

A History of Knowledge

Oldest Knowledge

What the Sumerians knew

What the Babylonians knew

What the Hittites knew

What the Persians knew

What the Egyptians knew

What the Indians knew

What the Chinese knew

What the Greeks knew

What the Phoenicians knew

What the Romans knew

What the Barbarians knew

What the Jews knew

What the Christians knew

Tang & Sung China

What the Japanese knew

What the Muslims knew

The Middle Ages

Ming & Manchu China

The Renaissance

The Industrial Age

The Victorian Age

The Modern World

What the Modern Age knew

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1919-1945: The Age of the World Wars

1946-1968: The Space Age

1969-1999: The Digital Age

A fanatic is one who can't change his mind and won't change the subject.

Winston Churchill

History will be kind to me for I intend to write it.

Winston Churchill

"The most thought-provoking thing in our thought-provoking time is that we are still not thinking"

(Martin Heidegger, 1951)

"Politics is too serious a matter to be left to the politicians."

Charles De Gaulle

He does everything wrong, but it sounds right

(Charles Mingus of Ornette Coleman)

*This whole world
Is one big prison yard.
Some of us are prisoners
The rest of us are guards.*
(Bob Dylan)

*You must be the change
you wish to see in the world*

(Mahatma Gandhi)

What the Modern Age knew

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What the Modern Age knew

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The Modern Age

- 1946: Churchill delivers in the USA the "Iron Curtain" speech
- 1946: Communist guerrillas begin a liberation war against France in Indochina
- 1947-1967: Independence of British colonies, from India to Aden
- 1947: one million people die in riots due to the partition of India and Pakistan
- 1947: The transistor
- 1948: first Arab-Israeli war
- 1949: Mao Zedong proclaims the People's Republic of China
- 1949: NATO is formed by the western Europe and the USA
- 1949: The Soviet Union detonates its first atomic bomb
- 1950: China invades Tibet
- 1950: Korean war (4 million die)

The Modern Age

1957: Albert Sabin develops the oral polio vaccine

1956: the first Japanese car is sold in the USA

1957: Italy, Germany, France found the European Community

1957: the Soviet Union launches the Sputnik

1958: Mao's "Great Leap Forward": 30 million people die

1960: The world's population is 3 billion

1961: the Soviet Union builds a wall to isolate West Berlin

1962: France recognizes Algeria's independence

1964-73: Vietnam vs USA (three million Vietnamese die)

1964: China becomes the fifth nuclear power

1964: Mario Savio founds the "Free Speech Movement"

1966: Mao launches the "Cultural Revolution": millions die

1966: the summer of Love of the hippies in San Francisco

The Modern Age

- Media
 - 1948: Columbia replaces shellac with vinyl and reduces the playback speed from 78 to 33-1/3 rpm
 - The 12-inch 33-1/3 RPM long-playing vinyl record: the LP
 - 1960: Theo Maiman's laser (Light Amplification by Stimulated Emission of Radiation)
 - 1962: the audio cassette is introduced

The Modern Age

- Records
 - Recovery of record industry
 - 1948: Columbia replaces shellac with vinyl and reduces the playback speed from 78 to 33-1/3 rpm
 - The 12-inch 33-1/3 RPM long-playing vinyl record: the LP
 - 1949 Rogers and Hammerstein's "Oklahoma" is the first record to sell a million copies

The Modern Age

- Records
 - The LP can play 20 minutes of continuous music, ideal for classical music lovers
 - The 45 rpm is ideal for short pop songs
 - The same division of Victor's Red Seal and Black Seal of 50 years earlier
 - 1958: stereophonic recording

The Modern Age

- Records
 - 1962: Philips introduces the audio cassette
 - The cassette player makes music portable and spreads to cars

