

## The Master Switch

by Tim Wu

When we look carefully at information technologies over the last 150 years, we see a progression of disruptive innovations (those that threaten, rather than simply improve current technology) following a similar path. Each begins with an optimistic and open media and evolves into a closed and controlled industry or monopoly. This process is so typical the author had given it a name - "the Cycle".

To understand this Cycle and why it occurs we must discover how information industries are naturally and historically different from those based on commodities. Since we live in an information based economy and society, this understanding is critical to our future well-being.

*Part I* describes the rise of each new disruptive technology. *Part II* focuses on the consolidation of each information empire. *Part III* explains how the stranglehold of information monopoly is broken. *Part IV* describes how the perennial lure of size and scale spawns new generations of the Cycle. *Part V* addresses the question of whether our current informational behemoth - the Internet - will follow the Cycle or can it be different?

## Part I -- The Rise

### Ch 1 - The Disruptive Founder

- The lone and outsider founder is an important part of disruptive industries.
  - a. They are at the right distance from power and current technology to imagine the future and create an independent industry to exploit it.
  - b. They must be close enough to understand the problem, yet far enough to think outside the current structure of power and status quo. They are going to replace the typewriter, not simply improve on it.
  - c. They must be close enough to power to be able to exploit it and succeed.
  - d. Alexander Gram Bell was outside the environment of the telegraph and his primary investor, Gardiner Hubbard, was a sworn enemy of Western Union.
- The election of 1876 was bought and paid for by the monopoly on news by Western Union and Associated Press. This example can serve as a crucial parable for communication policy makers.
  - a. When major channels for moving information are loyal to one political party or idea the results can be profound.
  - b. Communication monopolists often betray trusts in the service of furthering company goals.
- The Kronos Effect: The efforts taken by a dominant company to consume its potential successors in their infancy.
  - a. In 1878 Western Union hired Thomas Edison to design a better telephone and briefly dominated the telephone industry. However, the eternal problem for an existing monopoly, it didn't want the telephone to pose a threat to its telegraph business (see GM's experiment with the electric car in the 1990's) and therefore relegated the telephone to local business service.
  - b. The Cycle is always a match to the death between companies/technologies and the new destroys the old.
  - c. Joseph Schumpeter's economic theory: Innovation and economic growth are one and the same. Either innovate and grow or stagnate. Innovation is a perennial state of unrest.

- d. The telephone patent, held by Bell and Hubbard, became the shield preventing the large industrial power (Western Union) from killing them off or seizing control.
- e. Theodore Vail started a new subsidiary of the Bell company (AT&T) specializing in building a long distance business to compete with Western Union.

## **Ch 2 - Radio Dreams**

- A wireless radio station required no special equipment and was available to everyone - the greatest open medium before the internet.
  - a. People often believe that better communication leads to better understanding; therefore it is humanitarian, as well as profit motives, that drive the opening up of a medium.
  - b. Radio was viewed as a cure for the alienating effects of a remote federal government.
  - c. Early radio stations had a range of about 30 miles and were, therefore local in nature.
- In 1921 a Jack Dempsey fight was broadcast to some 300,000 listeners in theater screens across the U.S., becoming the first major radio broadcast event.
- In Britain the BBC was organized by the government as a closed system from the beginning; intending to bring the best-of-everything to the general public.

## **Ch 3 - Mr. Vail Is a Big Man**

- After 1894 Bell's patents expired and hundreds of independent telephone companies sprung up in rural America, where the first Bell monopoly didn't choose to go.
  - a. Rural farmers saw a social technology, not just a more efficient means of commerce. This is where the party line originated.
  - b. In this environment the telephone was used as a broadcast instrument.
  - c. Founder's myopia: The inventor doesn't perceive the full spectrum of the invention's use.
  - d. After first ignoring the independents, Bell tried predatory pricing and then sabotage, finally gaining dominance in the West.
- Theodore Vail, previous general manager of Bell Telephone and founder of the AT&T subsidiary during the initial rise of Bell, was approached by J.P. Morgan to run Bell after the bankers took over. Their aim was to form the greatest wire monopoly in the world and the company was renamed AT&T after they took control.
  - a. Vail's slogan for AT&T was, "One system, one policy, universal service" and aspired to be the only carrier, eliminating duplicate lines and cut-rate service.
  - b. Vail, unlike Alexander Bell, did believe in the telephone as a public utility; just not in the continued existence of the independents.
- Over and over again we see the shift from an open industrial phase to a closed market beginning when capital interests spy the potential for vastly increased profit through monopoly.
  - a. With the 1909 purchase of Western Union, AT&T now controlled all long distance communications in the U.S.
  - b. Independents were invited to join AT&T and share the profits. Vail now used connectivity as a carrot to join, not a weapon to destroy, following John D. Rockefeller's "purchase or perish" model in building Standard Oil.
- Vail avoided a government breakup in the antitrust era by agreeing to government regulation of rates and the sale of Western Union (it was already dying at this time) through the Kingsbury Commitment - making painless concessions that preempted more severe options.
  - a. Vail believed that the enlightened monopoly should do good, along with doing well.
  - b. The most meaningful concession was to agree to serve as a common carrier (net neutrality in today's parlance).

