

History of Communications Media

Class 3

Printing

- Significant Social and Historical Effects
 - Print was a major factor in the development of the following:
 - Capitalism
 - The Protestant Reformation
 - Nationalism
 - Intellectual Liberalism
 - The creation of childhood as a distinct social category
- I will discuss each in turn

Printing

- **Printing and the Development of Capitalism**
 - Printing shops were the first major urban capitalist enterprises
 - Print shop economics – large up-front costs combined with later revenues
 - The print shop's demand for paper stimulated the growth of the paper manufacturing industry which led it to rationalize the collection of rags
 - Printing press technology anticipated many features of industrial production

Print shop economics - Printing required a large initial capital investment for a press, movable type, large quantities of paper, and a building to house the above-- preferably in an urban setting near potential customers (educated people, teachers, clergy, officials) -- while income came much later in drips and drabs as individual books were sold. Hence, print shops required access to credit and a Capitalist approach to business -- i.e. they were the first major urban capitalist enterprises.

Paper – According to Lisa Jardine *Worldly Goods. A new history of the renaissance*, the major expense in printing was the paper on which the book was printed, representing 2/3rd of the cost of a book's publication. {The other 1/3rd consisting of the price of acquiring the text, the amortized cost of purchasing and installing the printing press and associated technology, and related labor costs}. The press was a huge consumer of paper, using three reams (1500 sheets) per press per day.

Anticipation of industrial production - Printing press technology anticipated many features of industrial production -- the assembly of individual lettered units into a linear whole that can stamp out identical words and sentences on page after page. The printing press allowed words to be privatized and commercialized for the first time in history. In an oral world, words, stories, poems, and tales were all collectively shared. They existed in common. The thought that someone could own a sentence or sell and profit from it would have seemed quite strange in Medieval Europe or other pre-print cultures.

Printing

- Printing and the Protestant Reformation
 - When Luther nailed his Ninety-Five Theses to the church door, he saw it as merely an invitation to an academic disputation
 - Protestantism was the first religious movement to fully exploit printing's potential as a mass medium
 - Luther described printing as "God's highest and extremist act of grace, whereby the business of the gospel is driven forward."

Ninety-Five Theses - When Luther proposed debate over his Ninety-five Theses his action was not in and of itself revolutionary. It was entirely conventional for professors of theology to hold disputations over an issue such as indulgences and "church doors were the customary place for medieval publicity." But these particular theses did not stay tacked to the church door (if indeed they were ever really placed there). To a sixteenth-century Lutheran chronicler, "it almost appeared as if the angels themselves had been their messengers and brought them before the eyes of all the people." Luther himself expressed puzzlement, when addressing Pope Leo X six months after the initial event: "It is a mystery to me how my theses, more so than my other writings, indeed, those of other professors were spread to so many places. They were meant exclusively for our academic circle here . . . They were written in such a language that the common people could hardly understand them."

Printing's revolutionary potential - Protestantism was also the first movement of any kind, religious or secular, to use the new presses for overt propaganda and agitation against an established institution. By pamphleteering directed at arousing popular support and aimed at readers who were unversed in Latin, the reformers unwittingly pioneered as revolutionaries and rabble rousers. They also left 'ineradicable impressions' in the form of broadsides and caricatures.

Printing & Protestantism - the reformers were aware that the printing press useful to their cause and they acknowledged its importance in their writings. From Luther on, the sense of a special blessing conferred on the German nation was associated with Gutenberg's invention, which in their eyes emancipated the Germans from bondage to Rome and brought the light of true religion to a God-fearing people. The mid-century German historian, Johann Sleidan, developed this theme in an *Address to the Estates of the Empire* of 1542: "As if to offer proof that God has chosen us to accomplish a special mission, there was invented in our land a marvelous new and subtle art, the art of printing. This opened German eyes even as it is now bringing enlightenment to other countries. Each man became eager for knowledge, not without feeling a sense of amazement at his former blindness." Variations on the German theme were played in Elizabethan England in a manner that has continued to resonate down to the present day. By associating printing

Printing

- Printing and the Protestant Reformation - 2
 - Printing brought into focus many troublesome issues that had been easily glossed over before
 - One issue was the relation of Scripture and Tradition
 - Another was the relationship of faith and works
 - Printing with its focus on the word of God led to simpler forms of church architecture
 - Art was banished from the churches – compare the Gothic cathedral with the Old South Church

Scripture & Tradition - Oral testimony, for example, could be distinguished much more clearly from written testimony when poets no longer composed their works in the course of chanting !! or reciting them and when giving dictation or reading out loud became detached from the publication of a given work. Accordingly, questions were more likely to arise about the transmission of teaching that came from the lips of Christ or from the dictation of the Holy Spirit to the Apostles. Was all of the Christian heritage down in written form and contained solely in Scripture? Was not some of it also preserved "in the unwritten traditions which the Apostles received from Christ's lips or which, under the inspiration of the Holy Spirit, were by them, as it were, passed down to us from hand to hand"? Was it meant to be made directly available to all men in accordance with the mission to spread glad tidings? Or was it rather to be expounded to the laity only after passing through the hands of priests, as had become customary over the course of centuries? But how could the traditional mediating role of the priesthood be maintained without a struggle when lay grammarians and philologists had been summoned by scholar-printers to help with the task of editing old texts? The priest might claim the sacred office of mediating between God and man, but when it came to scriptural exegesis many editors and publishers felt that Greek and Hebrew scholars were better equipped for the task.

Faith and works – Luther and Calvin had based their theology on Pauline concept of justification by faith – Man was saved by faith in Jesus Christ and not by practicing the works of the Mosaic Law. But the Epistle of James argued “For just as a body without a spirit is dead, so also faith without works is dead. (James 2:26). Thus, one effect of printing and the Reformation was to

Printing

- **Printing and the Protestant Reformation - 3**
 - Popular editions of the Bible (such as the Luther & King James versions) had some interesting results:
 - They led people to draw an inevitable contrast between the idealized origin Church depicted in Acts and its current reality
 - Led many to see the present as a corruption and a decline from the past
 - Contrary to the intentions of the Reformers, it led to the fracturing of Protestantism

Origins vs present - The contrast between the ideal Church depicted in the early chapters of the Book of Acts and the sometimes sordid realities of a Church that seemed in need of moral reform led to reform efforts – some by Protestants who felt that fundamental overhaul was required and some by Catholics who felt that the problems, while real, were not inherent in the Church and could be corrected. Another contrast was between the teachings described in Scripture and the doctrines of the 16th century Church. Catholic theologians could argue, with justification, that current dogmas were simply the explicit logical outcome and development of teachings that were implied in Scripture. But if one were a literate individual who was not conversant with the detailed history of the Church and of Catholic theology, it would often be hard to see how a current dogma was anything but either a distortion of Christianity or an addition to it. Examples are the Doctrine of Transubstantiation in the Eucharist and the role of the saints, and especially Mary, as intercessors with God. Martin Luther and John Calvin dismissed indulgences, purgatory, saints, canon law, obedience to the pope, and all but two sacraments -- baptism & holy communion -- because these had not been explicitly mentioned in Scripture. (p327) [Shlain]

Fracturing of Protestantism - The Protestant reformers believed that when large numbers of lay people read the Scriptures for themselves, they would be transformed *{and would have the same understanding of the Scriptures that the initial reformers had}* (p326) [Shlain]

Printing

- The Book of Scripture or the Book of Nature – both were seen as the handiwork of God
 - Printing had a differential impact on the study of both:
 - Biblical scholarship could not get back to the pure original words of God before they had been corrupted by copyists over time
 - The study of nature, however, could progress as corrupted scientific data could be compared with, and corrected by, current observations and experiments

In the words of Elizabeth Eisenstein, “Confronted with conflicting astronomical tables based on corrupted scribal data, an astronomer like Tycho Brahe could check both versions against fresh observations of the sky. But dissatisfaction with the corrupted copies of St Jerome’s Latin translation could not be overcome in the same way. Instead it led to multilingual confusion and a thickening special literature devoted to variants and alternative theories of composition. ... Thus the effect of printing on Bible study was in marked contrast with its effect on nature study.”

Printing

- But if the Book of Nature (what science revealed) seemed to contradict the Book of Scripture (what God revealed), then what:
 - For intellectuals and members of the educated elite, the logical conclusion was that the Book revealed by science was true and that the Bible was simply a collection of legends
 - For common believers, the logical conclusion was that Scripture was an infallible source of scientific knowledge

Science as true - This led to the Enlightenment, religious Modernism, and the alienation of Western intellectuals from religion. Their alienation from religion in turn led many to their infatuation with secular ideologies, such as Communism, Fascism, and militant Atheism.

