

technological determinism

history of information

January 24, 2012



administrative issues?

waitlist

signup

assignments

deadline, submission

argument, not summary: ATQ

cite

proofread

slides

<http://courses.ischool.berkeley.edu/i103/slides/3-Hofl12-Determinism-PD.pdf>

in the news

January 24, 2012



in the news

January 24, 2012

"He shall from time to time give the Congress information on the State of the Union."



in the news

January 24, 2012

"He shall from time to time give the Congress information on the State of the Union."

"something exceedingly ridiculous ... first excludes a man from the means of information yet empowers him to act in cases where the highest judgement is required."

--Tom Paine, *Common Sense*, 17??



the state of the class ...



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what is it?



Heilbroner's view:

"The hand-mill gives you society with the feudal lord; the steam-mill society with the industrial capitalist."

--Karl Marx

The Poverty of Philosophy, 1847





what is it?



Heilbroner's view:

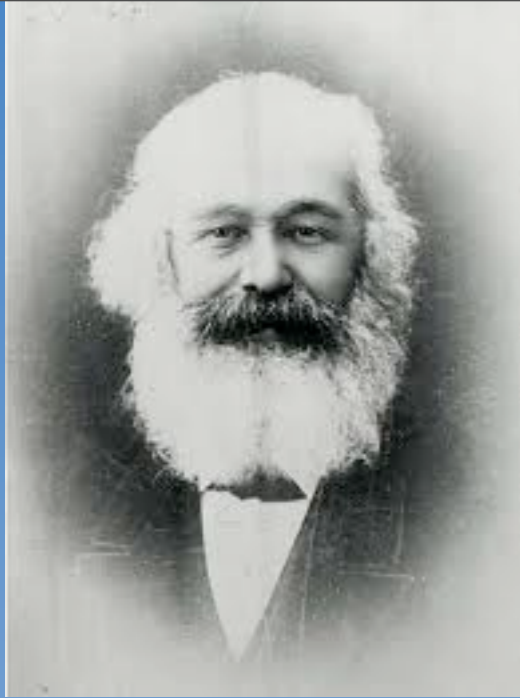
"The hand-mill gives you society with the feudal lord; the steam-mill society with the industrial capitalist."

--Karl Marx

The Poverty of Philosophy, 1847



the Internet gives you?



Karl Marx
1818-1883

in full

"[M]en make cloth, linen, or silk materials in definite relations of production. . . . these definite social relations are just as much produced by men as linen, flax, etc. **Social relations are closely bound up with productive forces.** In acquiring new productive forces men change their mode of production; and in changing their mode of production, in changing the way of earning their living, they change all their social relations. The hand-mill gives you society with the feudal lord; the steam-mill society with the industrial capitalist."



what is it?

it's the claim that

"[N]ew technologies are discovered, by an essentially internal process of research and development, which then sets the conditions for social change and progress. Progress, in particular, is the history of these inventions, which 'created the modern world' The effects of the technologies, whether direct or indirect, foreseen or unforeseen, **are as it were the rest of history.**"

-- Raymond Williams,

Television, Technology, and Cultural Form, 1974

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modern versions

"Kirkpatrick insists that for Zuckerberg, Facebook has never been about building an advertising platform. 'The idea that any of that is done for commercial reasons in order to advantage their opportunities to sell advertising, he considers insulting,' Kirkpatrick says. 'This is the Zuckerberg people really need to understand, the guy who is doing it **to change the world**, not to make money.'"

<http://newsfeed.time.com/2010/06/08/>

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back to revolution

TG DAILY

Lloyds TSB Premier International Account
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HOME TECHNOLOGY SCIENCE ENTERTAINMENT BUSINESS UNBALA

Arab Spring really was social media revolution

Posted on September 13, 2011 - 06:00 by **Kate Taylor**

After analyzing more than three million tweets, gigabytes of YouTube content and thousands of blog posts, a new study has concluded that the Arab Spring truly was fueled by social media.



"Our evidence suggests that social media carried a cascade of messages about freedom and democracy across North Africa and the Middle East, and helped raise expectations for the success of political uprising," says Philip

Howard, an associate professor in communication at the University of Washington.

general argument

"When technology shifts, it bends the culture"

-- Kevin Kelly,

"Becoming Screen Literate,"

New York Times 2008

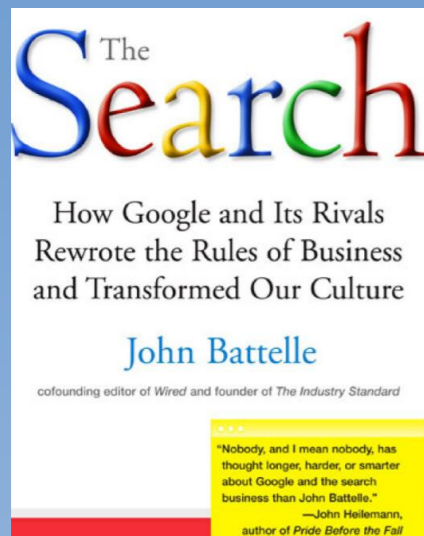


bending: which way?

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way."

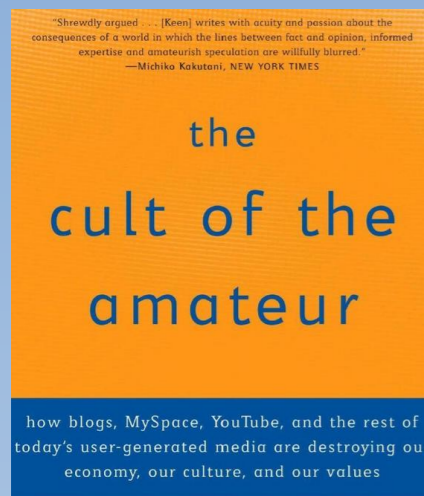


cultural contortions



John Battelle, *The Search:*

*How Google and Its Rivals Rewrote the Rules
... and Transformed our Culture, 2005*



Andrew Keen, *The Cult of the Amateur:*

How Today's Internet is Killing our Culture, 2006

in the news



Enlarge this image

Canada needs to reinvent CRTC, outgoing head says

GORDON PITTS

OTTAWA— From Monday's Globe and Mail
Published Sunday, Jan. 22, 2012 7:00PM EST

s



Tweet 62

Recommend 4

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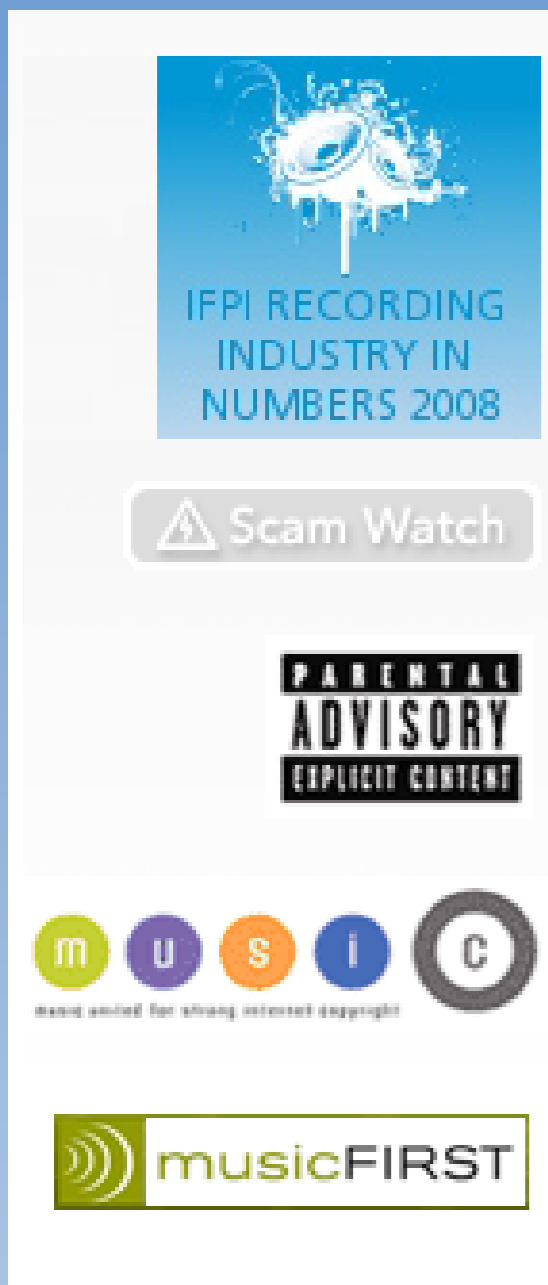
3.ca
NED.

