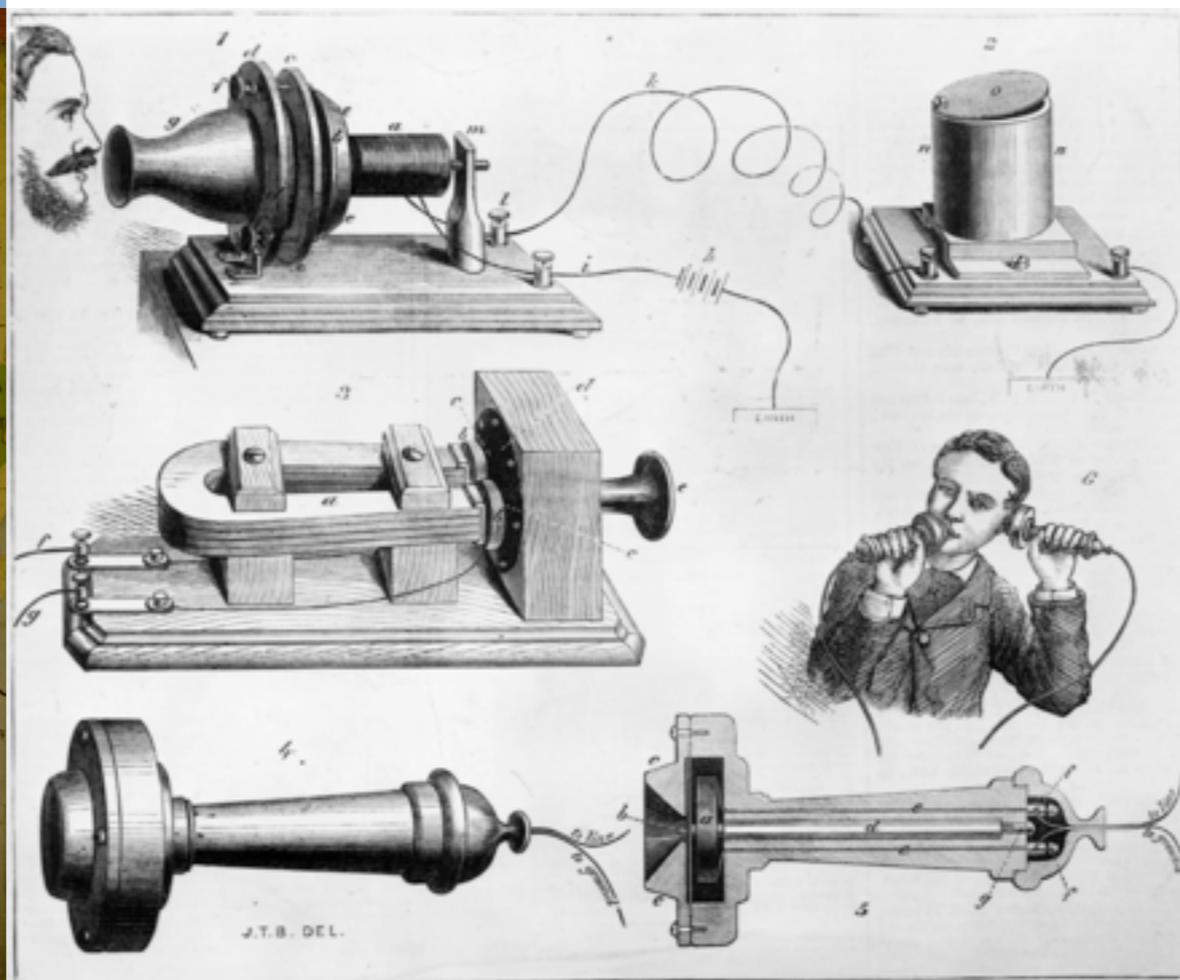
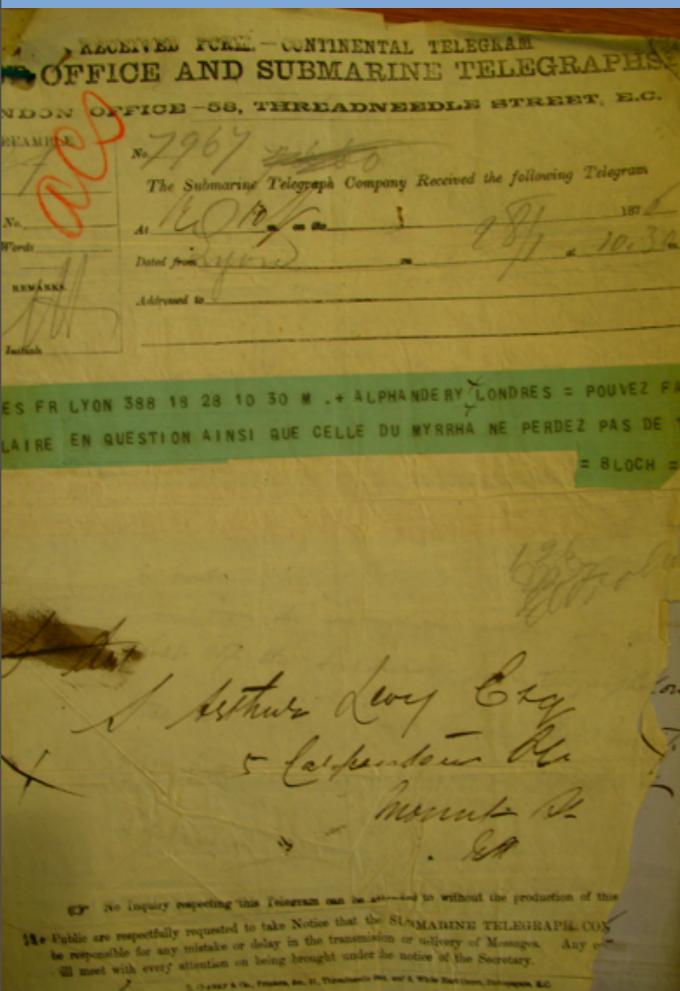




communications "revolution"

telephone & telegraph

History of Information
March 5, 2013



19 February 2013 Last updated at 20:17 ET



Could a new phonetic alphabet promote world peace?

aob

By Tom de Castella
BBC News Magazine



Backers of a universal alphabet say it will make pronunciation easy and foster international understanding. But can phonetic spelling systems really smooth the path to world peace?

In today's Magazine

Although many feel freer with the presence of one network ... much of the public does not realize the growing power and control the social network has over such private information. Oftentimes, buyers are not aware of the fact that, while these technologies simplify aspects of life, manufacturers have purchasers in the palms of their hands as they create technology that consumers are tempted to update every couple years, thus increasing sales.
--Charlotte Banayan



aob

MARCH 3, 2013, 11:00 AM | 61 Comments

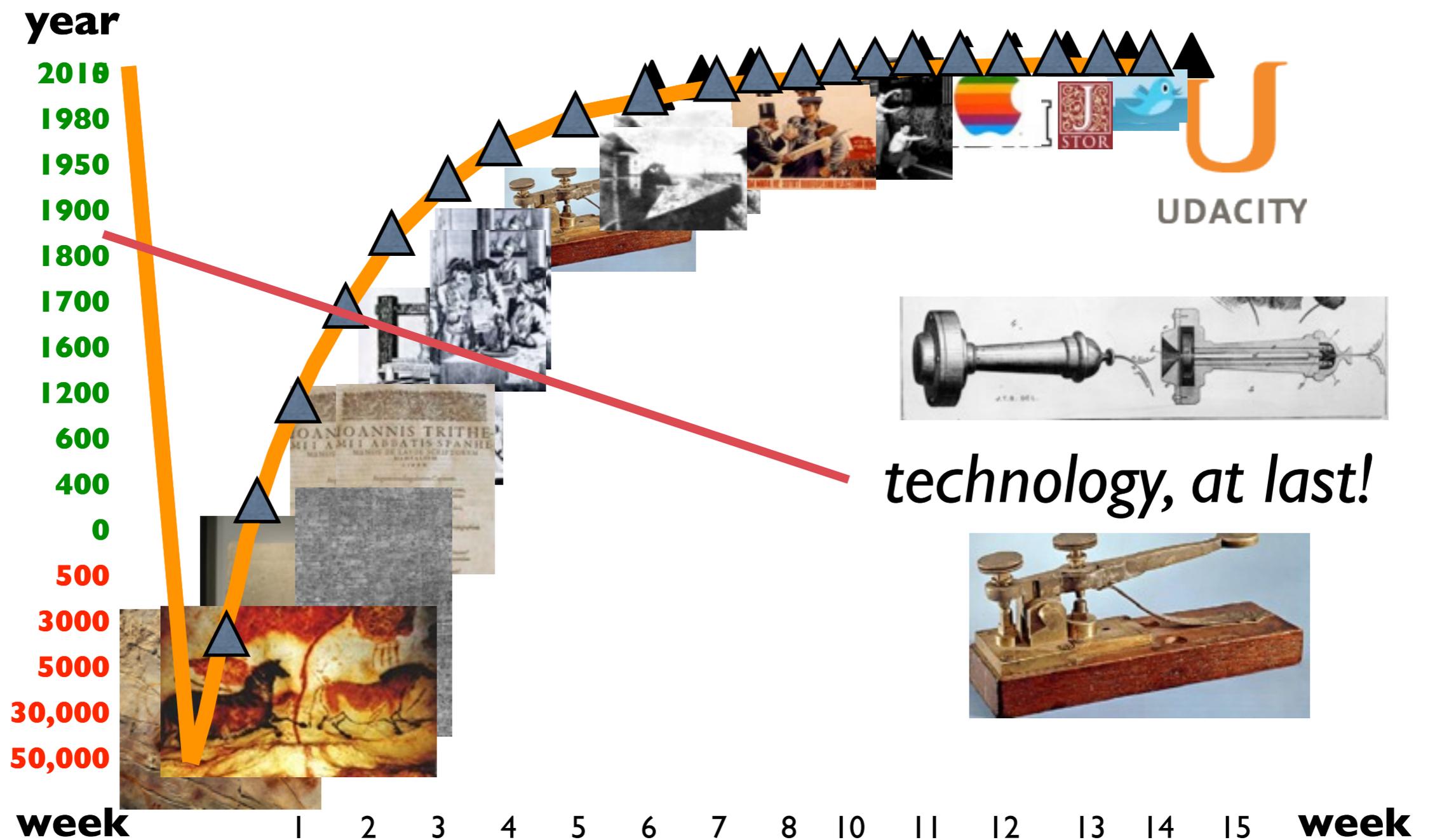
Disruptions: As User Interaction on Facebook Drops, Sharing Comes at a Cost

By NICK BILTON

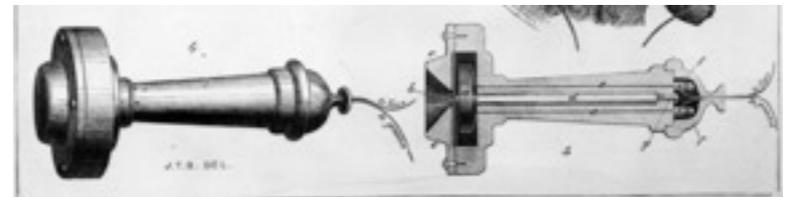
What changed? I recently tried a little experiment. I paid Facebook \$7 to promote my column to my friends using the company's sponsored advertising tool.

To my surprise, I saw a 1,000 percent increase in the interaction on a link I posted, which had 130 likes and 30 reshares in just a few hours. It seems as if Facebook is not only promoting my links on news feeds when I pay for them, but also possibly suppressing the ones I do not pay for.

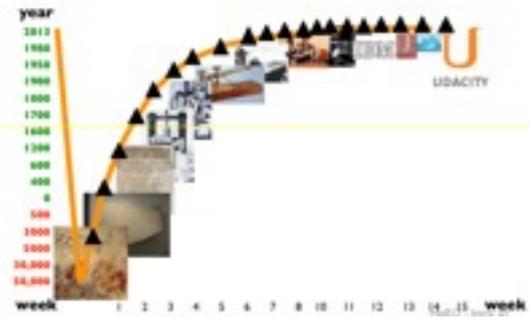
something happened



technology, at last!



overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

communications
"revolution"

changing
world

to make a long story short

point-to-point

Morse invents the telegraph

Bell invents the telephone

on to *broadcast*

Marconi invents long-wave transmission

coming up:
broadcast

The New York Times

Business Day

Media & Advertising

WORLD | U.S. | N.Y. / REGION | BUSINESS | TECHNOLOGY | SCIENCE | HEALTH | SPORTS | OPINION

Search | Global | DealBook | Markets | Economy | Energy | Media | Per

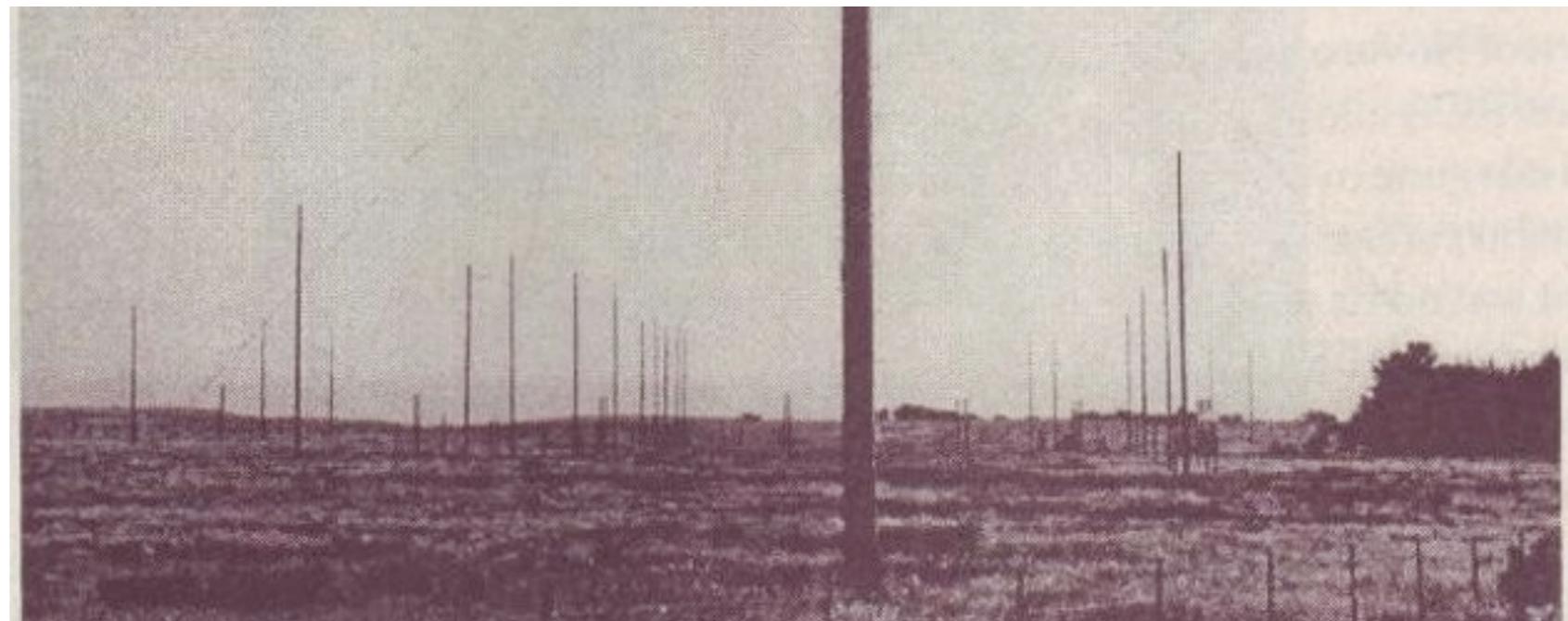
Don't Touch That Remote: TV Pilots Turn to Net, Not Networks

13-Hof13-CR 6

coming into California

The Western Union Telegraph Company
AND THE CALIFORNIA PRESS.

Henry George, *SF Herald* (1869); *Progress & Poverty* (1879)



Marconi America; Federal Telegraph

coming into class

assignment

technology controls: 25%

technology makes you free: 25%

both: 50%

calling on ...

