IT?

Pick one (or two!) of the following and construct a story in which it serves as an "information technology." Try to make your story ingenious without being completely implausible.

    a. necktie

    b. blanket

    c. rubber duckie

    d. can of beans

    e. lemon

History
of
Information

the "age of information"

& the "information revolution"

Paul Duguid

info 103

January 19, 2017

administrative matters

wait list

sign in
wait/drop

class website

https://ucberkeley.instructure.com/courses/1457197

Bancroft tour

sign up on google doc via syllabus

class reader
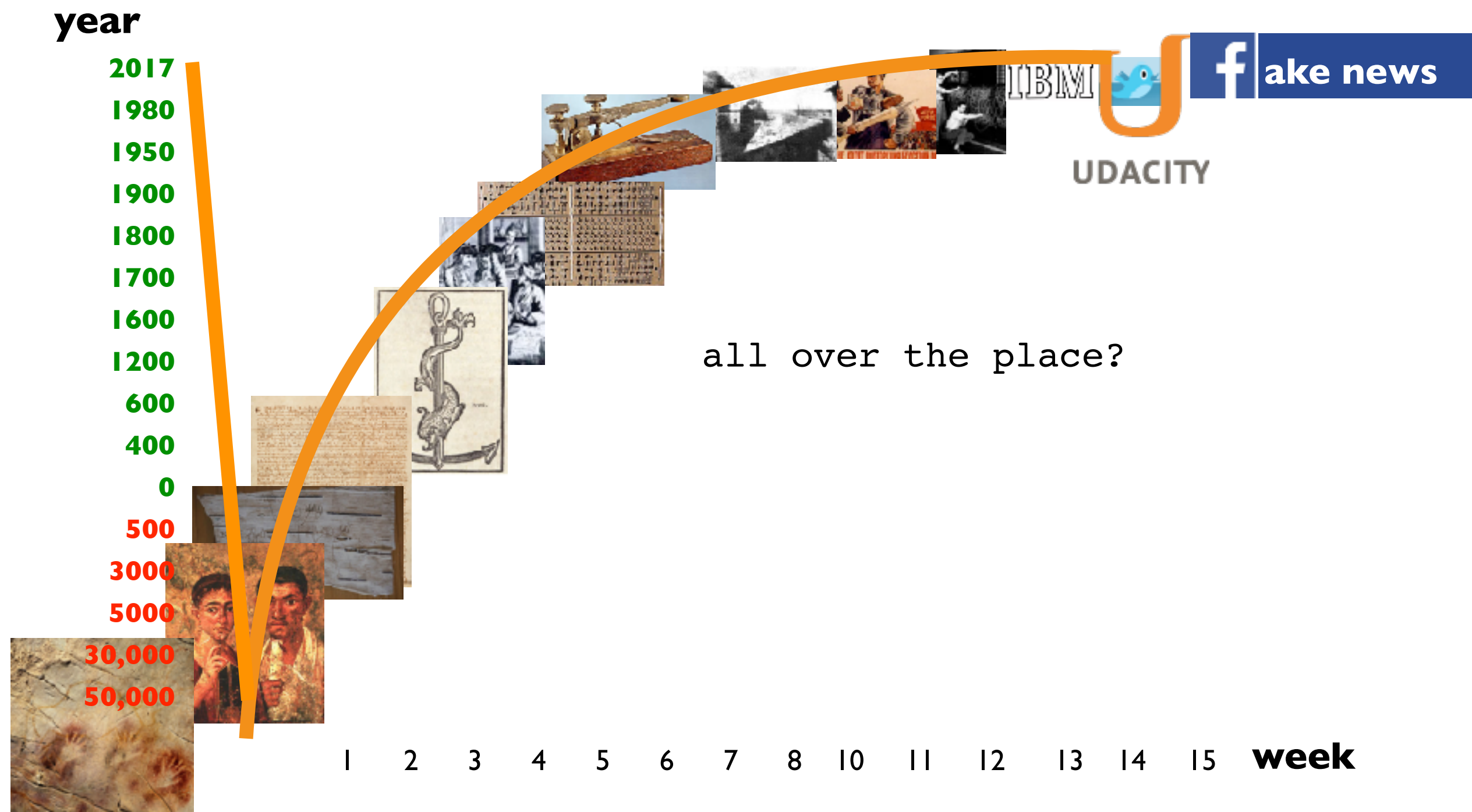
Copy Central, 2576 Bancroft Way

class recording

CalCentral

**Age
of
Information**

why history matters

intergenerational revolution

revolution

getting from one age
to another

what's in an age?

the "age
of information"

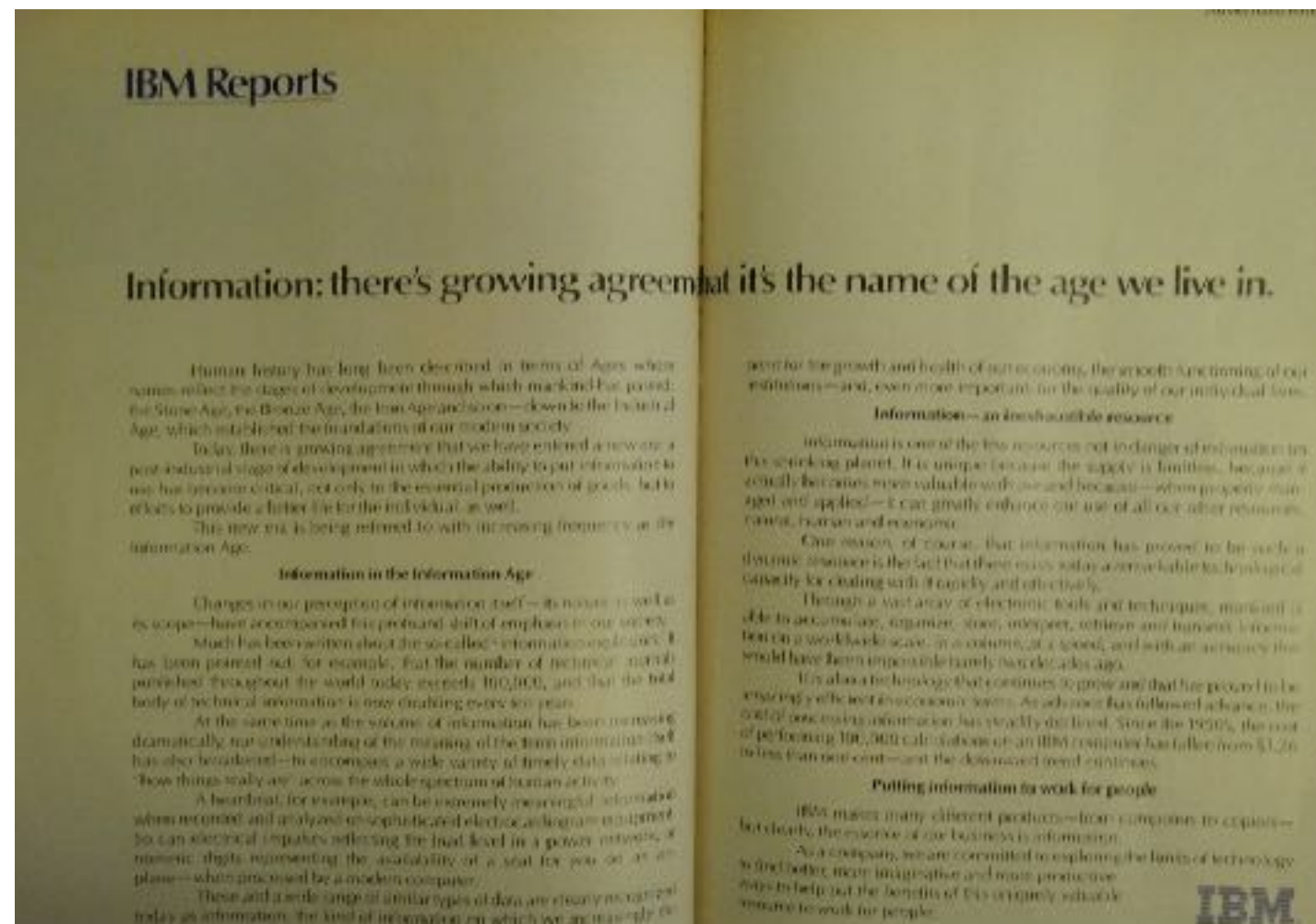# it's the ….?