- The big question today is to decide what businesses should be considered common carriers and which should be left to the forces of the free market. The author feels the following should be viewed as common carriers.
  - a. telecommunications
  - b. banking
  - c. energy
  - d. transportation

### ***Ch 4 - The Time is Not Ripe for Feature Films***

- Most of film's inventors were co-opted (the Kronos effect) by the phonograph.
- By 1912 the Film Trust cartel controlled most films shown in the U.S. and it was not interested in longer feature films or marquee performances (stars).
- Three would-be theater owners/distributors joined a loose association to fight the Film Trust cartel in the New York area ( Laemmle, Fox, and Zukor).
  - a. Due to repeated legal suits the three independents fled New York for Los Angeles - it was close to Mexico, in case process servers and subpoenas had to be avoided.
- The Film Trust served to...
  - a. Keep the product cheap and short.
  - b. Prevent stars from developing and demanding additional monies.
  - c. Define what could be filmed - censorship.
  - d. Keep foreign films out of the U.S.
- The independents prevailed because...
  - a. They created/imported big films that created a market for these films (the WASPs of the Film Trust thought films would always be novelties).
  - b. They pioneered the idea of Wall Street funding for their product, where as the Film Trust used fixed prices - limiting the type of picture financially available.
- This created an open film industry and all types of specialty films were produced through the 1920s.

### ***Ch 5 - Centralize all Radio Activities***

- AT&T created the first broadcast network because radio broadcasts could be carried on long distance lines and stations could reduce costs by sharing programming.
  - a. Advertising made possible the network because it introduced a business model for a radio station. This redefined radio, ultimately making it a closed medium.
  - b. AT&T denied rival radio stations access to its wires - a violation of its common carrier status.
- The Radio Corporation of America (RCA) was formed in response to the navy's insistence that all vital radio technologies be held in an American firm, in the interest of national security.
  - a. David Sarnoff became the head of RCA and squared off against AT&T for control of radio.
- Through court rulings and secret agreements, AT&T was forced to sell its network and stations to RCA and the National Broadcasting Company (NBC) was born under the condition that it was not seeking a monopoly of the air and was regulated by the government.
- The Federal Radio Commission (FRC, later the FCC) was formed and shut down many frequencies in favor of a few large networks.

## **Ch 6 - The Paramount Ideal**

- With the crumbling of the Film Trust, two concepts evolved among the independents for organizing the film industry.
  1. The three levels of film making (production, distribution, and exhibition) were separated, allowing each to increase their skill/craft to the highest level.
  2. The vertical trust that was the Film Trust cartel became the grand studios that controlled everything.
- The theater owner's organization became the primary opponents of the large studios (Paramount, Fox, Universal, MGM, and Warner Bros.) and won the first round by...
  - a. Eliminating 'block booking'; the practice of requiring theaters to take a number of yet-to-be-determined films to get highly desirable ones.
  - b. Forming the United Artists studio and hiring away the two largest stars (Mary Pickford and Charlie Chaplin).
- With the ascension of Adolph Zukor at Paramount Pictures, the vertical monopoly model became the dominant model for U.S. film production.
  - a. The studio group started the concept of chain theaters in rural America and smaller cities.
  - b. Using this power, the large studios were able to force 'block booking' back into the large theater owners.
- The dividing line in every information industry is between the virtues of centralized control (high quality and high costs) and decentralized variety
  - a. By 1921 the federal government began investigating Paramount Pictures monopolistic practices; however, it wasn't until 1962 that the Supreme Court banned the practice of 'block booking' – thereby allowing independent filmmakers into the competitive U.S. marketplace.
- In 1926 Zukor took over two of the great Midwest theater chains – now the large studios totally dominated the South and had considerable power elsewhere.
  - a. Finally in 1928, the independent theater organization sold out to Warner Bros.
  - b. In ten years the film went from one of the most open industries to one of the most controlled.
  - c. This illustrates how quickly an industrial structure can change when the underlying commodity is information and not a physical product.

