

talking about information

"the age of information"

history of information

January 22, 2011

administrative matters

wait list

check with departments

class website

<http://blogs.ischool.berkeley.edu/i103s11/>

class slides

<http://courses.ischool.berkeley.edu/i103/s10/SLIDES/Hof111-Talking-PD.pdf>

class reader

Copy Central, 2560 Bancroft Way

Bancroft tour

sign up

overview

age of information

what's in an age?

how do we get from one to the the next?

revolution

history matters

assignment

first: talking about *information technology*

pick one of the following and explain how it might serve as an "information technology." Try to make your answers ingenious without being implausible.

bicycle

necktie

blanket

piece of string

dishrack

bicycle - 18

Lauren Bachelis
Aaron Bloch
Thomas Bonner
Grace Butler
Olivia Cheng
Annie Chin
Chryl Corbyn
Elizabeth Dyer
Bailey Eells
Elise Etem
Benjamin Freitag
Alexander Huang
Lisa Lee

Trisha Remetir
Steven Tanti
Sayed Wahezi
Si Wang
Austen Weinhart

necktie - 9

Aaron Bloch

Aiko Brown

Leyla Holt

Ashlyn Kong

Victoria Partridge

Philip Persley

My Pham

Ramez Silyan

Kelly Whiteford

blanket - 8

Megan Beale

Aaron Bloch

Joshua Clawson Phipps

Ha Jun

Ariane Lange

Joshua Moller-Mara

Tracy Nguyen

Danae Sterental

piece of string - 12

Aaron Bloch

Charles Daniels

Jennifer Discar

Andy Horng

Omead Kohanteb

Jane Li

Clara Ma

Gavin Rynne

Nikolas Soelter

Annie Tung

Diana Wei

Andrew Wycle

dishrack - 5

Aaron Bloch
Mia Borzello
Anne Chen
Tiffany Fan
Jeffrey Gomez

overview

age of information

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today's topic

it's the age of information



today's topic

it's the age of information

it's the age of information
everything's now on the internet
my desktop is made to sedate me

...

the age of information is hell
I still feel the human race has
not progressed as much as
we should be

How come the human race isn't
progressing as fast as technology has?

Yea we're going to be staying on the moon

But there's still going to be racists

...

what's going on?



the new age

Information: there's growing agreement that it's the name of the age we live in.

Human history has long been described in terms of Ages whose names reflect the stages of development through which mankind has passed: the Stone Age, the Bronze Age, the Iron Age and so on—down to the Industrial Age, which established the foundations of our modern society.

Today, there is growing agreement that we have entered a new era—a post-industrial stage of development in which the ability to put information to use has become critical, not only to the essential production of goods, but to efforts to provide a better life for the individual, as well.

This new era is being referred to with increasing frequency as the Information Age.

Information in the Information Age

Changes in our perception of information itself—its nature as well as its scope—have accompanied this profound shift of emphasis in our society.

Much has been written about the so-called "information explosion." It has been pointed out, for example, that the number of technical journals published throughout the world today exceeds 100,000, and that the total body of technical information is now doubling every ten years.

At the same time as the volume of information has been increasing dramatically, our understanding of the meaning of the term information itself has also broadened—to encompass a wide variety of timely data relating to "how things really are" across the whole spectrum of human activity.

A heartbeat, for example, can be extremely meaningful information when recorded and analyzed on sophisticated electrocardiogram equipment. So can electrical impulses reflecting the load level in a power network, or numeric digits representing the availability of a seat for you on an airplane—when processed by a modern computer.

These and a wide range of similar types of data are clearly recognized today as information, the kind of information on which we increasingly de-

pend for the growth and health of our economy, the smooth functioning of our institutions—and, even more important, for the quality of our individual lives.

Information—an inexhaustible resource

Information is one of the few resources not in danger of exhaustion on this shrinking planet. It is unique because the supply is limitless, because it actually becomes more valuable with use and because—when properly managed and applied—it can greatly enhance our use of all our other resources, natural, human and economic.

One reason, of course, that information has proved to be such a dynamic resource is the fact that there exists today a remarkable technological capacity for dealing with it rapidly and effectively.

Through a vast array of electronic tools and techniques, mankind is able to accumulate, organize, store, interpret, retrieve and transmit information on a worldwide scale, in a volume, at a speed, and with an accuracy that would have been impossible barely two decades ago.

It is also a technology that continues to grow and that has proved to be amazingly efficient in economic terms. As advance has followed advance, the cost of processing information has steadily declined. Since the 1950s, the cost of performing 100,000 calculations on an IBM computer has fallen from \$1.26 to less than one cent—and the downward trend continues.

Putting information to work for people

IBM makes many different products—from computers to copiers—but clearly, the essence of our business is information.

As a company, we are committed to exploring the limits of technology to find better, more imaginative and more productive ways to help put the benefits of this uniquely valuable resource to work for people.





really?

"But though books are easily procured, yet, even in **this age of information**, there are thousands in the lower classes that cannot read. Besides, it is a well-known truth, that the same precepts inculcated by a living instructor, adorned by a proper oratory, enforced by a serious and authoritative manner, produce a powerful effect, not to be experienced in solitary retirement."

Vicesimus Knox, *Essays Moral and Literary*, 1778

or was it eternal?

"Every society is an information society and every organization an information organization, just as every organism is an information organism. Information is necessary to organize and run everything from a cell to General Motors or the Pentagon"

--Anthony Oettinger, 1980

information and history

"[History depends] on the development of systems to record events and hence accumulate and transmit information about the past. No records, no history, so history is actually synonymous with the information age, since *prehistory* is that age in human development that precedes the availability of recording systems."

Luciano Floridi, *Information: a very short introduction*, 2010

prehistory?



overview

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assignment

"Human history has long been described in terms of ages ...The Stone Age, the Bronze Age, the Iron Age, and so on"

IBM ad,
Fortune 1977

what's in an age?

ages past

- stone, iron, bronze, agricultural, industrial
- print, machine, telegraph, steam, telephone, car, flight, jet, space, nuclear, television, computer ...
 - renaissance, enlightenment

"Not an Heroical, Devotional, Philosophical, or Moral Age, but above all others the Mechanical Age.

It is the Age of Machinery."

Thomas Carlyle, "Sign of the Times," 1829

- classical, dark, middle, modern

overview

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from age to age

continuity

evolution

revolution

continuity?

just more of the same



"On an average weekday, the *New York Times* contains more information than any contemporary of Shakespeare's would have acquired in a lifetime"

or evolution?

"Printed books **evolved** into better-designed packages of information."