Sebastian Delgado

Tamara Takeshita

Justine Coven

Ione Sterental

Eric Lindholm

Melanie Cebula

Warren McQuinn

Steven Rivera

Meg Dholakia

overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

communications
revolution

changing
world

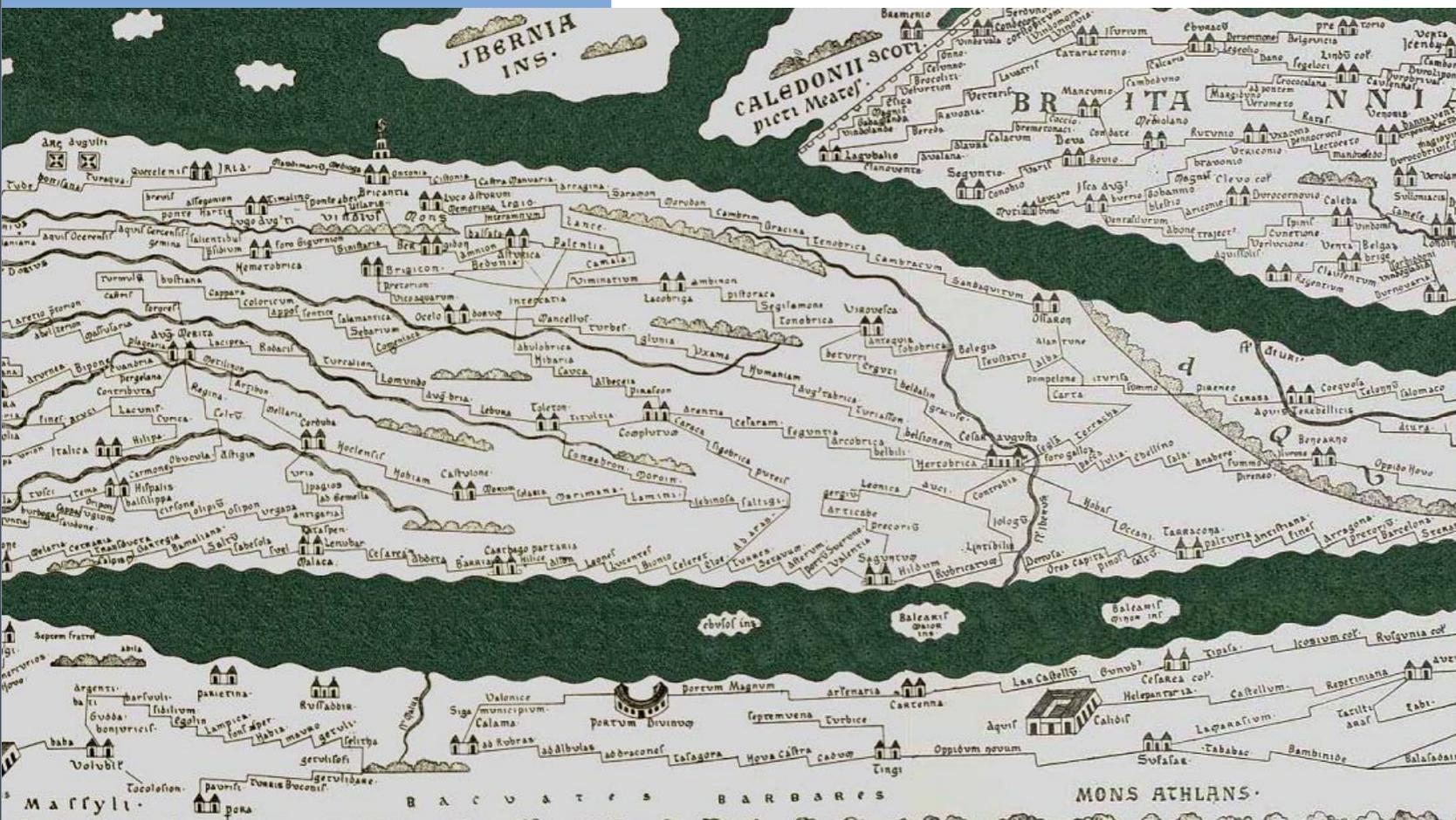
to make a short
story long ...



changing world: overland

Rome to Holy Roman Empire

"it took twenty-six days for Caesar to send a letter from Britain to his dear friend Cicero in Rome"



Franz von Tassis, 1489





John Ogilby, *The Traveller's Guide; or, A Most Exact Description of the Roads of England* (London, 1712).

changing infrastructure

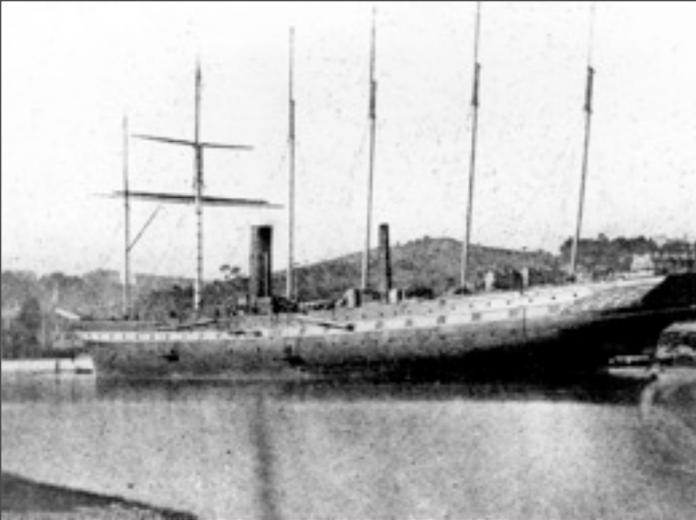
roads

[Before the eighteenth century] "Roads were ... a mechanism for government and a tool for the travels of soldiers, but very rarely an artery for trade ... between 1726 ... and 1848 ... state control had constructed the entire [British] road system ... 119,527 miles of road that yearly consumed £1,600,000 in parish rates and £1,097,000 in turnpike tolls"

Jo Guldi, *Roads to Power*, 2012



Arrowsmith, *The London Atlas of Universal Geography* (London: Published by Arrowsmith, 1842).



changing world: by sea

TRADE BETWEEN LONDON AND
BOSTON, U.S.A., 1765-71 (clxxi. 158).—
In 1775 the postal communication with the
British Dominions in America was by five
packet-boats between Falmouth and New
York, sailing from the former the first Satur-
day, from the latter the second Saturday in
every month, they were,
Halifax, Capt. John Bolderson.
Duke of Cumberland, Capt. John Mitchell.
Lord Hyde, Capt. Norris Goddard.
Harriot, Capt. Geo. Oake.
Mercury, Capt. Rob. Dillon.

The postage between London, and any port
within the British Dominions in America, of
a single letter (i.e., one sheet of paper) was
12d., which covered inland conveyance in the
Dominions up to 60 English miles; from 60 to
100 miles, 6d.; 100 to 200 miles, 8d., not pas-
sing through a chief office; and so in pro-
portion increasing two-pence for any distance
above every 100 miles. All double, treble,

messages by sea

irregular: merchant ships

regular: packet boats

speed: steam

"soon afterwards the Britannia steam-
packet from Liverpool, eighteen days out,
was telegraphed at Boston."

--Charles Dickens, *American Notes*, 1842



Erie
Canal
1825



Wedgwood's
Etruria

built infrastructure

canals

Wedgwood's distribution

railways

mail coach, c. 8 mph

early train, 20-30 mph



Manchester-Liverpool
1830

increasingly wired



increasing intervention



CHAPTER XCVII.

AN ACT

To provide for the construction of Telegraph Lines within the State of California.

The People of the State of California, represented in Senate and Assembly, do enact as follows :

SEC. 1. The right and privilege is hereby granted to Oliver E. Allen and Clark Burnham, or their assigns, to construct and put in operation an Electro-Magnetic Telegraph Line, from the city of San Francisco to the city of Marysville, by the way of the cities of San Jose, Stockton and Sacramento, with right of way over any lands belonging to this State, and on or along any streets, roads or highways, or across any stream or streams; *Provided*, they do not obstruct the same, and no person or persons shall be allowed to locate, or construct, or run any Telegraph Line, or any portion thereof, within half a mile of the Line or route selected by the said Allen and Burnham or their assigns, except that when within half a mile of any incorporated city, the proprietors of any similar Line of Telegraph, may enter said city and depart therefrom, making their Station therein, within twenty yards of the Station of said Allen and Burnham, or their successors, for the term of fifteen years; *Provided*, that the said above named parties or their assigns shall, within eighteen months from the passage of this Act, construct and put in operation a Tele-

To whom granted

Rights and privileges.

Duty of grantor.

interconnections

international cables

(but also treaties, standards)

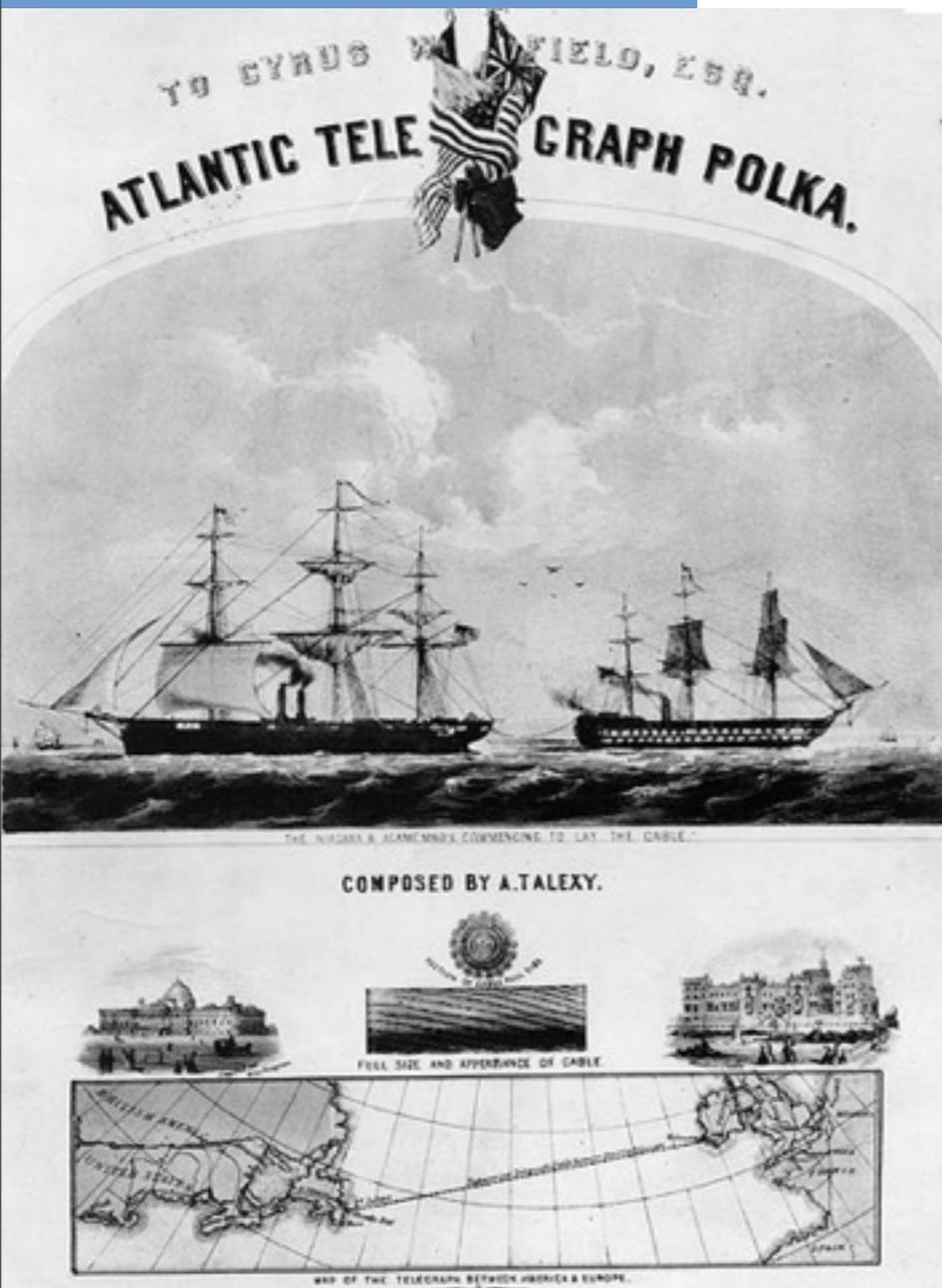
Prussia-Austria: 1849

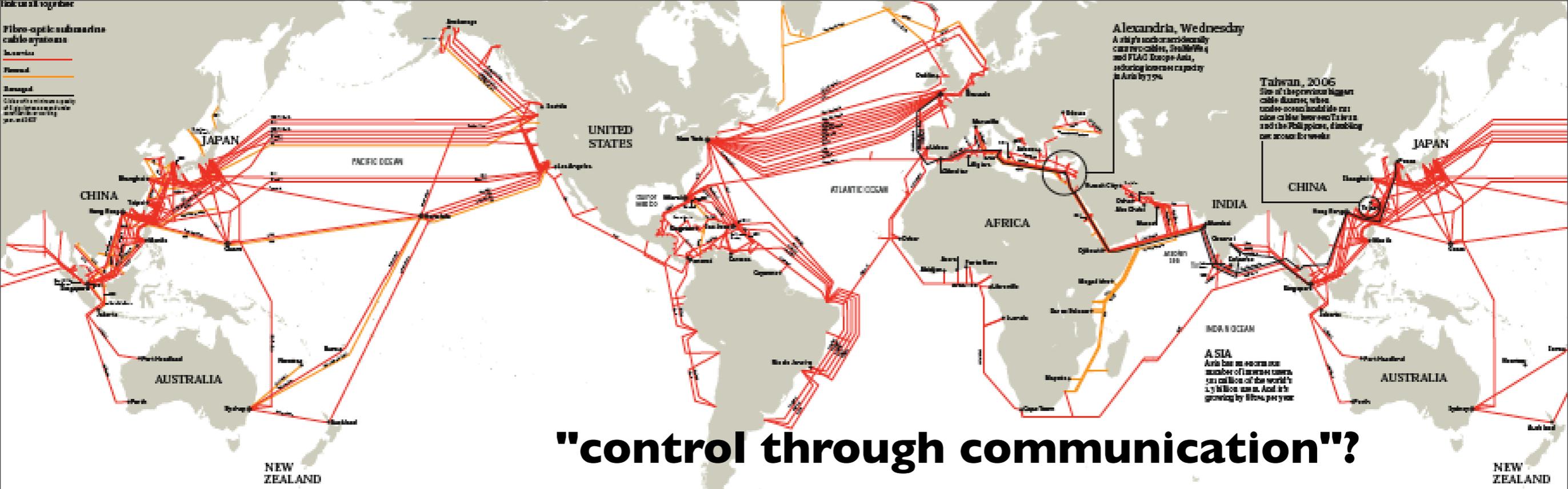
England-France: 1851

New York-Newfoundland: 1856

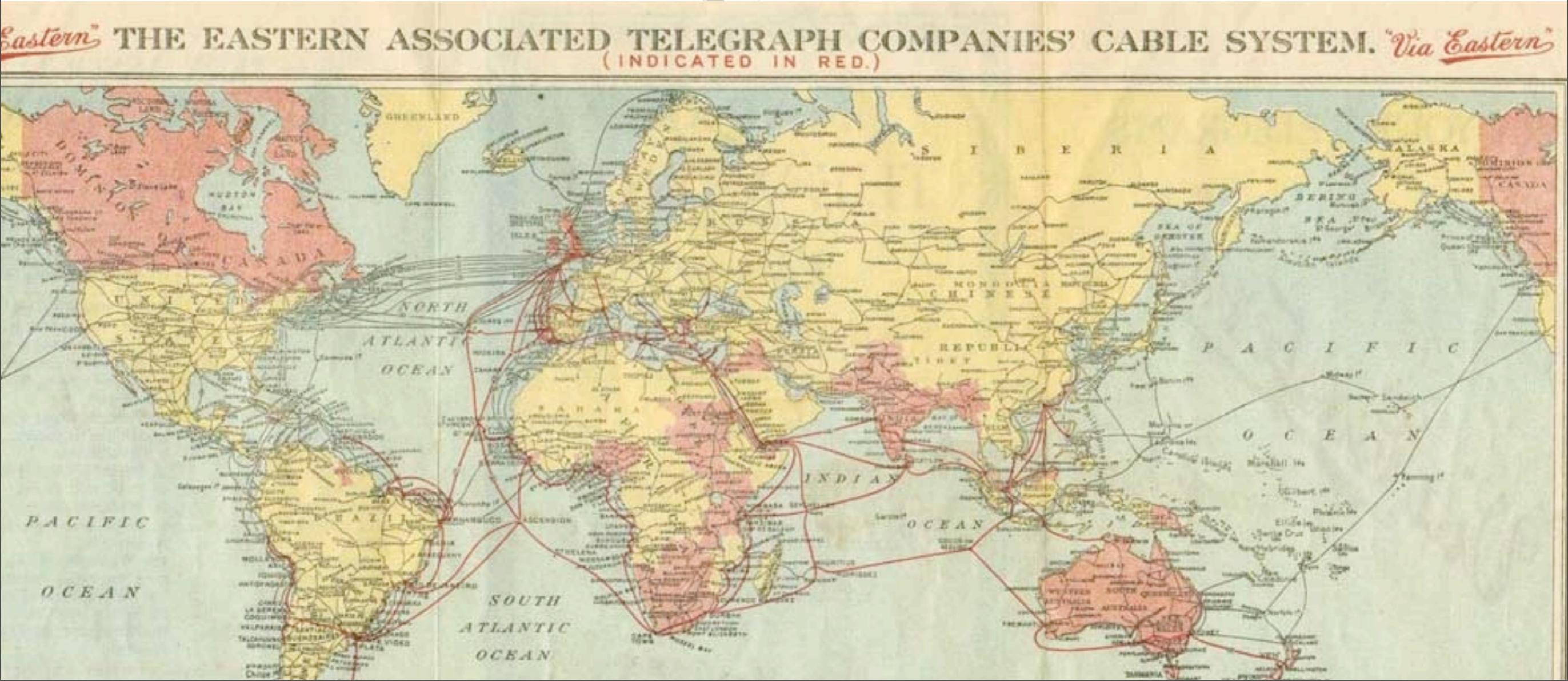
Britain-North America: 1858-1866

Atlantic telephone cable: 1956





"control through communication"?





military-industrial complex

cause or effect

"Between 1600 and 2000 we argue that changes in transport and communications technology were the single most important factor in both ushering in the era of the mass army and in leading to its eventual demise."