## **Part II -- Beneath the All-Seeing Eye**

- By the late 1930s every one of the new information industries was fixed in its centralized imperial form and would remain so at least into the 1960s.
  - a. The movie industry was producing *Gone With the Wind* and *The Wizard of Oz* and perceived itself as art, not just commerce.
  - b. NBC and CBS had perfected the soap opera and ran "sustaining programs".
  - c. AT&T was saying "The System is the Solution" and was providing service as a common carrier.
- With respect to freedom of expression, this period was also one of the least hospitable environments in American history.
- In this section we examine what information empires mean for free speech and innovation.

### **Ch 7 - The Foreign Attachment**

- Monopolies want to direct "sustaining innovations" that support their products and extend their monopoly, but suppress "disruptive inventions" that can destroy their products.
  - a. The Bell Labs became famous for the number and variety of inventions that improved American life, but if any

inventions there were seen as threatening the AT&T monopoly (magnetic tape answer machines in 1934) they were hidden from view and had to be developed in other countries (Germany).

b. Anything added to a telephone was considered a foreign attachment and thwarted by AT&T and the FCC until a federal judge reversed the FCC in 1956.

- Another weakness of centralized innovation is control is placed in a few hands and only those few are presumed able to predict the future. That is not how human progress has ever evolved.

## ***Ch 8 – The Legion of Decency***

- There was no government censorship of movies, but because the entire industry was run from five centralized studios, they were subject to censorship pressure from the Catholic Church.
- The Legion of Decency was formed as a private organization with the express belief that Hollywood was corrupting Americans.
  - a. The Catholic enforcers subscribed to the legal principle of “prior restraint” in that they defined what they called Christian values and instructed studios that movies that violated their values would not be allowed to be distributed or shown.
  - b. The group was astute enough to realize that, in a democracy, government censorship would never be as effective as private censorship.
  - c. At its height in 1934 the Legion claimed 11 million members and urged a boycott of any offending studio, not just the offending pictures.
  - d. At this time the incoming Roosevelt government was also under pressure from the Catholic Church to look into the movie industry.
- In the interest of maintaining profits, the studio heads decided to voluntarily abide by the Production Code drawn up by the Legion of Decency and allow Joseph Breen, a Legion member, to review all treatments and scripts before and during movie production.
  - a. The Code did not ban treatment of controversial subjects, but they had to be in suitably limited form so as not to corrupt the general morals, i.e. a policeman or judge could be corrupt, but not the entire system.
- The Code’s three principles...
  1. No picture will loser the moral standards of those who see it – the bad guy cannot win – and the audience should never side with crime, wrongdoing, evil, or sin.
  2. Correct standards of life shall be presented.
  3. Law, natural or human, shall not be ridiculed nor shall sympathy be created for its violation.
- The story of the Legion of Decency goes to a central contention of this book: In the U.S. it is industrial structure that determines the limits of free speech. While Congress shall make no law... the private sector is free to place limits it deems appropriate. Hence, monopolies are free to apply any standard they see fit.
  - a. The right to make a film in the U.S. was in the hands of a very few men and they made themselves subject to the veto of one man – Joseph Breen.

## ***Ch 9 – FM Radio***

- FM radio, mechanical television, and electronic television were all inventions suppressed by RCA (parent of NBC), CBS, General Electric, and Westinghouse through their influence on and overregulation by the FCC.
  - a. FM radio represented a replacement of AM radio because it had much higher sound quality and required much less power to broadcast, thereby allowing a less expensive and more open industry, while making the existing high wattage stations obsolete.
  - b. FM could also connect radio stations, making the use of AT&T lines unnecessary.
  - c. FM could be used to carry a facsimile of the NY Times – a wireless FAX that would finally completely destroy the telegraph.

- The vertically integrated industries of radio and AT&T saw FM as a threat to their core business and used lobbying power in Congress and with the FCC to insure that the technology did not get mainstream exposure, knowledge, or approval.
  - a. The most effective way to gain power over the future is to be able to dictate popular assumptions.
  - b. Lobbying is the campaign to establish, as conventional wisdom, the desired facts; be they about climate change, charter schools, or the ideal technology for broadcasting.
  - c. Control of the financial levers is the concurrent strategy to lobbying, so that new entrepreneurs will be unable to get financing.
- Even in 2010 Congress has made the licensing of low power stations very difficult.