Paul Grendel, *Cambridge History of Renaissance Philosophy* 1988



evolutionary force?

"[I]n order to satisfy the **new needs for information** and education, more books, ...and soon newspapers were required."

Lucien Febvre & Henri-Jean Martin,
The Coming of the Book, 1984



evolutionary force?

"The **need** for readily available information, which had been steadily rising, was accelerated by the advent of Christianity ..."

"The **need to find information** more rapidly than is possible in a papyrus-roll-form book initiated the development of the Greco-Roman codex in the second century ..."

Frederick Kilgour,
*The **Evolution** of the Book*, 1998





an information age, *but ...*

"glittering proof that a
new information age
was dawning in Europe,
fuelled by the power
of the printed word."

Stephen Fry,
The Machine That Made Us.
BBC 2008

[veoh.com]

[youtube]

nonsense



"The day the universe **changed**"

James Burke,
*Printing **Transforms** Knowledge*
BBC 1986

[Media Center]

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revolting

first wave

agrarian revolution

second wave

industrial revolution

third wave

post-industrial society

Alvin Toffler, *The Third Wave*, **1980**

what does it look like?



going round in circles

1640-1660

gaining direction?

Glorious Revolution (1688) -- eyewitness report

"The Popists in offices lay down
their Commissions and flie:
it lookes like a Revolution."

John Evelyn, *Diary*, 1688



what does it look like?

all much the same?

English

American

French

Haitian

Russian

Tunisian

PRÉFACE

Révoltes, révolutions, émeutes, rébellions, émotions, guerres civiles, coups d'État, l'histoire entière en est tissée¹. La vie de l'homme en est faite. Non point accident mais constante, non

1. L'histoire en est tissée... Prenons quelques exemples : le XVII^e siècle : 1601 à 1610, « le temps des troubles » série de révoltes en Russie; 1610, révolte des Sikhs; 1620-1630, révolte chinoise contre les Mings; 1631, soulèvement de Dijon et d'Aix-en-Provence; 1635, soulèvement de Bordeaux; 1636, révolte des Croquants; 1637, révolte d'Awa Kousa au Japon; 1639, révolte des Nu-pieds; 1640 à 1644, révoltes contre les Mings, aboutissant à la chute de la dynastie; 1640, révolte de la Catalogne contre l'Espagne qui ne s'achève qu'en 1652; et la même année, 1640, débute aussi la révolution du Portugal, qui restera, latente ou explosive, permanente jusqu'en 1668; 1641, année de troubles très généralisés, révoltes paysannes en Irlande, Suisse, Allemagne, Russie; 1643, révolte du Rouergue; 1645, révolte de Montpellier; 1647, révolte de Masaniello à Naples, contre le vice-roi espagnol, pendant un an; 1648 est également une année forte pour les révolutions : révolution d'Angleterre commencée en 1640 mais qui se développe de 1648 à 1653 tout particulièrement, et dont on a dit qu'elle était peut-être « la première grande révolution bourgeoise des temps modernes »; la Fronde en France, de 1648 à 1652; l'insurrection d'Ukraine, de 1648 à 1654; les émeutes populaires en Russie, dans cette même année, à Moscou, Koslov, Tomsk, etc.; la révolte hindouiste des Mahrattes contre les envahisseurs mongols, toujours en 1648; en 1649, la révolte de Moscou qui reprend; 1650, émeute de Novgorod et coup d'État de Guillaume de Hollande; 1653, guerre paysanne de Suisse; 1662, révolte du Boulonnais, révolte de Moscou pour un problème monétaire; 1664-1670, la grande rébellion d'Audijos; 1670-1671, la grande révolte de Stenka Razin et le soulèvement paysan de Bohême;

Jacques Ellul,

Autopsie de la Revolution, 1969

how selective?

PRÉFACE

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Jacques Ellul,
Autopsie de la Révolution, 1969

de l'histoire.

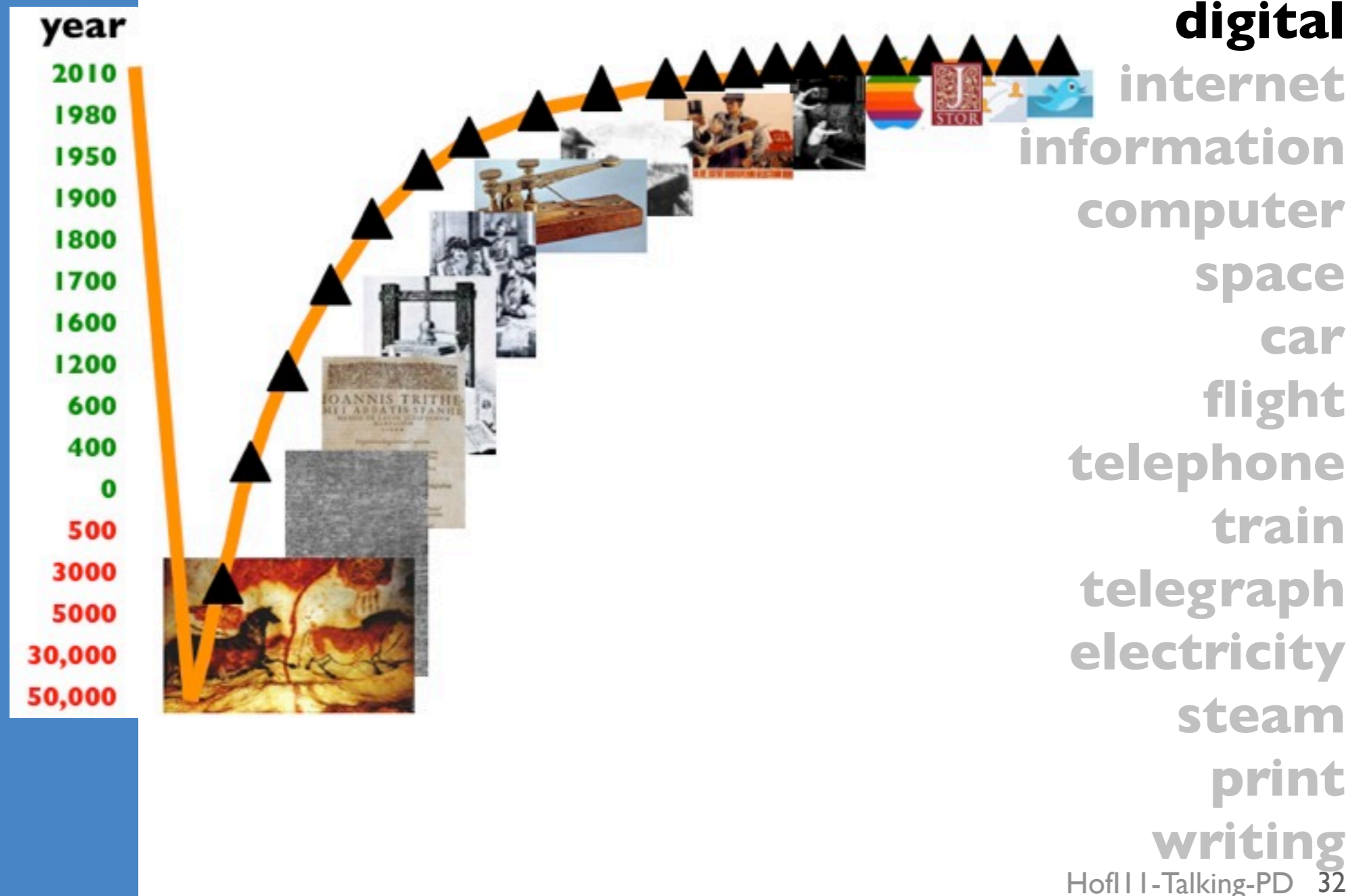
Il n'y a pas un exceptionnel de la révolution opposé à un normal ou à une règle de la vie des peuples, des pouvoirs, des civilisations. Ne nous contentons pas des schémas historiques qui nous parlent de 1649, de 1785, de 1917 : alors, scrutant les événements d'un peu plus près, voici que nous constatons dans les faits cette permanence de la révolution parmi les hommes. Il est vain de chercher une division entre des périodes calmes et des périodes troublées. La révolution est moins la locomotive que l'élément de la chaîne invisible du tissu des civilisations.