"The period beginning around 1970 … "

when was that?

"November 16, 1992 — the day the Information Age began in America"
— Bob Metcalfe,
"ISDN is the Information Age Infrastructure," *InfoWorld*, 1992

IBM Reports

Information: there's growing agreement it's the name of the age we live in.
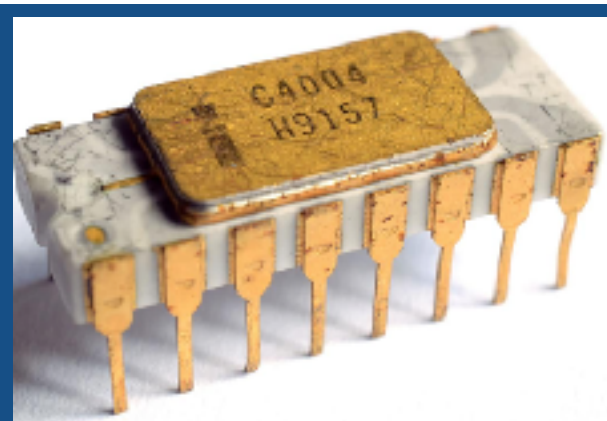
Fortune July 1977

24 Jan: Technological Revolutions

McLuhan, Marshall. 1964. *Understanding Media*. New York: McGraw-Hill.
Read: "Preface to Third Printing" (pp. v-x), and "Introduction" & "The Medium is the Message" (pp. 3-21).

earlier yet

45 years and counting

Intel 4004, 1971

(nb. Moore's Law, 1965)

Cramming more components onto integrated circuits

With unit cost falling as the number of components per circuit rises, by 1975 economics may dictate squeezing as many as 65,000 components on a single silicon chip

By Gordon E. Moore

Director, Research and Development Laboratories, Fairchild Semiconductor division of Fairchild Camera and Instrument Corp.

50 years and counting

"In the new …

Age of Information."

— Marshall McLuhan,
Understanding Media, 1964
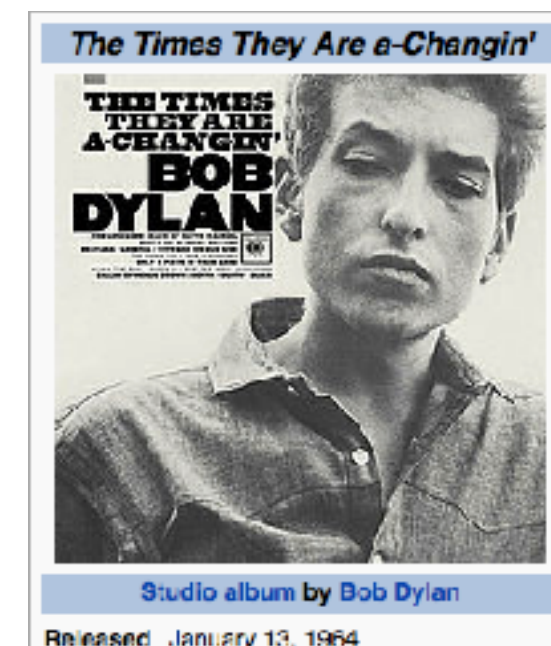
local changin'

Mario Savio, shown here at a victory rally in UC Berkeley's Sproul Plaza on Dec. 9, 1964, was the face of the free speech movement. (AP)

In 1964, students at the University of California, Berkeley, formed a protest movement to repeal a campus rule banning students from engaging in political activities.

"no reason to reject the hypothesis that the Information Society developed as a result of a crisis of control created by railroads and other steam-powered transportation in the 1840s" — Beniger, 1986

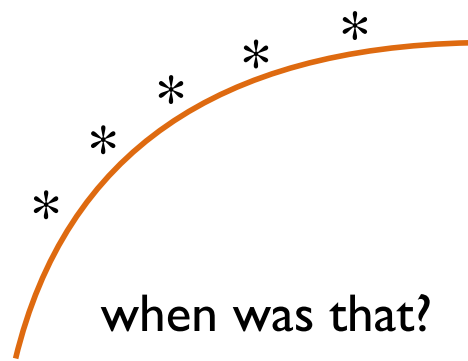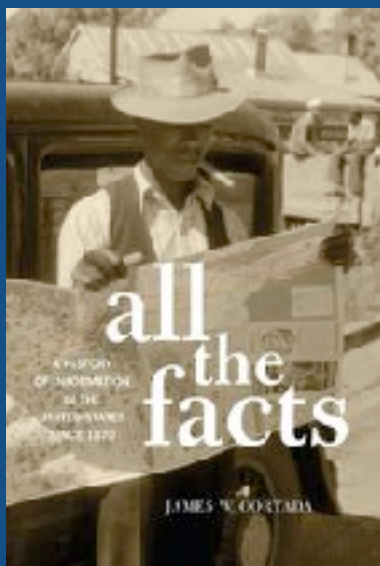when was that?

further back?