After five stormy years as Canada's chief communications watchdog, Konrad von Finckenstein is departing with a warning to his successor: Internet and wireless technology has disarmed federal regulators of their weapons to protect cultural identity.

all going direct to heaven?

"Universal access to the world's written knowledge [whereby] any digital work *could* be made available for experiencing to anyone, anytime, anywhere in the world .. the dream of universal access to *quality* digital works dangles just beyond reach."

-- Mark Stefik,
"Letting Loose the Light," 1995



all going direct the other way



"We have locked up most of twentieth-century culture and done it in a particularly inefficient and senseless way."

-- James Boyle, *The Public Domain*, 2008



bending: how determined?

SOPA / PIPA



The image shows a black and white protest page for Wikipedia. On the left, there is a large, stylized 'W' logo. Below it, the word 'WIKIPEDIA' is written in a serif font, with 'WIKIBEDIA' written below it in a similar font but with a different style. On the right side, the text reads: 'Imagine a World Without Free Knowledge'. Below this, a paragraph explains that for over a decade, Wikipedia has spent millions of hours building the largest encyclopedia in human history, and that the U.S. Congress is considering legislation that could fatally damage the free and open Internet. For 24 hours, to raise awareness, they are blacking out Wikipedia. A link 'Learn more.' is provided. Below this, it says 'Contact your representatives.' and 'Your ZIP code:' followed by a text input field and a 'Look up' button.

W

WIKIPEDIA
WIKIBEDIA

**Imagine a World
Without Free Knowledge**

For over a decade, we have spent millions of hours building the largest encyclopedia in human history. Right now, the U.S. Congress is considering legislation that could fatally damage the free and open Internet. For 24 hours, to raise awareness, we are blacking out Wikipedia. [Learn more.](#)

Contact your representatives.

Your ZIP code: **Look up**

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Heilbroner -- machines did it: 20%

Williams -- no they didn't: 40%



maybe; maybe not: 40%

RW: not inevitable

Both authors acknowledged the interconnectedness of the two positions, but I thought Williams more effectively discredited technological determinism by demonstrating the conscious, evolutionary nature of technological development. Williams argued that, according to the technological determinist standpoint, both technology and its consequences were “in effect accidental”. Williams’ argument, though very reflective of the social constructionist school of thought, took the middle road by describing technologies as “symptoms of change of some other kind”—a happy medium of sorts. Williams’ article was successful in the way it articulated the cultural intentions that contributed to the advent of the television. In his article, he explained how social and political needs predated the invention of the individual technologies that later contributed to the development of television (ie. the printing press, photograph, and radio). In this way, he demonstrated that these inventions were “not inevitable results, but conscious decisions” on the parts of modern society, developers, and people in power, and that technology evolved to respond to these needs.

--Elizabeth Amato

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RW: not improving

Another error in Heilbroner's argument is akin to one that high school biology students often make when learning about evolution. He assumes, as adolescent biologists do about life, that technology is always improving and moving towards some glorified end. This, however, is not the case. How else to explain the triumph of the internal combustion engine over the electric in the early 20th century (a little discussed "format war" that with different results might have saved us much of the current pressure of climate change)? Technology follows economics (hence, too, the seemingly anachronistic existence of sweat shops around the world). As Williams argues, people wanted an electronic form of theatre, so they got TV. TV wasn't—as Heilbroner might insist—something that was preordained on some timeline of technology.

--Adam Susaneck

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RH: technology and labor

I feel like [Heilbroner's] accounts, and connecting technology to a broader form of society and work over time is very true, especially in the work about technological innovation and a cheap labor force. That specific point is very much evidenced today in the manufacturing industries of modern China (for the most part, but there are exceptions) and its contrast to the high tech car manufacturing of German and American models which rely heavily on robots and other very specialized technology. And while, Heilbroner's presentation wasn't the most effective in my mind, his mention of the *post hoc ergo propter hoc* fallacy is something that I feel William's actually falls into when talking about the developments of TV.

--Michael Ball

RH: labor force

Heilbroner articulates the most convincing argument because while Williams states that technological advancements occur as a by-product of societal needs, Heilbroner instead most persuasively argues that technology molds society by imparting certain restrictions including the composition of labor force and hierarchical organization of work. Thus, societal needs cannot be the driving force for technological advancements.

-- **Dow-Yi Kou**

RW & RH: cycle

Both Heilbroner and Williams describe the two aspects of the relationship between technology and society in a way I describe as a cycle. I don't believe that either one is the "correct" one, as they both make valid arguments. I do think, however, that they are intertwined, depending on the technology and the era. I can see the pattern that Heilbroner recognizes and for some cases, including the ones that he states, are in fact deterministically advancing in such a way that it's unlikely that the forward stage would have happened without the stage before. Where I think Williams comes in is that I think Williams' theories on need and demand play a part in determining what that next stage will be. In another sense, I believe Heilbroner describes a general trend in a macronomic scale (not necessarily in terms of materials but also in terms of how society uses said inventions) while Williams describes cases in a micronomic scale. Both go hand in hand to some degree.

--Jay Kim

predictions

As both wrote before the Age of Information supposedly began, their predictions to the scope of the computer and the television are remarkable. The new implications of the computer in the scientific world are as Heilbroner would predict, but computers also have created change in the industrial, social, economic, and political sectors as well. As for the television, its social potential has been realized and beyond as programming has extended into all walks of life - from Snooki to Steven Hawking, everyone has a half-hour segment. Both Heilbroner and Williams live up to their claims that future technological advances can be (narrowly) foreseen. Perhaps, with their predictions in mind, we can survey the technology of today and predict the world of tomorrow.

-- Karen Scruggs

predictions

Williams predicts that social problems will arise with television in the future because of its mainstream importance on everyday life, combined with the power that broadcast institutions have over influencing cultural expectations and financial institutions. Williams' prediction of the future seems more plausible than Heilbroner's because problems of broadcasting investment and the contradiction of "centralized transmission and privatized reception" give the power of disseminating information to very few, for example Rupert Murdoch's disturbingly large control over media worldwide.

--Nicole Murphy

going soft

soft determinism

Heilbroner recognizes and for some cases, including the ones that he states, are in fact deterministically advancing in such a way that it's unlikely that the forward stage would have happened without the stage before.

--Jay Kim



how determined?



necessary vs sufficient

"Is industrial technology the necessary and sufficient condition for capitalism?"

-- Heilbroner



going soft?

- the handmill* produces feudalism?
- couldn't have feudalism without handmill?
- with handmill superseded, feudalism was in trouble?

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why worry?

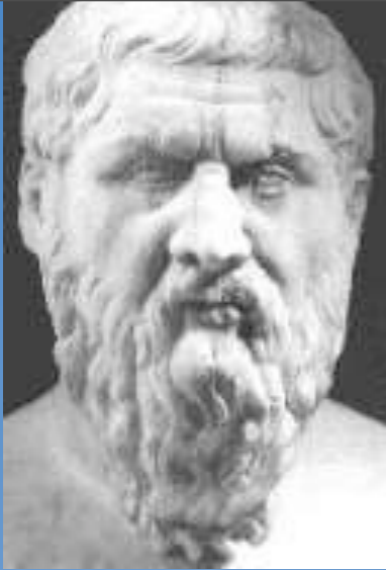
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Plato
427–347 bce