The Modern Age

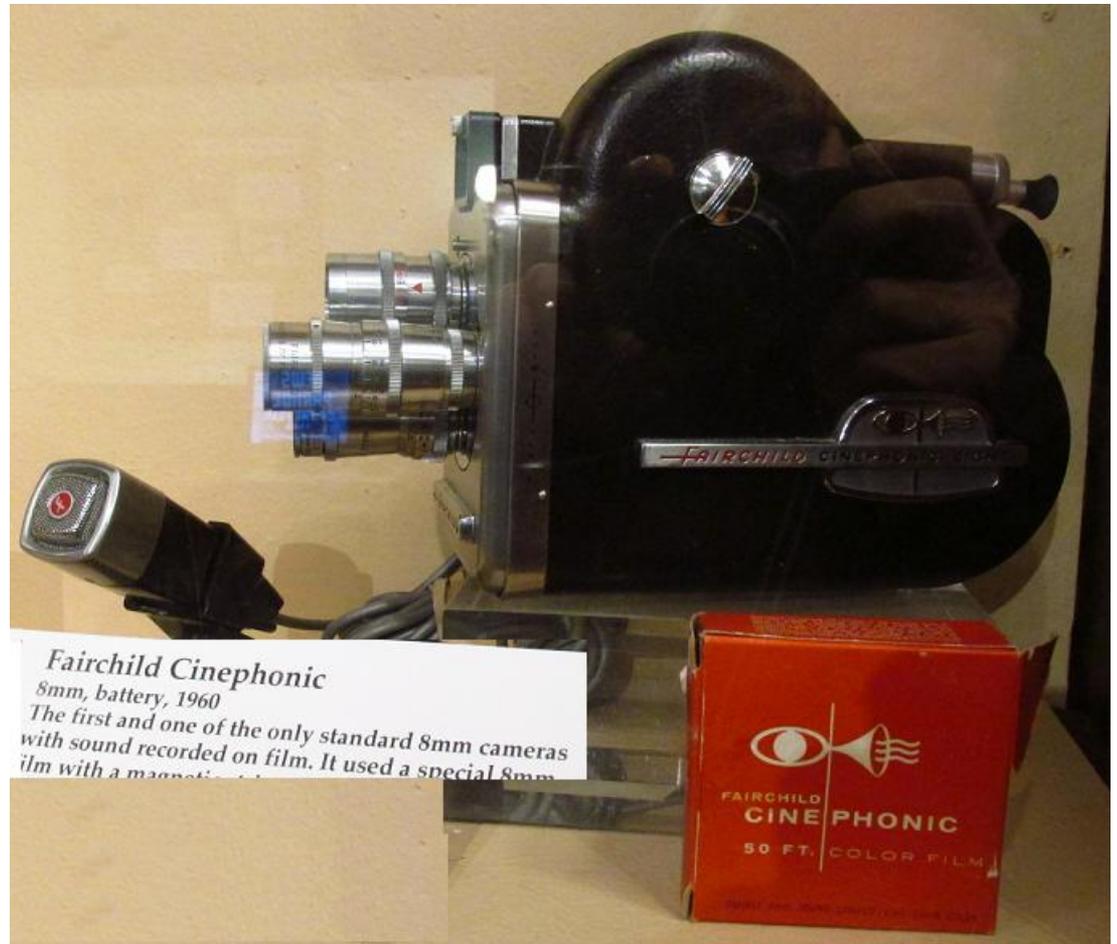
- Instant Photography
 - 1947: Edwin Land of Polaroid demonstrates demonstrates his instant camera Model 95
 - Instant photography required a new kind of camera and film
 - Polaroid revolutionized photography by reducing to seconds and to the space of a little box the dark-room process of developing a negative into a photograph

The Modern Age

- Media
 - 1960: Theo Maiman's laser (Light Amplification by Stimulated Emission of Radiation)

The Modern Age

- Video



The Modern Age

- Semiconductors
 - 1947: AT&T's Bell Labs invent the transistor (William Shockley, John Bardeen, Walter Brattain)
 - 1949: The USA files an antitrust lawsuit against AT&T
 - 1949: The EDVAC, the first stored-program computer
 - 1952: AT&T's symposium on the transistor, open to everybody
 - 1954: Texas Instruments introduces the first commercial transistor
 - 1954: The first transistor radio (“Regency”)



The Modern Age

- Semiconductors
 - 1958: Texas Instruments invents the integrated circuit (Jack Kilby)
 - 1961: Texas Instruments introduces the first commercial integrated circuit
 - Military and space applications use the integrated circuit
 - 1971: Intel invents the microprocessor
 - Universities are irrelevant in semiconductor progress because the manufacturing process is too costly
 - Universities are crucial for progress in computers

