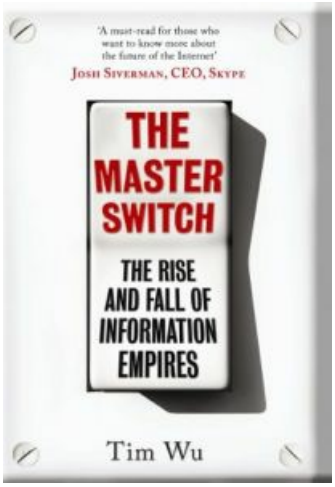

Book The Master Switch

The Rise and Fall of Information Empires

Tim Wu
Knopf, 2010
First Edition:2010

Recommendation

Great advances in communications technology start new industries, but the history of such breakthroughs shows a cycle of fragmentation, concentration, more breakthroughs and a splintered set of small companies. The web may defy this cycle, whether control of the web consolidates or remain diffuse. Historic patterns suggest that today's major web companies may become part of larger media empires, centralizing control of online content. Columbia professor Tim Wu offers a rich saga tracing the evolution of telecom industries, technology and regulations and explains what these patterns portend.

Take-Aways

- A cycle of fragmentation, consolidation and decline in the face of new technology is endemic in telecommunications industries: telephone, radio, TV, cable and film.
- How this cycle will affect the Internet remains to be seen. If conglomerates acquire major Internet firms, the web could become a "closed" system.
- Technological advances often slow or slaughter existing telecommunications industries.
- The US government has reacted to many telecommunications revolutions by delaying the adoption of disruptive technologies.
- AM radio stations' powerful owners squelched FM for years – with US government help.
- Companies using "vertical integration" handle every aspect of a product or service. This was the initial structure in telecommunications industries.
- In telephones, AT&T purchased its rivals in an early consolidation, but antitrust rulings split it into seven Baby Bells. Now AT&T and Verizon own the industry.
- Television broadcasters built powerful networks using AT&T's long-distance wires.
- Then cable television's satellite transmission revolutionized their industry.
- Hollywood's studios lost power after antitrust rulings made them sell their theaters.

Summary

A Cycle of Revolution, Fragmentation and Consolidation

Revolutions in communications technology encourage the formation of new companies that outperform old businesses based on outdated technologies. The fragmented frenzy of these revolutions fades as dominant companies buy or bankrupt smaller competitors. The diffuse nature of the Internet is the antithesis of centralized control, public or private, but if history is a useful guide, disjointed control of online content may yield to more concentrated power over the Internet. After all, the commercial forces of consolidation and concentration have prevailed in every communications revolution since the invention of the telephone in the late 1800s.

The Birth of the Bell System

The telephone, like subsequent major advances in communications technology, had several contemporaneous inventors. On the same day in 1876, inventors Alexander Graham Bell and Elisha Gray both registered for US patent protection for telephones they developed separately. Professor Bell had scant interest in running a business, but access to capital ultimately set him apart from other inventors. In 1877, he and a group of investors founded the Bell Company. By 1878, Bell's biggest competitor, Western Union, the telegraph monopoly, offered its own local phone service. Bell's small firm might have disappeared if it hadn't filed a lawsuit that year for patent

infringement against Western Union, claiming Western Union's phones infringed on Bell's patented design. The parties settled; Western Union agreed to leave the phone business forever.

> "By the late 1930s, every one of the 20th century's new information industries was fixed in its centralized imperial form."

The Bell Company, renamed American Telephone & Telegraph (AT&T), attained monopoly status after an extended fight with numerous small phone companies. After Alexander Graham Bell's telephone patent lapsed in 1894, investors funded the start-up of hundreds of these "independent" phone companies. AT&T fought back by refusing to connect its network with other firms and by undercutting its rivals' prices, putting many independents out of business.

> "The conglomerate is the dominant form for information industries of the late 20th and early 21st centuries."

Eventually, instead of destroying its rivals, AT&T began buying them. In 1909, it acquired Western Union, its "childhood tormentor," gaining control of all long-distance instant communication wires. Federal prosecutors threatened to attack this massive consolidation, but they did not splinter the system. The US Department of Justice later filed an antitrust suit against AT&T, which it settled in 1913 under a consent decree called the Kingsbury Commitment. AT&T agreed to charge "fair" rates, which government regulators would set, and to divest itself of Western Union. The pact forbade AT&T from buying independent phone companies in more than 1,000 markets. But, by avoiding a court-mandated breakup, AT&T could "consolidate the industry unmolested" in the guise of an "enlightened monopoly." Functioning as a "common carrier," it managed to keep its core business intact until the 1980s.