Mais nous nous trouvons immédiatement arrêté par un souci formel de définition. Que disons-nous au travers de ce mot révolution? Qu'entendra l'autre dans ces quatre syllabes? « Le devoir de tout chrétien est d'être révolutionnaire », proclama Camilo

1673 à 1681, le soulèvement considérable du nord-est de la Chine; 1675, nouvelle année d'abondance : révoltes dites du papier timbré en Bretagne et à Bordeaux, accroissement des rébellions sikhs et mahrattes, et aussitôt après la révolte religieuse des Camisards; 1679, la révolution d'Irlande.

Prenons une autre période : de 1770 à 1850. Là encore nous constatons émeutes, rébellions, révoltes, révolutions dans le monde entier. 1768, révolution démocratique de Genève; 1770 à 1783, la révolution américaine, à la suite de sa guerre contre la Grande-Bretagne; 1772, révolution royale en Suède; 1780 à 1783, révoltes multiples en Angleterre et en Irlande, grande révolte des Indiens du Pérou; 1781, insurrection de Nouvelle-Grenade, révolution à Fribourg, et de nouveau à Genève en 1782; 1783 à 1787, révolution aux Provinces-Unies avec diverses orientations; 1787-1790, révolution des Pays-Bas autrichiens; 1788-1794, révolte de Guyane, révolution polonaise; 1789, début de la révolution française, démocratisation du régime en Suède; 1791, révolution polonaise; 1792, reprise de la révolution belge et révolution rhénane, révolte généralisée dans les Antilles; 1794, émeutes en Irlande; 1795, révolution en Hollande et à Genève, émeutes à Londres, Birmingham, etc., à Constantinople, à Smyrne; 1796, révolution dans les États italiens; 1797, mutinerie des flottes anglaises; 1798, révolution en Suisse et en Irlande; 1799, révolte des îles Ioniennes et de Malte; 1810, révolution des colonies espagnoles qui s'achèvera par la reconnaissance de leur indépendance en 1825; et de 1810 également à 1829, guerre pour l'indépendance des peuples balkaniques; 1820, révolution d'Italie, et d'Espagne; 1821, révolution grecque, et 1830, grande flambée révolutionnaire en France, en Belgique, en Pologne... en attendant 1848.

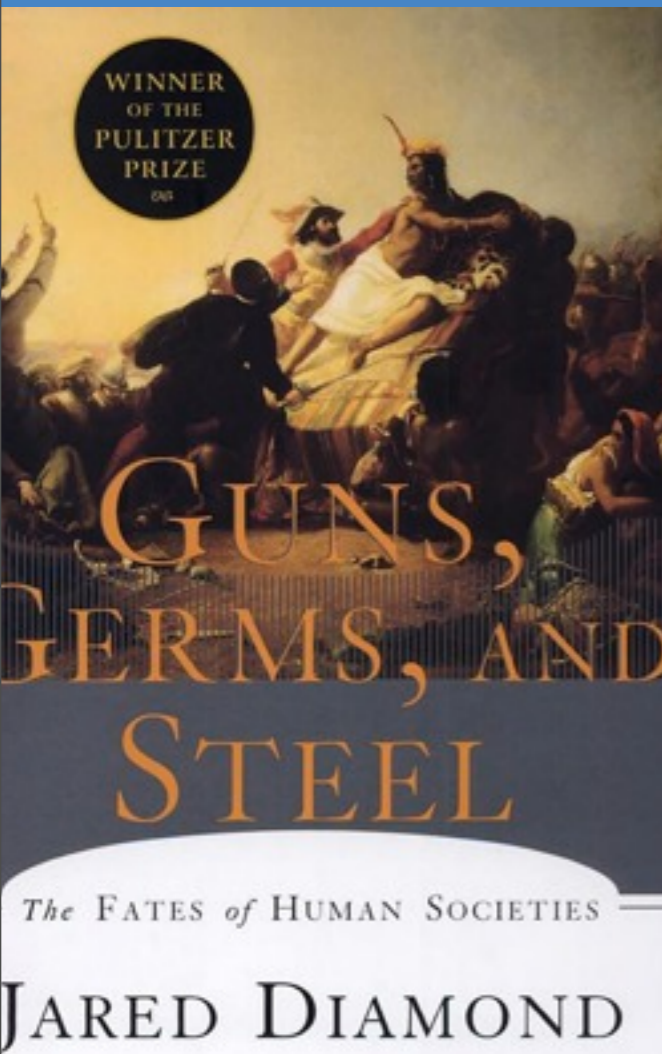
what makes a revolution?



what makes a revolution

guns, germs, and steel?

England? US?? France??? Russia????



Battle of Bosworth, 1485

quiet times?

