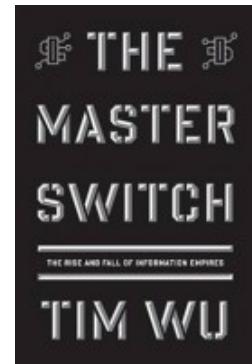


Tim Wu, **The Master Switch: The Rise and Fall of Information Empires**, New York: Alfred A. Knopf, 2010, 384 pp., \$27.95 (\$15.37 Amazon) (hardcover).

Reviewed by

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Tim Wu serves up a barber pole of a book with *The Master Switch: The Rise and Fall of Information Empires*. It contains intertwining historical stories—a retelling of the ATT/telephony saga and shorter explorations of developments in other American media sectors (radio, movies, television, and the Internet). The five sectors are treated in separate chapters, reflecting the traditional separation of various media and their regulation into vertical silos. The capstone to these parallel, mostly pessimistic tales is the inevitable suggestion for how to do better in the future, which Wu labels as the “Separations Principle.” (More on that later.)



The title indicates Wu's orientation. It is borrowed from one-time CBS News president Fred Friendly's remark that issues of free speech necessarily follow after the question of "who controls the master switch" (p. 13). The subtitle, of course, bows politely to Edward Gibbon's *Decline and Fall of the Roman Empire*. Wu's objective is to show that by "illuminating the past" it will be possible "to anticipate the future" (p. 7). He explains difficult concepts by telling stories about how information industry innovators and leaders built and maintained their industries. His narrative centers on four dynamic corporate titans: Theodore Vail (AT&T), David Sarnoff (RCA), Adolph Zukor (Paramount), and to a lesser extent Steve Jobs (Apple).

Wu's central thesis is that, time after time, in every media sector, the process of change repeats itself. Whichever company establishes early technological dominance does everything in its power to maintain its first-mover advantage. Wu labels this effort, the "Kronos Effect: the efforts undertaken by a dominant company to consume its potential successors in their infancy" (p. 25).

For a while, sometimes a considerable while, the early winners succeed by pursuing short-term, profit-maximizing politics to forestall or eliminate would be competitors. They resist alternative technological approaches, even those that are clearly superior to their own. They undercut newcomers at every turn, legally and sometimes illegally. If they recognize the threat early enough, the established dominant players may buy out the newcomer and suppress its technological breakthroughs. That doesn't always happen. Famously, the president of Western Union declined when offered the chance in 1877 to buy all of Alexander Graham Bell's patents for \$100,000, because he could not see telephony mounting a significant challenge against telegraphy (p. 25).

In addition, the established industry leaders use their immense financial and lobbying advantage to co-opt government policy makers at every turn. According to Wu, at many points since its creation in the 1930s, the Federal Communications Commission's independence was compromised, and it became a

virtual puppet of the dominant media and communication powers that were ascendant at that moment. Although the dominant firms usually prevailed, occasionally their arrogance and actions backfired. Almost to the end, for example, most observers were confident that "an outright breakup of (AT&T) the nation's telephone company, which since 1921 had provided the world's best service" was "unthinkable" (p. 193). Similarly, other media behemoths delayed their demise, but could not avoid it forever.

Ultimately, however, new companies that champion new and superior technologies win out. Wu relies on Joseph Schumpeter's concept of "creative destruction" and Clayton Christensen's notions of disruptive and sustaining innovations to explain the eventual supplanting of the old dinosaurs by robust, entrepreneurial newcomers. The cost of delay for innovation and for consumers is often substantial. For example, the superior FM radio technology was introduced commercially long after it was technically ready to supplant or complement AM radio.

The bands of Tim Wu's barber pole spiral out in chronological order. He sets the scene for the AT&T story with a description of a gala 1916 National Geographic celebration of the Bell System's achievements over four decades, especially its consolidation as a protected regulated monopoly as dreamed by its visionary long-time leader Theodore Vail. Wu extols the early triumphs and leadership of Vail, his ultimately failed effort to prevent attachments of non-AT&T equipment to AT&T's network, the breakup of Bell in the early 1980s, and its rebirth as a more limited wireless powerhouse.

The phoenix-like path is well known to telecom scholars, but likely will fascinate media experts.¹ AT&T's ultimately unsuccessful efforts to migrate into other media arenas also are examined. To maintain its telecommunication hegemony, AT&T first entered and then agreed to retreat from its forays into radio set production, radio broadcasting, and the movie and television industries. Only after its breakup was AT&T permitted by the government to enter into the value-added services markets, which eventually evolved into the nascent Internet sector.

Media scholars, depending on their specialty, are likely to find the others strands of Wu's story equally familiar or filled with new information and analysis. As a telecom scholar, I am fascinated by the moguls who built these adjacent media sectors and struck by the similarities across sectors. This, after all, is exactly what Tim Wu goes to great length to demonstrate. He succeeds.