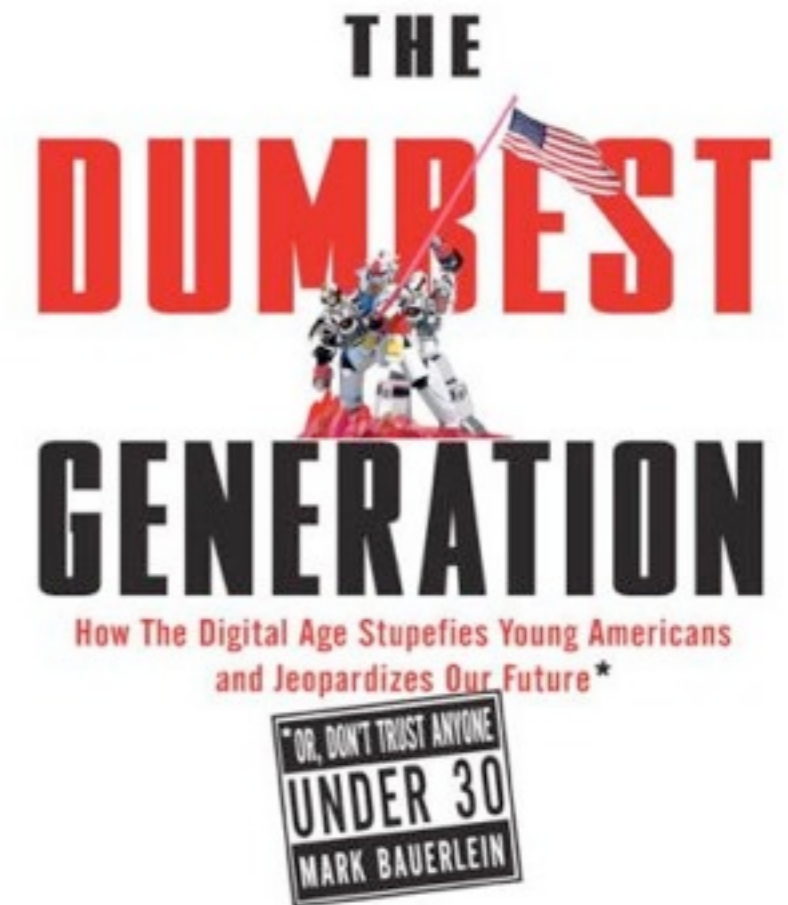
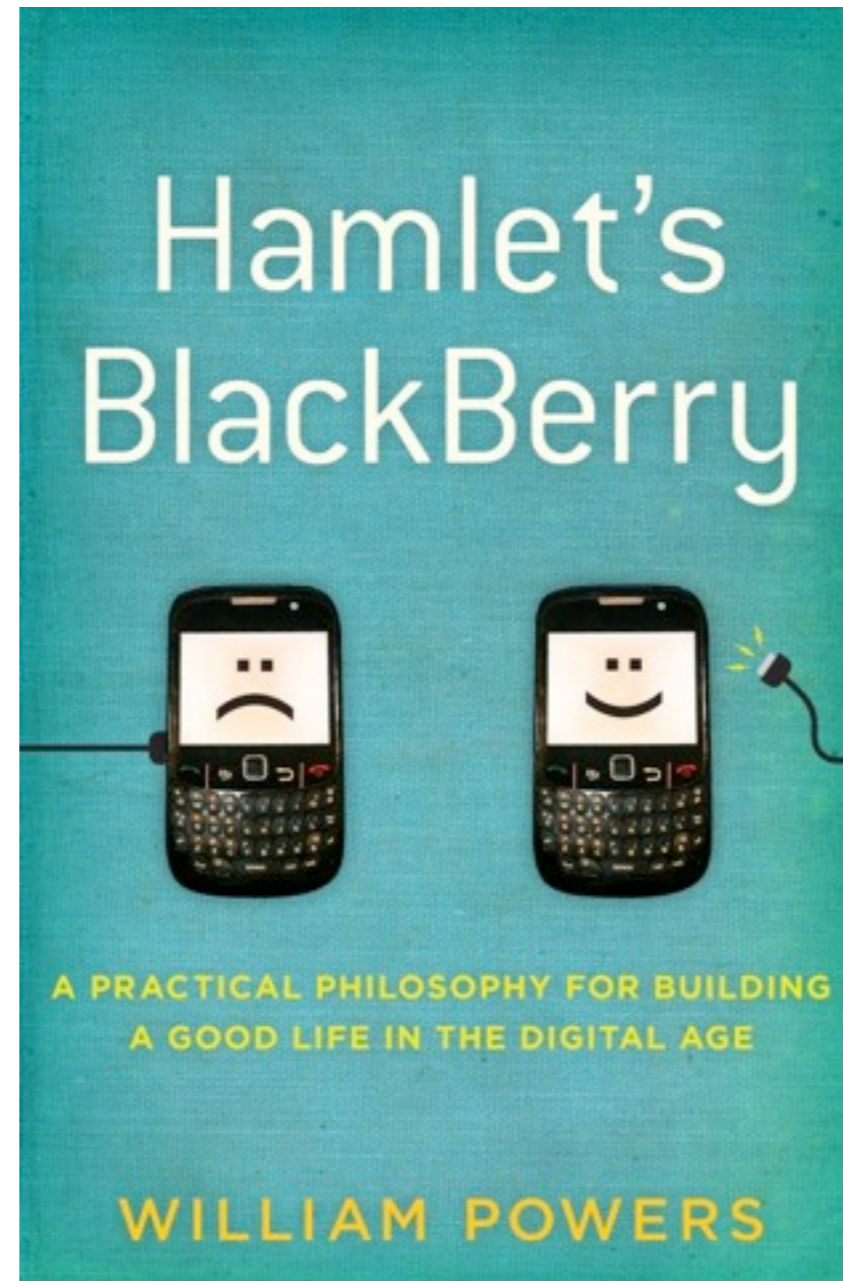
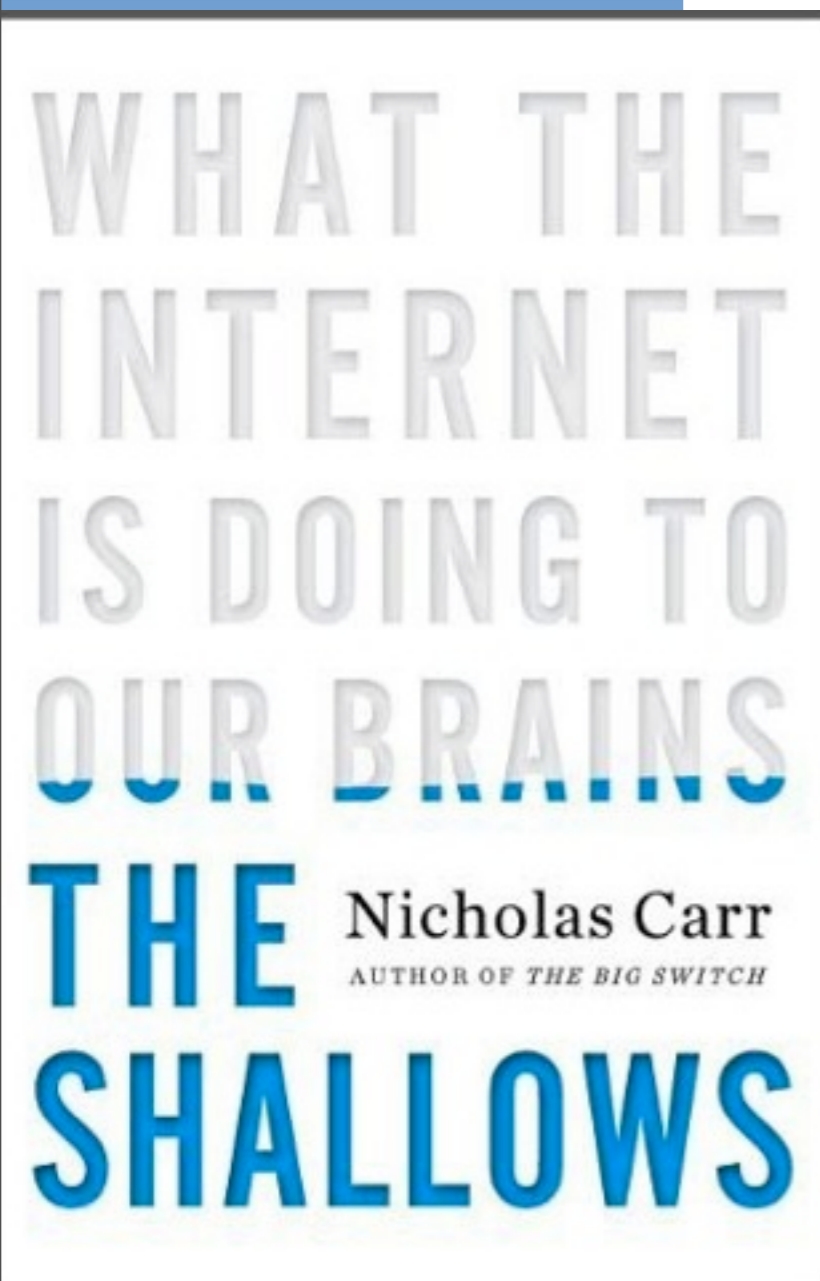
ancient history

"Those who acquire [writing] will cease to exercise their memory and become forgetful; they will rely on writing to bring things to their remembrance by external signs instead of on their own internal resources."