2011

1916

1804

1789

1776

1640

2010

1980

1950

1900

1800

1700

1600

1200

600

400

0

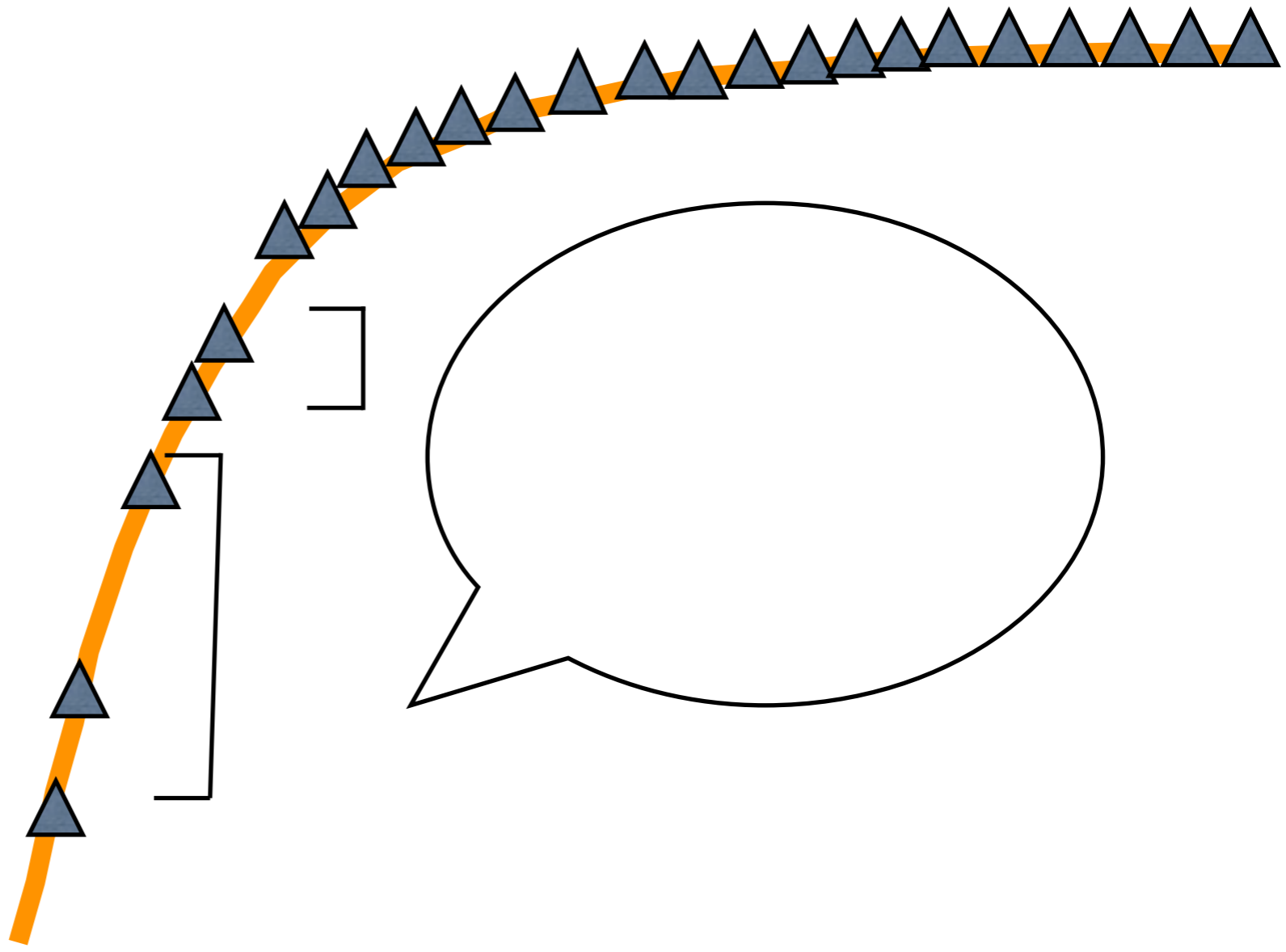
500

3000

5000

30,000

50,000



quiet times?

2011

1916

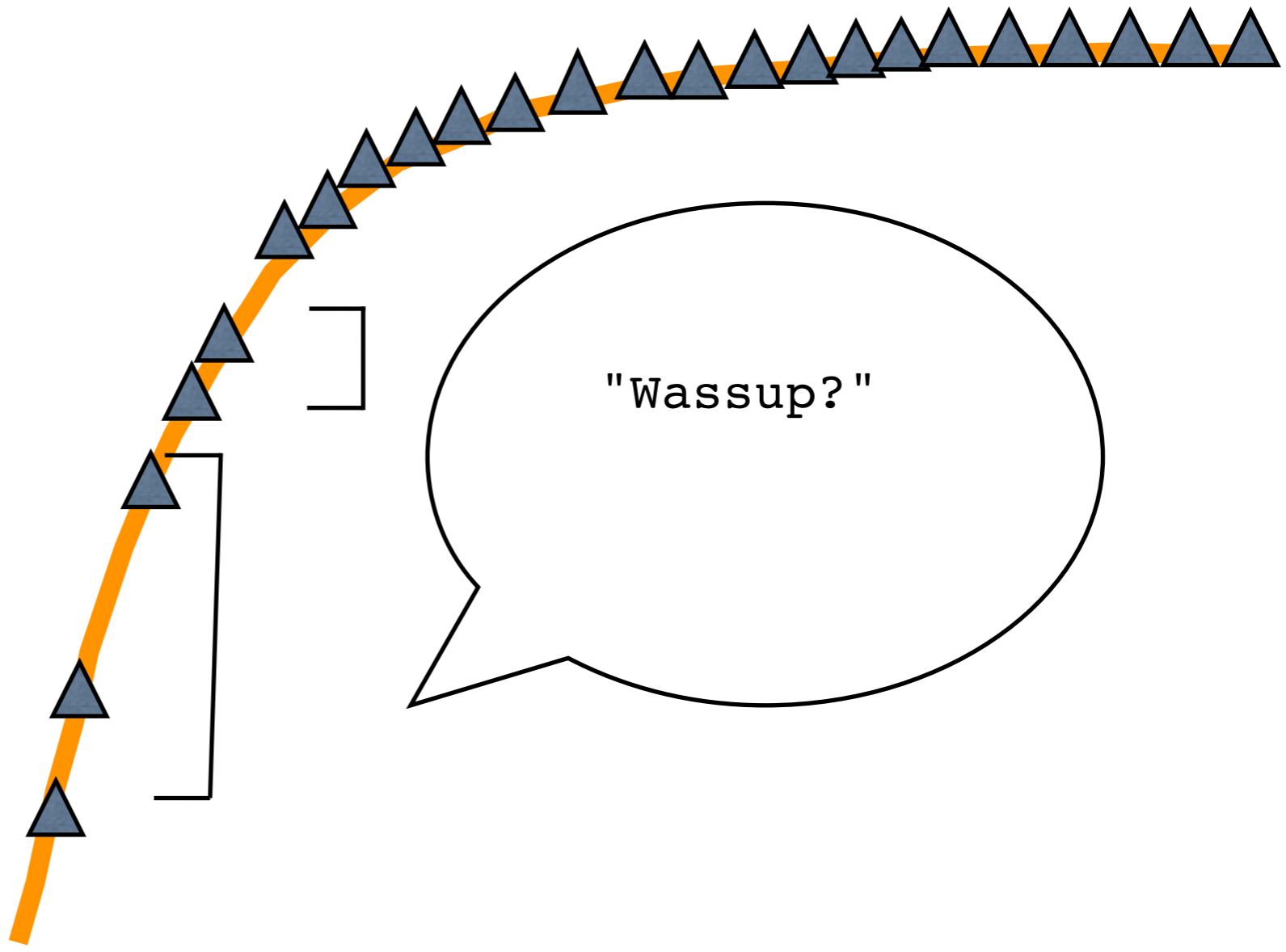
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50,000