The Breakup and Reconstitution of AT&T

An antitrust lawsuit against AT&T concluded in 1984 with a federal court order to break the company into seven regional units (the "Baby Bells") to encourage telecommunications competition. AT&T kept its long-distance business, its Bell Laboratories research arm and its equipment-manufacturing unit. After the US enacted the Telecommunications Act of 1996, Bell Systems reconstituted itself. The law was supposed to encourage competition by allowing Baby Bells to offer cable TV service, letting cable operators sell phone service and permitting long-distance providers to offer local calling. Its most "decisive impact" was to clear the way for a reconsolidation of the phone industry. The 1996 law superseded the 1984 decree, substituting Federal Communications Commission (FCC) regulation for court supervision of the Bells, shifting them "out of the line of antitrust fire." This provision had a lasting impact: It paved the way for acquisitions that made the Baby Bells into subsidiaries of two dominant phone companies, Verizon and AT&T.

No Business like Show Business

A cycle of industry fragmentation and consolidation also unfolded in the film, radio and television industries. The film industry has shown a periodic tendency toward consolidation since the early 20th century, when the Edison Motion Picture Patents Company of New Jersey licensed the use of founder Thomas Edison's patents on film projectors and various movie technologies. Other companies patented comparable machinery, triggering years of litigation. The main litigants, Edison and film manufacturer Eastman Kodak, settled in 1908 by pooling ownership of their patents in the Motion Pictures Patent Company, called the "Film Trust." Its control of patents enabled the Film Trust to dictate all aspects of the cinematic industry until 1915, when a federal court found it guilty of price fixing and dismembered it. Gradually, Hollywood studios replaced the Film Trust with a cartel. The studios sold movies in "blocks," not one by one. Theater owners had to buy the blocks because the sellers (Fox, MGM, Paramount Pictures, Universal Studios and Warner Bros.) dominated US movie production.

> "The American government ended up failing to affirm a considered vision of what broadcasting should be, only following and accommodating the evolution of business models."

Hollywood studio magnates also owned other moneymakers, reaching beyond production into distribution and exhibition. This "vertical integration" of all aspects of the cinema business was especially apparent in their national ownership of movie theaters. In 1938, the US Justice Department charged the studios with antitrust violations, prompting a decade of legal disputes. The court battles concluded in 1948 when the US Supreme Court ruled against the studios, ultimately forcing them to sell their theaters. By the turn of the 21st century, the major studios had become cogs in much bigger corporate machines. In 2008, Universal recorded $5 billion in revenue, a minor percent of its corporate parent GE's earnings of more than $183 billion.

Radio, Television and the Federal Communications Commission

In 1934, Columbia University professor Edwin Armstrong invented "frequency modulation," or FM, radio. Armstrong was working for RCA (Radio Company of America) on limiting the acoustical distortion of "amplitude modulation," or AM, radio. Instead of improving AM, Armstrong invented a new way to transmit radio signals. FM was clearer and transmitted with less electricity than AM. Armstrong held the FM patent and expected to license the technology to RCA. But RCA resisted, because FM technology threatened its AM business. RCA's anti-FM viewpoint found an ally in the US Federal Communications Commission (FCC), which slowed the spread of FM radio to protect the AM radio network run by RCA's subsidiary, the National Broadcasting Company (NBC). The FCC banned commercial FM radio stations for the six years after Armstrong invented the technology. In 1941, the FCC finally permitted commercial FM broadcasts, but it discouraged investment in FM stations by limiting the range of their broadcasts.

> "Western Union may not have fully realized that the telephone would actually replace, not just complement, the telegraph."

The FCC took a very similar stance to discourage the rapid development of television, launched in January 1926. British inventor John Logie Baird demonstrated the first crude television set. Charles Francis Jenkins, a US inventor, followed with a similar demonstration almost immediately. Their primitive TV sets were mechanical devices with poor picture resolution. In 1928, Philo Farnsworth, a young San Franciscan, showed reporters the first electronic TV, which looked better and offered better picture fidelity. Alarmed at television's potential threat to the status quo in mass communications, the FCC banned commercial TV broadcasts, permitting only a "few experimental" stations from the late 1920s to the 1940s. It enacted the ban "to avoid unsettling AM" station owners, including CBS and RCA's NBC. In retrospect, by slowing the emergence of commercial TV, the FCC appeared to give RCA more time to prepare to control it.