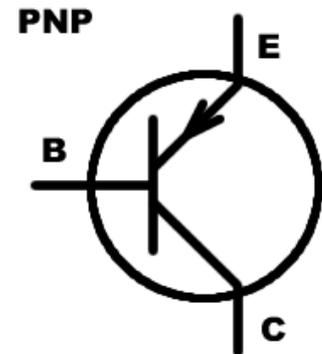
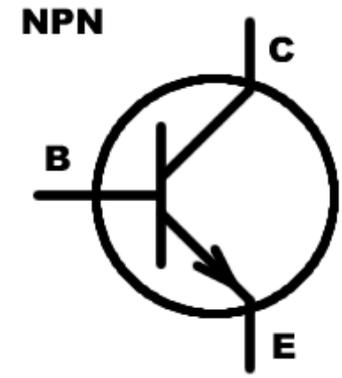
The Modern Age

- Semiconductors
 - Solids (not gases or liquids)
 - Carbon, silicon and germanium have four electrons in their outer orbital
 - They can be conductors as well as insulators
 - A pure semiconductor is almost an insulator
 - “Doping” it changes its conductivity
 - Combining semiconductors yields devices that allow control of electrical signals

II	III	IV	V	VI
	5 B	6 C	7 N	8 O
	13 Al	14 Si	15 P	16 S
30 Zn	31 Ga	32 Ge	33 As	34 Se
48 Cd	49 In	50 Sn	51 Sb	52 Te

The Modern Age

- The Transistor
 - The NPN from the PNP transistor
 - PNP's emitter “emitting” electrons, NPN's emitter “emitting” holes (positive charge)
 - NPN transistors can be used to switch ground to a device (turn it on/off)
 - An amplifier (eg replacing the vacuum tubes in radio engineering)
 - A switch (eg for binary logic)
 - Materials: germanium (1947) and silicon (1954)

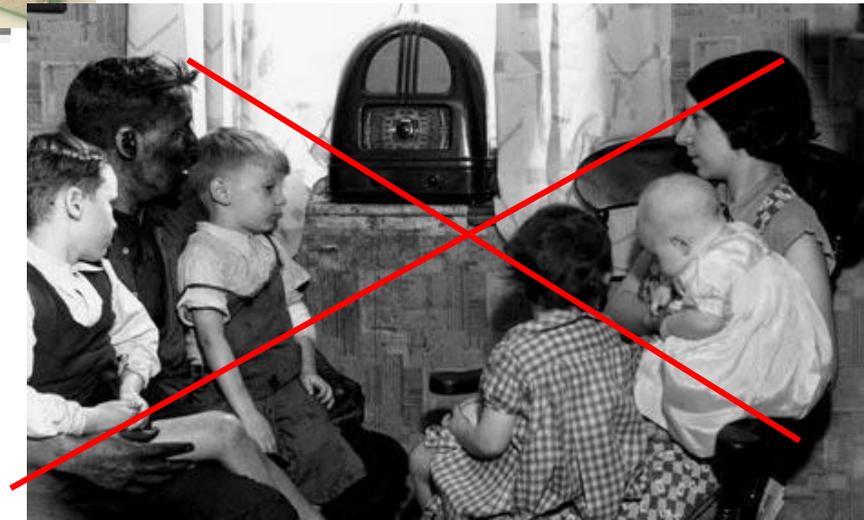


The Modern Age

- Solid-state electronics
 - Electronic conduction in the solid state as opposed to the gaseous state
 - Vacuum-tube devices and electro-mechanical devices (eg relays) vs solid-state devices: transistors (1947), integrated circuits (Jack Kilby, 1958), memory chips (Robert Dennard, 1966), microprocessor chips (Lee Boysel, 1970), light-emitting diodes (Nick Holonyak, 1962), liquid-crystal displays (Sharp, 1973), solar cells (1954)
 - Electricity is for power (heat, light, motors), Electronics is for communications (radio, control, binary logic)

The Modern Age

- Transistor radio



The Modern Age

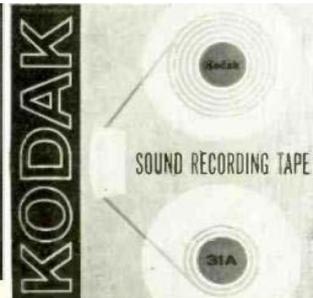
- **Television**



Candid portable tvset (1948)

The Modern Age

- Audio 1962/ USA



HARMAN-KARDON

• *Award Amplifier, Model A500.* An integrated amplifier with complete flexibility to handle the full variety of program sources required of the modern system. Lower output is sufficient to handle even an inefficient speaker system.