quiet times?

2011

1916

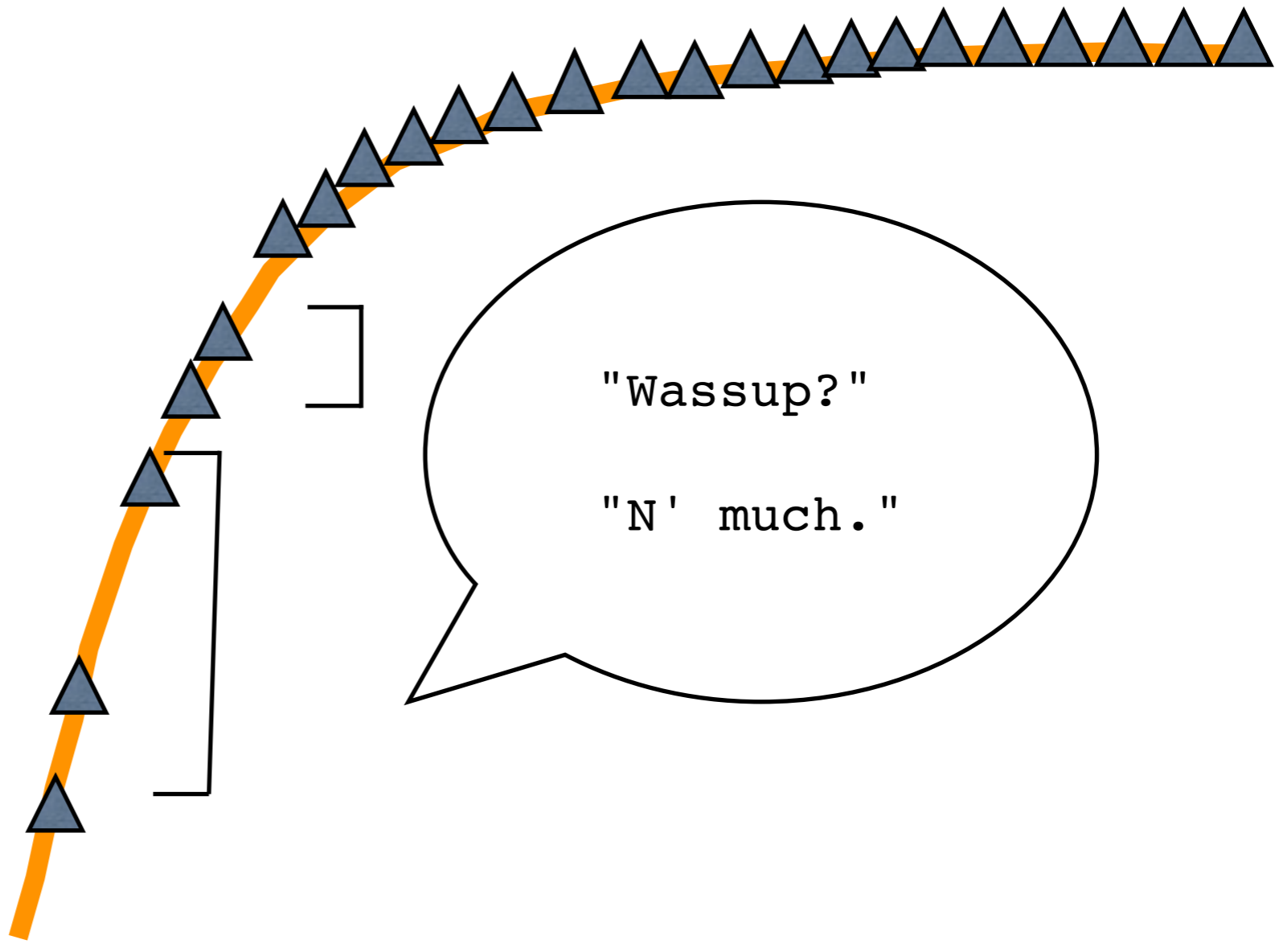
1804

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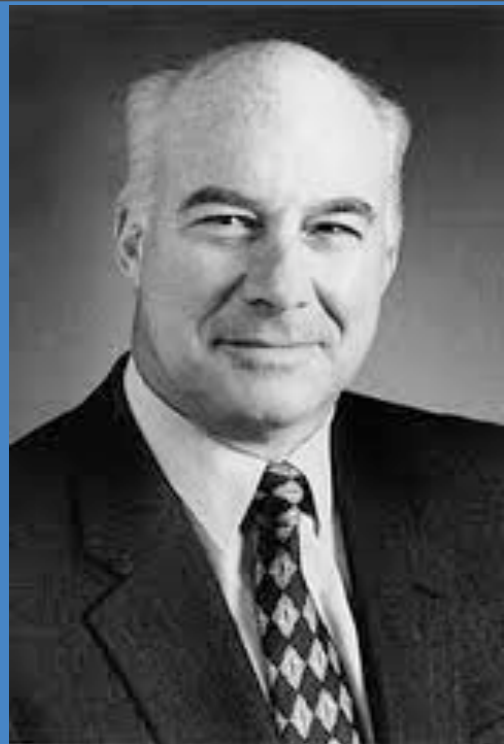
revolutionary revolution?

newly new

"The world now taking shape is not only new, but new in entirely new ways."

Richard J. Barnet,

"Defining the Moment" *New Yorker* 1990



revolutionarily benign revolutions

"The telecom revolution has begun -- and may be the first in history to have no losers."