--Onorato et al, "Technology and the Era of the Mass Army" 2012

"communications ... occupies a crucial position in the organization and administration of government and in turn of empires and western civilization."

--Harold Innis, *Empire & Communication*, 1950

overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

**communications
revolution**

control or freedom?

changing
world

**communications
"revolution"**

a good thing?

assignment

technology controls: 25%

technology makes you free: 25%

both: 50%

calling on ...

Sebastian Delgado

Tamara Takeshita

Justine Coven

Ione Sterental

Eric Lindholm

Melanie Cebula

Warren McQuinn

Steven Rivera

Meg Dholakia

technology and freedom

time matters

It also seems that with the passing of time and changes in the nature of information technologies, it becomes possible to rid these new technologies of their monopolistic "control" factors faster than in the past. This is seen in the difference between the examples in the readings and those of Apple.

--Sebastian Delgado

However, once time and news were no longer able to be controlled by a few people, this information helped to liberate workers and newspapers from being taken advantage of. With widespread access, communications technologies are freeing, but when certain people have entire control over the technology, it can be limiting and controlling.

--Justine Coven
13-Hof13-CR 21

technology and freedom

control and freedom

Control can also be established by the government, as in patent law. The AT&T company (and Bell) used the controls of patent law to their advantage, though, using the courts to gain a monopoly over a specific technology: sending spoken signals over electric wire. As in Beauchamp's writing, "under the decision, such advances were controlled by Bell's rights" (863). Bell and AT&T used the controlling influence of the courts and the patent system to gain the freedom of spreading the company across the continent. Almost all examples show that having control and freedom at the same time is not a dichotomy.

-- Eric Lindholm

technology of control

Technology builds control schema; the use of technology helps us control. Freedom is not increased, but new handholds – new possibilities for control – can be uncovered. --Warren McQuinn

A recent article in the New York Times was entitled: “For Twenty-Somethings: Ambition at a Cost,” it described the way in which new communication technologies have erased the division of work/leisure by forcing us to be “on-call” at all times. The article describes a man who had to leave his own surprise birthday party, because his boss called him and told him to come in. I doubt there is any more symbolic example of loss of control than being unable to choose how we spend the only day meant to celebrate our existence.

--Meg Dholakia

technology of control

For example, let us look at high school bell systems. In high school, the time-keeping system sounds a bell when it is the appropriate time for class to start, break time, or class to end. This forces students to assimilate to a system in which their breaks and actions are dictated, rather than decided upon by individuals themselves. Similarly to the situation in 1335, during Phillip VI's rule, students must attend to the bell system, or face the punishment (e.g. detention). As Thompson points out, "evidence is plentiful, and, by the method of contrast, it reminds us how far we have become habituated to different disciplines." [p93] Now that we are in a college setting with less strict accounting technology (the campanile) we notice more vividly the time conditioning which one underwent during grade school. ... Accounting technology provides one with self-control to be controlled by a greater power.

Tamara Takeshita

13-Hof13-CR 24



Cal
Time

An Operational Excellence Project

schools "a spectacle of order and regularity ...
they are become more tractable" --Thompson

time, money, & education

"The Nonequivalence
of High School
Equivalents"

Stephen V. Cameron
& James J. Heckman

1991

"They who have the art
To manage books, and things, and make them work
Gently on infant minds as does the sun
Upon the flower - the tutors of our youth,
The Guides, the Wardens of our faculties,
And Stewards of our labour, watchful men
And skilful in the usury of time,
Sages, who in their prescience would controul
All accidents, and to the very road
Which they have fashion'd would confine us down,
Like engines."

William Wordsworth, *Prelude*, 1850

history matters

The two competing visions of communication technology resulting in increasing freedom or increasing control turn out, in this vein, not to be competing at all ... the concern over the control of access to information made possible by a new technology is an eternal issue ...

--Ione Sterental

this is a problem that plagues man no matter where he lies on the timeline; in the past it may have been Catholic priests ... now it may be Facebook using machine learning to cater your news feed to your own bias. Ultimately, each new iteration of information technology will have its benefits and its problems, but these will simply be a continuation of what came before, and in balance with one another, will continue to be compatible as they've always been.

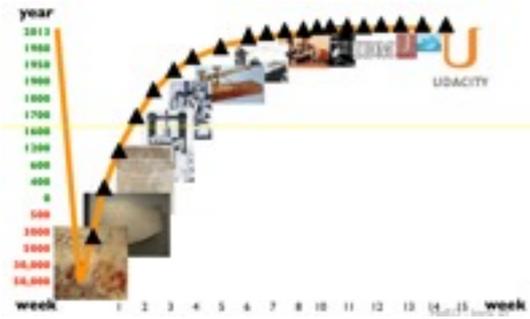
--Melanie Cebula

time and place

[I]nformation technologies ... are able to manifest themselves as social forces of a particular place, time, and social level. If we take the development of the internet as an example, we could see that on a personal level, the internet has democratizing effects on those who have access; however, the antithesis of this could be seen at the organizational level, especially in particular governments. ... cameras at the personal level allow the individual to extend human vision, memory, and interaction, but organizationally, even in democratic countries, surveillance systems penetrate every aspect of life. Also, digital information can be tracked and trace, but also hidden and made untraceable.

--Steven Rivera

overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

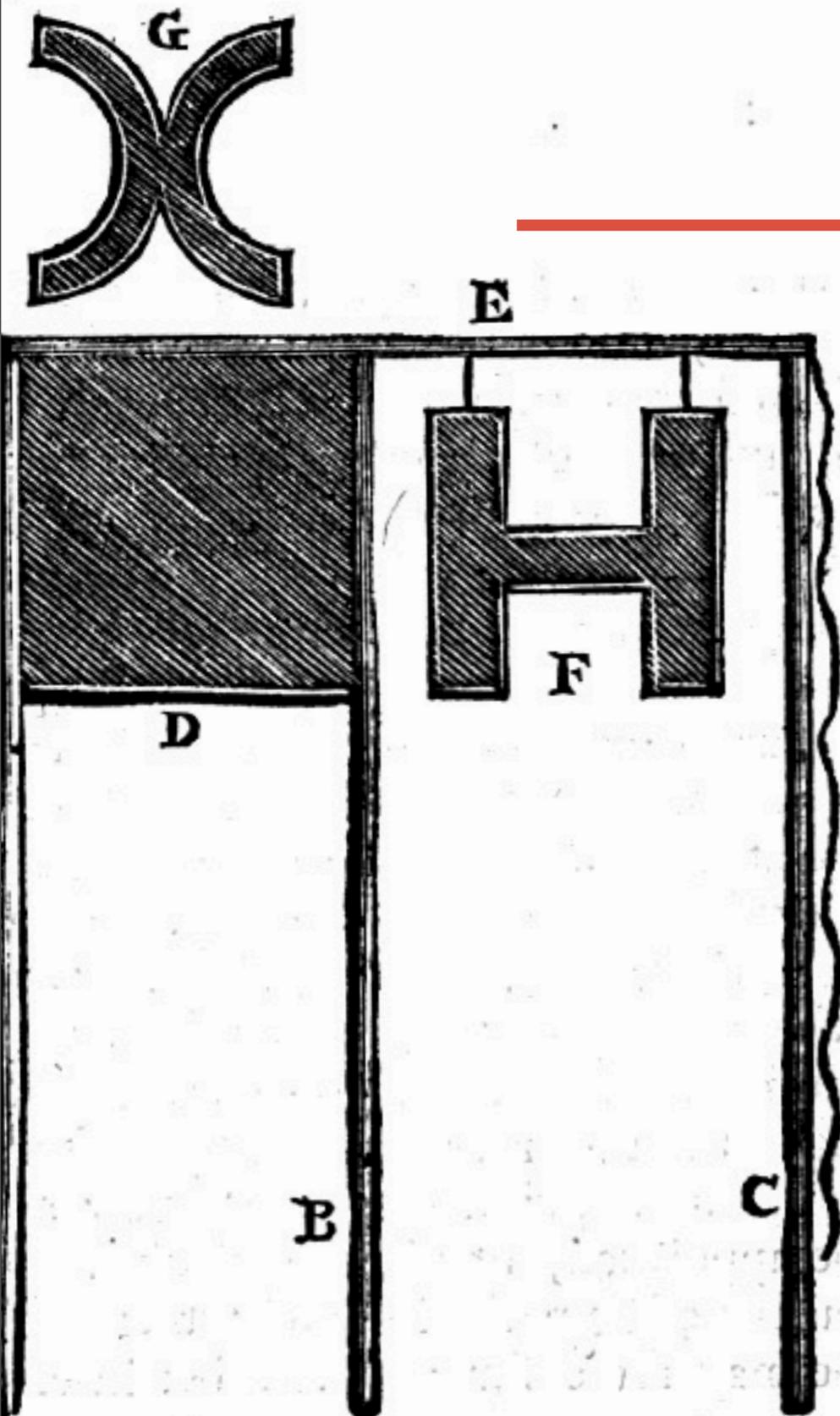
**communications
revolution**

what came before?

changing
world

**communications
"revolution"**

messages without messengers

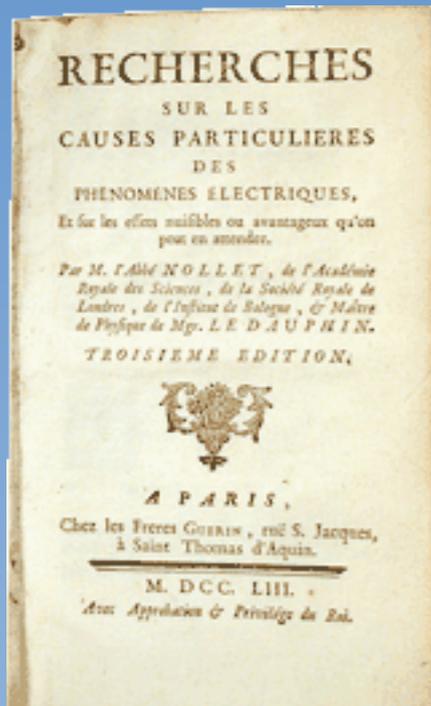


Dr. HOOK's Discourse to the Royal Society, May 21. 1684. shewing a Way how to communicate one's Mind at great Distances.

THAT which I now propound, is what I have some Years since discoursed of; but being then laid by, the great Siege of *Vienna*, the last Year, by the *Turks*, did again revive in my Memory; and that was a Method of discoursing at a Distance, not by Sound, but by Sight. I say therefore 'tis possible to convey Intelligence from any one high and eminent Place, to any other that lies in Sight of it, tho' 30 or 40 Miles distant, in as short a Time almost, as a Man can write what he would have sent, and as suddenly to receive an Answer, as he that receives it hath a
Mind



Abbé Nollet
1700–1770



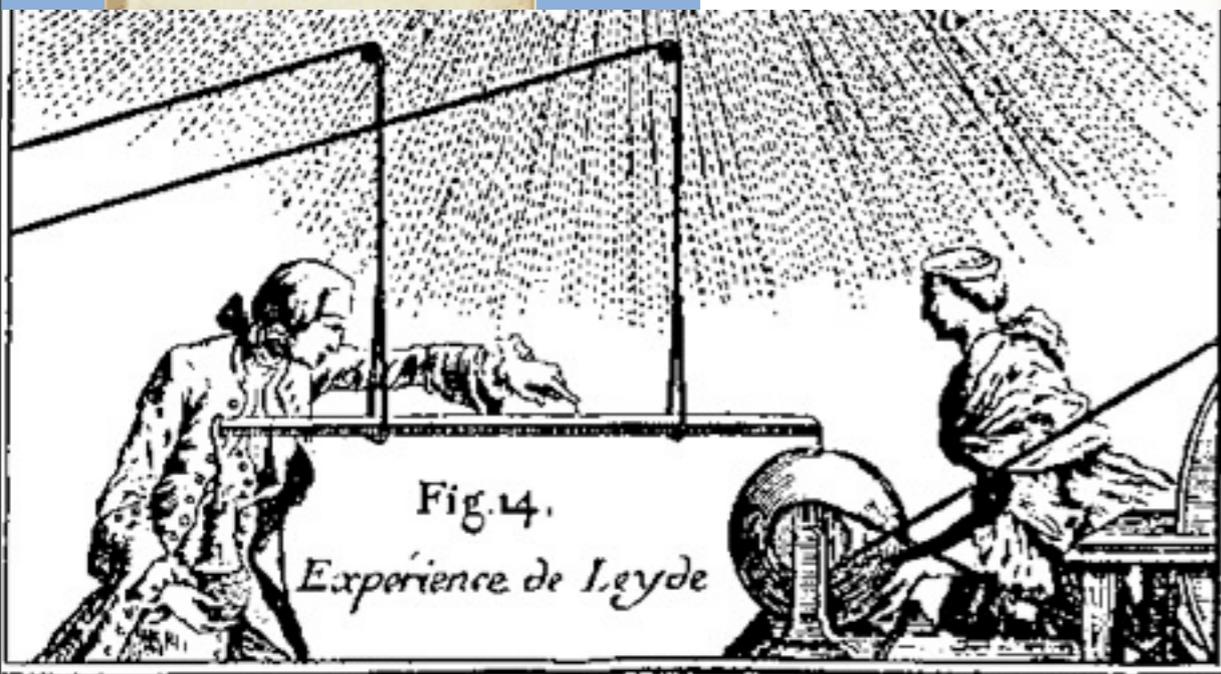
in charge

monkish experiments

Abbé Nollet's galvanism, 1753

180 Royal Guards; 1 km Carthusian monks

"when a Leyden jar was discharged, the white-robed monks reportedly leapt simultaneously into the air"





Claude Chappe
(1763-1805)

"Voici le rapport du télégraphe qui nous arrive à l'instant. Condé être restituée à la République. Reddition avoir eu lieu ce matin à 6 heures."