Norelco

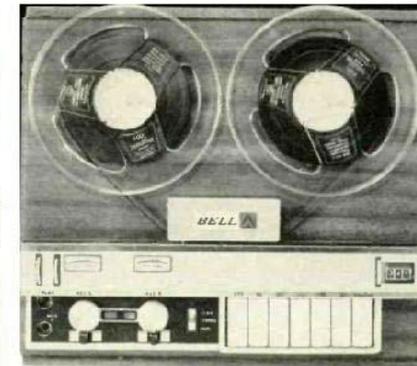
230 Duffy Ave., Hicksville, L. I., N. Y.



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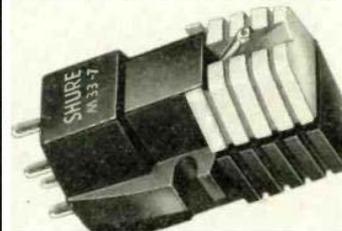


NORELCO

• *Continental "100" Fully Portable Tape Recorder.* Completely transistorized and battery operated, the Norelco Continental "100" is

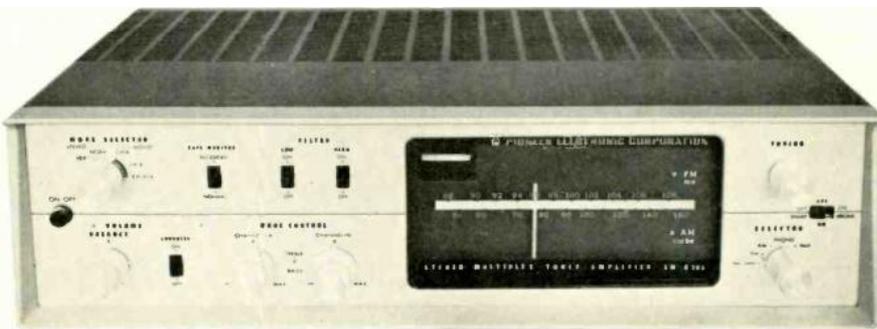


M33 Stereo Dynetic Phonograph Cartridge.



The Modern Age

- Audio 1962/ Japan



Pioneer SM-G 205 (1962)

 **PIONEER**
PIONEER ELECTRONIC CORPORATION
5 Otowacho 6-chome, Bunkyo-ku, Tokyo, Japan



\$595 complete with portable case

The Modern Age

- Pinball machines
 - 1931 Automatic Industries invents the coin-operated mechanical pinball machine, "Whiffle"
 - 1931 David Gottlieb's "Baffle Ball"
 - 1932 Raymond Moloney's "Ballyhoo"
 - 1933 Harry Williams' "Contact", the first pinball machine powered by electricity
 - 1936 Chicago, the center of the industry, became the first major city to enact a complete ban on the operation of the machines
 - 1942 New York bans pinball machines
 - 1947 David Gottlieb's "Humpty Dumpty", the first pinball machine with flippers
 - 1948-58 Golden Age of pinball

The Modern Age

- Solar energy
 - 1954: Bell Labs' Gerald Pearson, Calvin Fuller and Daryl Chapin build the first silicon solar cell
 - 1962: The Telstar communications satellite is powered by solar cells
 - 1963: Sharp introduces a mass-production photovoltaic module
 - 1964: Farrington Daniels' book "Direct Use of the Sun's Energy"
 - 1967: Soyuz 1 manned spacecraft is powered by solar cells

The Modern Age

- Oil
 - Worldwide economic boom fueled by cheap oil
 - Total world energy consumption more than triples between 1949 and 1972
 - Consumption of oil increases more than 500%
 - Motor vehicles increase from 64 million in 1949 to 281 million in 1972 (119 million in the USA alone)

The Modern Age

- Plastic
 - Tupperware (1946): unbreakable, air-tight, water-tight polyethylene containers replace glass and ceramic containers

The Modern Age

- Alternative energy
 - 1954: first solar powered battery (Bell Labs)

The Modern Age

- Urban landscape
 - Eisenhower-Kennedy-Johnson boom fueled by falling energy prices (the price of oil fell in relative terms from 1959 to 1969 and in absolute terms in 1963-69)
 - Imports of oil are slowly rising (10% in 1960, 28% in 1968, 36% in 1973)