James Beniger, 1986

James Cortada, 2016

THE CONTROL REVOLUTION
Technological and Economic Origins of the Information Society

JAMES R. BENIGER

all the facts
A HISTORY OF INFORMATION IN THE UNITED STATES SINCE 1870
JAMES W. CORTADA

4   Introduction

Introduction   5

Table 1.1.   Modern societal transformations identified since 1950

Year	Transformation	Sources
1950	Lonely crowd	Riesman 1950
	Posthistoric man	Seidenberg 1950
1953	Organizational revolution	Boulding 1953
1956	Organization man	Whyte 1956
1957	New social class	Djilas 1957; Gouldner 1979
1958	Meritocracy	Young 1958
1959	Educational revolution	Drucker 1959
	Postcapitalist society	Dahrendorf 1959
1960	End of ideology	Bell 1960
	Postmaturity economy	Rostow 1960
1961	Industrial society	Aron 1961; 1966
1962	Computer revolution	Berkeley 1962; Tomeski 1970; Hawkes 1971
	Knowledge economy	Machlup 1962; 1980; Drucker 1969
1963	New working class	Mallet 1963; Gintis 1970; Gallie 1978
	Postbourgeois society	Lichtheim 1963
1964	Global village	McLuhan 1964
	Managerial capitalism	Marris 1964
	One-dimensional man	Marcuse 1964
	Postcivilized era	Boulding 1964
	Service class society	Dahrendorf 1964
	Technological society	Ellul 1964
1967	New industrial state	Galbraith 1967
	Scientific-technological revolution	Richta 1967; Daglish 1972; Prague Academy 1973
1968	Dual economy	Averitt 1968
	Neocapitalism	Gorz 1968
	Postmodern society	Etzioni 1968; Breed 1971
	Technocracy	Meynaud 1968
	Unprepared society	Michael 1968
1969	Age of discontinuity	Drucker 1969
	Postcollectivist society	Beer 1969
	Postideological society	Feuer 1969
1970	Computerized society	Martin and Norman 1970
	Personal society	Halmos 1970
	Posteconomic society	Kahn 1970
	Postliberal age	Vickers 1970
	Prefigurative culture	Mead 1970
	Technetronic era	Brzezinski 1970
1971	Age of information	Helvey 1971
	Compunications	Oettinger 1971
1971	Postindustrial society	Touraine 1971; Bell 1973
	Self-guiding society	Breed 1971
	Superindustrial society	Toffler 1971
1972	Limits to growth	Meadows 1972; Cole 1973
	Posttraditional society	Eisenstadt 1972
	World without borders	Brown 1972
1973	New service society	Lewis 1973
	Stalled society	Crozier 1973
1974	Consumer vanguard	Gartner and Riessman 1974
	Information revolution	Lamberton 1974
1975	Communications age	Phillips 1975
	Mediacracy	Phillips 1975
	Third industrial revolution	Stine 1975; Stonier 1979
1976	Industrial-technological society	Ionescu 1976
	Megacorp	Eichner 1976
1977	Electronics revolution	Evans 1977
	Information economy	Porat 1977
1978	Anticipatory democracy	Bezold 1978
	Network nation	Hiltz and Turoff 1978
	Republic of technology	Boorstin 1978
	Telematic society	Nora and Minc 1978; Martin 1981
	Wired society	Martin 1978
1979	Collapse of work	Jenkins and Sherman 1979
	Computer age	Dertouzos and Moses 1979
	Credential society	Collins 1979
	Micro millennium	Evans 1979
1980	Micro revolution	Large 1980, 1984; Laurie 1981
	Microelectronics revolution	Forester 1980
	Third wave	Toffler 1980
1981	Information society	Martin and Butler 1981
	Network marketplace	Dordick 1981
1982	Communications revolution	Williams 1982
	Information age	Dizard 1982
1983	Computer state	Burnham 1983
	Gene age	Sylvester and Klotz 1983
1984	Second industrial divide	Piore and Sabel 1984

when was that?

growing agreement?

Gordon Moore at Fairchild R & D in 1962
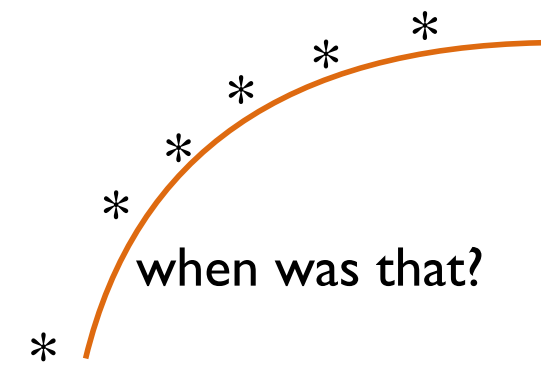
there's growing *awareness* that ...

self-conscious age of information

"In the long run, history is the story of information becoming aware of itself."