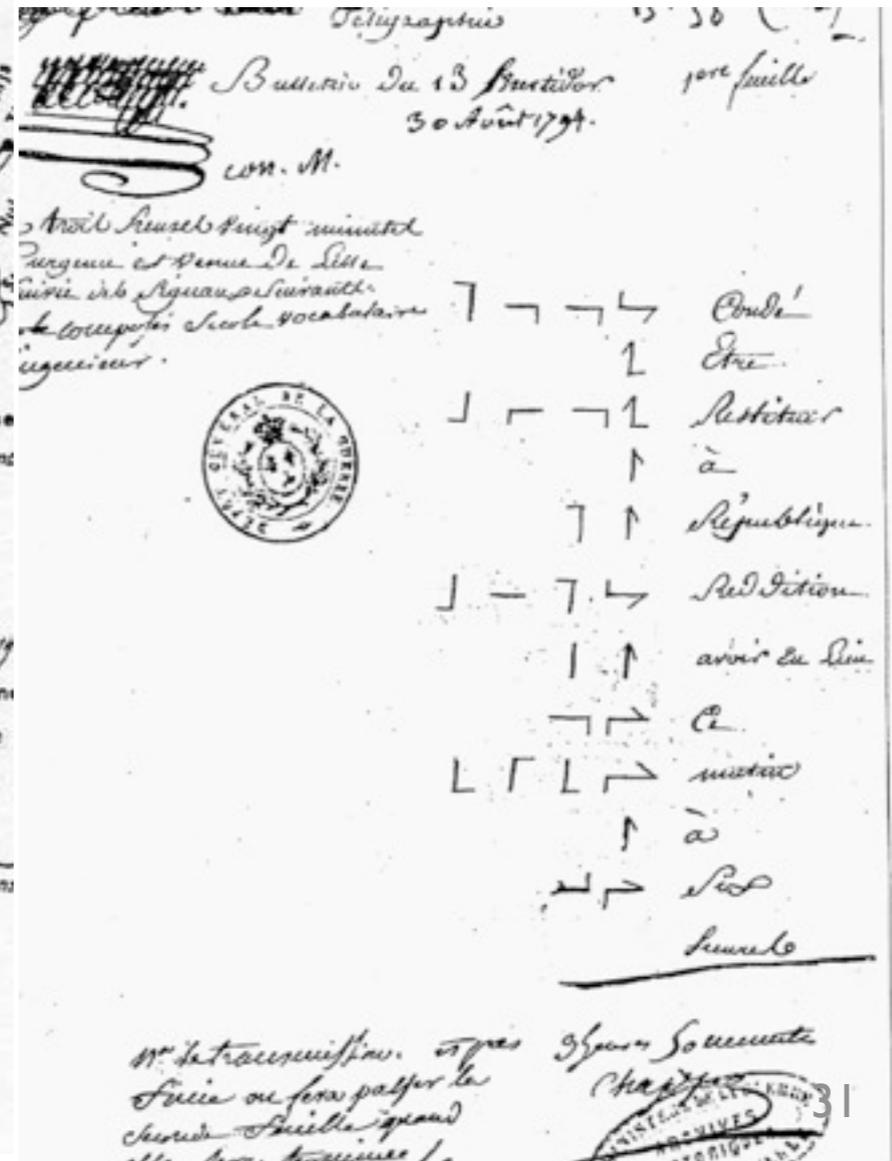
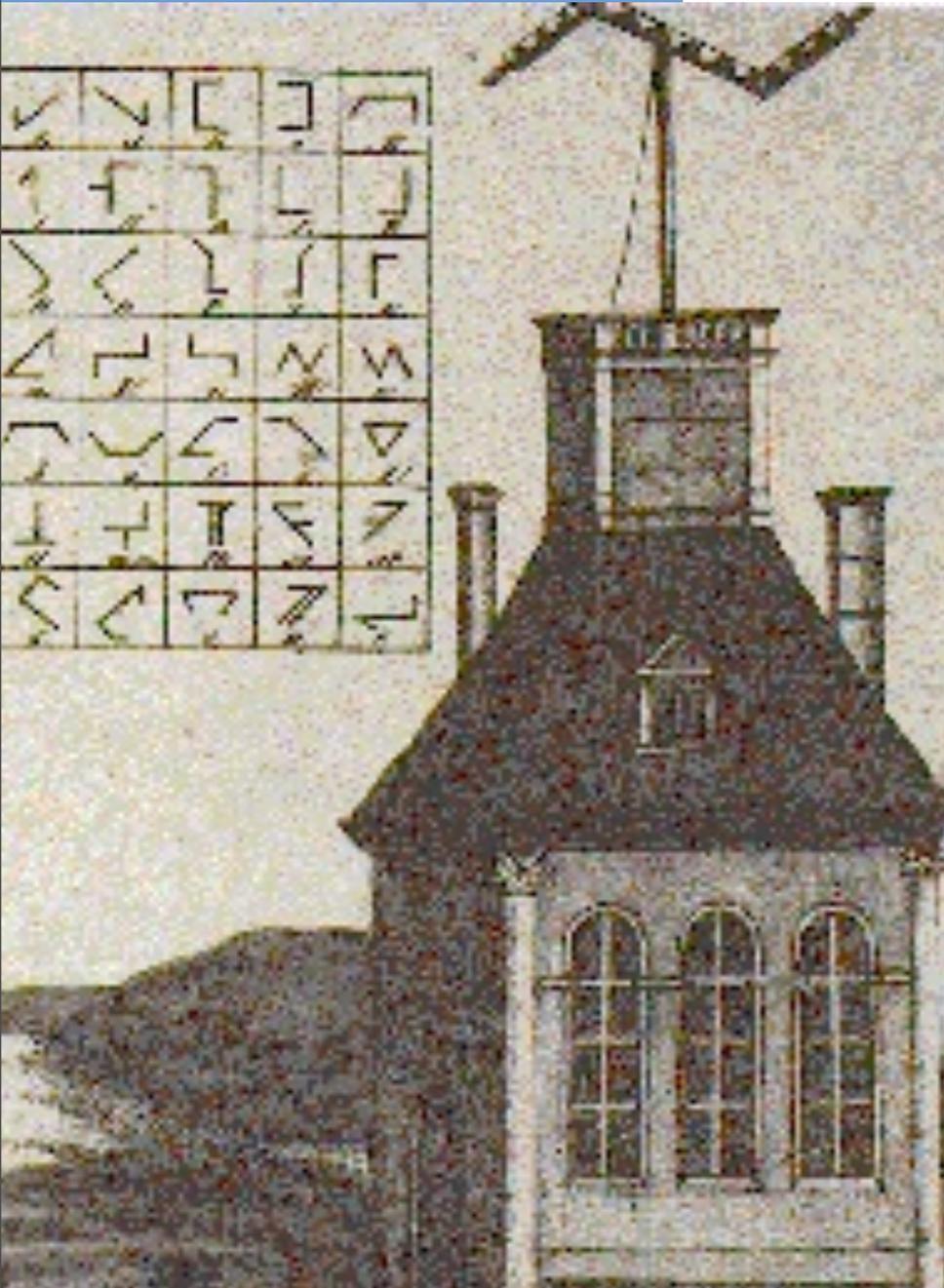
30 August, 1794

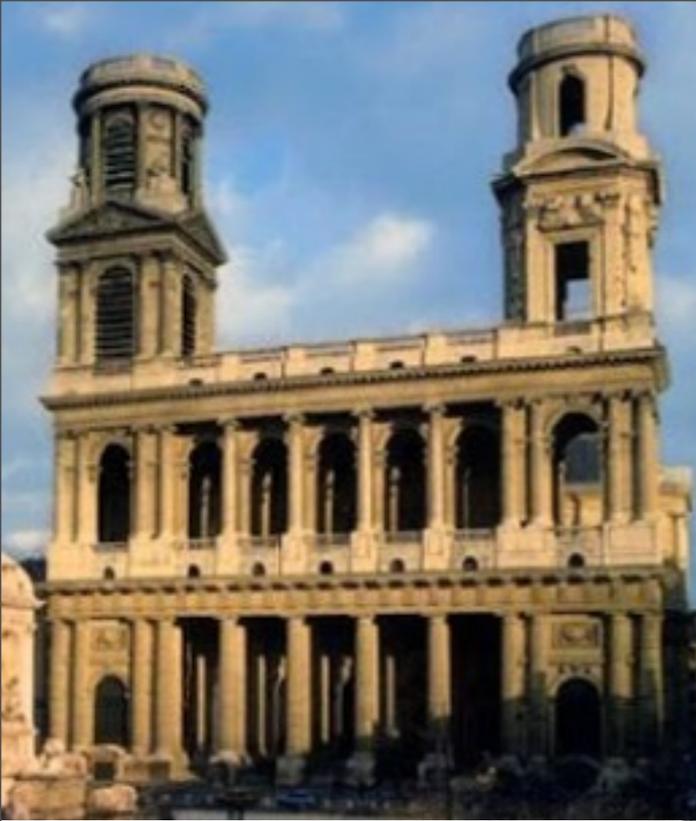


telegraph

Chappe télégraph

La Ligne Paris-Lille





"The towers of Saint-Sulpice are two huge clarinets, which is as good a shape as any, while the crooked, grimacing telegraph forms a pleasant accident on their roof."
 --Hugo, *Notre Dame de Paris*

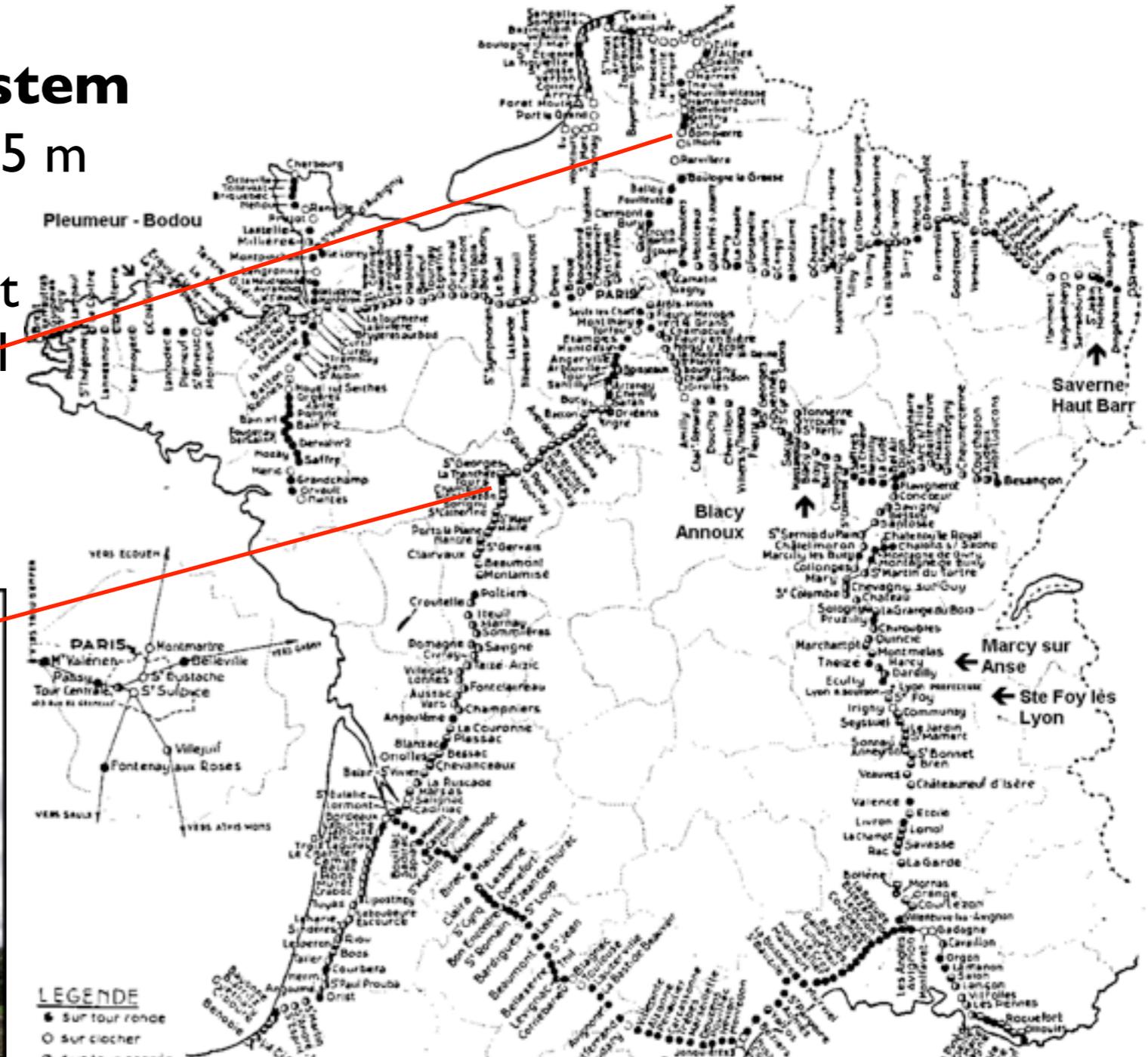
interconnections

national system

5,000 km/3,125 m

534 stations

c. 6 miles apart
 in service until
 c 1853

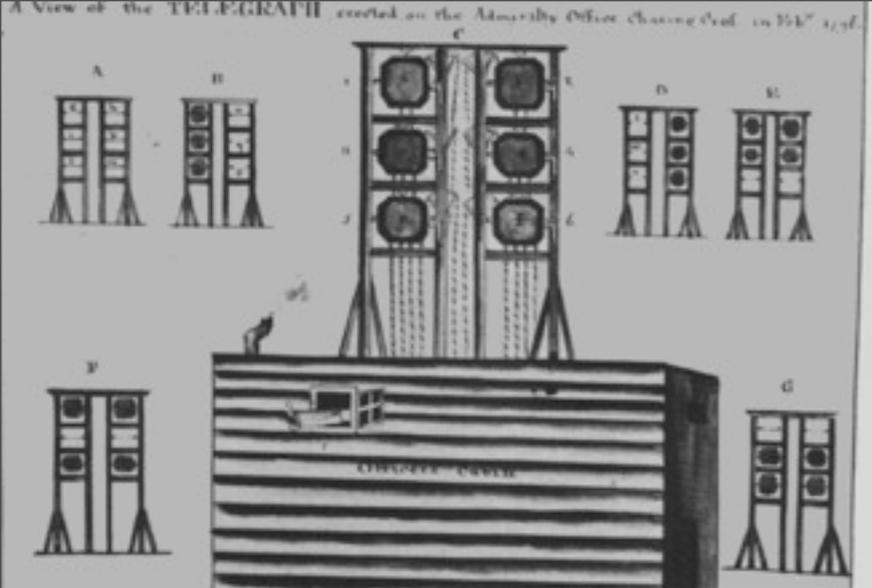


LEGENDE

● sur tour ronde

○ sur clocher

○ sur tour carrée



military rivals

on land

the Admiralty "six-shutter" telegraph

Portsmouth to London (75 miles):

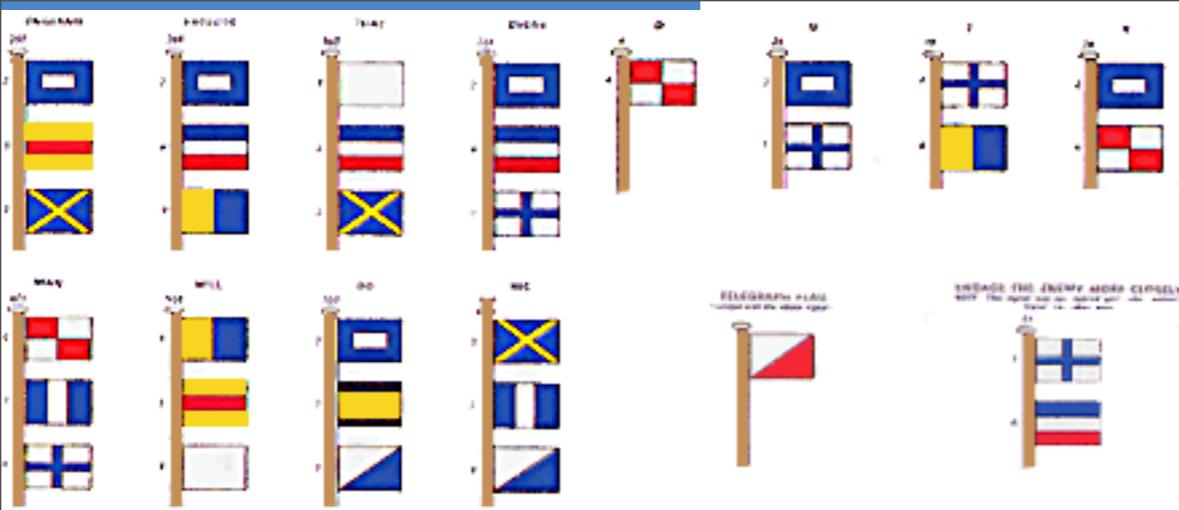
from 3 days to 15 minutes

rebuilt as a

Chappe "semaphore" telegraph, 1815

"[B]y the telegraph [man] renders himself as it were present in the same moment at distant places."

Monthly Review



--Home Popham *Telegraphic Signals, or Marine Vocabulary*, 1800

naval connections



Home Popham
(1762–1820)

at sea

1805: "Trafalgar, a 'revolutionary' battle in its effects, owed its nature to revolutionary tactics; but those tactics ... were chiefly the product of a revolution in control, brought about by the innovation of Home Popham's telegraphic signalling system."

-- William Keegan, *Battle at Sea*, 1988

Nelson's blind spot



resisting centralization

Clapping his glass to his sightless eye, "You know, Foley," he added, turning to his captain, "I've a right to be blind sometimes. I really do not see the signal. D—n the signal! keep mine for closer action flying."