The Modern Age

- Urban landscape
 - Boom of high-rise buildings
 - Suburban residential areas vs downtown financial districts
 - A world of asphalt and concrete
 - Boom of freeways

Los Angeles, 1962



Los Angeles, 1954



The Modern Age

- Urban landscape
 - Downtown
 - Steel-frame technology allows to build high-rise buildings
 - Central stations
 - Cars enable people to live in the suburbs

The Modern Age

- **Urban landscape**

Times Square, 1950s



Manhattan, 1950s

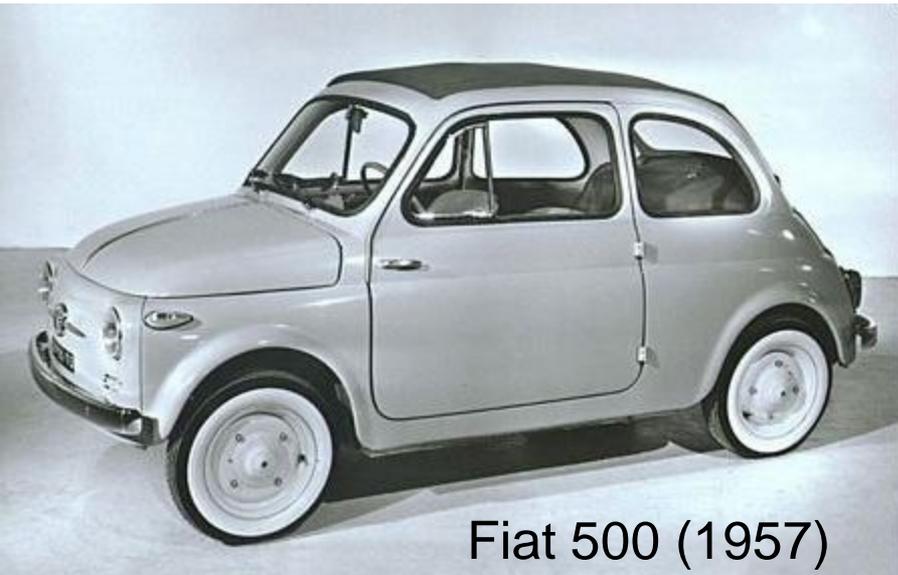
The Modern Age

- **The automobile in the 1950s**



The Modern Age

- **The automobile in the 1950s**



Fiat 500 (1957)

Volkswagen Beetle 1938



Mini 1959

The Modern Age

- Consumerism
 - 1950: The Northgate shopping center opens in Seattle
 - 1951: Shopper's World opens in Framingham (Massachusetts)
 - 1958: There are more than 4,000 drive-in theaters in the USA

The Modern Age

- Consumerism
 - Machines were not invented to solve the problems of hunger and illness, but to make money.
 - Machines were invented to mass produce goods that many people wanted to buy but were not produced in quantities large enough
 - Machines were invented to mass produce goods with the almost certainty of selling many goods to many people, i.e. of making easy money

The Modern Age

- Consumerism
 - Technologies of production became so good at producing that they started producing more than needed and therefore marketing was invented to convince people to buy more than what they need.
 - Farming was the beginning: farming was invented to provide the food needed by the people, but soon resulted in a surplus of food
 - The age of production gave rise to the age of consumption

The Modern Age

- Consumerism
 - Technologies of production turns luxuries into commodities and marketing turns commodities into necessities
 - Producers remain producers, but buyers/users become consumers, i.e. people who consume what is being produced as opposed to people who buy what they need
 - Instead of the market (what people need) driving production, it's production that shapes the market (what people buy)
 - The age of overconsumption (eg obesity due to too much sugar)

The Modern Age

- World's population in 1950
 - China 562,579,779
 - India 369,880,000
 - United States 152,271,000
 - Russia 101,936,816
 - Japan 83,805,000
 - Indonesia 83,413,921
 - Germany 68,374,572
 - Brazil 53,443,075
 - United Kingdom 50,127,000
 - Italy 47,105,000

The Modern Age

- Decolonization
 - Arab nationalism (Nasser)
 - Israel
 - Mao
 - Gandhi
 - Ho Chi Min
 - Africa
 - Che Guevara

The Modern Age

- Counter-colonization
 - Immigrants flood to the former European colonial powers, creating pockets of ethnic groups