Bible as true - This led to Biblical Fundamentalism, and such corollaries as Scientific Creationism, rejection of Darwinism, and Intelligent Design.

Printing

- Printing and the Rise of Nationalism
 - Printing fostered the idea of being part of large-scale collective groups
 - Printing, as noted earlier, elevated the status of the vernacular language, thus fostering a sense of ethnic-linguistic nationalism
 - Printing created walls between different language groups while homogenizing differences within
 - Print media proved very useful in arousing nationalist feelings and hatreds

Supra-local identification - With printing, people began to read about what went on beyond their local village and achieve both vicarious participation in more distant events and links to larger collective units. Printed materials encouraged silent adherence to causes whose advocates could not be found in any one parish and who addressed an invisible public from afar. Being able to read books and later newspapers from the capital led local provincials to see themselves as part of a national state.

Vernacular language –The vernacular languages which most people spoke acquired an importance once a mass market arose for printed material in those languages. This made it commercially profitable to produce books in the vernacular, which in turn gradually raised the literary status of these languages. This helped foster a sense of identity with those who also spoke the language. Two of these vernacular languages, French and early English, had become competitors of Latin as "languages of power" by the sixteenth century. In England early English had become the legal language in 1362, in France in 1539 "In 1562 the *Book of Homilies* was issued for universal public reading from every pulpit. Their content is not our concern, but rather their being uniformly imposed on the entire public. By making the vernacular a mass medium, print created a new instrument of political centralism previously unavailable.

Walls & homogeneity – Printing standardized idioms for millions of writers and readers, assigning a new peripheral role to provincial dialects. The preservation of a given literary language often depended on whether or not a few vernacular primers, catechisms or Bibles happened to get printed (under foreign as well as domestic auspices) in the sixteenth century. When this was the case, the subsequent expansion of a separate "national" literary culture ensued. The spread

Printing

- Printing and Intellectual Liberalism
 - Printers disliked censorship
 - They were natural libertarians who generally wanted the freedom to print whatever they wanted and whatever they thought would sell
 - Printers had to deal with scholars and intellectuals
 - This in itself contributed to liberal attitudes since intellectual pursuits brought together people from very diverse backgrounds and from different religions

Dislike of censorship - The printing industry was the principal natural ally of libertarian, heterodox, and ecumenical philosophers. Eager to expand markets and diversify production, the enterprising publisher was the natural enemy of narrow minds

Dealing with scholars & intellectuals – A merchant-publisher had to know as much about books and intellectual trends as a cloth merchant had to know about dry goods and dress fashions. The very nature of his business provided him with a broadly-based liberal education. He had to have a wide circle of acquaintances from various fields of endeavor and often wide contacts with foreigners. Foreign experts were often needed as editors, translators, and type designers. One result of all of this was exposure to people with different theologies and different points of view – all of which encouraged ecumenical and tolerant attitudes. Thus Christopher Plantin of Antwerp could be the official printer of Phillip II in the Low Countries but at the same time willingly serve Calvinists and have close friends who espoused some very unorthodox opinions that both Catholics and Calvinists considered beyond the pale.

Printing

- Printing and Childhood
 - Printing created childhood as a distinct social category
 - In the centuries after the invention of printing, Adulthood was redefined – one became an adult by learning how to read
 - Before the printing press, children became adults by learning to speak – a behavior for which all humans are hardwired and which they generally master by age 7
 - Thus the Catholic Church and the Law both defined age 7 as the age of reason and the age at which they became morally and legally responsible for their actions

Printing

- **Printing and Childhood – 2**
 - After printing, children had to earn adulthood by becoming literate, for which people are not hardwired
 - This meant children had to go to school
 - With the establishment of schools, children came to be viewed as a special class of people different from adults
 - People began to see human development as a series of stages, with childhood being a bridge between infancy and adulthood
 - Before print, children were seen as little adults and seen as part of the adult world

Children as a special class – Once children were seen as a special class, special institutions were developed for their nurturing. These include kindergartens, little leagues, Boy Scouts, Cub Scouts, Girl Scouts, Brownies, day care centers, Boys' Clubs, orphanages, summer camps, Juvenile courts, etc. We also conferred on children a special status, reflected in the distinctive ways we expect them to think, talk, dress, play, and learn.

Childhood, then adolescence - Later as schooling began to extend beyond literacy and primary or elementary school to high school, adolescence was added as a new stage between childhood and adulthood.

Printing

- As noted before, printing led to new formats and genres of literature:
 - Early genres included the book, broadside, and pamphlet
 - The mid-17th century saw the newspaper
 - The late-17th –early-18th centuries saw the scholarly journal
 - The 19th century saw the daily newspaper and the magazine

Printing – Pamphlet

- Pamphlets – an unbound printed publication with either no cover or a paper cover and generally many fewer pages than a book
- Pamphlets were an ideal print medium for circulating opinions, sermons, and pornographic writings and images
 - Pamphlets have played a major role in many political, social, and religious controversies and revolutions

Printing – Pamphlet

- Some examples
 - The Protestant Reformation
 - The Enlightenment Debate between Rationalists, Deists/Skeptics/Atheists and Traditional Christians
 - The “Pamphlet War” at the End of the Seven Years War
 - The American Revolution
 - The Abolitionists
 - The Influence of two pamphlet writers on Adolf Hitler

Protestant Reformation - Between 1520 and 1523, soon after Luther had raised his voice against the preaching of indulgences, a vast 'press campaign' developed in Germany. Thousands of pamphlets, brief quarto-format publications of only a few pages, at times with illustrations, circulated throughout the Empire. All the Reformation's challenges to the Church were propa-gated in hastily written, poorly organized, diffuse and redundant pub-lications of this sort. The same texts, presented in the form of sermons, dialogues or letters, were often reproduced from one city to another in what was in fact the first instance of the use of print to arouse public opinion.

Deists vs Traditional Christians – In the words of historian Peter Watson in his *Ideas. A history of thought and invention from fire to Freud*, the Enlightenment “occurred in four stages. These were what we may call rationalistic supernaturalism, deism, scepticism and, finally, full-blown atheism. It is also worth point-ing out that the advent of doubt, besides being a chapter in the history of ideas, was also a stage in the history of publishing. The battle between orthodox traditionalists and free thinkers, to give the doubters their generic name, was fought out partly in books, but it was also a time when pamphleteering was at its height.” He noted that many of the ideas of Enlightenment thinkers were published as pamphlets, often with a combative style and title, such as *The Unreasonableness of the Doctrine of the Trinity briefly demonstrated, in a letter to a friend* (1692).

The Pamphlet War – As the Seven Years War neared its end, the government in Lon-don, then winning the American phase of the Seven Years' War (also known as the French and Indian War), had to decide whether to return conquered Canada or the captured Caribbean island of Guade-loupe to France as part of a peace settle-ment. Draper notes a peculiar aspect of the “Canada versus Guadeloupe” contro-versy: “Fear of the growth of the colonies appeared in so many pamphlets that it was clearly more than a curious aberration on the part of some nervous British officials.” One English pamphleteer warned, “If, Sir, the People of our Colonies find no Check from [French] Canada, they will extend themselves, almost, without bounds into the Inland Parts

The possession of Canada, far from being necessary to our Safety, may in its Consequence be even dangerous. A Neighbour that keeps us in some Awe, is not always the worst of Neighbours.” Another English pamphleteer was even more blunt: “Nothing can secure Britain so much against the revolting of North-America, as the French keeping some footing there, to be a check upon them [for] if we were to acquire all Canada, we should soon find North-America itself too powerful, and too populous to be long governed by us at this distance.” Such fears were justified. Once the colonists no longer needed British military power to protect them from the French, they became increasingly resentful of British rule and more willing to contemplate independence.

American & Frenc Revolution – Pamphlets played a major role in fomenting the revolution. The American Revolution generated particularly strong popular beliefs in a free press because the events that led up to the war helped to identify the press with the patriotic cause. A critical formative experience was Britain's attempt to impose a key element of its communication regime on the colonies. The Stamp Act tax on newspapers, pamphlets, almanacs, and legal forms inflamed the most articulate people in the colonies -- lawyers, printers, merchants, and college students. But far from stifling the press, the Stamp Act politicized it by turning the press into a forum for discussion and protest, helping to turn what could have been mere disorder into a coherent opposition movement.