Battle of Copenhagen, 1801

compare the US navy and Marconi

overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

**communications
revolution**

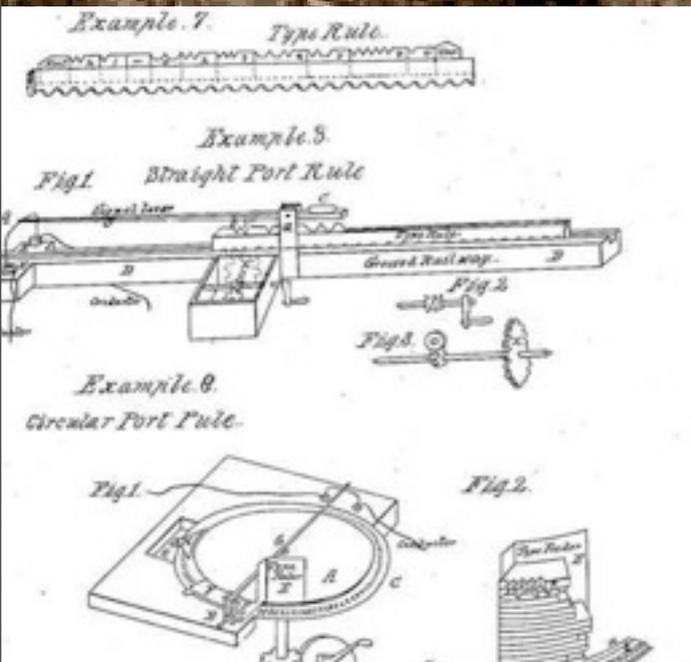
what happened?

changing
world

**communications
"revolution"**



along came Morse



Samuel Morse (1791-1872)

"If the presence of electricity can be made visible in any desired part of the circuit, I see no reason why intelligence may not be instantaneously transmitted by electricity to any distance."

1837, patent filing; numerical codes

1843, Washington-Baltimore line (US govt funded)

1861, transcontinental telegraph





~graph to ~phone

1868: duplex (Joseph Stearns)

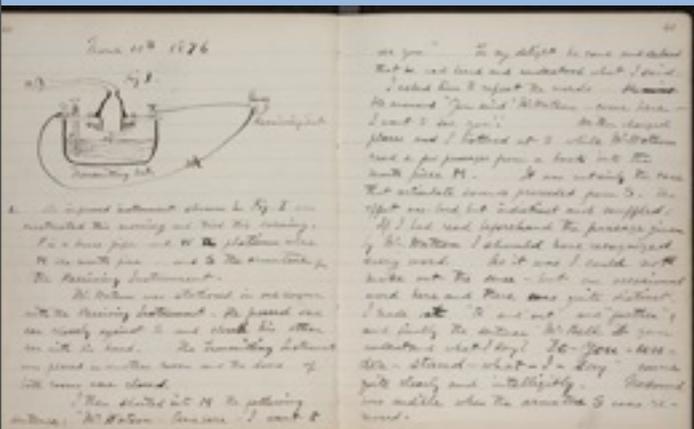
quadriplex (Thomas Edison)

visible speech: harmonic telegraph (Bell)

"Watson come here, I want (need) (to see) you"

"I could hear your voice plainly.

I could almost make out what you said"



overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm

communications
revolution

changing
world

communications
"revolution"

ELECTRO-MAGNETIC TELEGRAPHS.

[To accompany bill H. R. No. 712.]

APRIL 6, 1858.

Mr. SMITH, from the Committee on Commerce, made the following

REPORT :

The Committee on Commerce, to whom the subject was referred, have had the same under consideration, and report :

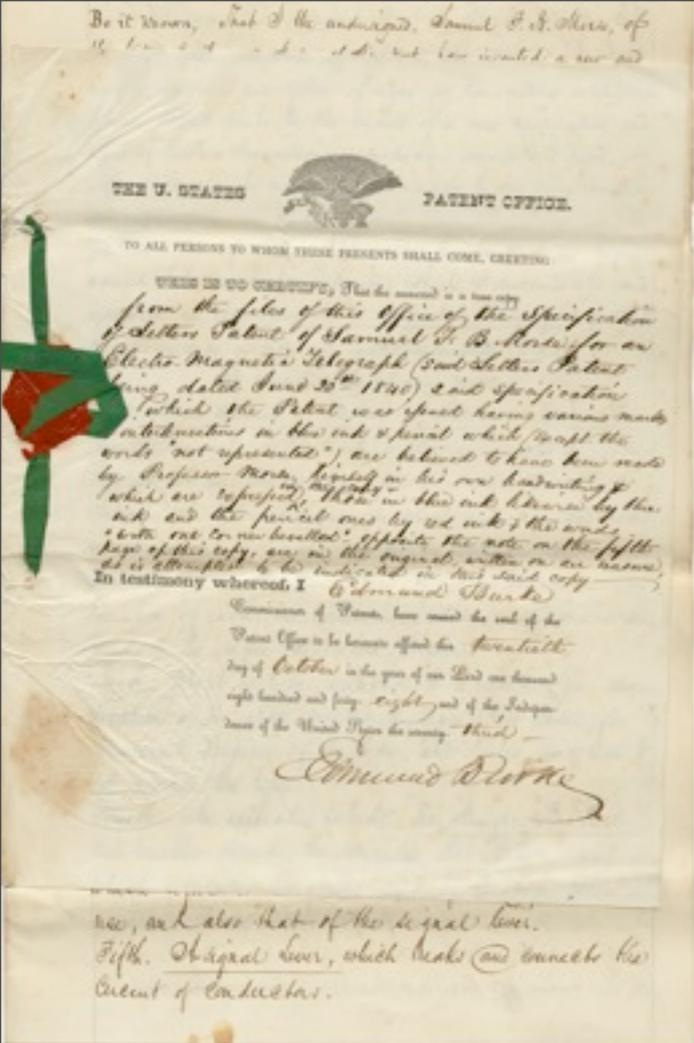
On the 3d of February, 1837, the House of Representatives passed a resolution requesting the Secretary of the Treasury to report to the House, at its present session, upon the propriety of establishing a system of telegraphs for the United States.

In compliance of this request, the Secretary of the Treasury, at an early

from private enterprise to moral grandeur

"its great and incalculable practical importance and usefulness to the country, and ultimately to the whole world ... presumptuous ... to attempt ... to calculate ... usefulness .. political, commercial, or social ... it is obvious, however, ... a **revolution unsurpassed in moral grandeur by any discovery** ... to the present day."

Congressman "Fog" Smith,
Chairman, House Committee on Commerce



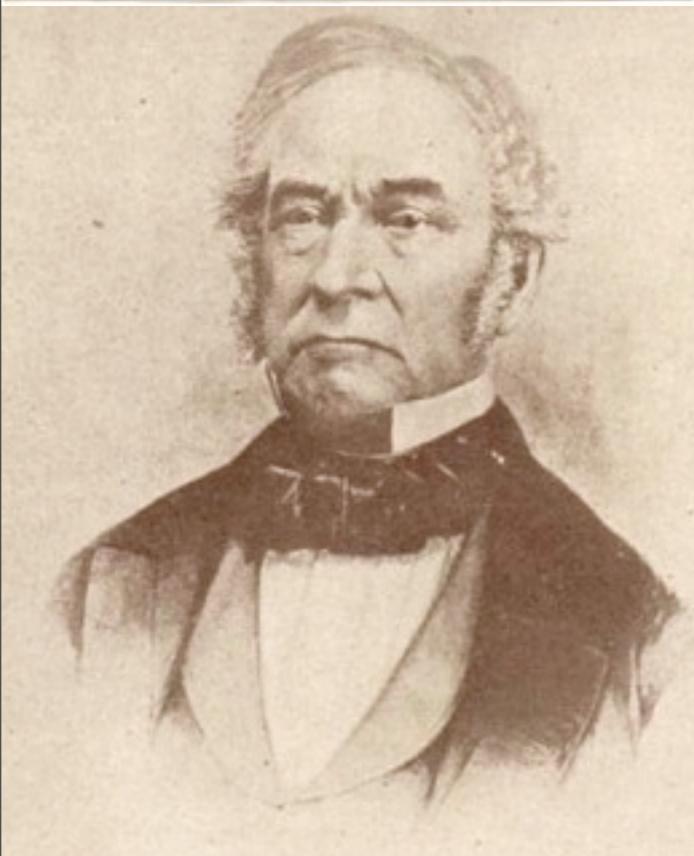
patent enthusiasm

It is a matter of proud congratulation that we witness the rapid advancement of the arts and sciences on this side of the Atlantic, and to hear how frequently the skill and experience of our citizens are purchased by the wisest monarchs of Europe. The liberality with which our artisans are compensated abroad, is the highest proof of their superiority. Our manufactures are extending throughout the world. The ocean and the land alike bear testimony to American ingenuity. Praise is but a tribute due to her constitution and the laws, which extend equal rights and privileges to all.

Among the most brilliant discoveries of the age, the electro magnetic telegraph deserves a conspicuous place; destined, as it is, to change as well as hasten transmission of intelligence, and so essentially to affect the welfare of society, all that concerns its further developments will be hailed with joy.

Imagination can scarcely conceive what is now accomplished by the electric fluid, when confined and tamed, as it were, to the purposes of life. Thought has found a competitor! Nor is it less gratifying that this invention is American. To a native citizen belongs the merit of the discovery, and it is hoped that the country of his birth will reward him accordingly.

The public, at first, could scarcely believe it possible that intelligence can be sent at the rate of 188,000 miles in a second; nor that the earth would suffice for half of the current of communication; nor that currents of electricity from opposite poles would traverse the same wire at the same time,



Henry L. Ellsworth
1791-1858

--Henry Ellsworth, commissioner of patents
Annual Report of US Patent Office, 1844

the great inventor

REMINISCENCES OF MORSE

SOME ANECDOTES OF THE GREAT INVENTOR.

HOW HE DIFFERED FROM OTHER INVENTORS
—HIS BELIEF IN HIS PROJECTS—BURYING
THE WIRES—HIS RETURN FROM WASH-
INGTON—WHAT IT COST TO DEFEND HIS
PATENT—HIS CHARITY.

It is worth while to pick up now, while it is still possible, some few anecdotes of Samuel Finley Breese Morse, the inventor of the telegraph, and to record them. Such incidents, trifling though they may be, allow us to form some slight estimate of this remarkable man. Perhaps the most salient trait that Morse had, was the positive belief in the necessity of his invention. There was no half-heartedness about him. Such men as Bernard De Palissy, are, it is true, few in this world. The French potter was willing to burn his baby's cradle, providing it would furnish fuel for heating his kiln. Putting aside as much as we may differences of age and time, Palissy seeking to perfect his dish, or Morse to develop his telegraph, the divergence between the two is wide. The former was groping for perfection in a physical thing. Men had eaten from earthen-ware, had slaked their thirst from *patere*, ever since the world was known. It behooved Palissy, perhaps, to invent new glazes, new forms, new ornaments. But with Morse it was to convince a world of a new method of imparting information, to project something which was in a certain measure ahead of them. It was a novel mental process, which was to be driven through

New York Times

1879

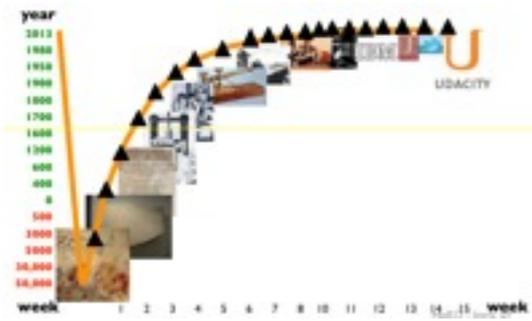
"the great inventor ... to convince the world of a new method of imparting information ... on a higher plane than that accorded to mere inventors" --*NYT*, 1879

unveiling of
Morse's statue
June 10, 1871



I3-HofI3-CR 42

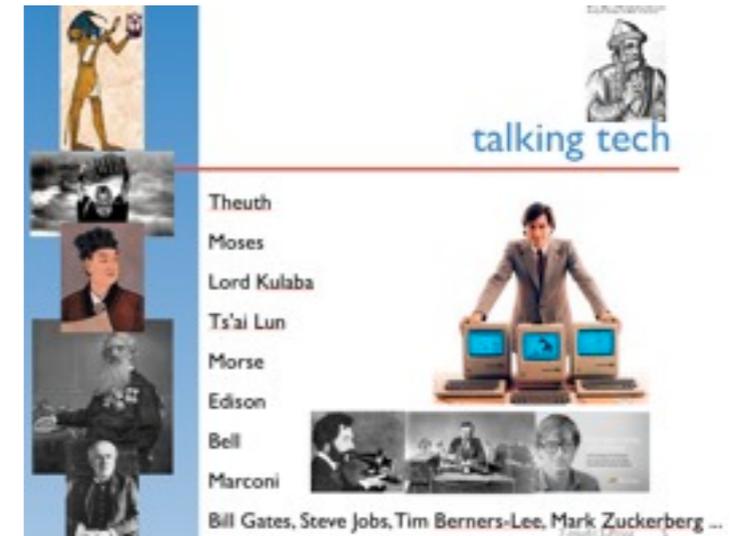
overview



wishing on
technology

inventing
inventors?

eyewitness
enthusiasm



communications
revolution
changing
world

communications
"revolution"

ELECTRO-MAGNETIC TELEGRAPHS.
[To accompany bill H. R. No. 712.]

APRIL 6, 1838.

Mr. SMITH, from the Committee on Commerce, made the following
REPORT :

The Committee on Commerce, to whom the subject was referred, have had the same under consideration, and report :

On the 3d of February, 1837, the House of Representatives passed a resolution requesting the Secretary of the Treasury to report to the House, at its present session, upon the propriety of establishing a system of telegraphs for the United States.

reliable witnesses?

business as usual

Congressman "Fog" Smith, business partner

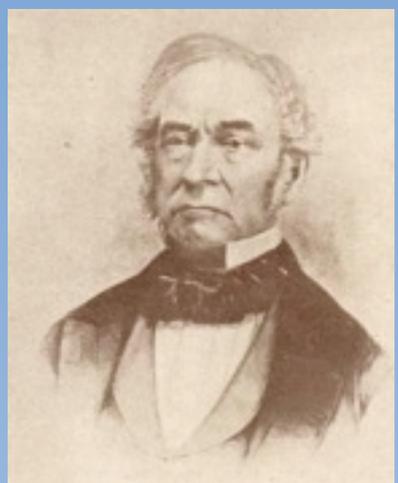
patent partner

Henry Ellsworth

old friends (Yale 1810); prospective in-laws

statue of limitations?

patent troubles



scientific viewpoint

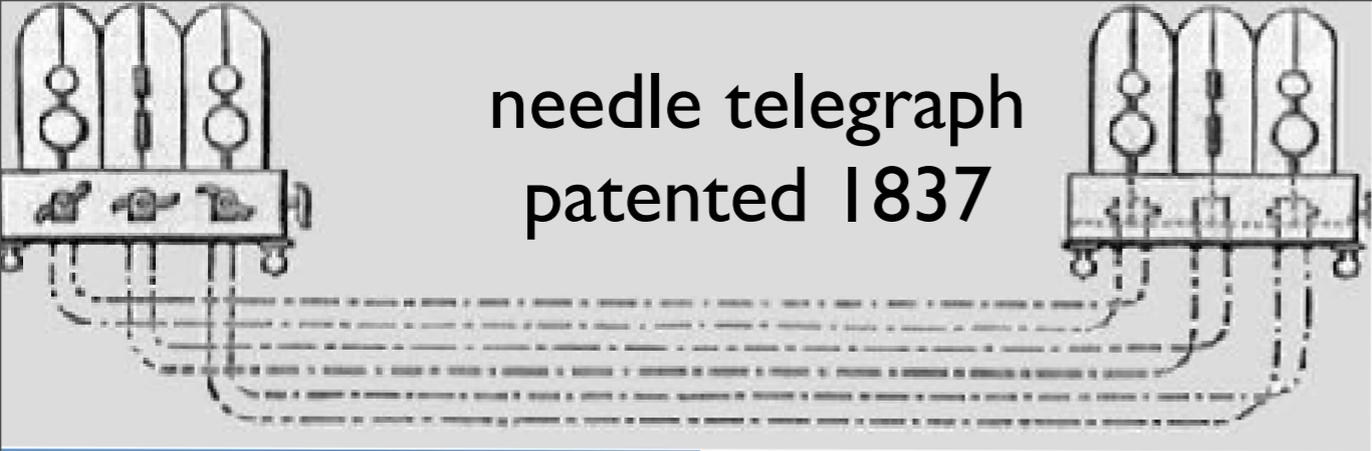
Veil's assistant

"It is singular" that a series "of
mechanical and scientific failures [has]
given a man such a name and so proud a
place in history"

--William Baxter,

"The Real Birth of the Electric Telegraph,"

[n.d.]



needle telegraph
patented 1837

prior art



Pavel Schilling
1780-1836

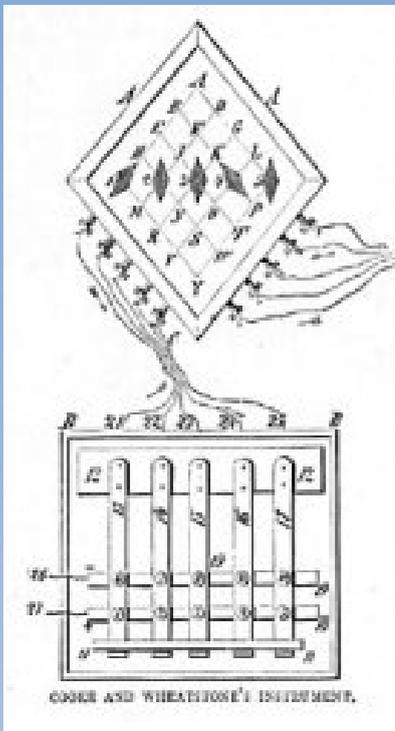
Carl Frederich Gauss (1777-1855)
Gottingen observatory telegraph, 1833

Pavel Lvovitch Schilling (1780-1836)
Russian Admiralty telegraph, 1835

William Cooke (1806-1879)
Charles Wheatstone (1802-1875)
GWR telegraph, 1837

Harrison Dyar, 1827, Long Island

Joseph Henry, 1830





so what did Morse do?