The Modern Age

- The decline of Britain
 - William Beveridge (1945): the state must provide social insurance for the sick, the old, the unemployed (welfare state)
 - Clement Attlee's Labour government (1945-51): comprehensive social program aimed at reducing the inequalities in income, education, housing, medicine caused by capitalism
 - Trade unions
 - Diversity (did not join European Community, did not adopt metric system, left-hand driver seat, etc)
 - Outdated industrial infrastructure
 - Commonwealth (a cost, no longer a revenue)

The Modern Age

- The decline of Britain
 - British intellectuals detached from the economy
 - “The intellectual world failed to perceive that the bough on which they were fairly comfortably resting depended on business vitality which they tended to scorn” (Keith Joseph)

The Modern Age

- The decline of Britain
 - An empire based on the ideals of liberty and equality (in spirit if not always in practice)
 - Its subjects from North America to India adopted those ideals, and rebelled against the empire
 - An empire that was fundamentally a contradiction in terms

The Modern Age

- The decline of Britain
 - At the end of the war it was a debtor nation with a global empire
 - Doomed to become the USA's junior partner
 - British electorate indifferent to the loss of the colonies
 - Relatively peaceful independence of British colonies compared with bloody independence wars of French and Portuguese colonies
 - Satires of lingering ideals of empire

The Modern Age

- The decline of France
 - Lost three wars in a row to the British (“Succession” 1702-13, “Seven Years” 1756-63 and “Napoleonic” 1803-15)
 - Lost three wars in a row to the Germans (1870-71, “First World War” 1914-18, “Second World War” 1940-45)
 - Lost a war against Vietnam (1946-54) and a war against Algeria (1954-62)

The Modern Age

- Japan's Boom
 - World War II: greatest material destruction of an industrial economy ever
 - 1946: Japan becomes a USA ally
 - Japan ends centuries of isolation and becomes a western country
 - Japan abandons military stance of the Meiji and adopts peace and capitalism as driving ideologies
 - Coastal industrial areas built on non-agricultural land become centers of steel-making and ship-building

The Modern Age

- Japan's Boom
 - 1955: Greater Tokyo is the largest city in the world with 14 million people, and probably the largest city ever in history
 - 1960-62: Peak of charcoal and coal production, peak of land under cultivation, peak of timber cutting
 - 1973: Manufacturing employment peaks at 12 million, peak of shipbuilding
 - 1991: Working-age population peaks at 87 million
 - 2007: Peak of population at 128 million

What the Japanese knew

- Japan's Boom
 - Cultural boom
 - Fiction
 - Cinema
 - Architecture
 - Economic boom
 - 1991: Japan becomes the second economic power in the world