## ***Ch 10 – Now We Add Sight to Sound***

- Mechanical television was invented by two different inventors in 1926 in London and Washington, DC. In 1928 Philo Farnsworth invented electronic television in San Francisco.
- David Sarnoff, president of NBC and founder of RCA, saw what was coming and determined it should come from his radio empire and on his terms, rather than it coming from outside and replacing radio.
  - a. He became the financial force behind television and enlisted the government to help insure his empire would survive the onslaught of creative destruction ahead.
  - b. He also delayed the introduction of television to the general American public until 1939 – about ten years.
    - Mechanical television was halted in its tracks because David Sarnoff successfully lobbied the FCC to vest control of the infant industry in RCA.
    - Television’s development was halted in the U.S. until NBC was ready to introduce it in 1939.
      - ✓ Sarnoff ignored Farnsworth’s patent rights – counting on court costs to keep the inventor at arms length – duplicated and improved on his invention.
      - ✓ Sarnoff defined the direction of U.S. television industry into the 21<sup>st</sup> century.
    - It was international development of television and broadcasting that drove the new medium during this time.
- Television’s founding within limited networks, offering homogeneous programming to the masses, defined by entertainment that sells is in stark contrast to the broad open medium first encountered in the development of radio. It presents a cautionary tale of allowing an existing monopoly control over a new, disruptive technology in the information arena.
  - a. Industry structure is what determines the freedom of expression in the underlying medium.
  - b. It wasn’t until the late 1950s that anyone even questioned how television had evolved in the U.S.
  - c. Television didn’t have to be censored; it was the handmaiden of merchandising and conformity and its early history shows what happens to the Cycle when the combined forces of a dominant industry (radio) and the government (FCC) combine to suppress innovation and change.

## Part III – The Rebel, the Challengers, and the Fall

- The story of how information monopolies disintegrate.
- Challengers were slowly born over decades of dominance from tiny irrelevancies.
  - a. Small town entrepreneurs invented community antennas that became cable television.
  - b. A failing UHF broadcaster, Ted Turner, pioneered the idea of a cable network.
  - c. Independent filmmakers remade a Hollywood damaged by television and government anti trust actions.
  - d. An impractical, highly abstract, academic project evolved into the Internet.

### ***Ch 11 – The Right Kind of Breakup***

- The blessing of the state, either explicit or implicitly, has been central to every twentieth-century information empire. In every information industry the government mediated what would otherwise have been a more tumultuous course of the Cycle.
- The Sandia National Laboratories, the steward of the U.S. nuclear arsenal, was run by the AT&T as late as 1992. The link between AT&T and the government was so tight that the Defense Department intervened in 1956 to prevent the company's breakup on the basis of 'national security'.
- Breaking the stranglehold of the Hollywood studios.
  - a. In 1948 the Supreme Court agreed with the government that Hollywood was an illegal conspiracy in restraint of trade and would need to sell off their theaters. The totally vertically integrated system had been in place since the mid-1920s.
  - b. Independent producers and foreign filmmakers were now free to try and distribute their movies in the U.S.
  - c. It was the late 1960s before the more profound effects of this change would be felt.
    - Stars on long term contracts became independent agents
    - Films became more one-shot deals, rather than part of an assembly line.
    - The system of film censorship disintegrated
  - d. The 70s and 80s saw an explosion in the variety and quality of film, with the freedom to fail being extended across the film industry.
- Antitrust action is often undertaken on an economic basis, but the cultural changes and innovation – usually impossible to measure – are often the longest lasting result.

### ***Ch 12 – The Radicalism of the Internet Revolution***

- What is so radically different about the Internet?
  - a. The computer and the internet attempted to give individuals a degree of control/decision-making power unprecedented in a communications system.
  - b. The system was one of human augmentation (extension of human abilities), rather than a simple media system (entertainment or human speech) and was an effort to create and maintain a decentralized network.
- J.C.R. Linklider's idea in 1963 was that computers would be used by humans in the process of thinking – as analytic aids rather than calculators (the status quo) or as surrogates (fantasy machine robots).
- In 1950 Douglas Engelbart visualized the interfaces needed to communicate with a machine and he originated the basic ideas of the screen, keyboard, and mouse.
- In the early 60s Paul Baran conceived of the idea of a packet network as a way to protect communications after a nuclear attack. This is a technique where messages are broken up into like-sized packets and sent over a network at a standard flow rate by any available path. When he tried to sell the idea to AT&T they were not interested because their phone network was based on intelligent switches and optimal paths, which his system would obsolete.