"electromagnetism ... discovered in 1820 by a Danish scientist .. the steady reliable current ... by the British chemist J. Frederick Daniell. .. Wheatstone and Cooke had installed an electrically powered signaling system ... several years before Morse ... the American chemist Harrison Gray Dyar ... workable electrical telegraph on Long Island .. 1827"

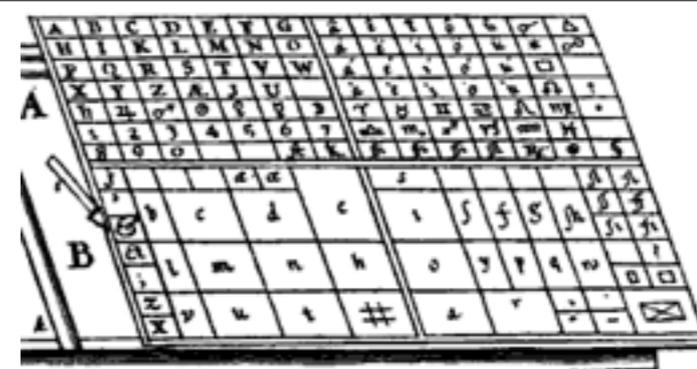
--R. John, *Network Nation*



cast your mind back

"[Theodore]De Vinne, in his book [*The Invention of Printing*, 1789] writes, 'The inventor of printing did not invent paper .. did not originate engraving on wood. He was not the first to print upon paper, he was not the first to make printed books, it is not certain that he made the first press, it is not probable that he was the first to think of or make movable type. What he did was to invent the type mold... it was the *type mold* that the Koreans developed."

--Carter, *The Invention of Printing in China*, 1955.



what did Morse do?

(a) introduced a "binary" code

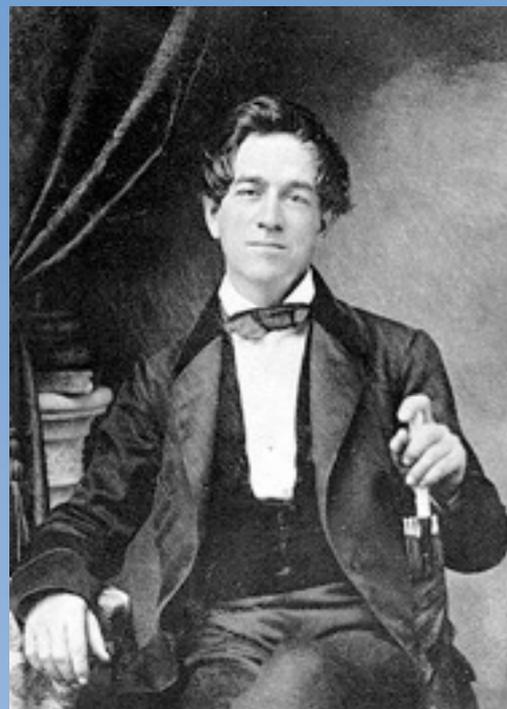
Morse Code or "Vail Code"?

The following is the alphabet for Morse's electro-magnetic telegraph:

ALPHABET.	NUMERALS.
A - -	1 - - - -
B - - -	2 - - - -
C - - - -	3 - - - -
D - - -	4 - - - -
E -	5 - - - -
F - - -	6 - - - -
GJ - - - -	7 - - - -
H - - - -	8 - - - -
IY - -	9 - - - -
K - - - -	0 - - - -
L - - - -	
M - - - -	
N - - -	
O - - -	
P - - - -	
Q - - - -	
R - - - -	
SZ - - - -	
T -	
U - - - -	
V - - - -	
W - - - -	
X - - -	

"a patient waiter is no loser"

Speedwell Iron Works
Jan 6, 1838



Alfred Vail
1807-1859

filing a caveat

Nº. XIX.

An Essay tending to improve intelligible Signals, and to discover an Universal Language. From an anonymous Correspondent in France, (probably the Inventor of the Telegraph) translated from the French.

POSSUNT QUIA POSSE VIDENTUR, Virgil.

Read June
20, 1788.

ALL the delights, and conveniences of life originate in the mutual aids which men

"The director of the post will only have to translate these numbers into longs (-) and briefs (v), ... to deliver this translation to the operator."

*Transactions of the American
Philosophical Society, 1799*

(a) introduced a "binary" code

what did Morse do?

(b) reintroduced electronic signaling

1837, 18 submissions to US govt: 17 were line of sight

(c) introduced a simpler system

"[Wheatstone's] system more complicated and less efficient than the American telegraph ... the deflection of the needle became the principle upon which the savans of Europe based all their attempts ... another discovery ... by Ampère and Arago, immediately consequent on that of Oersted, namely: the electro-magnet which none of the savans of Europe ... ever thought of applying ... **My telegraph is essentially based on this latter discovery.**" (1842)



"an industry shaped by law"

Morse

1837 filing; patent settled, 1854

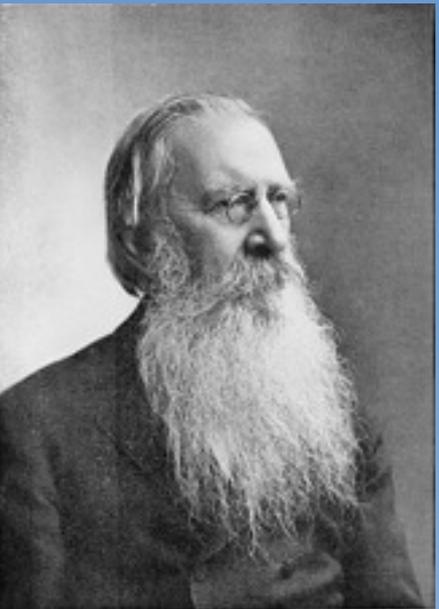
"I can't give [the figure] exactly now, but the aggregate ought to sum up something very close to \$500,000" --Morse, *NYT*, 1879

Bell v Western Union, Gold & Stock (Elisha Gray, Thomas Edison, E.A. Calahan)

18 years, 600 patent actions & 600 competing patents bought



Alexander Graham Bell
1847-1922



Gardiner Hubbard
1822-1997



Elisha Gray
1835-1901

succeeding technology

Bell, Hubbard, & Sanders

(Bell Patent Association, Bell Telephone, AT&T)

1875, telegraph filing multiple patents

1876, Valentine's Day filing

Elisha Gray:

(Western Electric)

late caveat

the English patent

"part of the instrument had been screwed down for Atlantic crossing...."

overview



wishing on
technology

war
& peace

inventing
inventors?

eyewitness
enthusiasm

communications
revolution
changing
world

communications
"revolution"

THE FIRST MESSAGE,
—
ENGLAND GREETES AMERICA
—
QUEEN VICTORIA
TO
PRESIDENT BUCHANAN.



perpetual peace

"May the Atlantic telegraph, under the blessing of heaven, prove to be a bond of perpetual peace and friendship between the kindred nations, and an instrument destined by Divine Providence to diffuse religion, liberty, and law throughout the world."

--President Buchanan, 1858

"Tomorrow the hearts of the civilized world will beat in a single pulse, and from that time forth forevermore the continental divisions of the earth will, in a measure, lose those conditions of time and distance which now mark their relations...The Atlantic has dried up and we become in reality as well as wish, one country." --*Times*



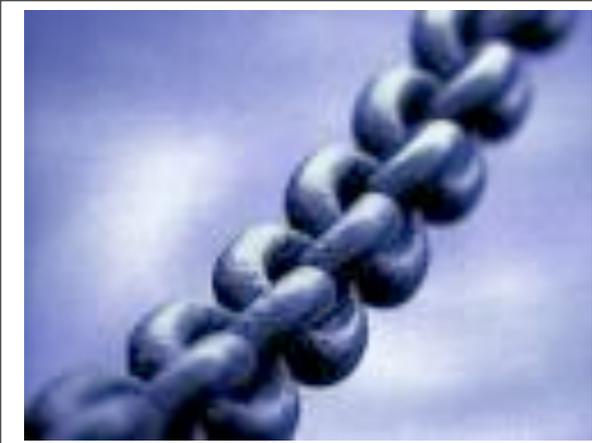
peace

"It is impossible that old prejudices and hostilities should longer exist, while such an instrument has been created for the exchange of thought between all the nations of the earth."

-- Charles Briggs & Augustus Maverick,
The Story of the Telegraph, 1858

"Steam was the first olive branch offered to us by science. Then came the still more effective olive branch--this wonderful electric telegraph, which enables any man who happens to be within reach of a wire to communicate instantaneously with his fellow men all over the world."

-- Ambassador Thornton, 1858
I3-HofI3-CR 56



and moral progress

"facilitating Human Intercourse and producing Harmony among Men and Nations ... [I]t may be regarded as an important element in Moral Progress"

-- *Daily Chronicle* [Cincinnati] 1847

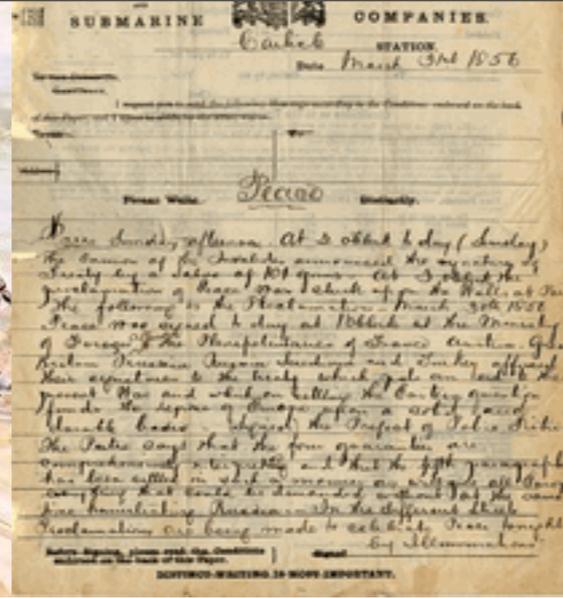
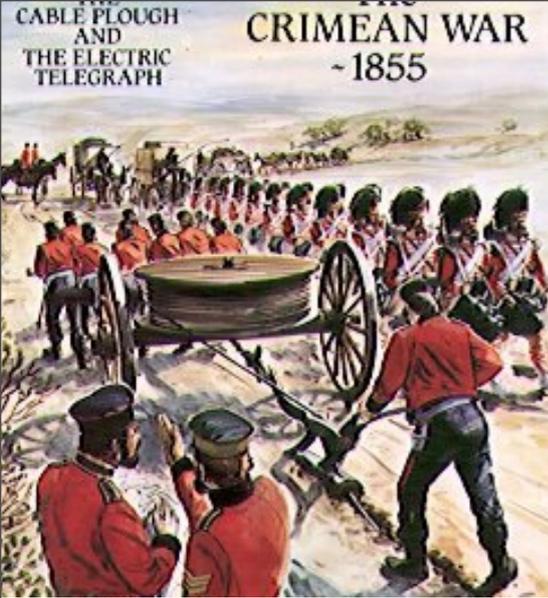
"the hand of progress beckons

a rivet is loosened from the chains of the oppressed"

--*Commercial and Financial Chronicle*, 1865.

"the great chain that will bring all civilized nations into instantaneous communication...the most potent of all the means of civilization, and the most effective in breaking down the barriers of evil prejudice and custom"

--*Hunt's Merchants' Magazine*, 1868



limits to open communication

Crimean War, 1855

"The steamer and the electric telegraph made the blood of England beat quicker in every heart, when our newspapers recorded, on the 13th of November, the most sanguinary and heroic battle of modern times, fought in the Crimea only a week previous."

--Charles Knight, *Knowledge is Power*, 1855

"The press and the telegraph are enemies we had not taken into account"

--Earl of Clarendon, British Foreign Secretary



Otto von Bismarck
1815-1898

(REUTER'S TELEGRAMS.)

DECLARATION OF WAR BY FRANCE AGAINST PRUSSIA.

FRANCE.

PARIS, JULY 15.

The French Legislature assembled at 1 o'clock this afternoon, when a communication was simultaneously made by the Government to the Senate and the Corps Legislatif explaining the situation of affairs and terminating by a Declaration of War against Prussia. The Government announced that this declaration is precipitated by the circular of the King to the Prussian agents abroad, which, firstly, confirms the affront to M. Benedetti; secondly, refuses to guarantee the renunciation of Prince Leopold of Hohenzollern; and thirdly, restores to him his liberty to accept the crown of Spain. The *Constitutionnel* publishes an extraordi-

a war caused
by telegram

Bismarck & the Ems telegram

His Majesty [having told Count Benedetti that he was awaiting news from the Prince,] **has decided** [with reference to the above demand] **not to receive Count Benedetti again, but only to let him be informed through an aide-de-camp that his Majesty** [had now received from the Prince confirmation of the news which Benedetti had already received from Paris and] **had nothing further to say to the ambassador.**



4458 gemeinsam
 17149 Friedensschluß.
 14471 ©
 6706 reichlich
 150 finanziell
 12224 Unterstützung
 6929 und
 14991 Einverständnis
 7382 andererseits.
 1565/7 2a/3
 67893 Mexico.
 14218 in
 36477 Texas
 5870 ©
 17553 neu
 67893 Mexico.
 5870 ©
 5454 AR
 16102 IZ
 15217 ON
 22801 A

war again

Zimmerman tel

We intend to begin ..
 submarine warfare. We
 .. to keep the United
 States neutral.
 In the event of this
 we make Mexico a prop
 ally
 on the following basis
 together, make peace
 generous financial su
 understanding on our
 Mexico is to reconque
 r territory in Texas, N
 Arizona.

GERARD IS HONOR GUEST

**Envoy Sees Cordial Relations Be-
 tween Germany and U. S.**

TELEGRAM SENT TO PRESIDENT

**Banqueters at Berlin Cheer Amba-
 sador When He Tells of Good Feel-
 ing That Exists—German Officials
 Take Same View and Von Gwinner
 Calls Gerard "Peace Dove."**

Berlin, Jan. 7.—"Never since the be-
 ginning of the war have the relations
 between Germany and the United States
 been as cordial as now."

received, Mexico, Jan 17, 1917



4458 gemeinsam
 17149 Friedensschluß.
 14471 ©
 6706 reichlich
 50 finanziell
 12224 Unterstützung
 6929 und
 14991 Einverständnis
 7382 andererseits.
 1565/7 Pa/3
 67893 Mexico.
 14218 in
 36477 Texas
 5870 ©
 17553 neu
 67893 Mexico.
 5870 ©
 5454 AR
 16102 IZ
 15217 ON
 22801 A

war again

Zimmerman tel

We intend to begin ..
 submarine warfare. We
 .. to keep the Unite
 neutral.
 In the event of this
 we make Mexico a prop
 alliance
 on the following basi
 together, make peace
 generous financial su
 understanding on our
 Mexico is to reconque
 territory in Texas, N
 Arizona.