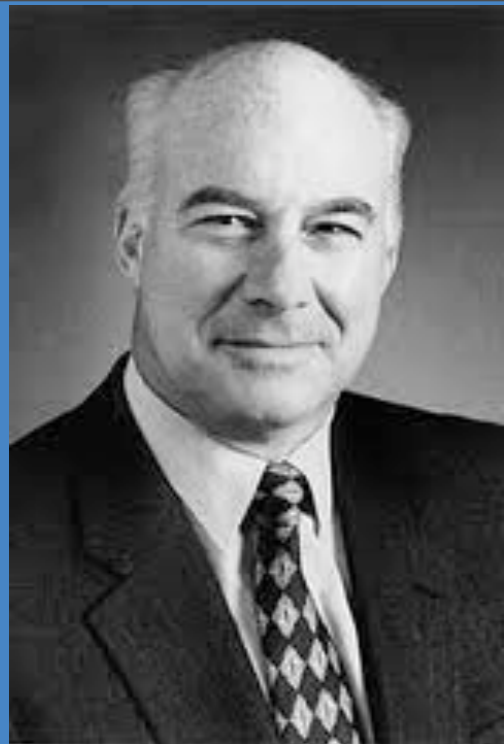
--Michael Armstrong (Chairman & CEO of AT&T)

InfoWorld, Nov 1, 1999

"Idealists ... hoped that the computer revolution wouldn't be like the industrial revolution. This time wealth -- information -- would be free to everyone and instant communication would break down the barriers between rich and poor."

John Markoff, *New York Times*, 1991

Hof III-Talking-PD 36

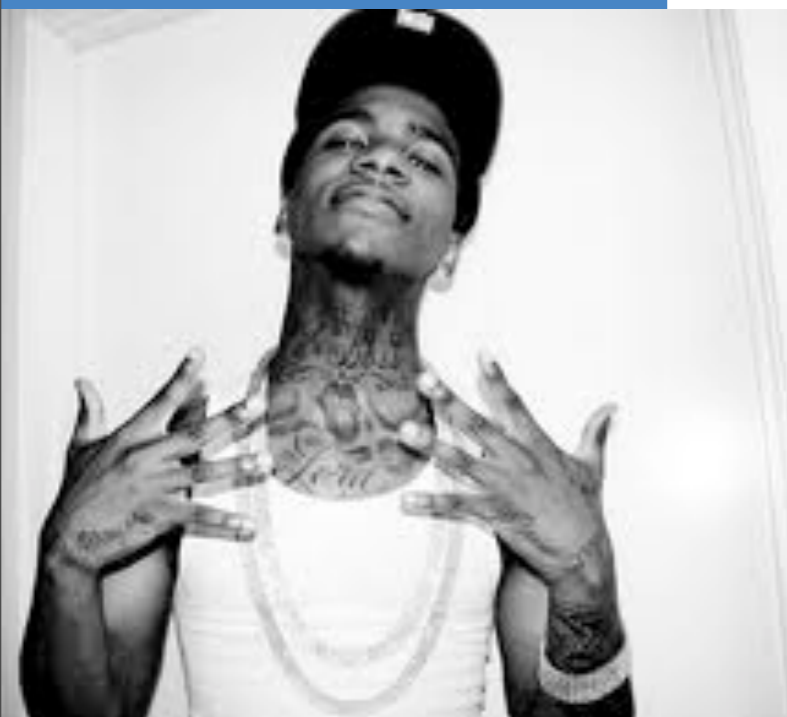


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intergenerational revolution

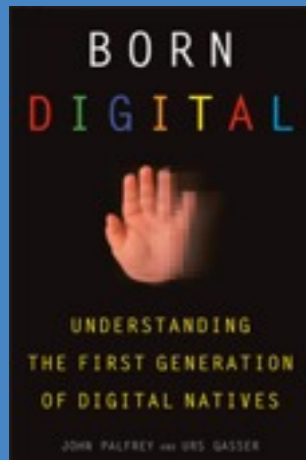
cosmetic change?

"One of the first known references to the "generation gap" came in 1925, when people referred to the gap between generations of mother and daughter being signified by one wearing lipstick and the other not"

Jessica Pallingston, *Lipstick*, 1998



generations



The Keyboard Becomes a Hangout For a Computer-Savvy Generation

By JOHN MARKOFF

Sixteen-year-old Jon Leger, a high school student in Port Arthur, Tex., does not consider himself a computer whiz. In fact he doesn't see himself as

Encountering
The Digital Age

An occasional look at computers in everyday life.

New York Times Aug 31, 1993

digital natives

"Today's students think and process information fundamentally differently, and these differences...run much deeper than most educators would like to have it."

--Edith Ackermann,

"Anthropology of Digital Natives" 2008

Hof II - Talking-PD 38

The Children of Cyberspace: Old Fogies by Their 20s

By BRAD STONE

Published: January 9, 2010

The New York Times

utterly new

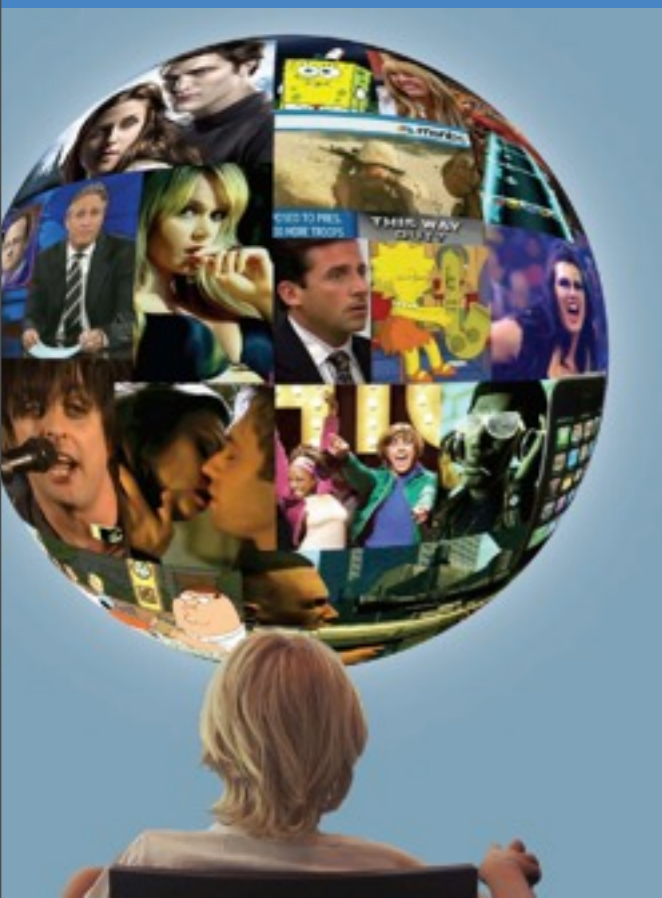
"I've begun to think that my daughter's generation will also be utterly unlike those that preceded it. Researchers ... theorize that the **ever-accelerating pace of technological change** may be minting a series of mini-generation gaps. ... 'People two, three or four years apart are having completely different experiences with technology,' said Lee Rainie, director of the Pew Research Center's Internet and American Life Project. 'College students scratch their heads at what their high school siblings are doing, and they scratch their heads at their younger siblings. It has sped up generational differences.'"