Abolitionists - The great abolitionist undertaking of 1835, their mass mailing of pamphlets to southern addresses, provoked the largest number of riots. The communications revolution, by empowering social critics on the one hand and fanning conservative fears on the other, catalyzed the violence. Future president John Tyler, addressing an antiabolition crowd at Gloucester Courthouse, Virginia, in August 1835, focused his remarks on the II sensationalism of the antislavery tracts, their wide circulations, and “the cheap rate at which these papers are delivered.” He pointed with horror to the novel involvement of women in the abolitionist movement, particularly in the circulation of mass petitions, and to the “horn-books and primers” aimed at “the youthful imagination.” Tyler viewed the abolition crusade as an assault not only on slavery but on the entire traditional social order. This reaction, combined with the Post Office ban on the sending of abolitionist literature through the mails in turn led civil libertarians to the side of the abolitionists and helped widen the breach between North and South.

Hitler – In a discussion on the roots of Adolph Hitler's anti-semitism, historian and psychoanalyst Robert Waite noted, “It was from racist pamphleteers and politicians, rather than from great figures in German intellectual history, that Hitler drew the ideas that were so important to his life and work. ... Hitler was also heavily and directly influenced by two racist pamphlet writers, Guido von List and Lanz von Liebenfels, men who reached the height of their influence during his Vienna period, 1908-1913.” From von Liebenfels, Hitler imbedded the following notions: First, their pseudo-scientific notions of race, including the racial superiority of the Aryans and the racial inferiority of rest of mankind, especially the Jews. Second, the establishment of a racially elite group. Third, the symbol of the swastika. Fourth, the idea that strict laws needed to be passed to prevent the mongrelization of the Aryan race. Fifth, the idea that lesser races needed to eventually be eliminated. From von List, Hitler got the notion of an international Jewish conspiracy against which a global war needed to be waged. For evidence that Hitler read von Liebenfels' and von List's pamphlets, Waite notes that the pamphlets were cheap and easily obtainable in Vienna —indeed there is strong evidence that Hitler bought them and went indirectly to Liebenfels in 1909 to ask for and to receive, free of charge some back copies.²¹ Also, the pamphlets were brief and dramatic and Hitler lacked the intellectual patience and discipline to read long books. In addition, a book in his personal library—now in the rare books division of the Library of Congress—bears the following inscription dated 1921: “An Adolf Hitler, meinem lieben Armanen-bruder.” It's a strange inscription, made comprehensible only when one knows that during 1908 to 1912 List had called for the establishment of a racially elite group called the Armanenschaft. Hitler's personal library also contains copies of von Liebenfel's pamphlets. Finally and most importantly, both in broad outline and in details the ideas of Liebenfels and List parallel Hitler's too closely to be accidental. (p196-197) [Wolman#Waite]

Pornography

- Early printing was devoted to religious, political, legal, and scientific topics
- But, some authors and printers were quick to find out that sex sells
 - Pietro Aretino *Postures* (1524)
 - Francois Rebelais *Gargantua and Pantagruel* (1530-1540)
- "Great art is always flanked by its dark sisters, blasphemy and pornography." Camille Paglia

Early printing - Early printing, though voluminous, was largely devoted to the Bible, to other theological, legal, and scientific works, to texts for scholars like the Greek and Latin classics, to popular sheet music, and to local religious and political broadsides

Two porn classics - But two less noble works did more to popularize print and bring literacy to the masses than the scholarly works. These were Pietro Aretino's *Postures* (1524)⁽¹⁴⁾ and Francois Rabelais' *Gargantua and Pantagruel* (1530-40).⁽¹⁵⁾ Of the two, the *Postures* was the more pornographic in the strict sense, a series of engravings of sexual positions, each with a ribald sonnet. Rabelais' work, on the other hand, instantly entered the canon, where it has remained ever since. His tales of the two courtly giants, Gargantua and his son Pantagruel, the vinous monk Friar John and the reprobate scholar Panurge, are classics of satire and adventure, spoofing every vestige of the Middle Ages from feudal war to scholasticism to law to religion, with hearty doses of sex and scatology. Playful governesses introduce Gargantua to sex;⁽¹⁶⁾ Gargantua's horse pisses an army away;⁽¹⁷⁾ a woman scares the devil away by exposing her vagina;⁽¹⁸⁾ Panurge scatters musk on a fine lady who scorned him, exciting the dogs of Paris to rapine and rut.⁽¹⁹⁾ Both Aretino's and Rabelais' works were censured,⁽²⁰⁾ but since censure at the time made no distinction between political, religious, and social heresies,⁽²¹⁾ one cannot be sure they were banned for smut. What is sure is that both were popular, Aretino remaining *the* underground porn classic for centuries,⁽²²⁾ Rabelais traveling a somewhat higher road. Rabelais' boast in *Gargantua and Pantagruel* that "more copies of it have been sold by the printers in two months than there will be of the Bible in nine years"⁽²³⁾ was first, probably true, and second, prescient advice to new media: sex sells.

Pornography

- Prior to the 19th century, pornography was a vehicle to attack the political and religious authorities through the shock of sex
 - “Pornography has the power to delegitimize, by stripping the high ones of respect and exposing them to contempt. Pornography, customarily regarded as apolitical, has therefore enormous revolutionary potential.” *Conor Cruise O’Brien*

Pornography

- Pornography played a major role in the French Revolution
 - *Les Libelles* – pornographic pamphlets graphically described the alleged sex-lives of the French royal family and aristocracy
 - This did much to shape the attitudes of the Paris mobs toward the royal family
 - Thus, politically-motivated pornography helped bring about the Revolution by undermining the legitimacy of the ancien regime.

“This was demonstrated more than two hundred years ago in the sources of the archetypal revolution of modern times. Much ink has been spilt on the intellectual origins of the French Revolution. Much less has been heard about that revolution's *pornographic* origins. The intellectual origins were, it is true, extremely important in the long run, as Burke had seen. But on the eve of the revolution itself, in the 1780s, the business end of the pre-revolutionary process was in the hands of the pornographers. The favourite reading of Parisians in those years consisted of *les libelles*. These were pornographic pamphlets, clandestinely published or illegally imported, but widely available and delusively directed at the supposed sex-life of the French royal family, and of Marie Antoinette in particular. !! These fascinatingly smutty little booklets ^ which could be read aloud to the illiterate — did much to shape the attitudes of the Paris mob towards the royal family: a major factor at various stages of the revolution.

Pornography

- In the 19th and 20th centuries, Pornography has been used to attack and discredit other groups
 - Anti-Catholics wrote numerous pornographic works describing the alleged sexual misdeeds of priests and nuns
 - Abolitionists wrote extensively about slave masters allegedly raping their slaves
 - Russian revolutionaries wrote extensively about the alleged sexual misdeeds of Rasputin and the Czarina

Accusing specific groups and individuals of grossly immoral and deviant sexual behavior has often been effective and has also allowed writers and readers of such material to indulge in such material without the guilt feeling that they were doing something immoral

Pornography

- In the early 19th century, Pornography largely took on an apolitical nature and began to focus more and more on the erotic and sexually explicit
 - It thus came to be seen as a separate, if disreputable, genre
 - If it was banned, it was banned for its alleged effects on morals, not for its libelous statements and political-religious radicalism

News and Newspapers

- News information – information and data about recent events
 - It consists of information transmitted via the media about the people, places, and events that engage us, influence our view of the world, or even directly affect our lives

21

In the pre-printing cultures of the past, news was often conveyed by the town crier, the visiting traveler or troubadour, the minister or priest via his sermon, or a letter from afar to one of the few persons in the community who were literate and who read the letter or conveyed its contents to friends and neighbors.