GERARD IS HONOR GUEST

**Envoy Sees Cordial Relations Be-
tween Germany and U. S.**

TELEGRAM SENT TO PRESIDENT

**Banqueters at Berlin Cheer Amba-
sador When He Tells of Good Feel-
ing That Exists—German Officials
Take Same View and Von Gwinner
Calls Gerard "Peace Dove."**

Berlin, Jan. 7.—"Never since the be-
ginning of the war have the relations
between Germany and the United States
been as cordial as now."

**GERMAN PLOT TO LINK JAPAN AND MEXICO
IN ALLIANCE OF WAR AGAINST AMERICA.**



4458 gemeinsam
 17149 Friedensschluß.
 14471 ©
 6706 reichlich
 50 finanziell
 12224 Unterstützung
 6929 und
 14991 ein vs.
 7382 aus
 15657 Mes
 67893 in
 14218 Tea
 36477 @
 5870 an
 17553 Mes
 67893 ©
 5870 AR
 5454 12
 16102 01
 15217 A
 22801

war again

PLOT AWAKENS CONGRESS

Party Spirit Engulfed in Patriotic Zeal to Back Wilson.

SENATE DEBATE WAXES HOT

Republicans and Democrats Assail Stone, Insisting on Asking President's Source of Facts.

FEW DETAILS DISCLOSED

GERARD IS HONOR GUEST

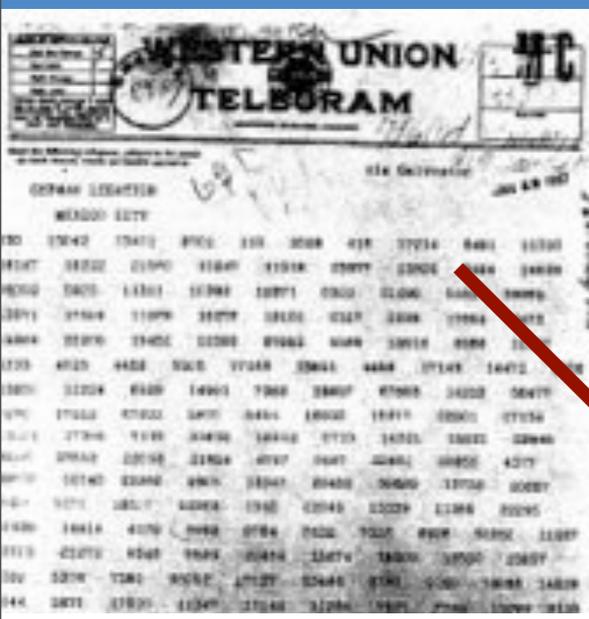
Envoy Sees Cordial Relations Between Germany and U. S.

TELEGRAM SENT TO PRESIDENT

Banqueters at Berlin Cheer Ambassador When He Tells of Good Feeling That Exists—German Officials Take Same View and Von Gwinner Calls Gerard "Peace Dove."

Berlin, Jan. 7.—"Never since the beginning of the war have the relations between Germany and the United States been as cordial as now."

GERMAN PLOT TO LINK JAPAN AND MEXICO IN ALLIANCE OF WAR AGAINST AMERICA.



4458
17149
14471
6706
12224
12224
12224

gemeinsam
Friedensschluß.
○
reichlich
finanziell
unterstützung
und
ein vsr.
aus
i.
Mes
in
Tca
@
An
Mes
@
AR
12
01
A

war again

ZIMMERMANN EXPLAINS.

Herr ZIMMERMANN paints what all admirers here and in Germany will consider a damning picture of the contrast between American and German methods. "Our behavior contrasts considerably with the behavior of the Washington Government," he truly says. And he explains. When he instructed the German Minister to Mexico to propose an attack on the United States by Mexico and Japan, it was done with the kindest regard for our feelings; it was done with the utmost secrecy. Washington, with a coarseness which revolts him, obtained and published these confidential instructions—"in a way that was not unobjectionable."

PLOT AWAKENS CONGRESS

Party Spirit Engulfed in Patriotic Zeal to Back Wilson.

SENATE DEBATE WAXES HOT

Republicans and Democrats Assail Stone, Insisting on Asking President's Source of Facts.

FEW DETAILS DISCLOSED

GERARD IS HONOR GUEST

Envoy Sees Cordial Relations Between Germany and U. S.

TELEGRAM SENT TO PRESIDENT

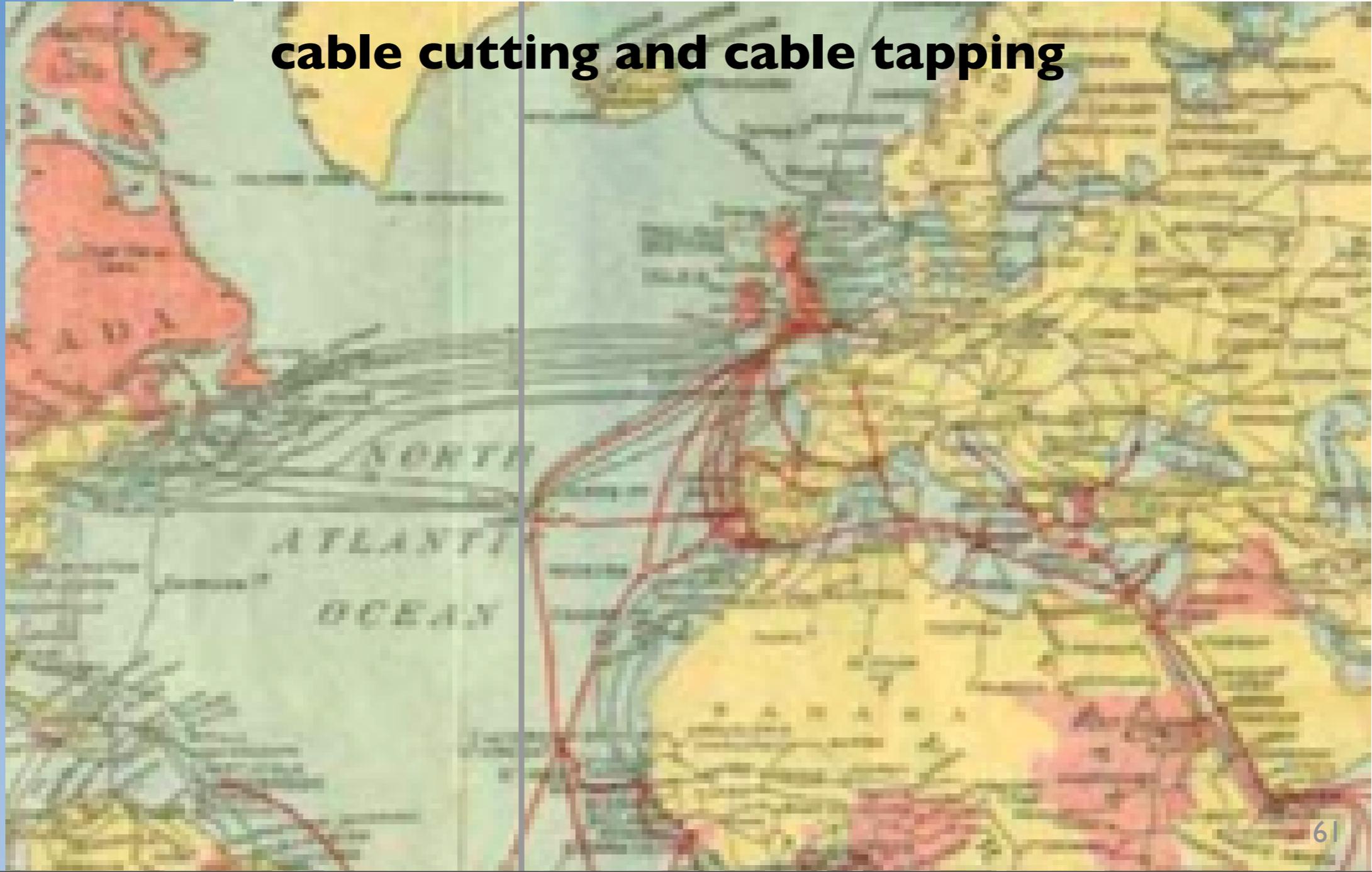
Banqueters at Berlin Cheer Ambassador When He Tells of Good Feeling That Exists—German Officials Take Same View and Von Gwinner Calls Gerard "Peace Dove."

Berlin, Jan. 7.—"Never since the beginning of the war have the relations between Germany and the United States been as cordial as now."

GERMAN PLOT TO LINK JAPAN AND MEXICO IN ALLIANCE OF WAR AGAINST AMERICA.

"If information is power, whoever rules the world's telecommunication system commands the world"
--Peter Hugill

open to all?





Albert Speer
1905-1981

coming up:
propaganda

bias of communication

"The telephone, the teleprinter and the wireless made it possible for orders from the highest levels to be given directly to the lowest levels, where, on account of the absolute authority behind them, they were carried out uncritically ... Former dictatorships needed collaborators of high quality even in the lower levels of leadership, men who could think and act independently. In the era of modern technique an authoritarian system can do without this ... The means of communication alone permit it to mechanise the work of subordinate leadership. As a consequence a new type develops: the uncritical recipient of orders"

--Albert Speer, Nuremberg trials.

overview



wishing on
technology

free market

inventing
inventors?

eyewitness
enthusiasm

communications
revolution
changing
world

communications
"revolution"

speculation of freedom

"The telegraph being alike open to *all* puts the whole community upon a par, and will thus '*head off*' the most adroit speculators, because they will not have the power to *monopolize* intelligence

Public Ledger and Daily Transcript
(Philadelphia), 1846



Samuel Colt
1814-1862

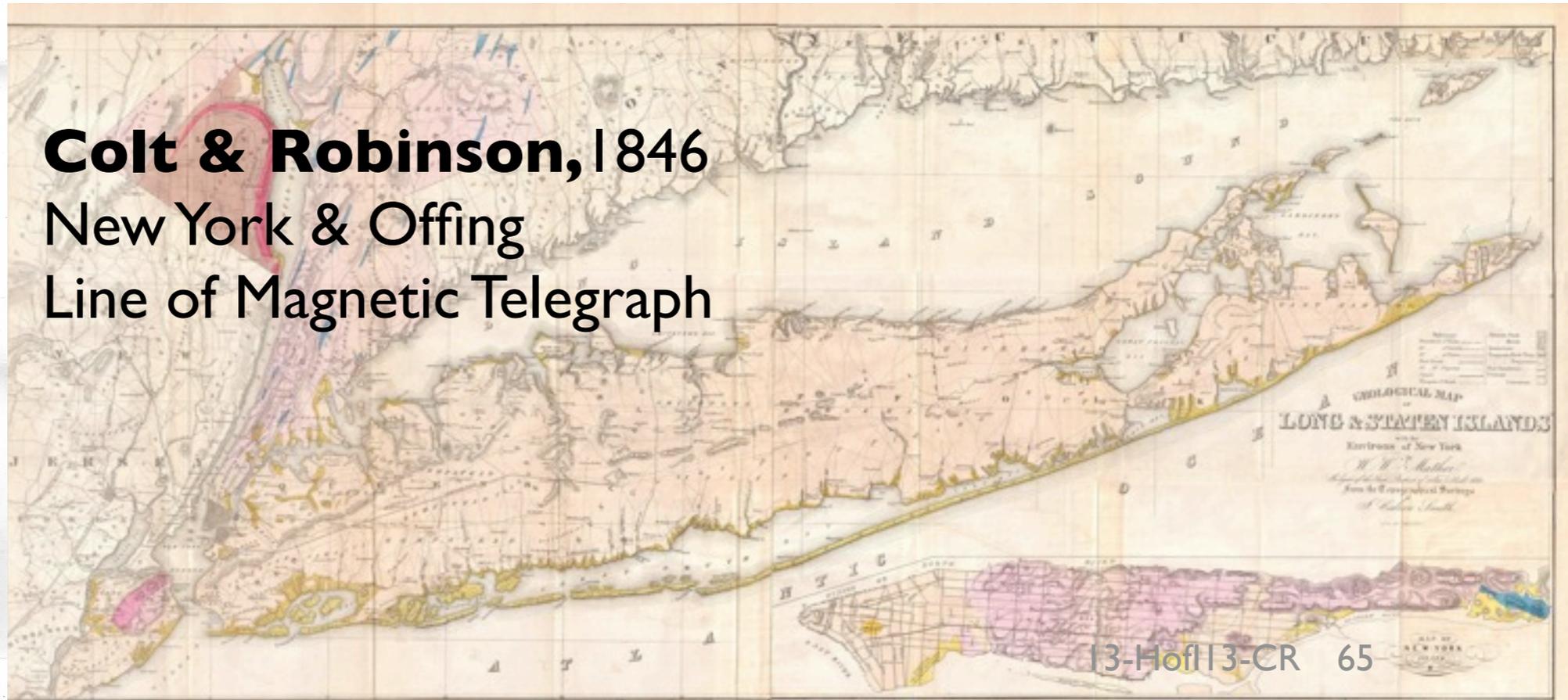
speculative alliances

patented revolver, 1835



Colt & Morse, 1843
naval mine

Colt & Robinson, 1846
New York & Offing
Line of Magnetic Telegraph



13-Hof13-CR 65

NEW YORK AND OFFING LINE OF MAGNETIC TELEGRAPH.

TO THE PUBLIC.

THE undersigned, SAMUEL COLT and WILLIAM ROBINSON, are the proprietors of the right to construct and use exclusively the ELECTRO-MAGNETIC TELEGRAPH, invented by PROFESSOR SAMUEL F. B. MORSE, from New York City, to any point or points on the shores of Long Island and New Jersey.

We have already succeeded in crossing the bed of the East River at Hurlgate with our Telegraph wires in a leader tube, and have completed and put into successful operation a line of Telegraph as far as the lower Bay, for Commercial purposes, and deeming it of great importance to our City, not only in a commercial, but in a humane point of view, that these lines be extended, at as early a period as possible, along the entire coast of Long Island to Montauk Point, and along the New Jersey Coast, to the Capes of Delaware, making Stations and Observatories at prominent points, such as the Highlands of Neversink, Squam Beach, Barnegat and Cape May, on the New Jersey shores, at Rockaway shoals, Fire Island Inlet, and Montauk Point, on the shores of Long Island, and such other places, on both shores, where there are inlets or dangerous shoals, as may be found necessary, keeping at the several Stations suitable Life, Surf, and other Boats, for the purpose of rendering all the relief possible to vessels in distress, saving of life, property, &c.

By the aid of instantaneous communication over the Electric Telegraph to the City, not only the tales of suffering and shipwreck can be told and relief furnished sooner than by any other means, but when not thus employed, and with the aid of suitable News Boats, all vessels from Foreign ports of later dates can be boarded and news of interest and importance to the Commercial community can be sent to the city in all weathers, night and day, with the quickness of thought. With a Boating establishment properly arranged at the outer stations, an Atlantic Steamer can be boarded and all her news of importance sent over the line of Telegraph hours before it can be known in New York by any other means that she is even on our coast. A Packet Ship may often be reported days before her arrival in our harbor.

In consequence of the amount of Capital requisite to carry out the above purposes being greater than the undesignated proprietors of the Telegraph have at their disposal, they applied to the Legislature of this State and have obtained a charter for a Joint Stock Association, with \$100,000 capital, to complete said lines of Telegraph, Boating Establishment, &c., and they feel warranted in asserting, that, independent of the great relief such an association may be to the distressed voyager, a judicious employment of commercial news furnished by this means, will, at an early day, not only pay all expenses and cost of constructing the several lines, but holding, as it does, the keys of trade of the greatest commercial city on the continent, must soon pay large dividends on the stock.

The cost of constructing the lines of Telegraph in a suitable manner will amount to \$150 per mile, and can be accomplished at all the points proposed to be reached, before cold weather, if commenced at an early day. The sources of revenue to the establishment, when in full operation, will be numerous: all vessels which arrive on the coast within the limits of these lines, it is proposed to board immediately, and report the news brought by them over the line of Telegraph to this city. It is the custom for owners and consignees of vessels to pay a small premium to the person first reporting the arrival of their vessels off the Harbor; the revenue from this source, estimating the amount of shipping which arrives annually at 400,000 tons, and allowing that only one-half a cent per ton is paid, would amount to \$3,000.

The Newspaper Press of this city keep afloat, in all, five news-boats for collecting commercial news in the lower Bay, at a cost of about \$1,500 each—making, in all, \$7,500. This duty will all be done by the Telegraphic news-boats quite as correctly, and sent over the lines of Telegraph with greater despatch than by any other means.

The income from subscribers to our news-room is at present at the rate of \$10,000 per annum, and may be greatly increased when the lines are extended to more distant points. We may safely calculate upon having this amount increased to \$20,000, as every person desiring early information from abroad must become a subscriber, and consult the Books of this room.