- By 1968 Linklider foresaw that the computer would rival or replace the telephone. “We believe we are entering a technological age in which we will be able to interact with the richness of living information as active participants, bringing something to it, not just receiving something from it.’

### **Ch 13 – Nixon’s Cable**

- In 1960 cable was a technology serving small town and remote localities, barred by federal law from expansion.
- Clay Whitehead, Richard Nixon’s communication czar, believed in the cable medium as a highly deregulated common carrier. This was accomplished during the last days of the Nixon administration in exchange for a commitment from the cable operators that they would provide public access channels.
  - a. The threat of cable was to deliver additional stations from a distance that would compete with rival local stations for an audience and, hence, advertiser’s revenue. For this reason the broadcast monopoly and the FCC had conspired to keep cable operators isolated in rural America.
  - b. This change also directly attacked the network media news organizations.

### **Ch 14 – Broken Bell**

- MCI had been founded in 1963 and proposed to use microwave towers to sell long distance service, thereby bypassing AT&T phone lines.
- In 1968 the FCC ordered Bell to allow a third-party add-on and included an order to force AT&T to use a universal phone jack as a connector to their phones, eliminating the need for a Bell technician to attach people’s telephone and freeing its use by third-party connectors.
- There had been several attempts to break up the Bell system and in the 1970s the FCC attempted to create three pools of competition.
  1. Long distance services
  2. Attachments – consumer premises equipment
  3. data processing services
- In 1977 the Hayes Modem was developed to connect computers to a phone network.
- The protection the FCC gave the infant industry of online computer services insured that these services flourished and that the internet would later tear apart the traditional media industries and information empires.
- AT&T reacted by trying to crush all the new upstarts encouraged by the FCC with such venom and ruthlessness the government determined the only solution was to break up the company.
- With the breakup of AT&T in 1984 local costs could no longer be subsidized by long distance charges and phone costs rose.
- The innovation pent up by the Bell monopoly’s long suppression of change created a tidal wave of new products and new technologies.
- It is always preferable that the Cycle proceed of its own accord. The examples of Hollywood and the Bell system show not only the economic cost of monopoly, but...
- The intense suppression of innovation.
- Censorship of ideas and culture.
- In an information industry the multiplier effect of this restriction is particularly severe. Therefore, disruptive innovation must be protected or the monopoly will always swallow it in order to survive.



## **Ch 15 – Esperanto for Machines**

- The developers of a universal network protocol (TCP/IP) were trying to get three privately owned packet networks (ARPANET, a radio network, and a satellite network) to talk to each other.
- A lot of the open design was forced on them (Vint Cerf and Robert Kahn) because they were working with close systems owned by others. This was frequently AT&T in the 1970s – usually uncooperative and antagonistic.
- With standard packets and flow rates, Cerf and Kahn were able to separate the communication functions and thereby create an electronic network independent of the physical infrastructure over which it ran.
- To ponder the design of the internet is to be struck by its resemblance to other decentralized systems – such as the federal system of the U.S. government. The Founding Fathers had no choice but to deal with individual states that were too powerful and mature to give up most of their authority to a central government. Similarly the Internet’s founders were forced to invent a protocol that took account of the existence of many networks, over which they had limited power. Their one requirement was that the networks had to be able to accept the TCP/IP protocol for packets.
- Politically, the same ideas that inspired Henry Ford and Theodore Vail had also produced Adolf Hitler and Joseph Stalin. This was much of the reason decentralization became somewhat of a mantra during the Cold War era.
- Friedrich Hayek (patron saint of libertarians) pointed out that while centralized planning could make all endeavors more efficient – given perfect information – the main human limitation is that there is no such thing as perfect information. *Editor’s note: People do not always make logical or even rational decisions with the information they do have.*
- In the 1960s both libertarians and the left came to equate bigness (centralization) with a lack of humanity or human understanding.
- The Internet came of age during this period of backlash against centralized planning and authority.
- The design of the network itself was intended to be as nonspecialized as possible, so as to serve the “ends” in any ways the “ends” could imagine – i.e. Net Neutrality.