In the 18th and 19th century, it was conveyed largely by newspapers and magazines

In the 20th century, it was conveyed first by newspapers and then largely by radio and television, followed in the 1990s and thereafter by internet websites, emails, and blogs

News and Newspapers

- Definition of News
 - New information about a subject of some public interest that is shared with some portion of the public.
 - Thus news can be distinguished from:
 - History – since it lacks the requisite newness
 - Art – since it does not offer compelling information
 - Intelligence – which is reserved for governmental or private use and is usually close hold
 - Chit-chat & gossip – which is normally only of personal, family, or small group interest

News and Newspapers

- Some Notes About News
 - Not all events are news
 - Events must be selected to be news and they are selected because
 - They are considered to be of interest
 - They are within the news gatherers' perceptual reach
 - They are seen as out of the ordinary
 - News imparts to occurrences a public character
 - It transforms mere happenings into publicly discussible events

News and Newspapers

- Some Notes About News – 2
 - News is usually a report about an event, but
 - Word on the President's position on a major political issue of controversy would be news
 - News is usually about recent occurrences, but
 - Fresh information on whether President Zachary Taylor was or was not deliberately poisoned would be news
 - News is usually deliberately gathered for purposes of dissemination, but
 - Some news is obtained merely by stumbling upon it

News and Newspapers

- Some Notes About Newspapers
 - Until the 19th century, almost all newspapers were weeklies whose content consisted largely of advertisements and news from outside the community. This was so for two reasons
 - Until the 19th century, printing remained a handicraft process
 - In small communities, local news could travel via the grapevine far quicker than by newspaper. Thus newspapers focused on news originating elsewhere

Printing of Newspapers – In 1800, no press was much different from that of Gutenberg's 350 years earlier – hand-operated and fed one sheet of paper at a time. With such a hand press, relays of experienced printers could print 2000 sheets on one side in eight hours; a newspaper with a circulation of 3000 required twelve hours, printing at top speed, and a popular paper had four presses, two for each side of the sheet, the whole paper being set at least twice. These limitations favoured other forms such as the weekly paper, the monthly magazine, the novel, and children's books.

Death of Local News – Given the grapevine effect, what local news there was usually consisted of obituaries and reprints of sermons and speeches by public officials

News and Newspapers

- Some Notes About Newspapers
 - Despite their limitations, newspapers often had a major influence
 - Newspapers and the printers who printed them were often well-educated individuals who were leaders and opinion makers in their community
 - Newspapers are a media that thrives on controversy, provided they are able to take part in public discussions with some degree of freedom

News and Newspapers

- Newspapers and the American Revolution
 - The Stamp Act tax paved the way for the American Revolution by:
 - Politicizing the press so that it became a forum for discussion and protest, thus giving rise to a coherent and powerful inter-colonial opposition movement
 - Newspapers played a key role in organizing a revolutionary movement in America
 - Printers played a key role in organizing both the Committees of Correspondence and the Sons of Liberty

Stamp Act – The Stamp Act imposed taxes on newspapers and legal documents. It was one thing for Parliament to regulate trade in the empire, but taxes imposed on colonists, as some people in Virginia and elsewhere asserted, were another thing, by no means acceptable. In the colonists' world, their legislatures set such taxes, and conceding a precedent threatened to undermine the self-government they had come to view as their birthright. Elected to the House of Burgesses, Patrick Henry arrived at his first session, in May 1765, just in time to participate in the response to the Stamp Act. He framed the Stamp Act Resolves that, broadcast from Virginia, invigorated resistance in other colonies as well.

Revolutionary organization – According to Michael and Edwin Every in their *The Press and America. An interpretive history of the mass media*, "As a propagandist, [Samuel] Adams was without peer. He understood that to win the inevitable conflict, he and his cohorts must achieve five main objectives: they must justify the course they advocated; advertise the advantages of victory; arouse the masses—the real "shock troops"—by instilling hatred of enemies; neutralize any logical and reasonable arguments proposed by the opposition; and finally phrase all the issues in black and white, so that the purposes might be clear even to the common laborer. Adams was able to do all this, and his principal tool was the colonial newspaper. "[Samuel] Adams was more than a writer; he was an expert news gatherer. His Committees of Correspondence, organized in 1772, kept him alert to every movement and sentiment throughout the colonies. His agents "covered" every important meeting as ably as modern reporters gather information for the press services today. In a remarkably short time all such news reached Adams's local committee, which then processed it for effective dissemination where such information was needed. This primitive news service was highly efficient, yet no one in the colonies had thought of such a device until Adams came along. "The Boston Radicals who gathered about Sam Adams at the Gazette office were the core of the revolutionary movement. But they needed a way to win the support of other colonies for the hard line toward the British they were developing in Massachusetts. This was supplied by the Sons of Liberty, whose chapters sprang into being during the spontaneous popular uprising over the Stamp Act of 1765. Adams, printer Benjamin Edes, and engraver Paul Revere were among the key Boston members from the Gazette group. Other printers rated as strong activists in the Sons of Liberty propaganda network were fellow Bostonian Isaiah Thomas of the Massachusetts Spy; John Holt of the New York Journal; Peter Timothy of Charleston's South Carolina Gazette; William Goddard of

News and Newspapers

- In the 19th century, newspapers would be revolutionized by
 - Faster presses powered first by steam and then by electricity
 - The telegraph and then the telephone
 - The railroad and the post office
 - Cheap newsprint made of wood pulp paper
 - News photography and color lithography

These innovations, which I will discuss later, turned the newspaper from a normally 4-page weekly with limited news content and limited circulation to the newspaper as we know it today – a daily paper of many pages replete with local, national, and international news and containing numerous photographs and illustrations.

19th Century Newspaper Innovations

- In the 19th century, the newspaper would be revolutionized by
 - Faster presses powered first by steam and then by electricity
 - The telegraph and then the telephone
 - The railroad and the post office
 - Cheap paper made of wood pulp
 - Photoengraving and color lithography

These innovations, which I will discuss later, turned the newspaper from a normally 4-page weekly with limited news content and limited circulation to the newspaper as we know it today – a daily paper of many pages replete with local, national, and international news and containing numerous photographs and illustrations.

19th Century Newspaper Innovations

- Use of steam power in printing
 - 1810 – Friedrich Koenig uses steam power to run a press
 - 1814 – *London Times* installs Koenig's press
 - Can print 1,100 sheets an hour (4X that of hand presses)
 - By 1850, further improvements raise the rate to over 4,000 sheets an hour
 - ***London Times*** circulation rose from 5,000 in 1815 to 50,000 in the 1850s

Steam-powered press - In 1810 Friedrich Koenig, a German working in London, harnessed steam power to operate a press that rolled a cylinder over a paper sheet lying on a bed of inked type, instead of pressing a flat weight on it like the old hand presses. In 1814 The Times of London installed such a press, with automatic inking rollers. It was still fed paper one sheet at a time, but it could print 1,100 sheets an hour, four times the pace of hand presses. During the next 30 years further improvements raised that rate fourfold, and the circulation of The Times rose from 5,000 in 1815 to 50,000 in the 1850's.

19th Century Newspaper Innovations

- Stereotyping – 1811
 - Before stereotyping, a printer wishing to reprint something needed either to keep the original type in place or to reset it
 - With stereotyping, the set type was used to make a lead mold from which metal plates were cast
 - This freed up the type for other uses
 - It also facilitated multiple press runs

Stereotyping - Stereotyping, which came to America c1811 from England, solved other problems. Traditionally, to be able to reprint a book, a printer needed either to keep the original type standing (a substantial capital cost since it precluded use of the type for other purposes) or to reset it (a substantial cost in labor). With stereotyping, the set type was used to make lead molds from which metal plates were cast, freeing the type for other uses. Since stereotyping made it cheaper to reprint a book when the demand arose, the technology helped to modulate print runs, cut inventory costs, and reduce the risk of being stuck with unsold copies. By investing in plates, a printer could also run multiple presses without having to make correspondingly large investments in type or causing wear to the type itself. The plates themselves could be sold or rented as part of joint publishing or other arrangements. Thus, the technology was a source of flexibility as well as of economies of scale.

19th Century Newspaper Innovations

- Rotary press invented by Richard Hoe - 1846
 - Rotary press consisted of a cylinder with type fixed to its surface, which rolled against another cylinder as paper passed between the two.
 - By 1860, the *Daily Telegraph* in London, which used a rotary press, was rolling out 130,000 copies a day.
 - This was followed by:
 - Four cylinder presses capable of printing on both sides of a paper simultaneously
 - Automated printing on continuous rolls of paper

19th Century Newspaper Innovations

- Reporters
 - Early newspapers did not have reporters
 - Local News was acquired by conversations at the print shop or local tavern
 - National and Foreign News acquired from letters to the newspaper and from other newspapers
 - Reporting -- going into the field in search of news -- was a consequence of:
 - Newspaper competition
 - Faster and better means of communication (which encouraged the use of out-of-town and overseas correspondents)
 - Growth of cities (which created an appetite for local news that word-of-mouth could not meet).