¹ Popular journalists and writers cover this same ground: John Brooks, *Telephone: The First Hundred Years* (Harper Collins, 1975); Steve Coll, *The Deal of the Century: The Breakup of AT&T* (Touchstone, 1986); Alan Stone, *Wrong Number: The Breakup of AT&T* (Basic Books, 1989); Leslie Cauley, *End of the Line: The Rise and Fall of AT&T* (Free Press, 2005); and Nicholas Carr, *The Big Switch: Rewiring the World, from Edison to Google* (Norton, 2008). More formal histories by economists and former regulators also abound: Harry M. Shooshan (ed.), *Disconnecting Bell: The Impact of the AT&T Divestiture* (Pergamon, 1984); Gerald W. Brock, *The Telecommunication Industry: The Dynamics of Market Structure* (Harvard, 1981); and *Telecommunication Policy for the Information Age: From Monopoly to Competition* (Harvard, 1994).

Early radio, like early telephony, was inherently local. Wu begins the odyssey of radio from the first mass broadcast—the Dempsey-Carpentier heavyweight championship fight of July 1921. He describes the fork between privately controlled RCA in the United States and the government-owned British Broadcasting Corporation. He then returns to the rise to absolute dominance of David Sarnoff, who “proceeded like the ancient Chinese emperors who rewrote history as soon as they came to power, to prove they had had Heaven’s mandate all along” (p. 85). To illustrate the strength of the Kronos Effect, Wu recounts how “Sarnoff and the rest of the AM radio industry quietly campaigned to relegate FM radio to irrelevancy” (p. 127). For two decades, from 1926 to 1946, Sarnoff and his allies delayed the successful commercial introduction of the technologically superior FM radio. The FCC was misled and persuaded to become an accomplice in this stalling tactic until after World War II, and even then “FM radio stations owned by AM were required to carry the exact same programming—so-called simulcasting—for the supposed benefit of the American consumer” (p. 132).

According to Wu, “David Sarnoff was a true visionary, but not of the progressive kind.” Beginning in the late 1920s “Sarnoff, RCA, NBC, and later CBS repeatedly lobbied the FCC to adopt the view that television was simply an outgrowth of radio, and one that the established radio industry could be entrusted to bring to proper fruition” (p. 143). In response, the FCC “arrested the marketing of television from its invention in the late 1920s until the 1940s” (p. 145). Sarnoff was not anti-television; he just wanted to make certain that its mass introduction was delayed until he could dominate the industry.

The concentration and resistance to competition in the movie industry and in the movie theater industry followed a similar pattern. In 1912, Adolph Zukor, the third major protagonist in Wu’s tome, began his journey from ownership of a small movie theater to the dominant leader of the motion picture industry. The early American film industry grew up on the East coast, transitioning from photography to short films. As documented in Neal Gabler’s *An Empire of their Own: How the Jews Invented Hollywood*, Zukor’s efforts first overwhelmed the “Film Trust” that was built on the inventions of Thomas Edison and then dreamed of replacing it with his own centralized machine, with himself at the hub.² In July 1916, Zukor took over Paramount Studios and assumed leadership of the Hollywood-based Independent Studios. This new combination emerged as “the first major integrated studio in America and now the largest film corporation in the world” (p. 91). By the late 1920s, the Zukor-led combination of Paramount, MGM, and Universal “hunted down and destroyed most of the independent theaters, producers, and distribution companies” (p. 98). Warner Bros. managed to join the ranks of the majors, riding on the success of the first hugely successful talkie, *The Jazz Singer*. Only United Artists, led by D.W. Griffiths, survived and maintained an important independent role.

Wu detours from his competition-based trajectory at several points to venture into the realm of free speech and censorship. In response to attacks by Catholic activists under the banner of the “Legion of Decency,” especially after the introduction of sound, Zukor and the film industry chose to adopt a “Production Code” rather than risk their profits. The movie industry agreed to not lower the moral standards of the audience, to feature “correct standards of life,” and to not ridicule or go against natural or human law. (p. 120). As the movie industry succumbed to outside pressure—it would also do so later

² Neal Gabler, *An Empire of their Own: How the Jews Invented Hollywood* (Random House, 1988).

during the McCarthy attacks—the quality of Hollywood films suffered. Wu's main contention, one that he returns to throughout *The Master Switch*, is that "in the United States, it is the industrial structure that determined the limits of free speech" (p. 121).

The rebels and challengers that eventually displaced the old guard broke the dominance of the old monopolists. Television replaced radio in the hearts of most Americans. The rise of cable television and Ted Turner's CNN undermined the dominance of the broadcast networks. The unified studio structure was undercut and on January 1, 1984, AT&T was broken into pieces. Efforts to rebound through reconsolidation showed mixed results. Media "conglomeratization" swept a movie industry eager to control its risks and maximize profits. But the shipwreck of the AOL-Time Warner merger continues to haunt the media industry. The dominance of the moguls who reigned after World War II has never again reached the zenith of power and concentration the industry founders achieved.

Finally, Wu turns his attention to the rise of the Internet. From the time of Theodore Vail, AT&T thrived in its role as a regulated monopoly. By contrast, the computer industry, which held the potential to "link man and machine," matured in a largely unregulated market environment (p. 169). Paul Baran, the father of packet switching, Vint Cerf, the principal designer of the Internet protocol, and others laid the groundwork for a global information network with far more decentralized structure than any previous information industry. As communication and computer technologies began to converge, conflict and competition was predestined.