## **Part IV – Reborn Without a Soul**

- This is how the once mighty, then fallen, picked themselves up in the last two decades of the 20<sup>th</sup> century.
  - a. For entertainment industries size is a way of flattening out the risk inherent in creating big, expensive products.
  - b. In communications, monopoly and size reflect an interest in controlling an integrated system and all possible sources of revenue.
- The old empires were suppressive and controlling, but each has some sense of public duty – regulated or internal. The newly formed conglomerates had no soul or real connection to people.

## **Ch 16 – Turner Does Television**

- Rather than serving as an adjunct to broadcast television stations in rural America, Ted Turner saw cable as a national network, separate and distinct from other networks.
- AT&T long distance lines had long been the largest barrier to starting a new network, but Turner circumvented this by utilizing a new technology, satellite transmission, to make his station a super station for the entire country and formed a model for the industry in 1976.
  - a. Previously only HBO had used satellites, and that was to offer pay-per-view in 1972.
  - b. Turner charged other cable operators a fee for carrying his station.
- This change in cable turned television into a wide open medium for the first time.
  - a. The networks were aimed at the broad middle of American society, while cable operators saw an audience with minorities, students, and news junkies.

- Cable has been driven by the profit motive for its niche markets from its inception and never developed any appetite for either public service or alternative programming, while the internet has always had an open and experimental component to its development.

## ***Ch 17 – Mass Production of the Spirit***

- The 1980s saw the rise of the media conglomerate as the studios sought to insulate themselves from the risk of expensive movie failures.
  - a. In a “hit” driven industry, wild success is very difficult to predict
  - b. Any entertainment product is not something people need; they have to want it.
- Conglomerate’s broad structure and accounting practices were pioneered by Steven Ross of Warner Communications.
  - a. Ross hedged the film studio’s volatility with steady revenues from unrelated businesses (DC Comics, Franklin Mint, Mad Magazine, Garden State National Bank, Atari video games, NY Cosmos soccer, parking lots, rental cars, and funeral parlors).
  - b. Part of the conglomerate’s interest in the movie industry was the aspect of celebrity and fame for conglomerate leaders.
  - c. By the time General Electric bought Universal Studios in 2004, the conglomerate was the definition of the movie industry.
- In managing risk conglomerates came to view the underlying intellectual property to be as valuable as the story and stars. Films would increasingly be built on an already identifiable property, not an entirely new story (see DC Comics above).
  - a. The only major successful movie over the last ten years that is an original idea is Avatar.
  - b. These films not only drive theaters, but also other products in the conglomerates empire.
  - c. Information is the only commodity that becomes more valuable the more it is used (copyright and trademark conditions apply).
  - d. Character ownership is not only more profitable locally than cultural story telling, but it is much easier to export globally.
  - e. Box office receipts are sometimes a relatively minor part of the expected return on a movie.
  - f. Studios are now more licensing operations than filmmaking enterprises.
- Investors have turned to film festivals to find already made small films that people liked and would be a good bet to distribute more widely, lessening the financial risk.
  - a. This is now the outlet for individual stories and small movies that used to be made by studios.
- Since there are several communications conglomerates, they own their properties in a number of unrelated fields, and the country has an anti-regulatory sentiment, there has been no pressure to break up these huge empires.
- The largest creative loss to the film industry, resulting from its domination by conglomerates, appears to be the lack of pressure to make good, story telling films.

## ***Ch 18 – The Return of AT&T***

- The 1984 court order broke AT&T up into seven baby Bells and a long distance carrier. Within 21 years AT&T had been essentially reassembled, without any commitment to public interest as a common carrier.
- The 1996 Telecommunications Act freed the Bell companies from the consent decree that ended the Bell antitrust lawsuit. The companies were now under the supervision of the FCC, a much easier entity to deal with than the federal judge overseeing them under the consent decree.

- In 2010 only three Bell companies remain...
  1. Qwest Communications (formerly US West)
  2. Verizon (formerly Bell Atlantic and NYNEX)
  3. AT&T (all the other baby Bells and the long distance carrier)
- Since the government finds it easier to deal with fewer companies when trying to implement some national strategy, having fewer companies to deal with was supported by the Executive branch.
  - a. In the early 2000s the Executive branch started spying on American citizens using the telephone or Internet, under a covert executive order exposed in 2006.
  - b. AT&T assisted the government by setting up secret cells through which all communications could be routed for examination and review.
  - c. In 2008 Congress passed a law granting AT&T and Verizon full retroactive immunity for any illegal spying – effectively ending any possibility that the public would ever know what was actually done.
- The saga of AT&T shows the irrevocability of the Cycle of information empires to return to consolidated order, however great the destructive forces.