Before reporters - Early newspapers did not have reporters. What little local news there was in the papers -- what little they attempted to compete with word of mouth for -- could usually be obtained in the course of conversations at the print shop or friends at the tavern. National and foreign news was taken from letters or, more commonly, from other newspapers. When Lewis & Clark returned from their expedition to the West on September 23, 1806, Boston newspapers obtained the news from the *National Intelligencer* of Washington, which itself was reprinting a letter from President Thomas Jefferson summarizing a letter he had received from William Clark in St. Louis. The news was not published in Boston until November 6, 1806.

Reporting - Early 19th Century big city newspapers began sending reporters to cover court room and legislative proceedings since both crime and the passage of new laws was of interest to readerships. Reporting also got a big boost from the telegraph and later the telephone which made it feasible for newspapers to hire out-of-town correspondents to provide the paper with news of whatever was going on in the area where the correspondent. One noted foreign correspondent for New York City newspapers during the Civil War was Karl Marx.

19th Century Newspaper Innovations

- Telegraph
 - Revolutionized the newspaper business
 - Made feasible the use of out-of-town and foreign correspondents
 - Led to the creation of news wire services, such as the Associated Press and Reuters
 - Had other impacts on the newspaper which I will talk about when I discuss the Telegraph and its impacts

19th Century Newspaper Innovations

- Investigative Journalism
 - Pioneered by the *New York Tribune* and the *New York Times*
 - *Tribune's* investigation of the 1836 murder of Ellen Jewett
 - *Times'* expose of the Tweed Ring in 1870

Investigative Journalism - James Gordon Bennett's *New York Tribune* and the *New York Times* pioneered the field of investigative journalism -- Bennett through his investigative reporting of the 1836 murder of Ellen Jewett and the *New York Times* through its expose of the Tweed Ring in 1870, in which reporter John Foord revealed that Tweed had added 1,300 new employees to the city payroll in six weeks, that city park lamps were being painted on rainy days so that they would have to be repainted at lucrative rates, that some city election districts had 70% more registered voters than male citizens over the age of 21, and that the city paid over \$1,200,000 for plumbing and gas fittings in the new courthouse and over \$779,000 for carpets and shades

19th Century Newspaper Innovations

- Cheap Paper
 - As noted in the first class, paper meant rag paper until the middle decades of the 19th century
 - In the 1830s came hemp paper and straw paper
 - Hemp had a high cellulose content with strong fibers, but it was costly and could not be bleached – used for manila folders
 - Straw was cheap, but it had short fibers that were neither strong nor durable
 - Mixed with rags, it was widely used for newsprint and dime novels by mid-century

19th Century Newspaper Innovations

- Cheap Paper – 2
 - Wood Pulp Paper
 - Production began in Germany In 1847
 - German immigrants brought the technology and production techniques to the U.S.
 - U.S. began wood pulp paper production in 1867
 - Wood Pulp Paper was less durable and weaker than paper made from straw, but was also cheaper
 - When it became available, newsprint prices dropped from 25 cents per lb in the 1860s to 2 cents per lb in 1897
 - U.S. newspapers begin using wood pulp paper in the late-1870s—early-1880s

19th Century Newspaper Innovations

- Wood Pulp Paper
 - Facilitated the penny press and the dime novel by drastically lowering the cost of paper
 - Created a record storage medium that was highly prone to acidification and degradation
 - Thus many 19th and 20th century newspapers, books, and documents have become unreadable and have either been lost or have had to be deacidified and laminated at great expense

19th Century Newspaper Innovations

- Penny Press
 - Became possible when newsprint became cheap
 - Began with the rag-straw paper but was facilitated by the adoption of wood pulp paper
 - Depended on advertising revenues and newspaper sales rather than upon subsidies and printing contracts from political parties
 - This led to “sensationalism”, a focus on local news and especially crime news and human interest stories , and less of a focus on political and business news

Effects of cheap newsprint - Reductions in the cost of paper and printing contributed not only to the proliferation of political and reform-oriented papers, most of them weeklies with fewer than a thousand subscribers; but also made possible the ‘penny press’ mass (and sensationalistic) journalism of the New York *Sun* (launched in 1833 by printer Benjamin H. Day) and the New York *Herald* (launched in 1835 by the journalist James Gordon Bennett and destined to become largest-circulation newspaper in the world) plus imitator ‘penny press’ newspapers in Boston, Philadelphia, Baltimore, and other cities. !!

Penny press - In the 18th and early-19th centuries, the press depended on governments and political parties for subsidy. Unlike other newspapers, the ‘penny press’ newspapers depended entirely for revenue on advertisers and sales to readers. Hence, they were independent of political parties and could and did represent themselves as unfettered champions of the public in reporting the news. Unlike earlier newspapers which focused on business, political, and foreign news, the penny papers, while not abandoning politics and business, focused on local news, especially crime news, and human interest items. With their higher income from their high circulations and increased advertising revenue, the penny papers could engage in independent news-gathering. The penny papers were the first papers in the U.S. to cover local news extensively and the first to turn news itself into entertainment.

19th Century Newspaper Innovations

- Linotype
 - The machine revolutionized printing and especially newspaper publishing, making it possible for a small number of operators to set type for many pages on a daily basis.
 - Resulted in an 85% reduction in the time it took for setting type
- Color Lithography & News Photography
 - Will talk about these when I discuss Photography

The Linotype machine operator enters text on a 90-[character keyboard](#). The machine assembles "matrices", which are molds for the letter forms, into a line. The assembled line is then cast as a single piece, called a "slug", of [type metal](#). The matrices are then returned to the type [magazine](#) from which they came. The name of the machine comes from the fact that it produces an entire line of metal type at once - hence a "line o' type". This allows much faster typesetting and composition than original hand composition in which operators place down one pre-cast metal [letter](#), [punctuation mark](#) or [space](#) at a time.

Telegraph

- Theoretically, Telegraphy became possible when Stephen Gray of England in 1729 discovered that electric current could be conveyed along a wire and activate some sort of receptacle at the other end
 - Variation in the number or duration of the impulses could signal different letters or numbers which could be strung together to form a message
- Practically, creating a telegraph system proved possible only when reasonably reliable and economical batteries became available

Telegraph

- What Samuel F.B. Morse and Theodore Vail accomplished was:
 - A telegraphic system that used Morse Code
 - A telegraphic receiver that could both mark the dots and dashes onto a moving strip of paper and emit sounds that an experienced telegrapher could decipher at speeds up to 40-50 words a minute

42

Theodore Vail later became a moving force in the creation of Western Union.

Telegraph

- Some Notes About the Telegraph
 - Before the telegraph, the speed of information was tied to the speed of transportation. The telegraph broke that link and made possible the almost instantaneous communication of information
 - This revolutionized information-intensive industries and activities
 - News could now be reported as it occurred and instantly disseminated across a fairly wide region
 - Facilitated the operation and coordination of the railroads
 - Business transactions between merchants in different cities that formerly took days or weeks now took only minutes or hours

43

Telegraph

- Some Notes About the Telegraph – 2
 - It created a lot of technological hype and technological utopianism
 - The notion that new technology equals progress and that technological innovation can solve our socio-economic-political problems largely gets its start with the telegraph and the railroad.
 - It made possible the future creation of large-scale corporate entities

44

Tom Standage in *The Victorian Internet* notes: “Because of its ability to link distant peoples, the telegraph was soon being hailed as a means of solving the world’s problems. It failed to do so, of course, but we have been pinning the same hope on new technologies ever since.”

People noted that the Battle of New Orleans could have been avoided since neither the British nor American forces at New Orleans in January 1815 knew that a peace treaty had been signed at Ghent in December 1814. Others even contended that if the telegraph had existed in 1812, the War of 1812 could have been avoided (since the British Orders in Council which to some extent provoked the American declaration of war were repealed one day before the American Congress, which didn’t know of the change in British policy, declared war).

Economist Mancur Olson noted that poor transportation and communication made large-scale efficient enterprises impossible for two reasons. First, they force firms to rely mainly on locally-available resources. This precludes an increase in scale since such an increase either would be impossible due to the limited quantity and availability of local resources or would force the firm to go further afield to get the resources, causing costs to rise disproportionately. Second, and more importantly, poor transportation and communication make it far more difficult to coordinate a large or geographically-extended enterprise effectively. This explains why large corporations did not emerge until well into the 19th century after the railroad/steamship and the telegraph/telephone cut resource costs and made coordination possible.