In the final two chapters of *The Master Switch*, the narrative jumps first to the present and then to the future. The critical battles for control of the desktop by Microsoft against IBM and later its efforts to fend off the challenge of Google receive only passing attention.

The penultimate chapter introduces Wu's fourth mogul, Steve Jobs, and then assesses Apple's growing competition with Google, as they "are fighting anew the age-old battle" for dominance. But, Wu argues, "this time around, as compared with any other, the sides are far more evenly matched" (p. 273). Steve Jobs receives less attention than do the other three stars of the book, because, as Wu recognizes, the battle is larger than the competition between these two giant technology leaders.

This war is being fought on three fronts. First, this "is the old conflict between the concepts of the open system and the closed, between the forces of centralized order and those of dispersed variety" (p. 289). Apple, AT&T, and the entertainment conglomerates champion centralized, self-contained systems, while Google and its Internet allies favor specialized, decentralized Internet operations. Second, echoing Jonathan Zittrain, Wu sees an ongoing effort by Apple and others in the information industry "to replace the personal computer with a new generation of 'information appliances'" (p. 291).³ The third confrontation, this one between device and equipment providers and the implications of the move of services to the "The Cloud," is not directly addressed. Everybody agrees that Apple makes really cool stuff, but iPhones, iPads, and the like are still commodities. Apple's profits still are disproportionately from the sale of devices, and not from services like iTunes or from its applications. The pace of innovation is

³ Jonathan Zittrain, *The Future of the Internet and How to Stop It*, (Yale, 2008).

fierce, requiring Apple to hit home run after home run to turn back its competitors. Moreover, Google has deployed new weapons like Gmail and Android in its battle for its vision. As Sony discovered, and Apple recognizes, this is a huge challenge, especially since most customers prefer the choices they enjoy in open networks. Users want modularity—the freedom to plug in any device, software, or service into their personal system and have it work seamlessly.

Still, even if a post-Jobs Apple stumbles, Google is far from secure, as even more specialized firms emerge to try to slice off pieces of their business.

In the final chapter, Wu returns to his academic roots in his framing of a possible way forward. When introducing his discussion of the Internet, Wu asks: "Was the Internet truly different, a real revolution?" and then responds: "We don't yet know the answer?" (p. 169). Yet, oddly, after some 300 pages of repeatedly arguing that companies and governments consistently follow the same patterns and fall into the same traps, Wu declares, rather unconvincingly, "this time is different" (p. 316). This is akin to the claim that every generation makes, that the world is at a critical turning point unlike any that has gone before. Only rarely, as at the onset of the Industrial Revolution in the late 18th century, is a paradigm change truly at hand. Even then, it took historians decades to agree that a momentous change had been underway.

The concluding chapter is far more theoretical and less entertaining than is the rest of the volume, but like his vigorous call for "network neutrality" in the first volume of this journal,⁴ his suggestions likely will generate considerable discussion and debate. Wu proposes a "Separations Principle" that would mandate

a salutary distance between each of the major functions or layers of the information economy. It would mean that those who develop information, those who own the network infrastructure on which it travels, and those who control the tools or venues of access must be kept apart from one another. At the same time . . . the government also (must) keep its distance and not intervene in the market to favor any technology, network monopoly, or integration of the major functions of an information industry. (p. 304)

In essence, Wu seems to want to establish separation between horizontal layers across media providers, while abolishing vertical silos that traditionally kept them apart.

On one level, Wu is suggesting a perfectly sensible middle ground that recognizes that neither free markets nor obtrusive government regulation and intervention will be able to ensure that monopolies do not triumph at the expense of the public interest. Alright, but that leaves three open questions: First, where should the line be drawn between markets and government? Second, how can the pragmatic middle ground be reached and implemented in a politically divided America that usually favors black or white (or red and blue) approaches over pragmatic compromise? Finally, can the Separations Principle be

⁴ Wireless Carterfone, *International Journal of Communication* 1 (2007), pp. 389–426.

globalized, given that technological neutrality is not an accepted priority in other companies and countries (China, but also the EU, for example) as it is in the United States.

Despite some reservations about the final two chapters, I consider *The Master Switch* a wonderful read. It is packed with historical anecdotes, featuring a fascinating collection of moguls and innovators, and also is filled with insightful nuggets about the competitive failures of the system. It is aimed at an educated general audience, not just at a few specialists. Wu writes with grace and wit, and his book should enthrall curious students as well as dyed-in-the-wool technophobes.

Wu has reached out to potential readers in forums and on media talk shows, and has garnered considerable, well-deserved attention. His success at promoting the book is evident; six weeks after its publication in early November 2010, *The Master Switch* ranks in the top 1,000 Amazon titles and sits atop both Amazon Technology and Society and Telecommunications lists. This popularity will fade, but for those like me who bemoan the limited historical knowledge of communications and media among their students, Wu provides a sweeping survey of communication and media developments in the United States since the late 19th century that sets the groundwork for assessing how the Internet might evolve. I am assigning *The Master Switch* to my undergraduates this spring, and I expect others will use it in their classes.