move over M¹

Generation M² Media in the Lives of 8- to 18-Year-Olds

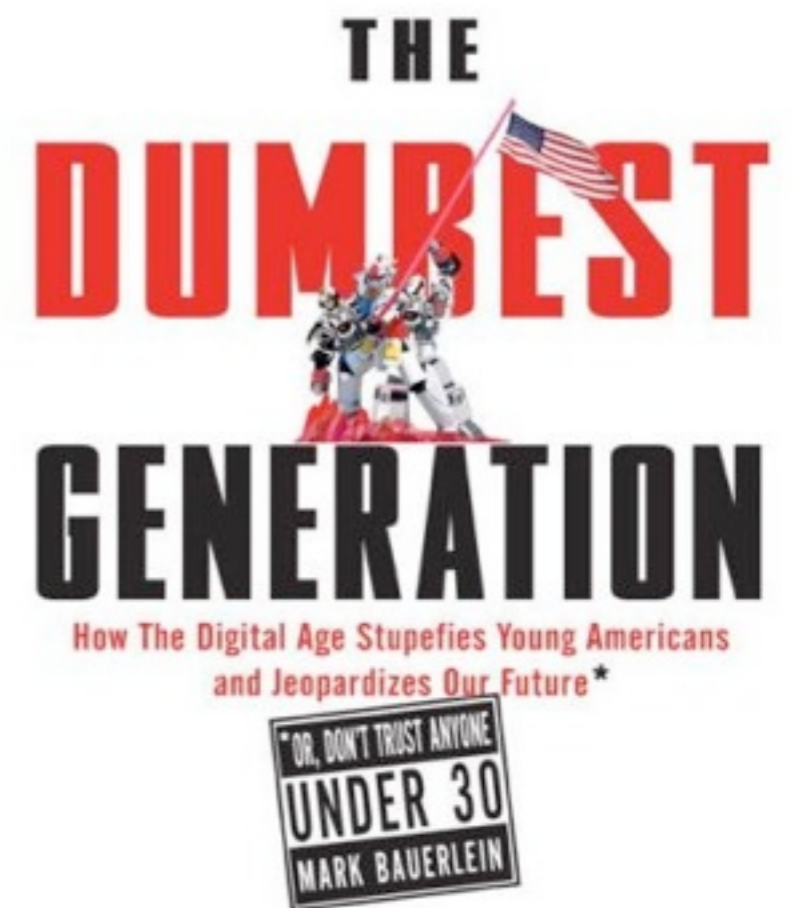
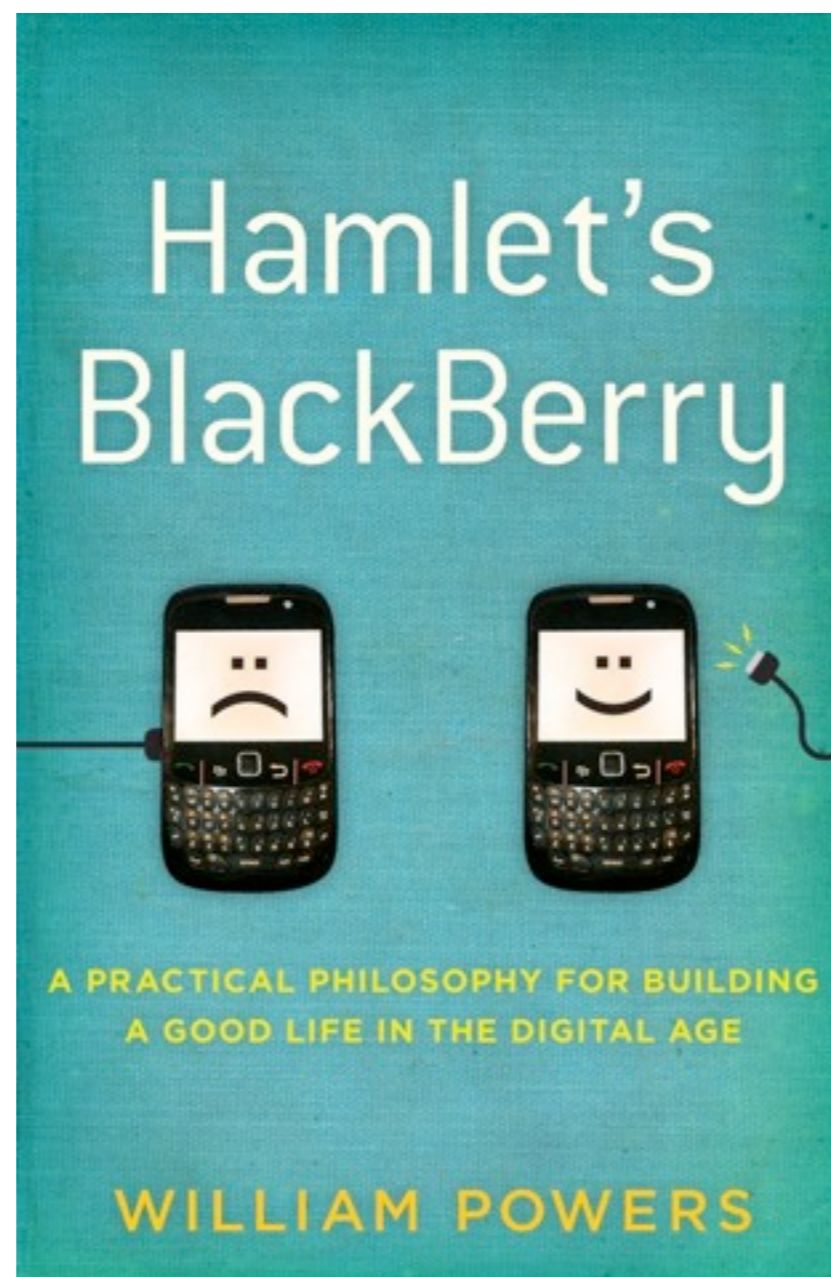
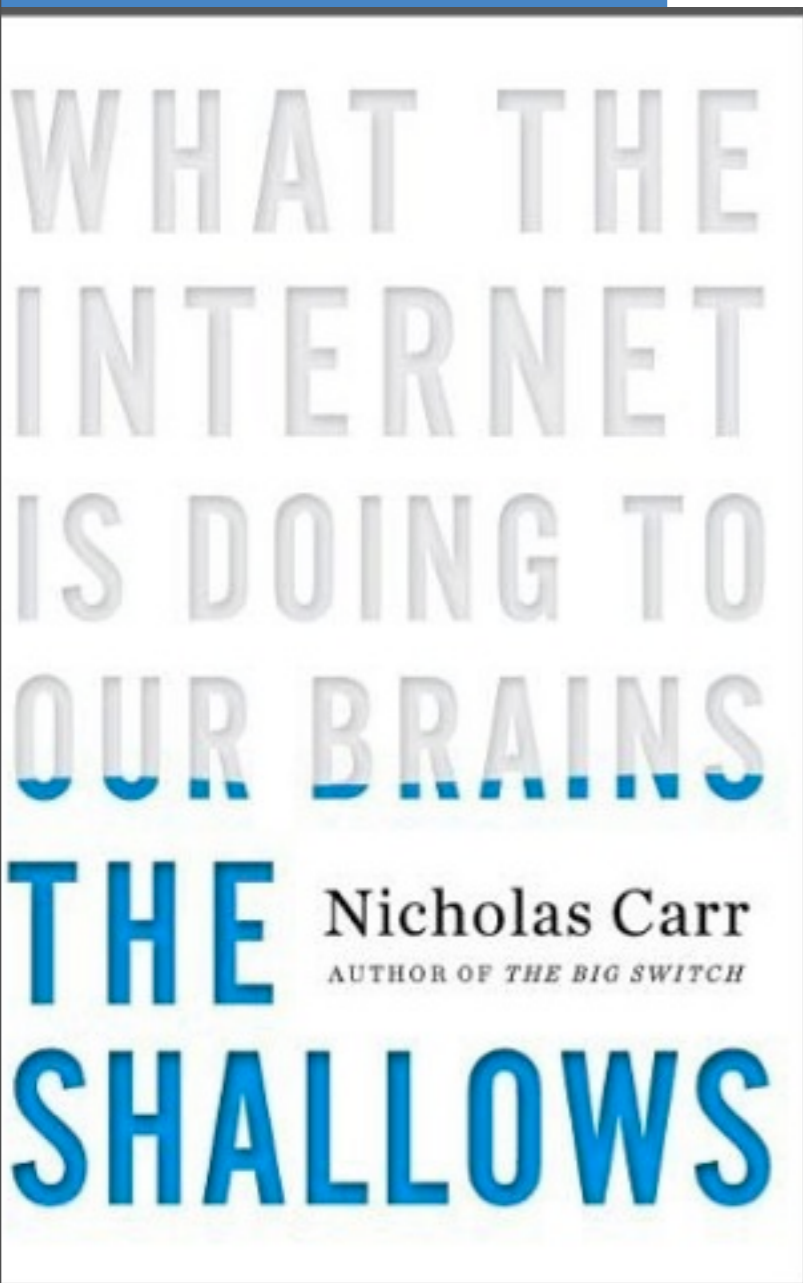
<http://www.kff.org/entmedia/upload/8010.pdf>