-- Plato, *Phaedrus*, c. 370 bc

coming up: manuscript culture, Feb 2

not so ancient ...



educational promises

"One can predict that in a few more years, millions of schoolchildren will have the personal services of a tutor as well-informed as Aristotle."

--Patrick Suppes,
Scientific American, 1966

you should be so lucky

"Children in the public schools will be taught practically everything by moving pictures. Certainly they will never be obliged to read history again."


-- D.W. Griffith, 1915



and this week

Apple Introduces Tools to (Someday) Supplant Print Textbooks


By BRIAN X. CHEN and NICK WINGFIELD | January 19, 2012, 10:17 AM |  128


 FACEBOOK

 TWITTER

 LINKEDIN

 SHARE

 E-MAIL

 PRINT

9:02 p.m. | Updated

Apple wants students to stop lugging around backpacks full of heavy textbooks and to switch to the iPad instead.

On Thursday the company introduced three free pieces of software revolving around education. It released iBooks 2, a new version of its electronic bookstore, where students can now download textbooks; iBooks Author, a Macintosh program for creating textbooks and other books; and iTunes U, an app for instructors to create digital curriculums and share course materials with students.

Digital textbooks made for iBooks can display interactive diagrams, audio and video. The iBooks Author app includes templates made by Apple, which publishers and authors can customize to suit their content.




Chris Ratcliffe/Bloomberg News

tho' ...


Reinventing Textbooks: A Hard Course


By DAVID STREITFELD | January 19, 2012, 5:34 PM | 16

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A technology company announces plans to reinvent higher education by encouraging the creation of a new kind of textbook. Students will learn better, faster, cheaper. They will be spurred to new triumphs that will finally reverse the persistent decline in American education and the American way of life.



Case Western, Pace, Princeton, Reed College, Arizona State and other colleges were involved in trial programs to make the Kindle DX available to students. The textbook publishers Cengage Learning, Pearson and Wiley, which were described as representing more than 60 percent of the United States higher education textbook market, were to begin offering textbooks through the Kindle Store within a few months.

It seemed like yet another instance of the way the tech industry explodes antiquated business models. But the plan largely fizzled. As Reed reported in early 2010 [in a post-mortem](#) on its trial, “students and faculty in Reed’s Kindle study were unanimous in reporting that the Kindle DX — in its current incarnation — was unable to meet their academic needs.”

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going back



Francis Bacon
1561-1626

"Printing, gunpowder and the compass ...
whence have followed innumerable changes, in
so much that no empire, no sect, no star
seems to have exerted greater power and
influence in human affairs than these
mechanical discoveries."

-- Francis Bacon, *Novum Organum*, 1620

still looking back



Thomas Carlyle
1795-1881

"He who first shortened the labor of copyists by device of movable types was disbanding hired armies, and cashiering most kings and senates, and creating a whole new **democratic** world: he had invented the art of printing."

--Thomas Carlyle,
Sartor Resartus, 1833

coming up: print revolution, Feb 7

"creating a
whole new
democratic
world"

--Carlyle

wishing up a grand future

what and when?

"at bottom, this invention might suffice to make possible **the establishment of democracy among a large population** ... no reason why it would not be possible for all the citizens of France to communicate their will ... in such a way that this communication might be considered instantaneous."

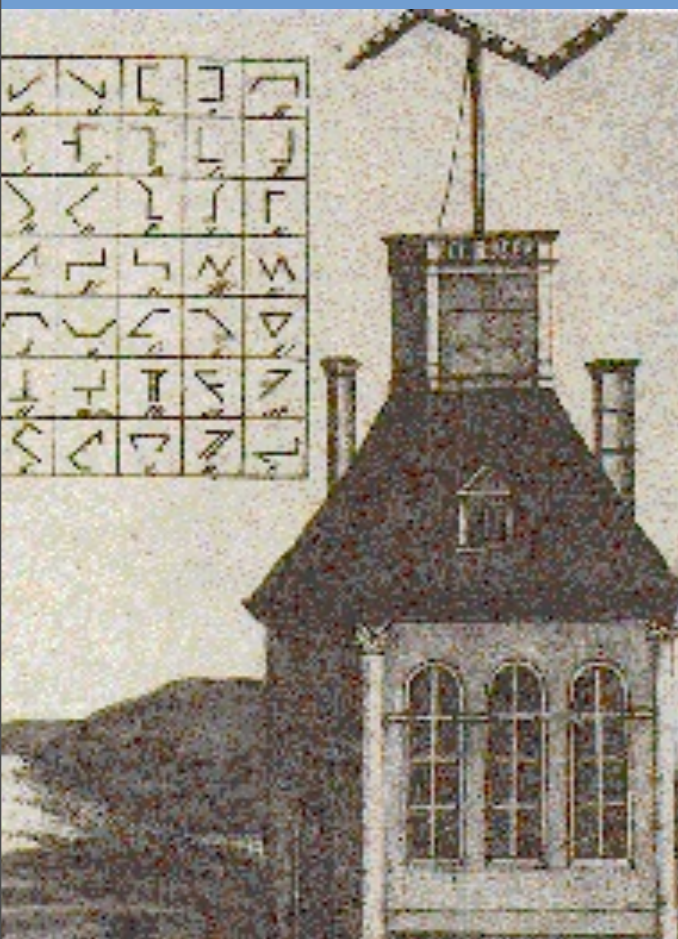
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whole new
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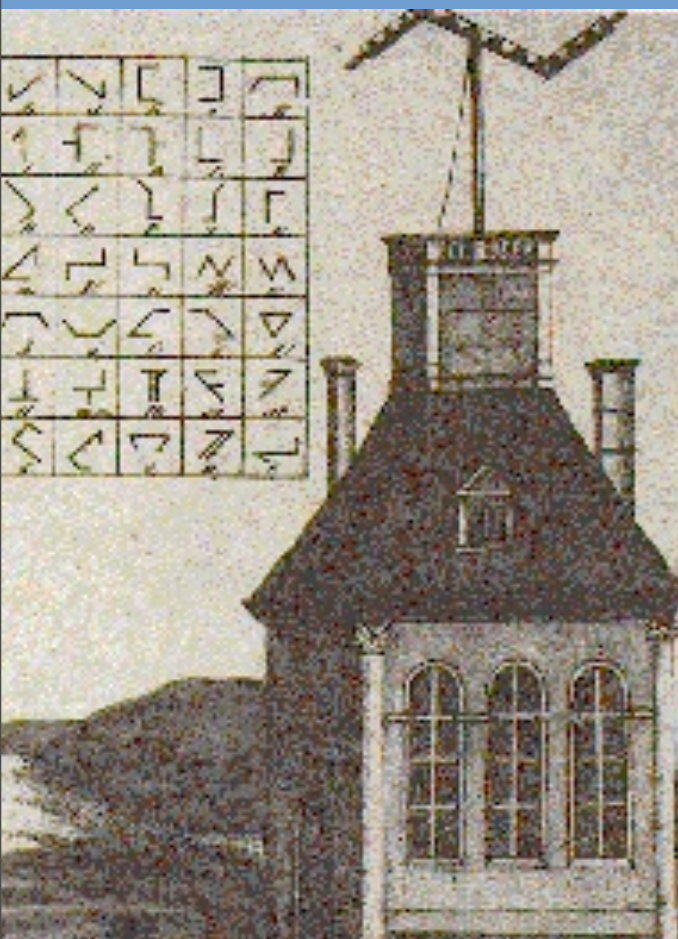
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-- Alexandre Vandermond, 1795