-- James Gleick, *The Information*, 2011

when was that?
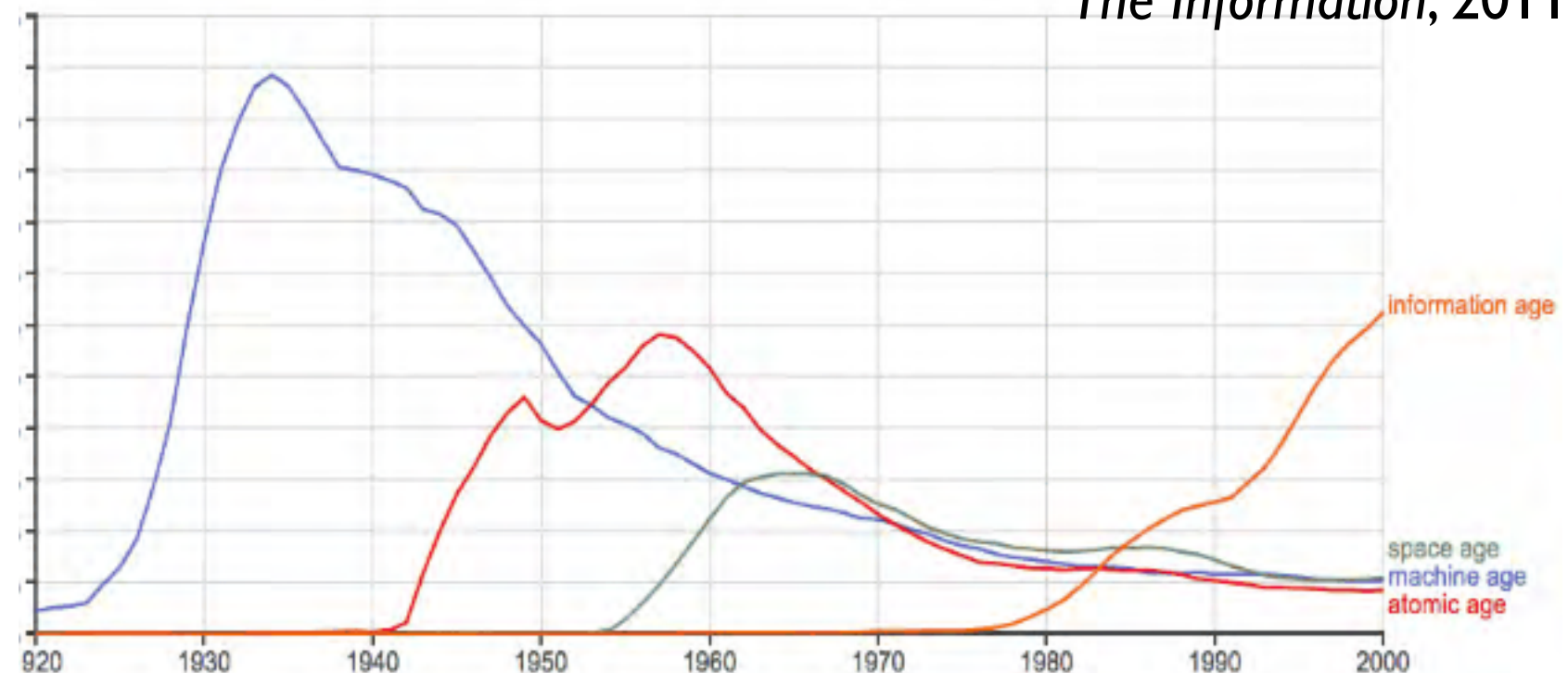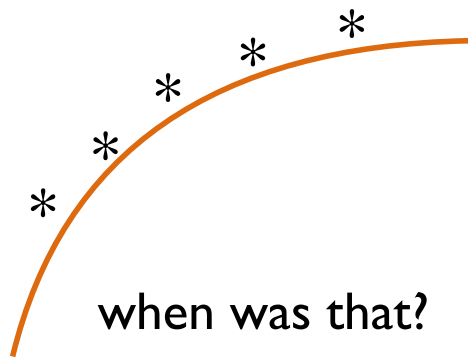
over to you …

1. when did people **become aware** that they lived in an "age of information"?

2. what were the most important innovations of the time and how did they affect this awareness?

when was that?
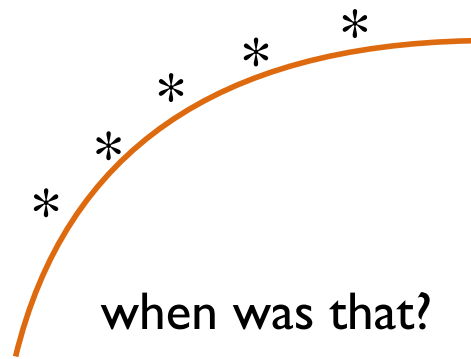
1. when did people **become aware** that they lived in an "age of information"?

ahead of his time?

Vicesimus Knox
1752–1821

1. when did people **become aware** that they lived in an "age of information"?

ahead of his time?

when was that?

Vicesimus Knox
1752-1821

"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

when was that?

what was going on?

the emergence of the public sphere

newspapers, public opinion   [coming up, Feb 9]

organization of knowledge

Chambers, Diderot, Smellie   [coming up, Feb 21]

advertising, IP

Donaldson v. Beckett   [coming up, Feb 23; March 9]

revolution   [coming up, *today*]

Age
of
Information

why history matters

intergenerational revolution

revolution

getting from one age
to another

what's in an age?

the "age
of information"

what's in an age

"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

ages past

what's in an age

what's in an age?

> "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

ages past

stone	sail
bronze	steam
iron	jet
steel	nuclear/atomic
	space

what's in an age

ages past

hunter-gatherer

husbandry

manufacturing

commerce

— Adam Smith,

Wealth of Nations, 1776

"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
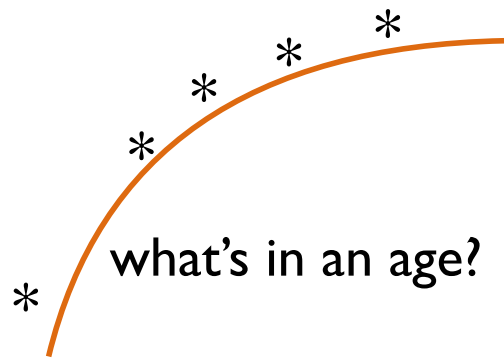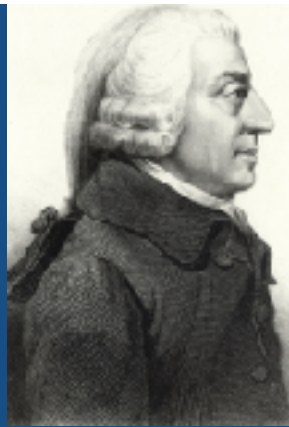
Adam Smith
1723–1790
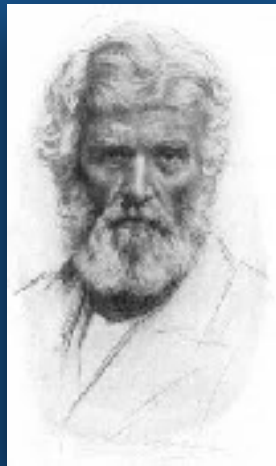
Thomas Carlyle
1795–1881

Age of Information

why history matters

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revolution

getting from one to another

what's in an age?

the "age of information"

transformation?

"The day the universe changed"