"Five years ago, we reported that young people spent an average of nearly 6-1/2 hours (6:21) a day with media—and managed to pack more than 8-1/2 hours (8:33) worth of media content into that time by multitasking. At that point it seemed that young people's lives were filled to the bursting point with media. Today, however, those levels of use have been shattered."





going up or down?



overview

age of information

what's in an age?

how do we get from one to the the next?

revolution

history matters

assignment

history matters

better? worse?

how would we know?



"What should they know of England
Who only England know?"

Rudyard Kipling

"The English Flag," 1899

looking back

generation vs country

"The past is another country.
They do things differently there."

L.P. Hartley, *The Go-Between*, 1953



central themes

Plato

Trithemius

Sprat

Johnson

Morse

Babbage

Bell

Marshall

beyond presentism

"The real, central theme of history is
not what happened, but what people
felt about it when it was happening"

George M Young,

Victorian England:

Portrait of an Age, 1960

even the present can surprise us

To coincide with this year's Reith Lectures, entitled the **Triumph of Technology**, You and Yours asked what has been the most significant technological innovation since 1800.

From the hundreds of listeners' nominations and together with our five experts, voting was opened on a final 10. Here are the results...

[http://www.bbc.co.uk/radio4/youandyours/technology_launch.shtml]

but first

the wired view

10 gadgets that changed the world



most significant technology



- 59.4% - Bicycle**
- 7.8% - Transistor**
- 7.8% - Electro-magnetic induction ring**
- 6.3% - Computer**
- 4.6% - Germ theory of infection**
- 4.5% - Radio**
- 4.0% - Internet**
- 3.4% - Internal Combustion Engine**
- 1.1% - Nuclear Power**
- 1.1% - Communications satellite**

or again:

Mass Production, Mass Persuasion (1780 - 1914 AD)



91: Ship's chronometer from HMS Beagle



92: Early Victorian tea set



93: Hokusai's 'The Great Wave'



94: Sudanese slit drum



95: Suffragette defaced penny

The World of Our Making (1914 - 2010 AD)



96: Russian revolutionary plate



97: Hockney's 'In the dull village'



98: Throne of Weapons



99: Credit card



100: Solar-powered lamp and charger

<http://www.bbc.co.uk/ahistoryoftheworld/about/british-museum-objects/>

overview

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25 Jan: Technological Determinism

Required reading:

- Heilbroner, Robert L. 1994. "Do Machines Make History?", pp. 53-65 in Merrit Roe Smith & Leo Marx eds., *Does Technology Drive History?* Cambridge, MA: MIT Press
- Williams, Raymond. 1974. "The Technology and the Society," pp 1-25 in *Television: Technology and Cultural Form*. London: Fontana.

coming up

assignment -- due Sunday

On pp 11-12 Williams gives 9 examples of how we can think of television as changing society, before dismissing them all. If we use the internet, instead of television, do any of the arguments become more convincing and thus prove Williams wrong? If you think Williams wrong, does Heilbronner help make your case? If you think Williams right, what does that say about Heilbronner?