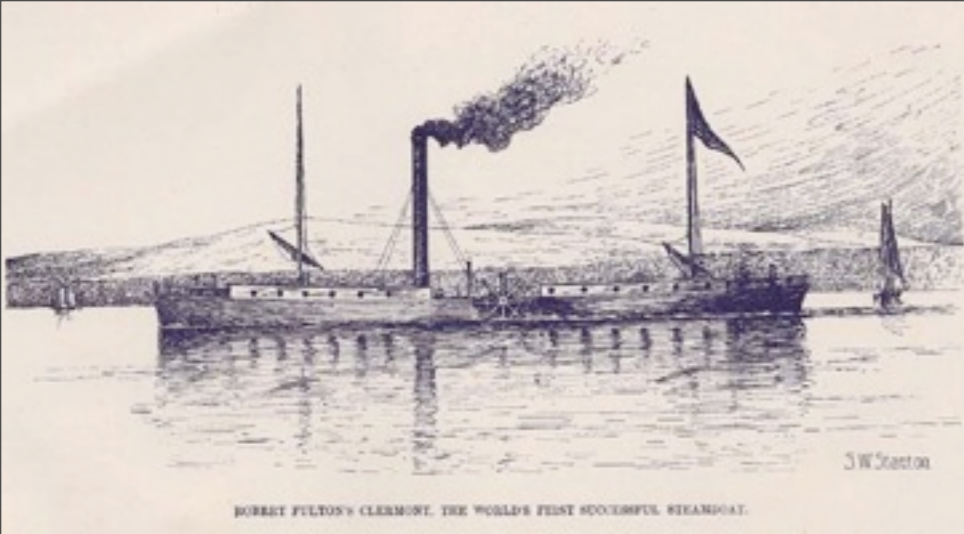


what and when?

"The progress of human knowledge has accomplished within a century revolutions in the character and condition of the human race so beautiful and sublime as to excite in every observing mind feelings mingled with the deepest admiration and astonishment. No age has illustrated so strongly as the present the empire of mind over matter and the ability of man to rise ... above obstacles with which nature has surrounded him. ... It is a happy privilege we enjoy of living in an age, which for its inventions and discoveries, its improvement in intelligence and virtue, stands without a rival in the history of the world ..."--*Scientific American*, 1841

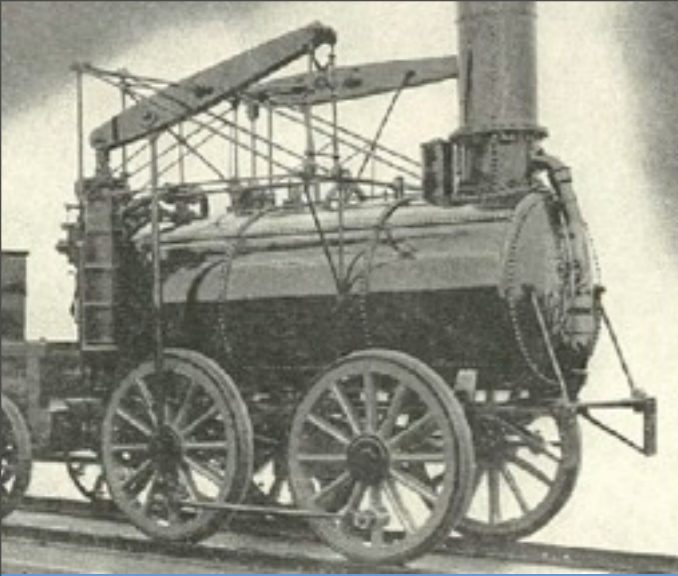
what and when?

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Look at our splendid steamboats.



what and when?

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Look at our splendid steamboats.



Stourbridge Lion
Delaware & Hudson
1829

America sublime

"Objects of exalted power and grandeur elevate the mind that seriously dwells on them, and impart to it greater compass and strength. Alpine scenery and an embattled ocean deepen contemplation, and give their own sublimity to the conceptions of beholders. The same will be true of our system of Rail-roads. Its vastness and magnificence will prove communicable **and add to the standard of the intellect of our country.**"

-- *New England Magazine* 1832



the scientific american tradition

"And the Iron Horse, the earth-shaker, the fire-breather, which tramples down the hills, which outruns the laggard winds, which leaps over the rivers, which grinds rocks to powder and breaks down the gates of the mountains, **he too shall build an empire and an epic. Shall not solitudes and waste places cry for gladness at his coming?**"

--*Scientific American*, 1849



"les distances
vont disparaître
et les extrémités
du Monde se
rapprocher."

sea to shining sea

and tech to shining tech

"the almost complete annihilation of time
and space between the distant antipodal
points of the American continent ...
produced by the construction of the
Pacific Railroad"

-- John Wesley Clampitt,
Echoes from the Rocky Mountains, 1888





wishful thinking?

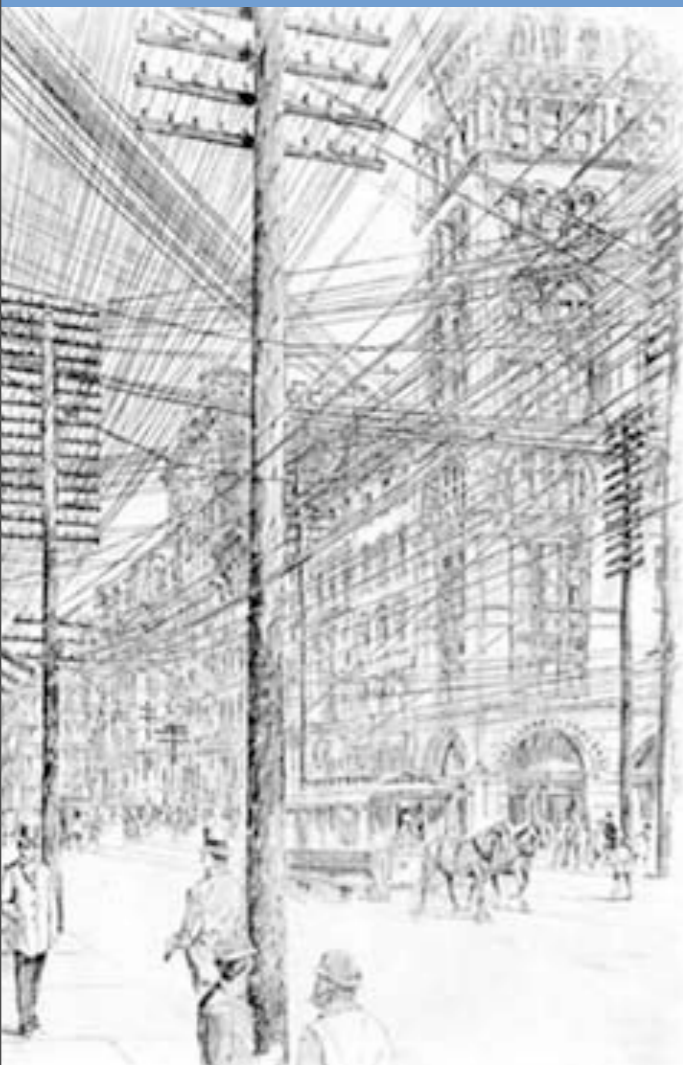


"Ye Gods, annihilate but space and time,
And make two lovers happy."

1728



60 years on



"A line of telegraph ... from London to Kurrachee, and from thence to every part of India, ... intelligence and commands be daily and hourly communicated with the speed of lightening ... in this **virtual annihilation of time and space** in the communications between England and her distant possessions will be more than realised"

--*Blackwood's Edinburgh Magazine*, 1857



moving on

too cheap to meter?

"nuclear domestic power packs leading to a social revolution in our own time, a society without class, privilege, cities, nations or geographical boundaries ... **a single, uniformly spread community, sharing as neighbors the whole surface of the earth.**"

-- R.M. Langer, 1940.