James Burke, *Printing Transforms Knowledge*
BBC 1986 [UC Media Center]
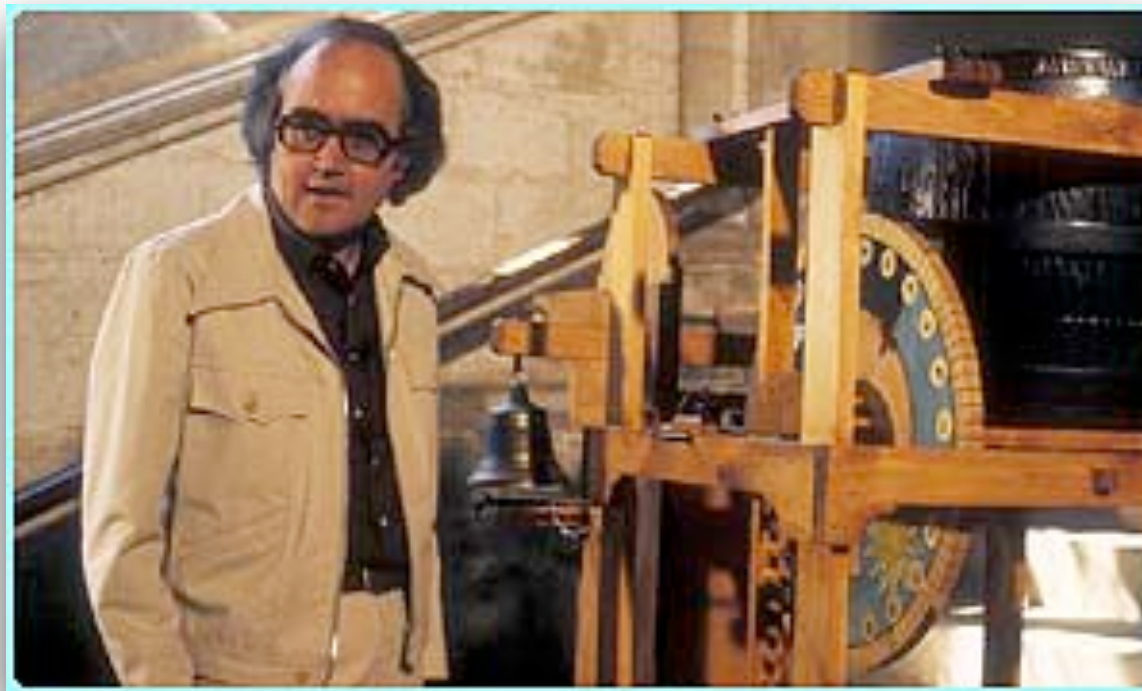
or evolutionary?

"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

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

-- Paul Grendel,
Cambridge History of Renaissance Philosophy 1988

tech as cause
or effect?

"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

"[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

**Age
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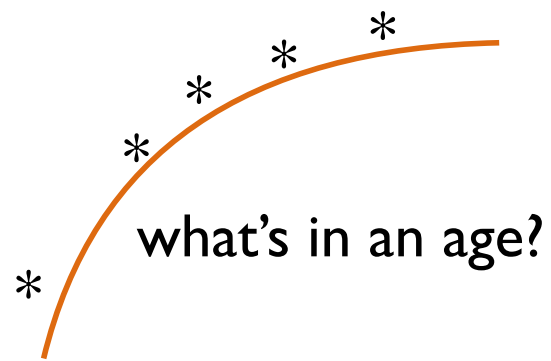what's in an age?

the "age
of information"
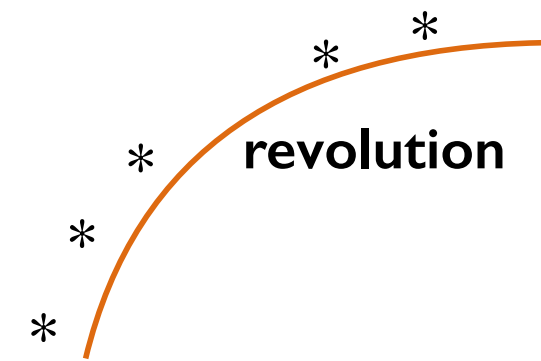
what drives change?

first wave

second wave

third wave

Alvin Toffler,
— *The Third Wave*, 1980
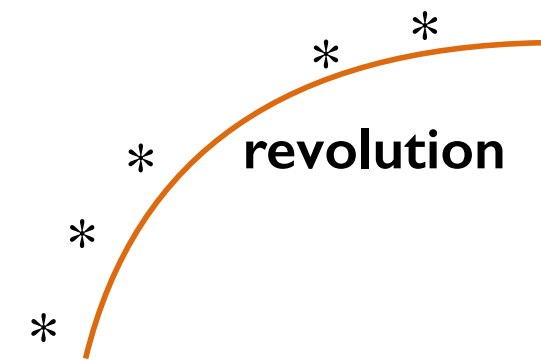
what drives change?

first wave
agrarian revolution

second wave
industrial revolution

third wave
information revolution

Alvin Toffler,
— *The Third Wave*, 1980

fourth revolution?

Copernicus

Darwin

Freud

Turing
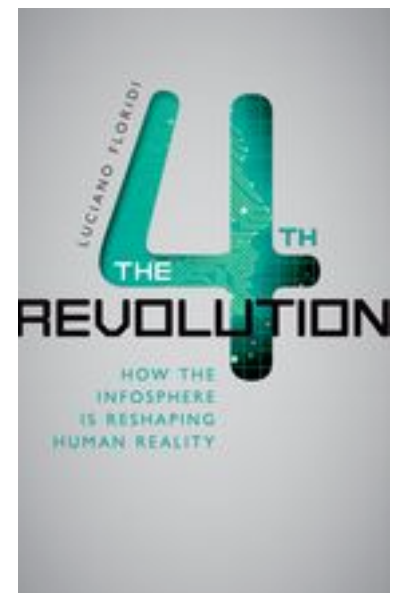
Luciano Floridi
— *The Fourth Revolution*, 2014
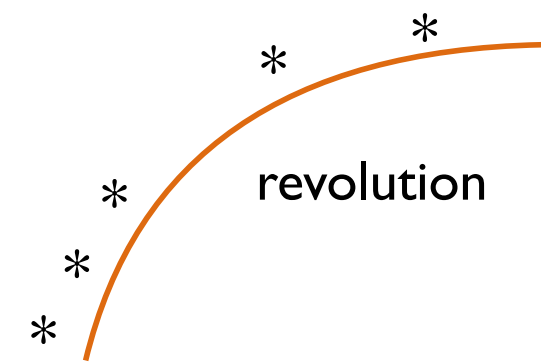
what's in a revolution?

a break from the past?

is this what it lookes like?

John Evelyn
1620-1706

an English view:

- going round in circles: 1640-1660

gaining direction? "Glorious Revolution" (1688)

"The Popists in offices lay down their

Commmissions and flie: **it lookes like a**

Revolution."   -- John Evelyn, *Diary*, 1688

coming round again (English view of the French)**:**

"a Pope/is summoned in, to crown an emperor

… the dog/Returning to his vomit ..."

                                        --William Wordsworth, *Prelude, 1805*

William Wordsworth
1770-1850
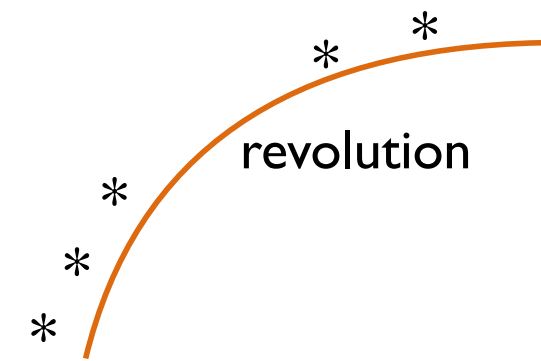
round and round

Ibn Khaldun
1332–1406

"Ibn Khaldun, the great fourteenth century north African sociologist developed a cyclical theory of Islam … alternation between the city and the desert whereby warrior desert nomads sweep in on the decadent cities …. But they in turn become lax and decadent, and new conquest sweeps in from the desert."