Telegraph

- Some Other Consequences
 - The combined desire for speed and the increasing costs involved in using the telegraph to get news led New York City newspapers in 1848 to create the first news wire service, the Associated Press
 - The unreliability of early telegraph lines (especially in wartime) led reporters to develop the 'inverted pyramid' style of news writing
 - The concern with essential facts led to a differentiation between news and opinion – with the latter being segregated into an editorial section or caged in quotation marks

45

The unreliability of early telegraph lines and the Civil War (where lines were often cut by opposing forces) led reporters to develop the habit of compressing the most essential facts into short 'lead' paragraphs at the beginning of their dispatches so that the key facts would get through even if the complete news dispatch did not.

Telegraph

- Some Other Consequences – 2
 - To economists, it is axiomatic that markets are limited to the area in which communications is effectively instant
 - Thus, before telegraphy, markets were inherently local. After telegraphy, they became regional and then national.
 - One effect was to concentrate the trading of items such as gold, stock, bonds, and commodities in the place where most of their related financial transactions took place:
 - » New York became a center of stock and bond trading
 - » Chicago became a center of commodities trading

46

Telegraph

- Some Other Consequences – 3
 - Created the first network-effect technology – the value and use of telegraphy increased as more nodes were added to the system
 - Made Western Union a major corporate entity
 - Along with the railroad, it facilitated travel and the holding of professional and business conventions
 - Telegraph allowed people to make hotel reservations
 - Allowed convention planners to coordinate convention planning with the hotels where the convention was to take place

Western Union - Before the Civil War, Western Union achieved prominence as a result of buying up bankrupt telegraph companies, its exclusive agreements with the railroads to run telegraph lines along rights-of-way, and its completion of the transcontinental telegraph in 1861 (which drove the Pony Express out of business). Before the Civil War, however, Western Union had a major competitor in the American Telegraph Corporation which had gained control of many eastern lines, including those originally owned by Morse's Magnetic Telegraph Company. The Civil War brought prosperity to Western Union since its principal trunk lines ran east-west and thus benefitted from a surge in wartime demand. In contrast, American Telegraph suffered greatly since its principal trunk lines ran north and south, so that when war broke out, its lines were cut and revenues plunged. In 1866, Western Union combined with a third firm, United States Telegraph, and the combined Western Union took over American Telegraph, gaining a nearly complete monopoly throughout the United States.

Telegraph

- Some Other Consequences – 4
 - Paved the way for such future wire-related information technologies as the telephone, the teletype machine, the stock ticker, and the fax machine
 - Along with the railroad, the telegraph made modern sports and touring theatrical companies and their related stars possible by permitting long-distance transportation of teams, troupes, and fans (and the necessarily-related coordination) and the electrical transmission of sports news and theatrical publicity to city newspapers and mass-distribution magazines

Telegraph

- Historical Notes – 1
 - 1851 – Fire alarm telegraph
 - 1858 – Wheatstone Automatic Telegraph Sender that could transmit up to 400 words a minute from pre-punched tape
 - Used for news transmission
 - 1871 – Western Union begins money transfers
 - 1871 – Signal telegraph
 - Allowed a customer to signal a central police station, firehouse, or messenger service
 - 1872 – Duplex Telegraph
 - 1884 – Quadraplex Telegraph

Wheatstone Auto Telegraph - In 1858, Charles Wheatstone patented an *automatic telegraph sender* that could transmit Morse Code messages at speeds up to 400 words a minute from pre-punched tape. At the receiving end, messages were printed out as dots and dashes by a standard Morse printer and then decoded into letters and numbers. While the message had to be punched onto tape beforehand, this was less skilled work than operating a Morse key; it could be done in advance; and it could be done by several keypunchers working in parallel, each punching a different paragraph with the paragraphs spliced together in proper order afterwards.!! The Wheatstone Automatic Telegraph, as it was known, entered widespread use after 1867, particularly for news transmission for which it was especially well-suited.

Duplex telegraph - In 1872, Joseph Stearns of Boston built and patented a *duplex telegraph* which could send messages over a single line in both directions simultaneously. This meant that telegraph companies were able to send twice as much traffic over a single wire as before.

Quadraplex telegraph - In 1884, Thomas Alva Edison invented the *quadraplex telegraph* which enabled single wire to carry four streams of traffic

Telegraph

- Historical Notes – 2
 - 1884 – Western Union is one of the original 11 stocks included in the first Dow Jones Average
 - 1900 – Fredrick Creed invents a way to convert Morse Code to text
 - 1913 – Western Union develops Multiplexing
 - 1914 – Western Union introduces the first charge card
 - 1920s-1930s – Telegrams experience peak popularity
 - 1925 – Teleprinter machines

In 1913 Western Union developed multiplexing, which it made possible to transmit eight messages simultaneously over a single wire (four in each direction). Teleprinter machines came into use about 1925.

Telegraph

- Historical Notes – 3
 - 1933 – Western Union introduces singing telegrams
 - 1936 – Varioplex Telegraph
 - 1938 – Facsimile
 - 1959 – TELEX
 - Jan 27, 2006 – Western Union delivers the last telegram

Varioplex, introduced in 1936, enabled a single wire to carry 72 transmissions at the same time (36 in each direction). Two years later Western Union introduced the first of its automatic facsimile devices. In 1959 Western Union inaugurated TELEX, which enables subscribers to the teleprinter service to dial each other directly.

Telephone

- Alexander Graham Bell
 - Son of a professor of elocution in London & Edinburgh who emigrated to Canada
 - Taught deaf mutes in Boston. There
 - Met Gardiner G. Hubbard, an affluent businessman and philanthropist
 - Married Hubbard's deaf daughter, Mabel
 - Became professor of vocal physiology and elocution in 1873
 - Conceived of the telephone in July 1874

Graham Bell began teaching deaf-mutes in Boston in 1871, where he met Gardiner Greene Hubbard, an affluent businessman and philanthropist. One of Hubbard's daughters, Mabel, had been deaf from scarlet fever since the age of five. She became one of Bell's pupils. He fell in love with her and they were married. Bell was very sensitive to the psychological plight of children imprisoned by their physical disability. He had an extraordinary capacity for reclaiming recalcitrant children and gained the support of Sarah Fuller, a prominent Boston teacher of the deaf. He became interested in multiple telegraphy as a means of communication and tried to make an instrument for transmitting sound vibrations.

Bell's considerable reputation as a teacher led Lewis Monroe, dean of the School of Oratory of the recently formed Boston University, to offer him a chair in vocal physiology and elocution in 1873. This provided him with a permanent base from which he could pursue his research. Bell was the first person to realize that the electrical transmission of the human voice was physically possible and commercially practicable.

Telephone

- Origins of the Telephone
 - Invention of the duplex and quadruplex telegraph showed:
 - A telegraph wire could be made to carry the traffic of first two and then four wires
 - Concept of the harmonic telegraph
 - Bell's experience with a stuck reed led to the realization that a wire could also transmit a voice message
 - Bell obtained a patent for the telephone on March 7, 1876

Duplex Telegraph - In 1872, Joseph Stearns of Boston built and patented a **duplex telegraph** which could send messages over a single line in both directions simultaneously. This meant that telegraph companies were able to send twice as much traffic over a single wire as before. (p192) [Standage]

Quadruplex telegraph - In 1884, Thomas Alva Edison invented the **quadruplex telegraph** which enabled single wire to carry four streams of traffic (p194) [Standage]

Harmonic telegraph - The invention of the duplex and quadruplex had shown that with the right approach, a single telegraph wire could be made to carry the traffic of first two and then four wires. Could a wire be made to carry even more traffic? Since such an invention would save telegraph companies a lot of money, many inventors devoted much time and effort to the project. !! One possible approach was a **harmonic telegraph** -- use of a series of reeds vibrating at different frequencies with each separate frequency sending an electrical signal that would be combined, sent down a telegraph wire, and then separated out at the other end using an identical series of reeds, each of which would respond only to the signal generated by its counterpart. By starting and stopping the vibrations of each reed to make dots and dashes, More telegraphy using a harmonic telegraph would be possible. Eventually, Western Union with its Varioplex system in 1936 enabled a single wire to carry 72 transmissions (36 in each direction) simultaneously.

The stuck reed - Bell conceived the idea of the telephone in July 1874. While he was working on a harmonic telegraph, Thomas Watson's plucking of a stuck reed caused the sound of the reed's twang to be heard. Bell realized that with a few modifications, his device could transmit any sound – including the human voice.