## Part V – The Internet Against Everyone

- By the first decade of the 21<sup>st</sup> century the second closing of traditional information industries was complete. Bell was back in control of the phone system and its competitors were being steadily run down and conglomerates controlled film, cable, and broadcasting.
- The one great exception to this domination of big business was the Internet, its users, and the industry that had grown up around the network.
- Since the Internet represents an existential threat to these communications industries, the question is, “Will the Internet be able to survive as an open medium while all other closed communication vehicles attempt to absorb it?”

### Ch 19 – A Surprising Wreck

- The AOL – Time Warner merger in 2000 was supposed to signify the merging of the Internet with the Conglomerates and the closing of a previously open medium, but it didn’t work. Why?
- The principle of net neutrality, installed by the Internet’s founders ultimately wrecked the AOL – Time Warner merger.
  - A key reason for successful mergers is cross pollination – each side is able to add customers to the other.
  - AOL was a seriously flawed company, formed before the advent of the mass internet. AOL’s idea was to create a “walled garden” where its users could come and satisfy all their needs without leaving – the Apple philosophy. The problem with this was the development of broadband access made AOL’s business plan obsolete – eliminating dial-up as the primary entry into the Internet.
  - AOL had to find a suitor with cash and access to content to have any chance of surviving the broadband challenge. While Time Warner was such a suitor, there was no way for a closed environment to survive the broadband internet – customers simply would not sign up.
  - The aspect of net neutrality insured that users could not be prevented from going where they wanted to on the Internet and this meant Time Warner could not constrain users to Time Warner / AOL approved websites.
- This is also a key reason the mergers between Microsoft / GE and the merger between Comcast / Disney did not go through.

- The Internet is neutral by design and access is not naturally limited to a particular segment of business – i.e. subscribers want access to more than a “walled garden”.
  - a. All other media industries are predicated on control of the customer, the Internet is not.
  - b. The power of the Internet is that it abdicates control to the individual user.
  - c. The only entity that has so far succeeded in overturning the net neutrality principles is the government of mainland China.

## **Ch 20 – Father and Son**

- Apple – the original radical, idealistic firm – and Google – its logical successor in thought would seem to be father and son, made from the same stock. The two companies are, however, diametrically opposed to each other at the present time.
  - a. Apple
    - After the time Steve Wozniak designed the Apple II Steve Jobs took control of the company and he demanded a closed system where he could control all use of his products, i.e. the AT&T model.
    - Jobs’ mania for central control, aesthetic dominance, functionality coordination, and quality control are all characteristics of a monopolistic system. This is why Apple is not a supporter of net neutrality.
    - He has made excellent decisions about the future, but his products (iPod, iPhone, iPad) are commodities that people use passively, not things that extend people’s ability to develop.
    - The weakness of the company is they rely on inside abilities to both forecast and develop the future and cannot adapt to disruptive innovation as easily as open systems.
  - b. Google
    - Google is the modern day equivalent to the 1910 telephone girl: A fast, accurate, and polite way to reach your party – i.e. they are the Internet’s switch. While the Internet switch is a switch of choice, their market share is over 65%, qualifying them as a monopoly.
    - Google’s chief advantage is specialization. They understand that infrastructure is not the same thing as content and they concentrate all their efforts on infrastructure. It is the corrupting influence of content that doomed companies like AOL.
    - Google’s great weakness is that it doesn’t control access and whoever does control that access can block Google, or any other site or content. Additionally sites can tell Google they don’t want to be indexed. This is the key reason Google is a strong supporter of net neutrality.
- What is different about Google?
  - a. It’s highly specialized control of the Internet switch.
  - b. It’s corporate structure actually avoids vertical integration.
    - It is an Internet company that doesn’t own content.
    - It is a communications company that doesn’t own wires or airwaves.
  - c. Google traffics in content originated by others and reaches its customers over hardware controlled by others.
- AT&T understands that Google’s use of AT&T lines to access the internet is their great weakness and that the only thing that stands between the phone company, the cable companies, and the consumer is the idea of net neutrality and the government’s enforcement of it (note the example of China when the government does not support neutrality).
- Net neutrality is the 21<sup>st</sup> century’s version of common carriage.
  - a. An FCC rule that bans any degree of blocking of individual sites or transmissions of data (whether by size, sender, time-of-day, or any other factor).
  - b. AT&T initial step would be to offer a “fast lane” to consumers for a fee. This sets the precedent for treating customers differently.