The income from owners of Vessels and Insurance Offices for assistance rendered vessels in distress—for early information given them of such facts—for saving property from wrecks, must every year be considerable, and may amount to large sums of money, other sources of revenue, such as private communications over the line from the various stations, may be added to the above estimates; but the great and principal source from which a profit will be derived, will be the Correspondence formed with Commercial Houses and the Newspaper Press in all parts of the Union, it being contemplated to dispatch all important information in every direction where persons will subscribe and pay for it. It is evident that the system of Telegraphing news is destined to supersede, in a great degree, the publication of commercial newspapers in this and other Northern cities. Who in New Orleans, for instance, would subscribe to New York newspapers, and wait eight or ten days for the receipt of commercial news brought by an Atlantic steamer, when they can be in possession of it in as many minutes by our Telegraphic Correspondence. We beg leave to state, in this connection, that contracts have already been made for constructing a continuous line to New Orleans, and in twelve or eighteen months it will be finished and in operation.

The Offing Telegraph Association, having exclusively all the Foreign news brought to this port either by ship or steamer, can instantly dispatch the same over the other Telegraphs to every city in the Union where the lines extend.

supersession & control

"It is evident that the system of Telegraphing news is destined to supersede in a great degree, the publication of commercial newspapers in this and other Northern cities."

"We may safely calculate . . . every person desiring early information from abroad must become a subscriber and consult the Books of [our news-room]"

--Colt & Robinson

NEW YORK AND OFFING LINE OF MAGNETIC TELEGRAPH.

TO THE PUBLIC.

The undersigned, SAMUEL COLT and WILLIAM ROBINSON, are the proprietors of the right to construct and use exclusively the ELECTRO-MAGNETIC TELEGRAPH, invented by PROFESSOR SAMUEL F. B. MORSE, from New York City, to any point or points on the shores of Long Island and New Jersey.

We have already succeeded in crossing the bed of the East River at Hurlgate with our Telegraph wires in a leaden tube, and have completed and put into successful operation a line of Telegraph as far as the lower Bay, for Commercial purposes, and deeming it of great importance to our City, not only in a commercial, but in a humane point of view, that these lines be extended, at as early a period as possible, along the entire coast of Long Island to Montauk Point, and along the New Jersey Coast, to the Capes of Delaware, making Stations and Observatories at prominent points, such as the Highlands of Neversink, Squam Beach, Barnegat and Cape May, on the New Jersey shores, at Rockaway shoals, Fire Island Inlet, and Montauk Point, on the shores of Long Island, and such other places, on both shores, where there are inlets or dangerous shoals, as may be found necessary, keeping at the several Stations suitable Life, Surf, and other Boats, for the purpose of rendering all the relief possible to vessels in distress, saving of life, property, &c.

By the aid of instantaneous communication over the Electric Telegraph to the City, not only the tales of suffering and shipwreck can be told and relief furnished sooner than by any other means, but when not thus employed, and with the aid of suitable News Boats, all vessels from Foreign ports of later dates can be boarded and news of interest and importance to the Commercial community can be sent to the city in all weathers, night and day, with the quickness of thought. With a Boating establishment properly arranged at the outer stations, an Atlantic Steamer can be boarded and all her news of importance sent over the line of Telegraph hours before it can be known in New York by any other means that she is even on our coast. A Packet Ship may often be reported days before her arrival in our harbor.

In consequence of the amount of Capital requisite to carry out the above purposes being greater than the undersigned proprietors of the Telegraph have at their disposal, they applied to the Legislature of this State and have obtained a charter for a Joint Stock Association, with \$100,000 capital, to complete said lines of Telegraph, Boating Establishment, &c., and they feel warranted in asserting, that, independent of the great relief such an association may be to the distressed voyager, a judicious employment of commercial news, furnished by this means, will, at an early day, not only pay all expenses and cost of constructing the several lines, but holding, as it does, the keys of trade of the greatest commercial city on the continent, must soon pay large dividends on the stock.

The cost of constructing the lines of Telegraph in a suitable manner will amount to \$150 per mile, and can be completed at all the points proposed to be reached, before cold weather, if commenced at an early day. The sources of revenue to the establishment, when in full operation, will be numerous: all vessels which arrive on the coast within the limits of these lines, it is proposed to board immediately, and report the news brought by them over the line of Telegraph to this city. It is the custom for owners and consignees of vessels to pay a small premium to the parties first reporting the arrival of their vessels off the Harbor; the revenue from this source, estimating the amount of shipping which arrives annually at 800,000 tons, and allowing that only one-half a cent per ton is paid, would amount to \$3,000.

The Newspaper Press of this city keep afloat, in all, five news-boats for collecting commercial news in the Lower Bay, at a cost of about \$1,500 each—making in all \$7,500. This duty will all be done by the Telegraphic news-boats quite as correctly, and sent over the lines of Telegraph with greater despatch than by any other means.

The income from subscribers to our news-room is at present at the rate of \$10,000 per annum, and may be greatly increased when the lines are extended to more distant points. We may safely calculate upon having this amount increased to \$20,000, as every person desiring early information from abroad must become a subscriber, and consult the Books of this room.

The income from owners of Vessels and Insurance Offices for assistance rendered vessels in distress—for early information given them of such facts—for saving property from wrecks, must every year be considerable, and may amount at times to very large sums of money; other sources of revenue, such as private communications over the line from the various stations, may be added to the above estimates; but the great and principal source from which a profit will be derived, will be the Correspondence formed with Commercial Houses and the Newspaper Press in all parts of the Union, it being contemplated to dispatch all important information in every direction where persons will subscribe and pay for it. It is evident that the system of Telegraphing news is destined to supersede, in a great degree, the publication of commercial newspapers in this and other Northern cities. Who in New Orleans, for instance, would subscribe to New York newspapers, and wait eight or ten days for the receipt of commercial news brought by an Atlantic steamer, when they can be in possession of it in as many minutes by our Telegraphic Correspondence. We beg leave to state, in this connection, that contracts have already been made for constructing a continuous line to New Orleans, and in twelve or eighteen months it will be finished and in operation.

The Offing Telegraph Association, having exclusively all the Foreign news brought to this port either by ship or steamer, can instantly dispatch the same over the other Telegraphs to every city in the Union where the lines extend.

LONDON,
TUESDAY, FEBRUARY 22, 1814.

Never, perhaps, was greater agitation produced in the Metropolis by any foreign news, than was yesterday occasioned by a fraud of the most impudent and various description. An express arrived from Dover,

speculative precedents



Admiral Cochrane

"Napoleon is dead" 1814

Omnium from 26-1/2 to 33

Stendhal

The Telegraph, 1835

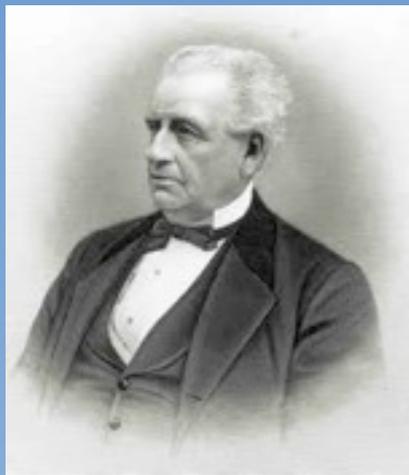
Thomas Cochrane
1775-1860



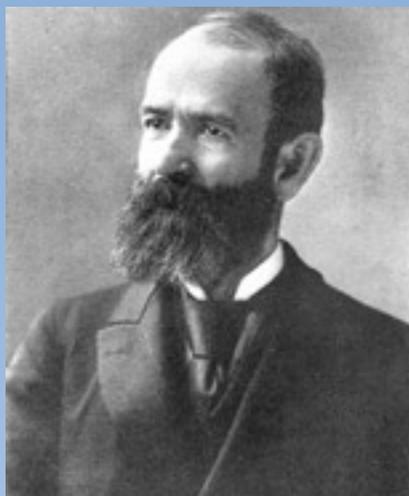
speculative control in action



James Gordon Bennett
1795–1872



Hiram Sibley
1807–1888



Jay Gould
1836–1892

New York Associated Press

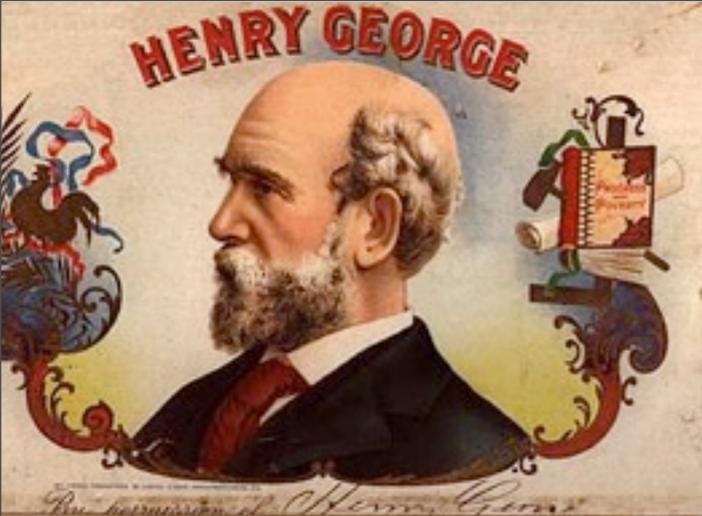
James Gordon Bennett
New York Herald

Moses Beach
New York Sun

consolidation:

Sibley's Western Union, 1855

Gould's Western Union, 1881



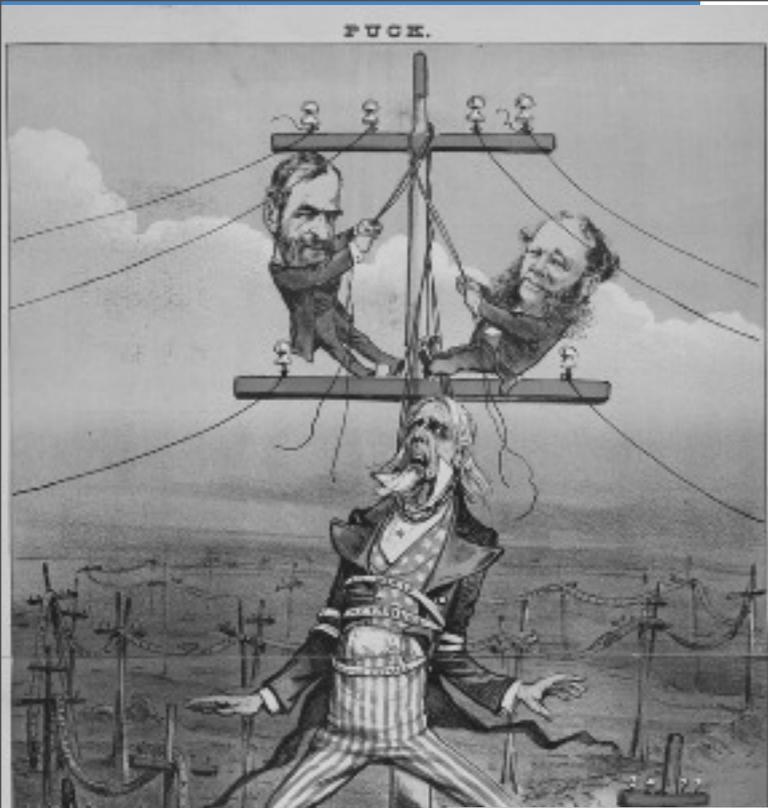
The Western Union Telegraph Company
AND THE CALIFORNIA PRESS.

telegraph neutrality?

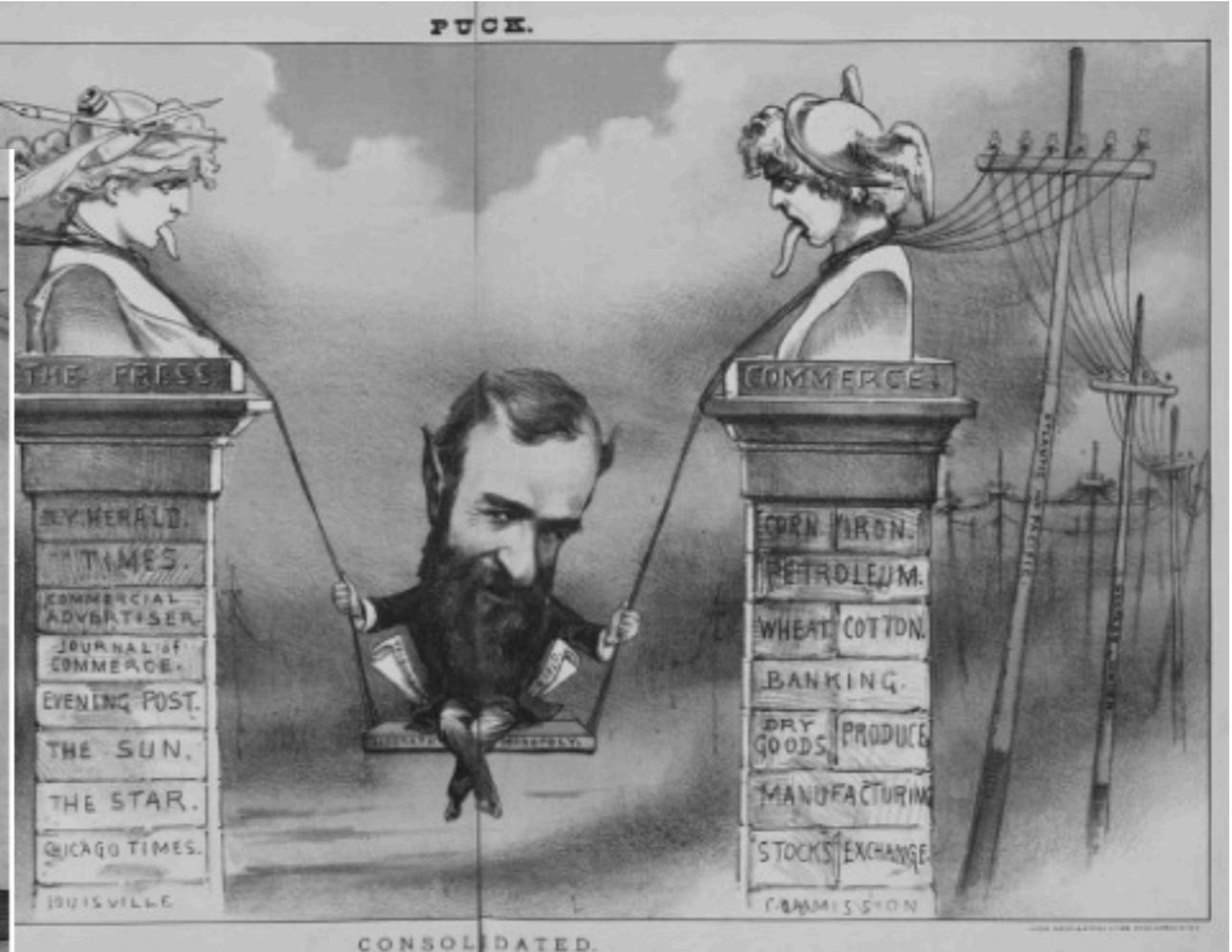
"The newspapers of California, which hardly dare notice the incorporation of a rival company, and dare not endorse a public measure of which you disapprove, are subservient enough already ... you could destroy a private business ... more completely than earthquake or conflagration could do the work the Telegraph, which has become a necessity of individual and social life, is not merely private property ... it is a great public trust to be administered for the benefit of the whole community. ... This crushing of newspapers may be a small thing to the Great Western Union--mere pastime to its managers"

--Henry George, 1869

13-Hof113-CR 69



contemporary views



Richard John, "Robber Barons Redux: Antimonopoly Reconsidered." *Enterprise & Society* (2012) 13(1) 1-38

competitive markets?

Western Union

"the first industrial monopoly, swallowed up its last two rivals in 1866. [O]nly in the United States and Canada did the telegraph remain under private control after 1868"

-- Du Boff, "The Telegraph...Technology & Monopoly", 1984

natural monopoly?

Ma Bell

1876 Bell Telephone

1885 AT&T

1894 Bell Patents expire

1899 AT&T incorporates Bell

1910 AT&T buys Western Union

1913 Kingsbury (monopoly) Commitment

1915 AT&T San Francisco

1927 transatlantic telephone

1982 break up: the Baby Bells

reassembly?

Ameritech - now AT&T

Bell Atlantic - now Verizon

Bell South - now AT&T

Pacific Telesis - now AT&T

Southwestern Bell - now AT&T

US West - independent

2011 AT&T attempts to buy Verizon, T-Mobile

coming up

7 Mar: The Telegraph in China

Guest Lecture: Tom Mullaney, Stanford University