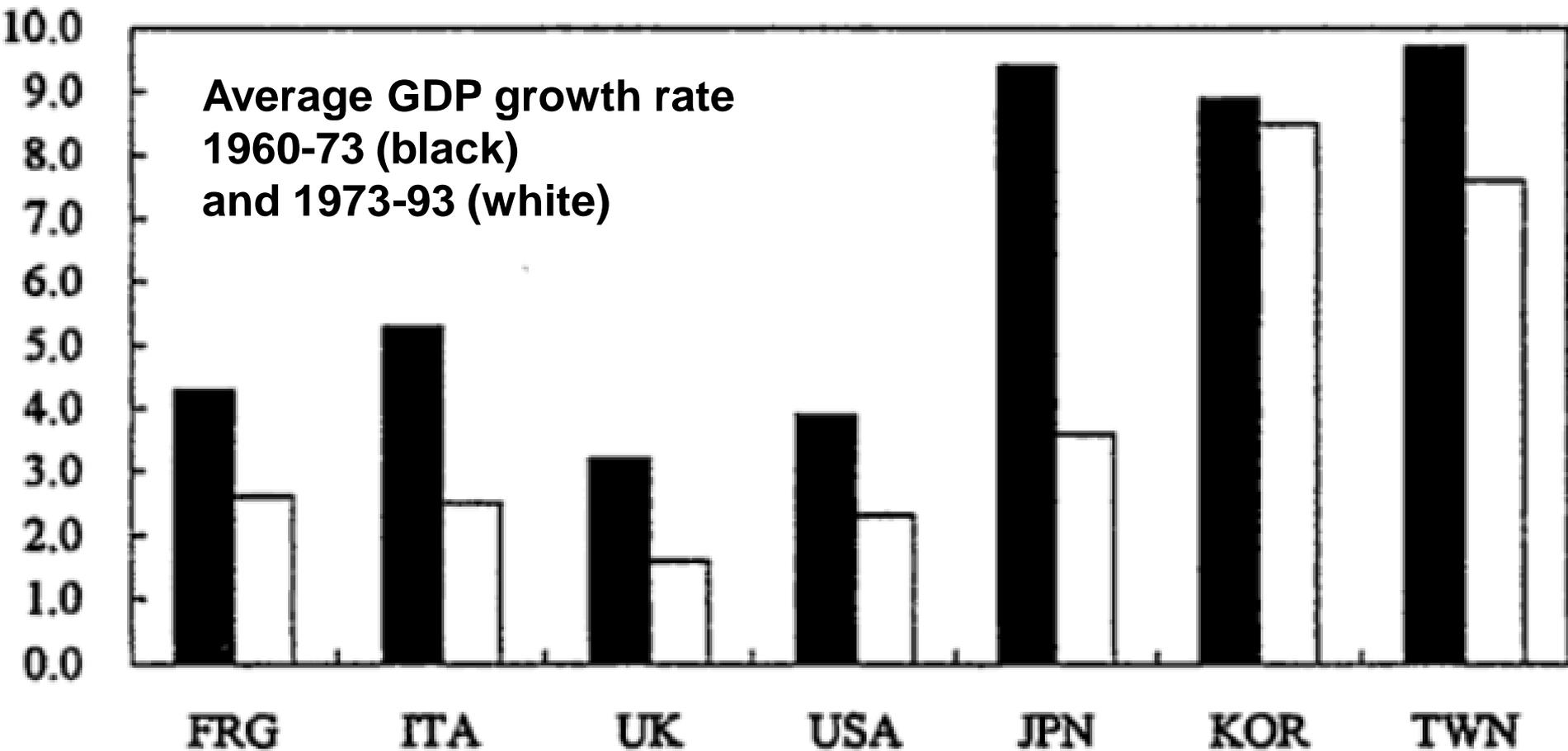
The Modern Age

- The rise of Germany
 - 1946: the German-speaking peoples end centuries of imperial ambitions and becomes a trusted ally of the western powers
 - Abandons military stance of the first, second and third reich and adopts peace and capitalism as driving ideologies



The Modern Age

- Economic miracles
 - Germany (FRG), Italy, Japan



The Modern Age

- Economic miracles
 - Main beneficiaries: West Germany, Italy, Japan
 - Western Europe: 1950s-60s
 - Japan: 10% yearly in 1955-73

The Modern Age

- Soviet Union



The Modern Age

- Soviet Union
 - World War II lessens the importance of the traditional European powers (Britain, France, Germany) and leaves the Soviet Union the strongest military power on the continent
 - End of Soviet isolation: the Soviet Union can create a buffer of friendly communist nations between itself and its enemies: Yugoslavia (1945), Czechoslovakia (1946), Poland (1947), Romania (1947), Bulgaria (1947), Hungary (1949), East Germany (1949)

The Modern Age

- Soviet Union
 - Stalinization of all Communist Parties and Stalinist-style terror (1949-52) except Yugoslavia
 - Exceptions: Finland (neutral), Greece (West), Austria (occupied)
 - Stalinization of Eastern Europe a reaction to the Truman doctrine (1947) and the Marshall Plan (1946)
 - Atomic bomb (1949)
 - Warsaw Pact (1955) a reaction to NATO
 - The USA has surrounded the Soviet Union with military bases and deployed tactical nuclear weapons in Europe (1954)

The Modern Age

- Soviet Union
 - Friends also in Asia
 - Communist North Korea (1948)
 - Communist China (1949)
 - Communist Vietnam (1950)

The Modern Age

- Soviet Union causes the largest movement of peoples in centuries
 - Germans move west (out of new Poland)
 - Finns move west (out of Soviet Karelia)
 - Soviet Poles move into new Poland
 - Baltics, Ukrainians and Belarussians moved east (Soviet Union)
 - North Caucasians deported to Central Asia (Soviet Union)
 - Russians from Siberia and Central Asians moved west (Soviet Union)
 - Russians moved to the Baltics (Soviet Union)
 - For the first time in Russian history peasants are not the majority