> "Net neutrality is what prevents the telephone and cable industry from killing Google, Amazon, Wikipedia, blogs or anything else that might incur their

displeasure."

Farnsworth obtained a patent for the first TV set in 1930, but he lacked the money to build an empire based on his technical creativity. He needed more financing to compete with RCA. When RCA began developing its own TV (in part with information one of its men gathered by touring Farnsworth's shop), he sued for copyright infringement. Farnsworth never became a TV tycoon, but RCA had to pay him $1 million, plus royalties, to license his TV technology. At that point, RCA's powerful NBC network took over television.

Cable and the Conglomerate Trend

In the 1940s, the cable television industry was a splintered, scattered collection of amateur operators, often farmers who erected wire networks to broadcast TV signals to remote areas. In the late '50s, cable operators began to use microwave towers to transmit the signals over greater distances. The FCC tried to quiet the cable rebellion, showing its usual deference to the status quo. In 1966, it temporarily banned cable TV from the 100 most populous towns. That delayed cable's long-term growth until satellite technology emerged, offering cable operators broadcasting power on par with the "long lines" of AT&T. By the 1970s, satellite transmission was the defining force in cable. In 1976, Ted Turner, "the essential pioneer of the cable network," launched his Atlanta "superstation." Thanks to satellite signals, his WTCG became the first channel offered "on basic cable nationwide." Turner left AT&T's wires in the past and launched a cable empire. Within a decade, almost a dozen cable networks began satellite transmission, including Turner's Cable News Network (CNN), Music Television (MTV) and the Weather Channel.

> "With the convergence of all communications by virtue of interconnected networks...the reconstituted giants of telephony are closer to possessing a master switch."

The fragmented ownership in cable television operations consolidated. A handful of large, diversified companies now control much of the industry. General Electric, Disney and Viacom are leaders not only in cable programming and transmission, but also in films and broadcast TV. NBC, CBS, ABC and the big movie studios are subsidiaries of multinational corporations. The question now is if these conglomerates will consolidate ownership of major Internet companies.

Google and the Openness of the Internet

The Internet is a shifty challenge for older media – from radio and TV to magazines and newspapers – because it has the potential to replace them. Broadcasters and publishers are scrambling to attract online audiences by creating their own websites. But the most popular sites tap the web's full interactive power. Innovative firms – Google, Facebook and eBay – have created some of the world's most widely used online services. Despite their leading positions, however, many of the biggest web firms someday may merge with bigger companies.

> "Unlike almost every other commodity, information becomes more valuable the more it is used."

Google is the Internet's dominant search engine. As of 2010, it held the "master switch," the most popular portal to data and entertainment. Yet it doesn't own its transmission capacity or the content it delivers in the form of search results. This lack of vertical integration shields it from antitrust issues and benefits its users. Google's lack of a proprietary interest in web content adds to the integrity of its search results. Google could lose its independence in a future merger or acquisition, perhaps in a deal that would transfer custody of the master switch to a big conglomerate. Consider what would happen if a diversified producer of TV shows, movies and music acquired Google and then steered online searchers to its proprietary entertainment. If either AT&T or Verizon acquired Google, it might limit the access that users of the rival network have to Google. In either case, a "closed" quality would replace the "open," or agnostic, nature of Google searches. Commercial control of online content could become concentrated if Google and other big Internet firms meld with large conglomerates that want to give users a narrow, or closed, set of options.

The Vertical Integration Issue

Vertical integration historically has been a prelude to the creation of information industry monopolies and oligopolies. Concentrated power, in turn, has stifled innovation and, in some cases, slowed the advance of communications technology. Legal change is necessary to encourage not only innovation but also commercialization of new technology. AT&T, for example, developed the first telephone answering machine in 1934 but refused to sell it, fearing that it somehow would hurt its main telephone business. Similar concerns led AT&T to suppress development of other products for years after inventing them, including mobile phones, fax machines and fiber-optic transmission capacity. Better governance would deter online business activities that undercut public needs to fill commercial goals. The best approach would be a constitutional ban, not merely a regulatory restriction. Preservation of an open Internet demands preventing business combinations that allow vertical integration of online service delivery.

About the Author

Tim Wu is an author, a policy advocate and a professor at Columbia University.