Telephone

- How the Telephone Worked
 - Caller would talk into vibrating plates or reeds
 - This would induce a continuous fluctuating current
 - Current would carry the exact amplitude and voice frequency along a wire
 - An electromagnet at the receiver would transform the current into pulses of magnetic force
 - These pulses would act on another set of tuned reeds to reproduce the original sound

Telephone

- Creation of the Bell Telephone system
 - Hubbard was excited by Bell's invention
 - Opposed Western Union because it was a monopoly & favored a U.S. Postal Telegraph Company
 - Organized the Bell Telephone Company in July 1878
 - Persuaded Theodore N. Vail to run the company
 - Bell Telephone won a suit against a Western Union-sponsored competitor

Western Union, threatened in its monopoly of communications, brought together a motley collection of rival claimants to dispute Bell's authorship and impugn his character. In December 1878, Western Union established a rival, the American Speaking Telephone Company, but not before the Bell Company had sued for an injunction in Massachusetts against Western Union's agent, Peter Dowd, for renting out telephone transmitters illegally. The case was first heard on January 25, 1879. Western Union claimed that Elisha Gray had first invented the telephone and that Amos Dolbear had perfected it. Bell produced a letter he had received from Gray dated March 5, 1877, acknowledging Bell's prior claim, and this crucial piece of evidence was taken as positive proof that Bell had conceived, made practical, and patented the telephone before anyone else. The Dowd case was resolved on November 10, 1879, when Western Union agreed to forfeit its telephone business and to assign all its telephone patents to the Bell Company in return for 20 percent of telephone rental receipts for seventeen years.

Telephone

- Notes about the Bell Telephone System
 - Bell Telephone would manufacture the phones & license them to local phone companies
 - This meant that Bell:
 - Could for its first 16 years dictate, via its license agreements, both common technologies and the cost of local phone service
 - Due to its technical standardization, could begin long-distance phone service
 - Bell created Bell Labs to solve the technical problems that beset long-distance service

Thus, between 1877-1893, the *Bell Telephone Company*, through its local affiliated operating companies, controlled and standardized every telephone, every telephone line, and every telephone exchange in the country. This permitted Bell in the 1880s to conclude that they could profitably connect one local operating company with another precisely because all the operating companies were using standardized technology. While there were technical problems in maintaining voice clarity over long distances, the organizational problems in connecting New York with Chicago or Los Angeles were minimal.

Telephone

- Early leaders of Bell saw the telephone as simply a “talking telegraph”
 - Assumed the telephone would be used just like the telegraph and by the same types of users
- This had three effects
 - Led independent phone companies to take advantage by providing services that Bell didn’t
 - Slowed down the pace of telephone adoption
 - Brought Bell to near bankruptcy, leading to its takeover in 1907 by Morgan banking interests and the stabilization of AT&T under Theodore Vail

“Talking Telegraph” - Bell officials assumed that the telephone system would be used similarly to the way the telegraph network was used -- i.e. the primary customers and users would be businesses in urban areas. Thus rates were kept high in order to provide the most reliable and clearest voice service possible. By the end of the company’s first year, 3,000 phones had been leased; by 1880 -- 60,000 phones; by 1893 (when the Bell patents expired) -- 260,000 phones. About 2/3rd of the phones were in business establishments. Most of the country’s business information and transactions still traveled by mail and by telegraph because businesses normally wanted a written record of their transactions *{which mail and telegraph provided}*. What the organizers of the Bell system failed to understand was that, while in technological terms the telephone was similar to the telegraph, in social terms it was quite different. The telephone provided user-to-user communication -- with the telegraph there were always intermediaries in the form of the telegraph operators. Also, the telephone was a form of voice communication -- as such, it facilitated emotional communication which was impossible with the telegraph. In short, the Bell Company failed to understand that people would use the telephone to socialize with one another. Instead they saw such socializing as a trivialization or an abuse of the service.

Independents - The independent companies took advantage of Bell’s mistake. Some offered services that Bell hadn’t thought to provide: ***Dial telephones which allowed customers to contact each other without having to rely on an operator*** (who sat at a switchboard manually connecting one line to another with plugs and often relieved the boredom of her job by listening in on the conversation). ***Party lines which drastically lowered the cost of residential service*** by allowing anywhere from 2 to 10 residences to share the same telephone line and telephone number, and ***Phone service in rural areas***.

Telephone Adoption – Initially, Bell and Vail focused their advertising on trying to create a need for the phone, publicizing the existence of the phone, telling people how to use it, and encouraging courteous conversation while on the phone. From 1900 to the 1927, Bell directed its advertising primarily to businessmen – telling them that phone service impressed customers, saved time, facilitated planning, and allowed businessmen to keep in touch with their offices while out of the office. A secondary focus was on home management – housewives could call doctors, schools, grocers, coal dealers, etc to facilitate the conduct of household-related business – and conveying messages of importance. It was not until the mid-1920s that Bell’s advertising recognized that the telephone was made for socializing – calling friends and relatives to chat and even then the focus was on invitations, calling home while on a business trip, and conveying news of a safe arrival. The combination of a misconstrued medium, misdirected advertising, and high phone rates slowed down the pace of public adoption of the telephone. As late as 1920, only 35% of all households had phones and it wasn’t until 1950 that over half of all American households (61.8%) had them, with near-universal adoption (90.5%) of the phone not occurring until 1970.

Near Bankruptcy - In 1907, the Boston investors that had dominated Bell lost control of the company to the Morgan banking interests, as a consequence of soaring debt, multiple stock offerings, and declining profit that resulted from the competition with independent phone companies after Bell’s patents had expired. AT&T’s new president, Theodore N. Vail, had a goal of ‘one system, one policy, universal service.’ Telephone service ‘should be universal, interdependent, and intercommunicating, affording opportunity for any subscriber of any exchange to communicate with any other subscriber of any other exchange.’ This meant creating an integrated telephone network throughout the country. In pursuit of this end, Vail had both a political and a business strategy. Instead of rejecting any role for government, he was willing to accept regulatory control by an independent commission. Instead of holding Bell aloof from public opinion, Vail undertook the first major public relations campaign designed to improve a corporation’s public image. Instead of trying to suppress all independent phone companies, Vail began to entice them into the Bell system by allowing them to connect with the Bell system network provided they bought telephone equipment that met Bell’s technical standards. The system that Vail established lasted until the 1980s when anti-trust decrees and the desire for cheaper long-distance rates (Vail had kept long-distance rates high to subsidize cheap local-area phone service) led to both phone service competition and new phone services.

Telephone

- Bell/ATT Timeline - 1
 - 1878 - First commercial switchboard established in New Haven, CT
 - 1880 – Local telephone companies reorganized as the American Bell Telephone Company
 - 1880 – First telephone numbers
 - 1880 – First pay telephone
 - 1885 – Name changed to American Telephone & Telegraph Company
 - 1893 – With the expiration of Bell’s patents, independent phone companies enter the business
 - By 1902, there were 9,000 such companies

1880 saw the institution of telephone numbers -- the first telephone directories had no numbers, only names; but a measles epidemic in Lowell MA led to the idea of assigning each subscriber a telephone number to make it easier for substitute telephone operators to take over. 1880 also saw the installation of the first pay telephone. By 1902, there were 81,000 pay phones. (p124) [Ierley]

First transcontinental telephone - Using the first practical electrical amplifiers, developed by AT&T's Harold Arnold, AT&T opens the first transcontinental telephone line. The new line connects the network that AT&T had been building out in every direction from New York since 1885 with a separate network that had been constructed by AT&T's Pacific Telephone subsidiary on the West Coast.

Telephone

- Bell/ATT Timeline -- 2
 - 1915 – First transcontinental telephone call
 - 1919 – First rotary dial telephone
 - 1922 - AT&T opens WEAF, the first commercial radio station in New York.
 - 1925 - AT&T establishes Bell Telephone Laboratories Inc. as its research and development subsidiary.
 - 1927 - AT&T begins transatlantic telephone service
 - 1934 – AT&T inaugurates trans-pacific phone service

Bell Labs – In 1937, Clinton Davisson of Bell Telephone Laboratories won the Nobel Prize in Physics for experimental confirmation of the wave nature of the electron. He became the first of seven Nobel Prize winners produced by AT&T.