Michael Mann,
Sources of Social Power vol 4, 2013
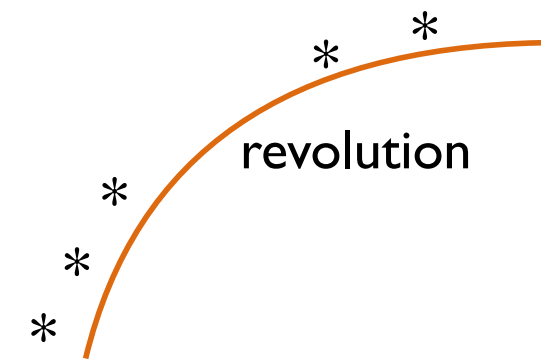
still circling?

Marshall McLuhan
1911–1980

new media "creates … depth of involvement …
and human association that our preceding
mechanical technology has destroyed.

"… the causes of things begin to emerge to
awareness again … **We return to** the
inclusive form …"

— McLuhan, *Understanding Media*, 1964
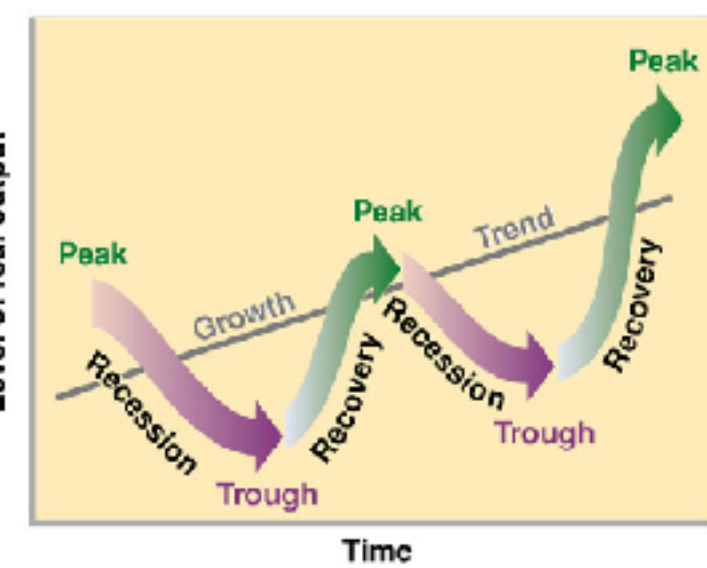
round and round

80% Stock Market Crash To Strike in 2017, Economist Warns

BY JL YASTINE   December 16, 2016

Table 1.1 Modern social transformations identified since 1950

(table contents illegible)

PRÉFACE

Révoltes, révolutions, émeutes, rébellions, émotions, guerres
civiles, coups d'État, l'histoire entière en est tissée [1]. La vie
de l'homme en est faite. Non point accident mais constante, non

---

1. L'histoire en est tissée... Prenons quelques exemples : le XVIIᵉ 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, soulè-
vement 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 Bohème,

---

*point trouble mais mouvement apporté dans le cours paresseux
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'un des éléments de la chaîne invisible du tissu des civilisa-
tions.*

*Mais nous nous trouvons immédiatement arrêté par un souci
formel de définition. Que disons-nous au travers de ce mot révo-
lution? 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, révo-
lution 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, révo-
lution 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, Birmin-
gham, 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 indé-
pendance 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.

Table 1.1. Modern societal transformations identified since 1950

1639 France: Nu-pieds

1640-44   China: against the Ming

1640 Spain: Catalonia

1640-88   Portugal (against Spain)

1641 Ireland, Switzerland, Germany, Russia

1643 France: Rouergue

nent revolution?

1645 France: Montpellier

1647 Italy: Naples (against Spain)

1648-54   England

1648 France: Fronde

1648-54   Ukraine, Moscow, Koslov, Tomsk; Maharatta (Hindus against Mongols)

1649 Russia: Moscow

1650 Russia: Novgorod; Holland

1653 Switzerland

1653 Russia: Moscow

1664-70   France: Audijos

1670-71   Russia/Azerbaijan: Stenka Razin; Bohemia

1673-81   China

1675 France: Brittany, Bourdeaux, Camisards; India: Sikhs,

1679 Ireland

PRÉFACE

*R*évoltes, révolutions, émeutes, rébellions, émotions, guerres civiles, coups d'État, l'histoire entière en est tissée[1]. La vie de l'homme en est faite. Non point accident mais constante, non

1. L'histoire en est tissée... Prenons quelques exemples : le XVIIe 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;
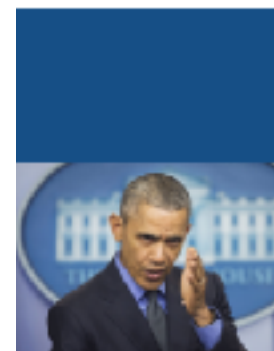
**Age
of
Information**

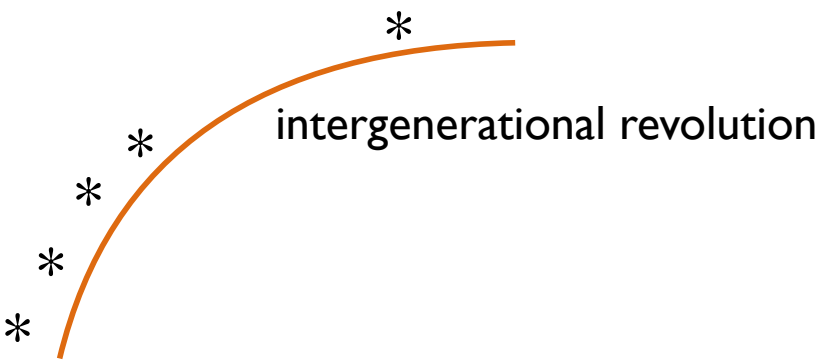why history matters

revolution

intergenerational revolution

getting from one to another

what's different?

what's in an age?

the "age
of information"

intergenerational revolution

being digital
NICHOLAS NEGROPONTE

short durée?

Marc Prensky   Digital Natives Digital Immigrants   ©2001 Marc Prensky

Digital Natives, Digital Immigrants

By Marc Prensky

From *On the Horizon* (MCB University Press, Vol. 9 No. 5, October 2001)
© 2001 Marc Prensky

It is amazing to me how in all the hoopla and debate these days about the decline of education in the US we ignore the most fundamental of its causes. *Our students have changed radically. Today's students are no longer the people our educational system was designed to teach*.