"communication
might be
considered
instantaneous."

electrical sublime



Marshall McLuhan
1911-1980

"Electric circuitry has overthrown the regime of 'time' and 'space' and pours upon us instantly and continuously concerns of all other men. It has reconstituted dialogue on a global scale. Its message is Total Change, ending psychic, social, economic, and political parochialism. . . . Ours is a brand-new world of allatonceness. 'Time' has ceased, 'space' has vanished. **We now live in a *global village* . . . a simultaneous happening.**"

-- Marshall McLuhan et al.,

Medium is the Message, 1967

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looking back

we become the inevitable product of progress

"Westward the course of empire takes its way"



looking about

machines reveal hierarchy

from religious superiority
to technological superiority

"advanced"

"un-/less-/developed"

if it got us here . . .

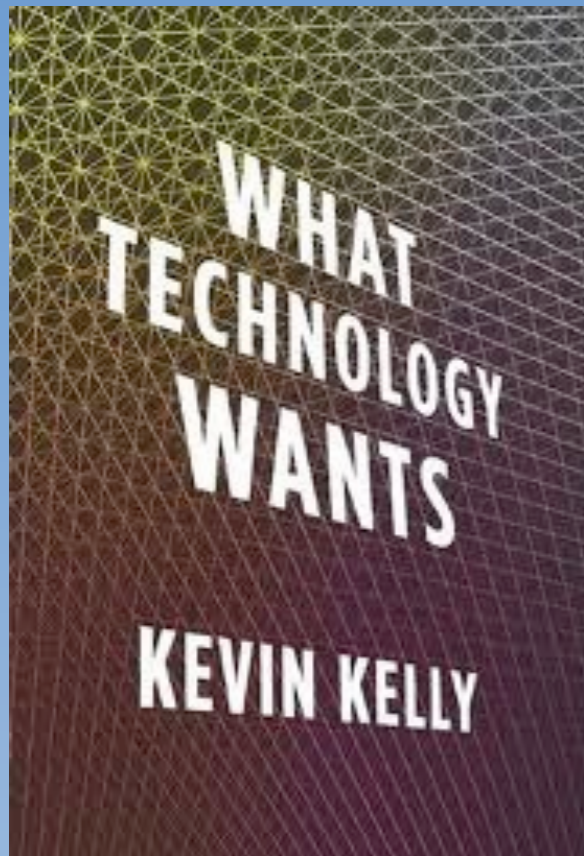


easy or accurate?

"these technologies are inevitable ...
Inevitability is not a flaw.
it ... makes predictions easier."

--Kevin Kelly,

What Technology Wants, 2010





clearing the clutter

Le Monde

supersession

"ceci [the book] tuera cela [the church]."

-- Victor Hugo, *Notre-Dame de Paris*, 1831

"le journal [newspaper] tue le livre, comme le livre a tué l'architecture."

-- Théophile Gautier, *Mademoiselle Maupin*, 1834

"Ceci tuera cela, le fer [les Halles] tuera la pierre [St. Eustache]."

--Emile Zola, *Le Ventre de Paris*, 1874



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resigning ourselves to ...?

"Science explores,

Technology executes,

Man conforms"

Chicago World's Fair 1933



tech's to blame

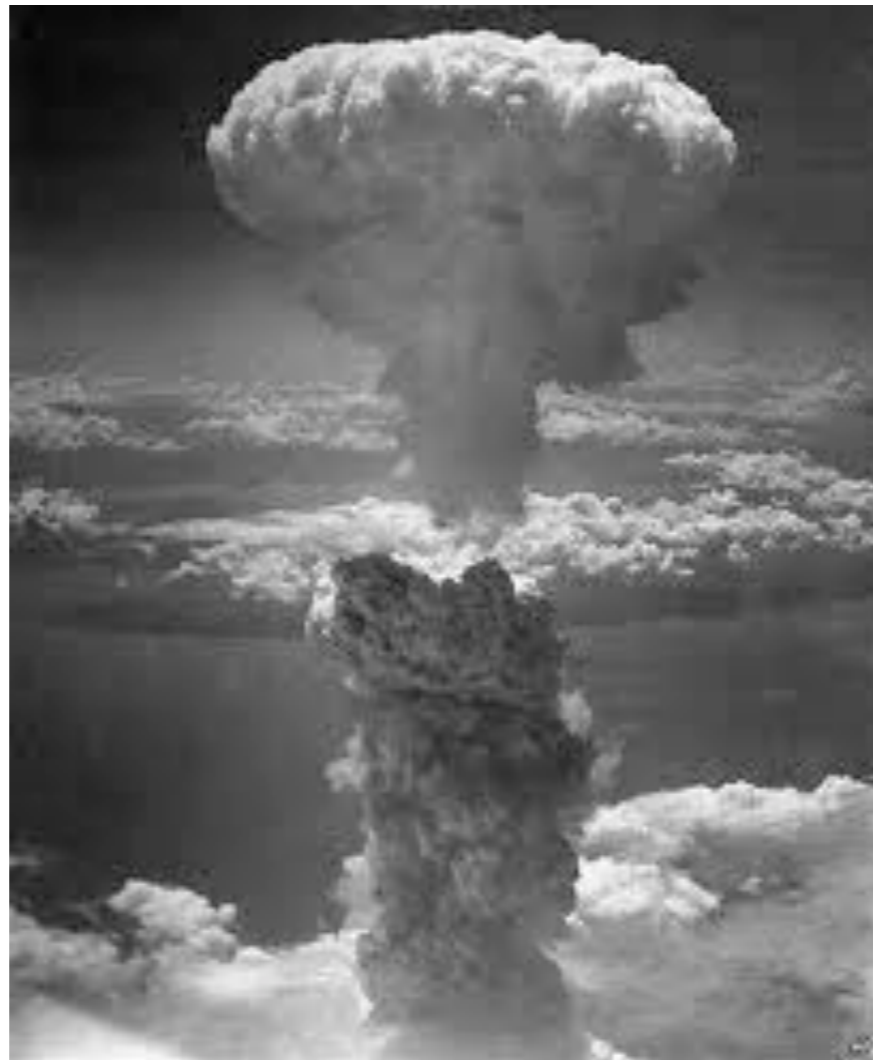
"And for the rest, those swarms of black, and brown, and dirty-white, and yellow people, who do not come into the new needs of efficiency? Well, the world is not a charitable institution, and I take it they will have to go. The whole tenor and meaning of the world, as I see it, is that they have to go."