- c. News Corp. has threatened to remove themselves from Google's search engine when they start charging for their content. This would prevent non-customers from even seeing things like headlines in News Corp. content.
- By 2010 the battle lines are clearly drawn in the age old battle between those who support a closed system (AT&T, News Corp., Apple, copy write holders) and those who want an open system (Google, Amazon, eBay, Wikipedia, Facebook). For the first time the sides are more even and the results are not foreordained.
- Apple's salvo to control the communication industry and replace the personal computer is its trio of successful introductions (iPod, iPhone, iPad).
  - a. These products, while they are essentially computers on the inside, have been designed to do a limited set of functions very well, but not to go beyond that. Apple controls a veto over all applications developed (i.e. they temporarily blocked Skype – a competitor to AT&T and Apple's business partner).
  - b. Apple's products are now designed to control users (and user applications), not to empower the user like the Apple II. These are consumption machines, not creation machines.
- Google responded, not by introducing a product, but by donating a platform – the Open Handset Alliance and the Android operating system – for Internet developers to use in product and/or application development.
  - a. Android is free and brings Google no revenue, but it forms the basis of an open system that allows Google to continue to operate.
  - b. Google has partnered with Intel, NTT, Sprint/Nextel, T-Mobil, HTC, LG, Samsung, and Motorola – all partners who would be closed out by the Apple / AT&T alliance.
  - c. Android is based on open system architecture using the Linux kernel, a known development environment.
- Each side has problems they would prefer not to talk about...
  - a. Closed systems: More polish at the price of more limited choices and possible future development.
  - b. Open systems: More choice and a wide open development future, but messy mistakes and an amount of spam.
- In the past the growth has always been in one direction, from open systems to closed, but the democratization of technological power has made the future harder to predict.
  - a. Inspiration can be translated to commerce virtually overnight, making closed systems more difficult to maintain.

## ***Ch 21 – The Separations Principle***

- Human history has always been about the rise of concentrated power and its destruction by dispersed power – the Cycle.
- The American political system was constructed to prevent the abuses of public power, however, we have always been loath to address the danger private power can inflict on our public life.
  - a. Our attitudes toward private property
  - b. Our constitutionalism, which reserves power not explicitly granted to the state for the individual.
- Whatever we may think of private power, there is a special case concerning concentrated power having control over the creation, transmission, and exhibition of information.
  - a. Today's information industries are embedded in our existence in a way unprecedented in industrial history. They determine not only who gets heard and seen, but when they will be heard and seen.
  - b. The FCC reckons the cable companies will soon enjoy an uncontested monopoly over broadband Internet in much of the U.S.
  - c. This industry must be handled differently because an after-the-fact approach will not serve us when the industry's substrate (natural environment) is speech.
- The author's proposed approach is not a regulatory one, but a constitutional one – something instituted by multiple intuitions, including those restrained by it. The goal being to constrain and divide all power that derives from the control of information – a Separations Principle.

- This would mean the creation of a salutary distance between each of the major functions or layers in the information economy.
  - a. Those who develop information separated from...
  - b. Those who own the network infrastructure on which it travels, separated from...
  - c. Those who control the tools of access.
  - d. The government also must not intervene in the market to favor any technology, network monopoly, or integration of the major functions of an information industry.
- The simplest expression of the Separations Principle, as it relates to the state, is that government's only proper role is as a check on private power, never as an aid to it.
- This principle, like the separation of church and state, is a means to preempt politics.
- We know in advance that some of the benefits of concentration and unified action will be sacrificed, however, since power can be concentrated both...
  - a. by monopolistic control of a technology (telephony or films) and...
  - b. by the integration of industrial functions - as when a single entity controls every stage of creating and delivering the product (studios),

This sacrifice is needed for the overall benefit of society.
- Implementation of the Separations Principle
  - a. First the FCC oversees anti-discriminatory or common carriage rules like net neutrality.
  - b. The FCC is also responsible for the prevention and dissolution of large-scale vertical mergers in the communications industry – like Comcast / Disney.
  - c. Congressional oversight must be implemented along with the FCC regulations.
  - d. The last line of defense would be antitrust legislation and involvement by the Justice Department.