DigitalNatives
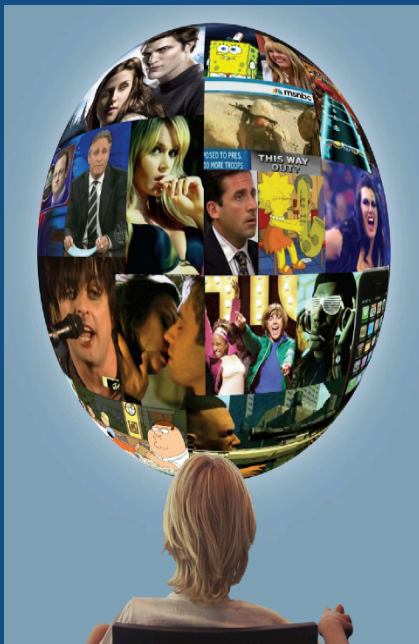
permanent revolution?

children of the depression

baby boomers

generation x

generation y

generation m^1

generation m^2

... generation m^n

America's Best Days May Be Behind It

Eduardo Porter
ECONOMIC SCENE   JAN. 19, 2016

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Take a look back at some of the most popular TV programs of the mid-1960s — "The Dick Van Dyke Show," "Bewitched," even "The Beverly Hillbillies" — and what do you see?

Like today, middle-class Americans typically had washing machines and air-conditioning, telephones and cars. The Internet and video games were not yet invented. But life, over all, did not look that different.

Mary Tyler Moore in "The Dick Van Dyke Show." Though the Internet and video games were not yet invented, life over all in the 1960s did not look that different. The Hudson River Museum

There were TVs and radios in most homes. Millions of people worked in downtown offices and lived in suburbs, connected by multilane highways. Americans' average life expectancy at birth was 70, only eight years less than it is today.

But flash back 50 years earlier. Then, less than half the population lived in cities. Though Ford Model T's were starting to roll off the assembly line, Americans typically moved around on horse-drawn buggies on dirt or cobblestone roads. Refrigerators or TVs? Most homes weren't even wired for electricity. And average life expectancy was only 53.

John

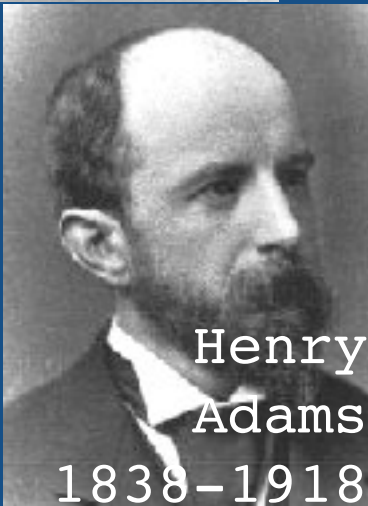# steam natives/steam immigrants
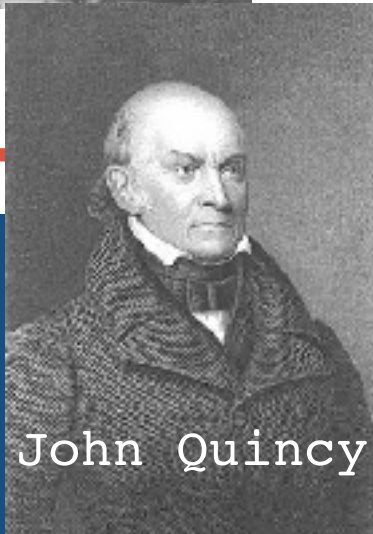
John Quincy
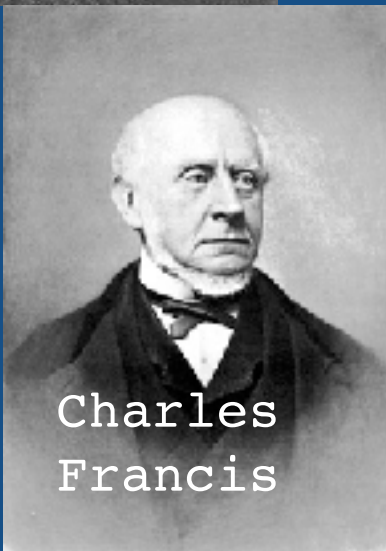
Charles
Francis

the Adams family

"Only on looking back ... at his own figure in 1854, and pondering on the needs of the twentieth century, he wondered whether, on the whole, the boy of **1854** stood nearer to the thought of 1904, or to that of the year 1 ... in essentials, the American boy of 1854 stood nearer to the year 1 ... **Before the boy was six years old** he had seen four impossibilities made actual--the ocean-steamer, the railway, the electric telegraph, and the Daguerreotype."

--Henry Adams,
The Education of Henry Adams [1905]

Henry
Adams
1838-1918

1_Hofl-1.17.
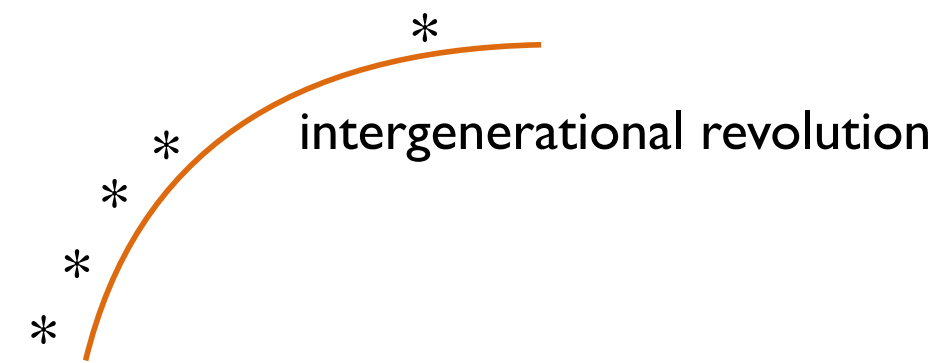
1854, or was it 1847?

Daniel Webster
1782–1852

"the age is remarkable for scientific research. … The ancients saw nothing like it. The moderns have seen nothing like it till the present generation. We see the ocean navigated and the solid land traversed by steam power, and intelligence communicated by electricity. Truly this is a miraculous era."