-- H.G. Wells, *Anticipations*, 1901

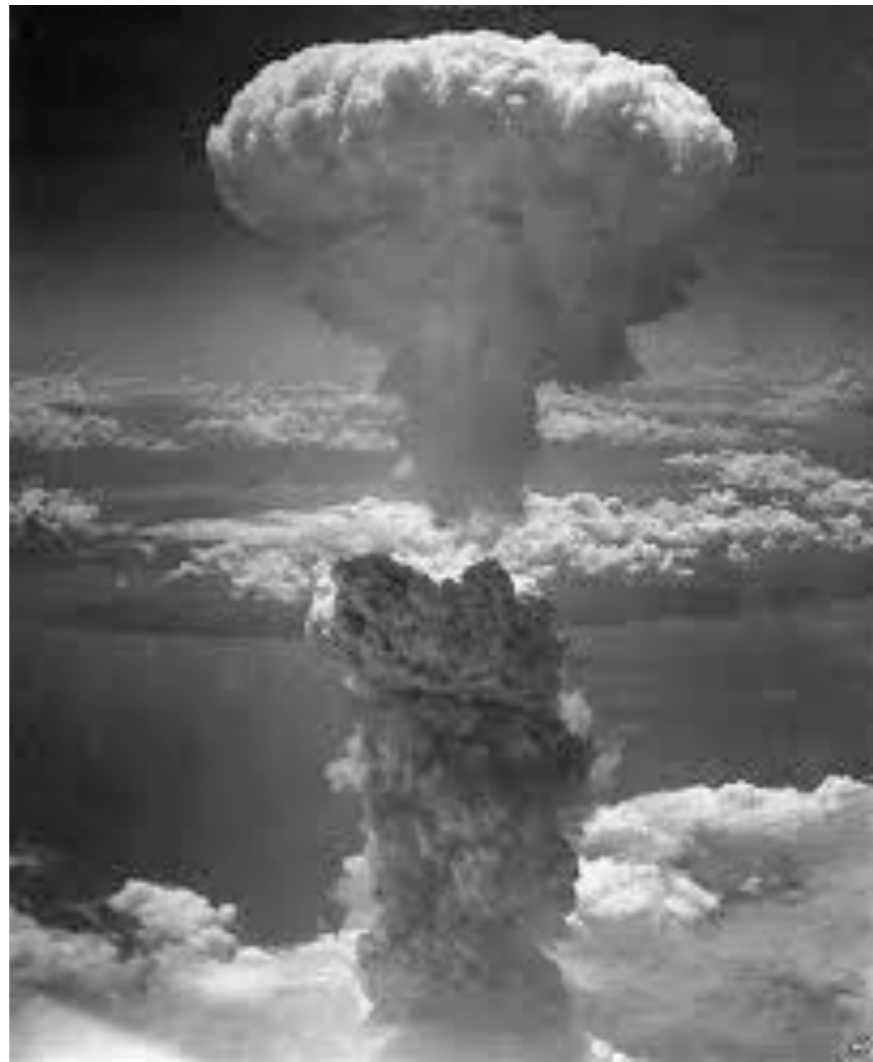


H.G. Wells
1866-1946

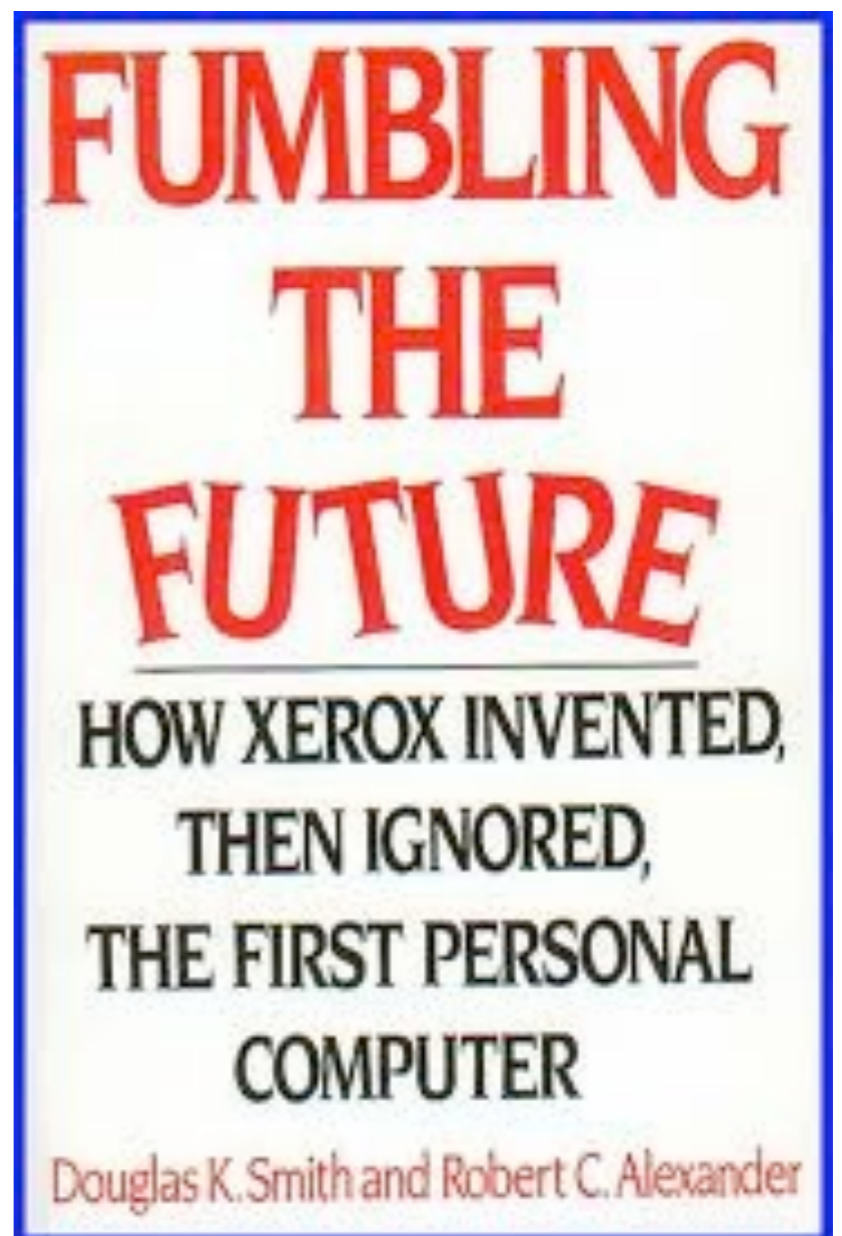
backing the wrong horse



backing the wrong horse



leaving it all to the horse



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social embedding

coming up: radio, telephone, television



proclaiming supersession

There are persons who can write not illegibly in pencil, but are as enigmatical as Rufus Choate or Horace Greeley when they take up the pen. There are persons too lazy to resort to ink and pen who can conquer their besetting sin enough to make a few dabs with a pencil. Living must have been more laborious before the pencil age. Blue pencil, red pencil, what should we do without them? Yet writing with one's own hand seems to be disappearing, and the universal typewriter may swallow all. Librarians of a century or two hence may be searching for the last reference to pencils.

New York Times
1938

the new vs the old



59.4% - **Bicycle**

proclaiming supersession

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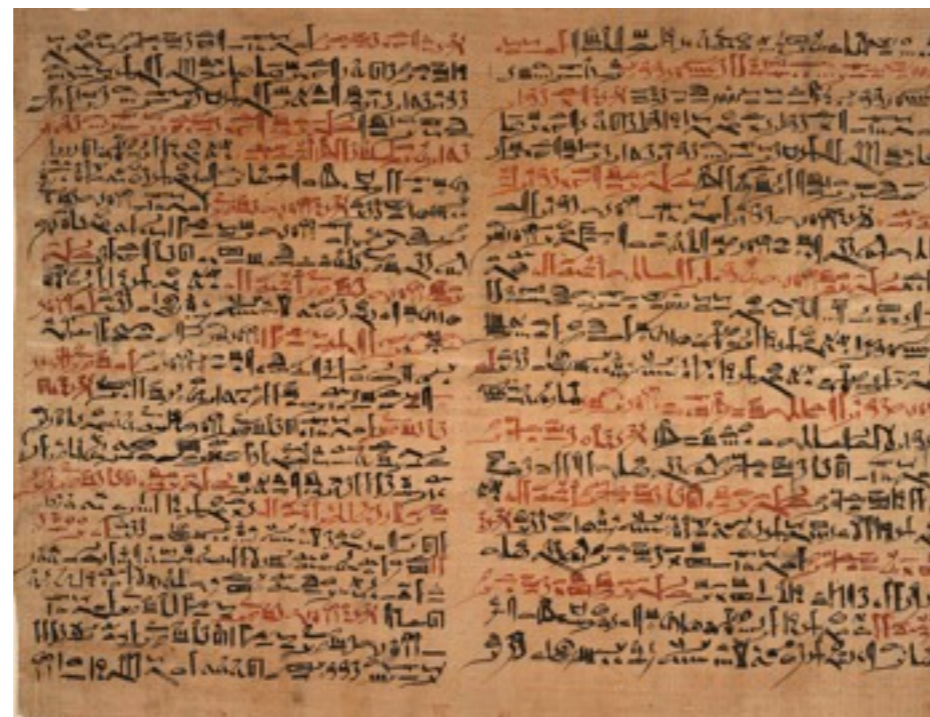


59.4% - **Bicycle**



trivializing the past

coming up:
manuscript culture



coming up: social implications

category mistakes



Grandfather:
Well, I finally finished my
doctoral thesis.



Woman:
Way to go, Gramps.



Grandfather:
Did my research at
Indiana University.

Woman:
Indiana?



Grandfather:
Yup. IBM took the
school's library...and
digitized it. So I could
access it over the Internet.

*She cocks her ear to take
this all in.*



Grandfather:
You know... It's a great time
to be alive.



Tag:
IBM. Solutions for
a small planet.