First transcontinental telephone - Using the first practical electrical amplifiers, developed by AT&T's Harold Arnold, AT&T opens the first transcontinental telephone line. The new line connects the network that AT&T had been building out in every direction from New York since 1885 with a separate network that had been constructed by AT&T's Pacific Telephone subsidiary on the West Coast.

WEAF - AT&T left radio broadcasting in 1926, retaining the networking facilities used to send programs to stations across the country

Transatlantic service - The conversations crossed the Atlantic via radio. The initial capacity is 1 call at a time, at a cost of \$75 for the first three minutes. In terms of constant 1990 prices, the cost of the call was \$245 in 1930, \$50 in 1960, 35 cents in 1999.

Telephone

- Bell/ATT Timeline -- 3
 - 1941 – First non-experimental laying of coaxial cable
 - 1946 – Beginning of mobile phone service
 - 1947 - Bell Labs invents the transistor
 - 1951 - First customer dialing of long-distance calls
 - 1956 - First transatlantic telephone cable
 - 1962 - First telephone satellite - Telstar

Coaxial cable - The first non-experimental installation of coaxial cable in the network is placed in service between Minneapolis, Minn., and Stevens Point, Wis. The type of coaxial cable installed was invented at AT&T in 1929 and is the first broadband transmission medium.

Mobile phone service - AT&T begins offering mobile telephone service. With a single antenna serving a region, no more than 12 to 20 simultaneous calls could be made in an entire metropolitan area

Transistor - AT&T Bell Telephone Laboratories scientists John Bardeen, Walter Brattain, and William Shockley [invent the transistor](#), the first solid state amplifier or switch, and lay the foundation for modern electronics. The three shared the Nobel Prize in Physics in 1956 for the achievement.

Long-distance calls - AT&T introduces customer-dialing of long distance calls, initially in Englewood, NJ. The national rollout takes place over the second half of the 1950s. Until this innovation, all long distance calls required operator assistance.

Transatlantic cable - AT&T opens for service TAT-1, the first trans-Atlantic telephone cable. The initial capacity is 36 calls at a time at a price per call of \$12 for the first three minutes. Since trans-Atlantic service opened in 1927, calls had traveled across the ocean via radio waves. But cables provide much higher signal quality, avoid atmospheric interference and offer greater capacity and security.

Telstar – Telstar transmits the first live television across the Atlantic

Telephone

- Bell/ATT Timeline -- 4
 - 1963 – First touchtone phone
 - 1968 - AT&T introduces 911 as a nationwide emergency number
 - 1970 - First customer dialing of international telephone calls
 - 1971 - Researchers at Bell Labs create the Unix computer operating system
 - 1977 – Installation of the first fiber optic cable

Touchtone phone – With touchtone service, a keypad replaces the familiar telephone dial, initially in Greensburg and Carnegie, Pennsylvania.

International calls – First service was between New York City and London

Telephone

- Bell/ATT Timeline -- 5
 - 1983 – AT&T opens the first commercial cellular telephone service in Chicago
 - 1984 - Dissolution of AT&T and creation of the Baby Bells
 - 1988 - First transatlantic fiber optic cable
 - 1996 - Telecommunications Act of 1996

1984 - In 1982, AT&T and the Justice Department agreed on tentative terms for settlement of anti-trust suit filed against AT&T in 1974. AT&T agrees to divest itself of its local telephone operations. On January 1, 1984, the Bell System ceases to exist. In its place are seven Regional Bell Operating Companies – the Baby Bells - and a new AT&T that retains its long distance telephone, manufacturing, and research and development operations. This marks the beginning of competition, first in the long-distance telephone market and later in the telephone market generally. One consequence was a reduction in long-distance phone rates.

Transatlantic fiber optic - AT&T lays and opens TAT-8, the first fiber optic submarine telephone cable across the Atlantic. It has a capacity equivalent to 40,000 calls, ten times that of the last copper cable. (Today's cables have capacities equivalent to over 1,000,000 calls).

1991

Phone competition - President Bill Clinton signs the Telecommunications Act of 1996 into law. It is the first rewriting of the nation's communications laws since 1934. The bill's purpose is to promote competition between local telephone companies, long distance telephone companies and cable companies by establishing procedures for the elimination of legal and regulatory barriers between these industries.

Telephone

- Telephone vs Telegraph
 - Telephone permitted voice communication as opposed to Morse Code
 - Telephone communication was synchronous and dialogic whereas the telegraph was asynchronous
 - Telegraph left a written record – the telegram – whereas the telephone did not
 - Telegraph required an intermediary – the telegraph operator – while the telephone within a local exchange did not

Telephone

- Effects of the Telephone
 - It replaced the telegraph in the performance of many of its functions, particular its coordination and communication functions
 - Its technical problems led to the creation of Bell Labs
 - from which many innovations and discoveries flowed
 - Its linking of different exchanges created the first virtually universal network
 - A network that no longer required people to be at a fixed point to access the communication system

Replacing the telegraph - Thus, the phone replaced the telegraph in placing business orders, making hotel reservations, arranging theatrical and sports performances, making travel reservations, and scheduling events and performances.

Bell Labs – Among the innovations coming out of Bell Labs were the transistor, fiber optics, and the discovery of the background radiation left over from the Big Bang at the beginning of the universe.

Network – While the telegraph system had network effects, its network was limited. It linked railroad stations, business establishments, newspapers, and government offices; but it did not reach into private homes. Any telegram to a person at home had to be delivered by a messenger to the home. The phone not only linked the establishments formerly linked by the telegraph, but also reached into the home.

Telephone

- Effects of the Telephone – 2
 - Telephone poles and wires changed the suburban and rural landscape
 - Made obsolete the Victorian practice of card leaving
 - Led to people calling before coming over for a visit
 - Led to large-scale solicitation by businesses and charities who started calling people at home

Card leaving - During its American vogue, 1870 to 1910, card leaving became an avenue for entering society, of designating changes in status or address, of issuing invitations and responding to them, of presenting sentiments of happiness or condolence, and, in general !! of carrying on all the communications associated with middle class social life. Done almost exclusively by women in the afternoon, calling and card leaving entailed complicated social arithmetic. Since husbands did not normally accompany their wives, the wife left her husband's card where she visited. If the lady of the house was "at home," the visitor left two of her husband's cards on the card receiver, one for the lady of the house and one for the lady's husband. She did not leave her card, since she had seen the lady. If, however, the visitor called but the lady of the house was "not at home," she left three cards on the receiver, one of her own (etiquette books prescribed that a lady should leave only *one* card for a lady) and two of her husband's. The contents of a family's card receiver were sorted and evaluated. Decisions then had to be made as to how to respond—to pay an actual visit or only a surrogate one by way of a card (a call for a call or only a card for a card). Mark Twain, writing in *The Gilded Age*, lampooned the intricacy of these social rituals by commenting: "The annual visits are made and returned with peaceful regularity and bland satisfaction, although it is not necessary that the two ladies shall actually see each other oftener than once every few years. Their cards preserve the intimacy and keep the acquaintanceship intact."

Typewriter – In the words of Marshall McLuhan in *Understanding Media*, "It was the telephone, paradoxically, that sped the commercial adoption of the typewriter. The phrase "Send me a memo on that," repeated into millions of phones daily, helped to create the huge expansion of the typist function. C. Northcote Parkinson's law that "work expands so as to fill the time available for its completion" is precisely the zany dynamic provided by the telephone. In no time at all, the telephone expanded the work to be done on the typewriter to huge dimensions. Pyramids of paperwork rise on the basis of a small telephone network inside a single business.

Telephone

- Effects of the Telephone - 3
 - Sped the commercial adoption of the typewriter
 - The need to create memos or records of phone conversations helped increase the need for typists
 - Fosters sociable conversation, gossip, and chit-chat
 - Thus teen-age girls are the biggest users of the phone
 - Fostered the development of subsequent communication technologies

Subsequent technologies – The telephone helped inspire Edison to invent the phonograph. In 1877, after Thomas Edison had perfected a better transmitter for Bell's telephone, Edison worried that the high cost of telephones might limit their use. Thus, Edison sought a device on which a person could record a spoken message and then take the record to a central station which it could be transmitted to an addressee over a telephone. The instrument that Edison designed consisted of a rotating, grooved metal cylinder around which a piece of tin foil was wrapped to record and play back the sounds. In December 1877, Edison recorded and played back "Mary Has a Little Lamb." Edison quickly patented the device and formed the Edison Speaking Phonograph Company to manufacture and exhibit the instrument around the country. Later communication technologies included fiber optics, communication satellites, and cell phones