—Daniel Webster, "Dedication of the Northern Railroad," 1847.

generational paradox?

who's wrong?

and what's odd?

intergenerational revolution

why history matters

revolution

getting from one age
to another

what's in an age?

the "age
of information"

how do we know?
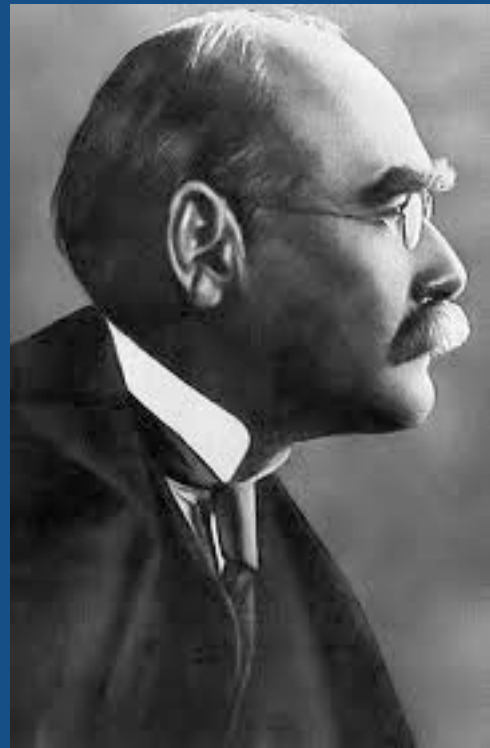
Rudyard Kipling
1865–1936

"What should they know of England

Who only England know?"

-- Rudyard Kipling, "The English Flag," 1899

what should we know of our "age" who …?

"You can't connect the dots looking

forward, you can only connect them

looking backwards."   -- Steve Jobs,

Stanford Commencement, 2005

"The real history of communications, in showing us the contradictions, shows us also the need to choose between genuinely alternative directions for the future"

— Raymond Williams, *Communications*

how do we know?

"What should they know of England

Who only England know?"

-- Rudyard Kipling, "The English Flag," 1899

what should we know of our "age" who ...?

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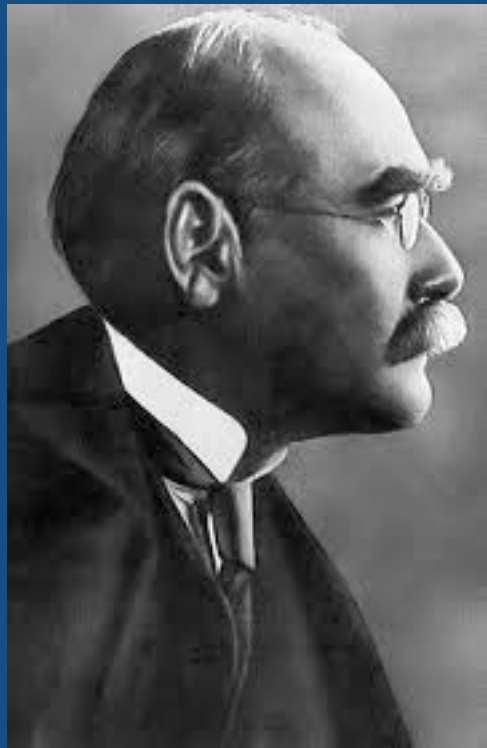
Rudyard Kipling
1865–1936

dangerous pastime?

"Mao urged the emulation of ... an emperor [Qin Shi Huang] who had advocated eliminating anyone who used history to criticise the present. .... [Huang] 'buried 460 scholars but we buried 46,000.'"

James C. Scott, "Tyranny of the Ladle," 2012

hence?
talk of revolution, transformation, rupture, coupure, …. 2.0

and a challenging pastime?

like learning cricket?

"The past is a foreign country.

They do things differently there."

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

in other countries

Plato
Trithemius
Caxton
Erasmus
Sprat
Addison
Steele
Knox
Johnson
Harrison
Morse
Babbage
Lovelace
Bell
Marshall
Bush
Riefenstahl
Capra

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

coming up:
what's the role of tech?

Stanford, California
& Cambridge, England
1973

tech change — 50 years on

24 Jan: Technological Revolutions

In this class we will look at arguments that suggest or contest the idea that technologies (and particularly information technologies) are capable of changing the world by themselves. Such claims are common today, but as we shall see, they have a long history.

Required Reading

McLuhan, Marshall. 1964. *Understanding Media.* New York: McGraw-Hill.
Read: "Preface to Third Printing" (pp. v-x), and "Introduction" & "The Medium is the Message" (pp. 3-21).
Source: Course reader

Williams, Raymond. 1974. *Television and Cultural Form.* New York: Schocken Books.
Read: Chapter 1, introduction and sections a & b, pp. 1-11; & chapter 5, section c, pp. 119-127.
Source: Course reader

why them?

"what people felt about it"

"very large structural changes that are occurring today… data classification yields to pattern recognition … 'information overload' … The young student today grows up in an electronically configured world."

— Marshall McLuhan,
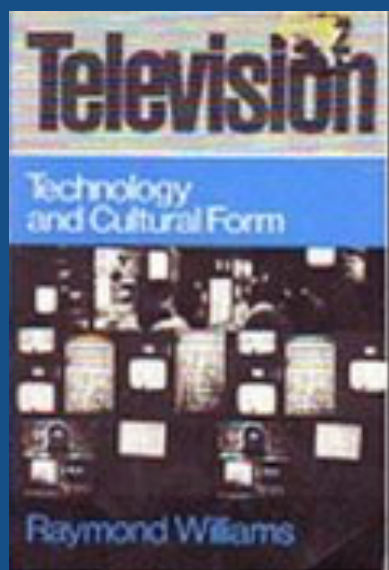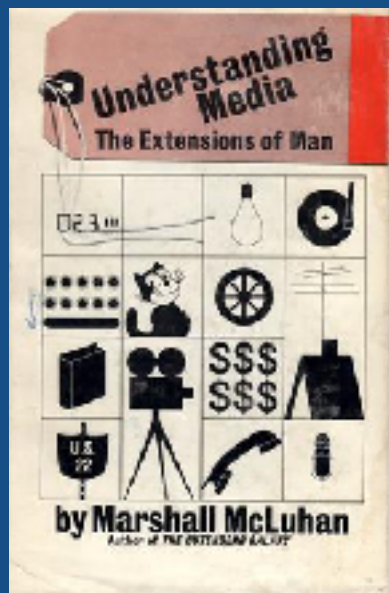Understanding Media, 1964

Why *then*?

"Television has now been a … service for a whole generation"

— Raymond Williams
Television and Cultural Form, 1974

assignment

McLuhan writes that "social life is totally threatened by the electric technology" [17] and that, where "print created individualism and nationalism" [19-20], the "electric implosion" [5] by "abolishing both space and time" [3] now "compels commitment and participation" [5] that will ultimately lead to us all living in an interconnected "global village" [111]. Williams, in response, asks whether it is "reasonable to describe any technology as a cause." [9]

Some see our "information age" as the result of another "implosion" beyond McLuhan's dreams. Does McLuhan's or Williams's argument best account for what got us here?