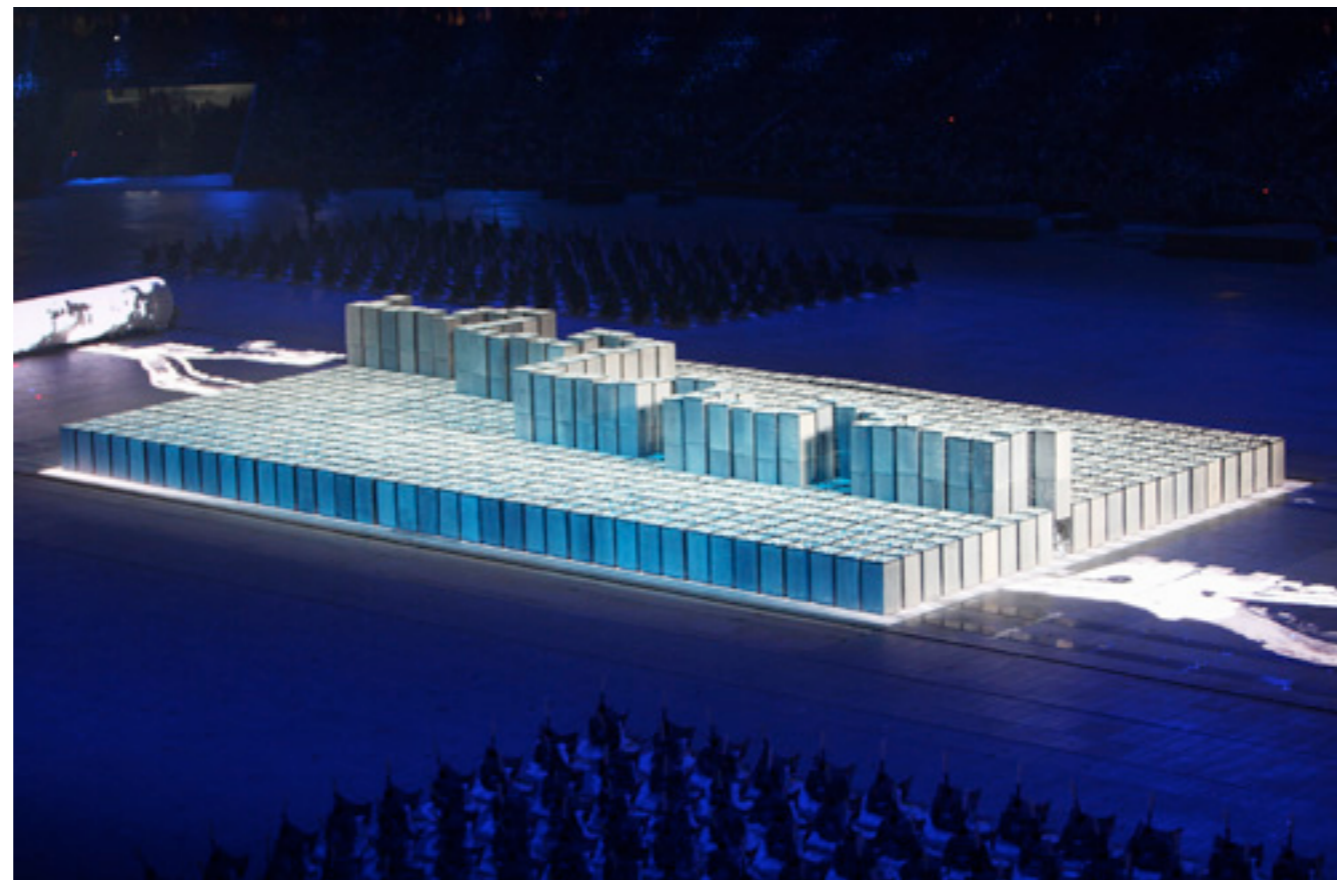
constraint vs resource

coming up: newspaper, telegraph



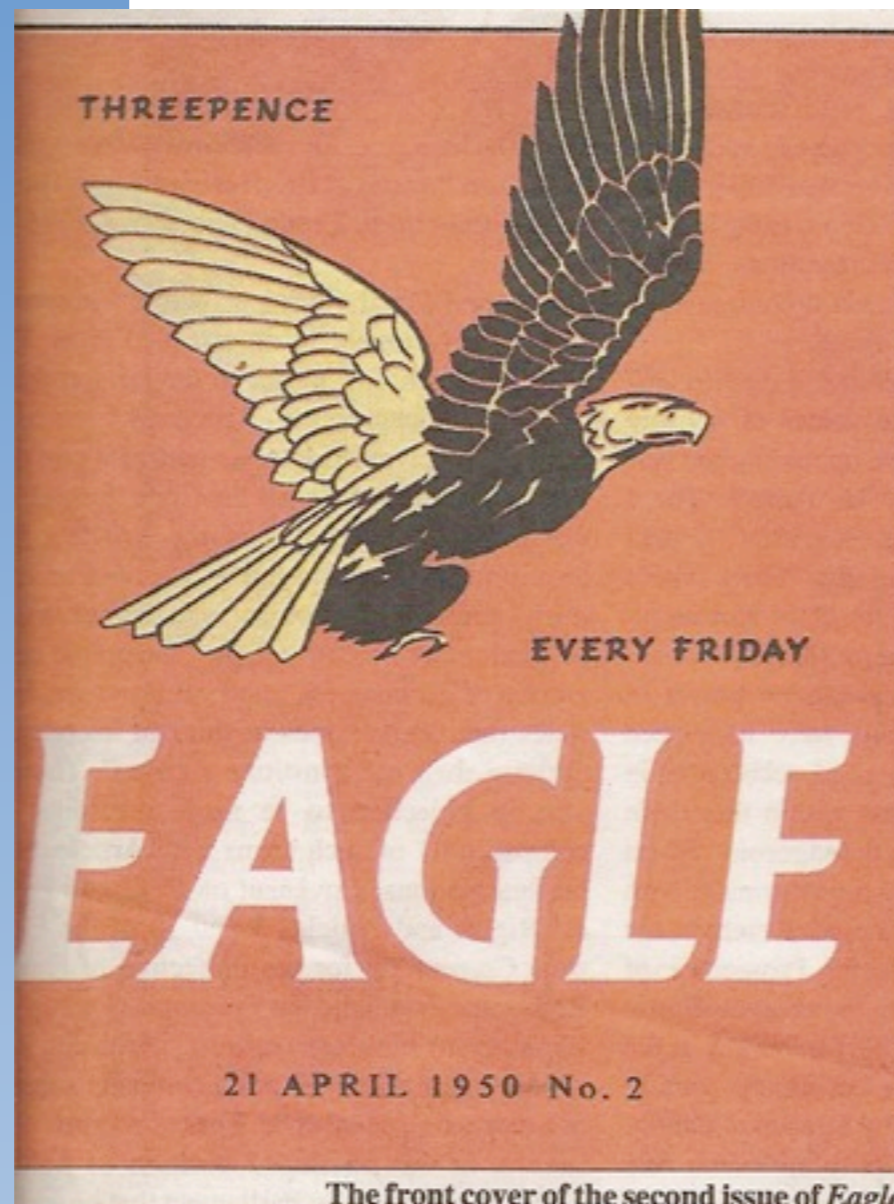
necessary vs sufficient

coming up: print technology





out of focus



The front cover of the second issue of *Eagle* magazine (1950); from the book under review

linear thinking



unintended consequences

moral hazard

Edward Tenner,
*Why Things Bite Back:
Technology and the
Revenge of Unintended
Consequences*, 1997

3-Hof112-Determinism 68

linear thinking

unintended consequences

moral hazard



Edward Tenner,
*Why Things Bite Back:
Technology and the
Revenge of Unintended
Consequences*, 1997

3-Hofl12-Determinism 68

in conclusion

how to think about determinism

what happened?

what did (or did not) come before?

what did (or did not) follow?

what did (or did not) contribute?

what happened elsewhere?

what's likely to be underestimated?



coming up first



26 Jan: The First Technologies of Information: Writing Systems

Required reading:

- Marshack, Alexander. 1999. "The Art and Symbols of Ice-Age Man," in David Crowley, ed. *Communication in History: Technology, Culture, Society*. Allyn & Bacon. Pp. 5-14.
- Robinson, Andrew. 1999. "The Origins of Writing." In David Crowley, ed. *Communication in History: Technology, Culture, Society*. Allyn & Bacon. Pp 36-42.