The Modern Age

- Soviet Union
 - Cultural war against Western ideas (avantgarde writers, artists and composers condemned)
 - Soviet culture isolated from the rest of the world
 - Exception: physics (Relativity and Quantum tolerated in order to build the nuclear bomb)
 - Persecution of national cultures and Jews (opposed to Lenin's exaltation of national cultures)
 - Cult of Russia (Russian scientists credited with inventing just about everything)
 - Cult of the Communist Party
 - Cult of Stalin

The Modern Age

- Soviet Union
 - Khrushchev's Thaw
 - Elimination of Stalin's old guard: Beria (1953), Malenkov (1955), Molotov (1956), Zhukov (1957), Bulganin (1958)
 - Anti-Stalinism (1956)
 - Development of "virgin lands" (Volga, Urals, Siberia, Kazakhstan)
 - Rehabilitation of non-Russian nationalism
 - Frequent travels abroad by Khrushchev
 - End of one-man rule: Khrushchev is accountable to the Central Committee

The Modern Age

- Soviet Union
 - Khrushchev's Thaw
 - Rehabilitation of Stalin's victims
 - Relaxation of control over intellectuals
 - Evtushenko's "Babi Yar" (1961)
 - Solzhenitsyn's "Ivan Denisovich" (1962)
 - Experimental theater "On the Taganka" (1963)
 - Critique of cult of personality
 - Khrushchev's visit to the USA (1959)
 - Split with Mao's China (1960)

The Modern Age

- Soviet Union
 - Khrushchev's Thaw
 - Annual GDP growth rate in the 1950s: 7.1% (USA's: 2.9%)
 - The first intercontinental ballistic missile (1957)
 - Sputnik, the first space satellite (1957)
 - Yuri Gagarin, the first astronaut (1961)
 - The Soviet Union has become an urban society and the working class has become the largest class

The Modern Age

- Soviet Union
 - Reactive foreign policy
 - Berlin Wall (1961) in retaliation for U2 spy plane (1960)
 - Cuban missiles (1962) in retaliation for US nuclear-armed missiles in Turkey (1962)
 - Military aid to North Vietnam in retaliation for US bombing of North Vietnam (1965)

The Modern Age

- Soviet Union
 - A communist empire
 - Natural enemy: liberal capitalist democracies of the Anglosaxon world
 - An atheistic empire
 - Natural enemies: Christian churches, Islam

The Modern Age

- The Rise of Communism



The Modern Age

Famines caused by communism

- 1932 Soviet Union (mainly Ukraine)
- 1959 China
- 1974 Ethiopia
- 1976 Cambodia
- 1984 Mozambique
- 1995 North Korea

The Modern Age

- Cold War
 - The Domino theory
 - Nuclear Deterrence
 - The Wall
 - Korea and Vietnam
 - Cuba and Chile
 - National ways to socialism
 - Caudillos and guerrillas
 - Liberation movements
 - Weapons of mass destruction
 - Consumerism
 - The media
 - The moon landing
 - The youth culture
 - Women's liberation
 - Bipolarism in Europe: the social-democratic state
 - Terrorism



The Modern Age



- Cold War
 - “Germany is finished... The real problem now is Russia. I can’t get the Americans to see it” (Winston Churchill, nov 1943)
 - Yalta Conference (feb 1945)
 - Potsdam Conference (aug 1945): partition of Germany into four occupation zones
 - 1945: Stalin’s anti-Western campaign
 - Russians deported to gulags if they had contact with Westerners
 - Westerners forbidden to visit Russia
 - Distortion of world events (Pravda)
 - Churchill’s Iron Curtain Speech (march 1946)
 - Andrei Zhdanov’s “Social Realism” (aug 1946)

The Modern Age

- Cold War
 - Greek civil war (dec 1946)
 - Vietnam's liberation war against France (dec 1946)
 - Communists rig Polish elections (jan 1947)
 - “Truman Doctrine” of USA support for free people around the world (march 1947)
 - Japan's constitution (may 1947)
 - CIA (july 1947)
 - India's independence (aug 1947)
 - 1948: Purges of scientists in USSR
 - Communist coup in Czechoslovakia (feb 1948)
 - Tito excommunicated by Stalin (march 1948)
 - Defeat of PCI in Italy's elections (apr 1948)

The Modern Age

- Cold War
 - Berlin blockade (june 1948)
 - Marshall Plan (july 1948)
 - NATO (april 1949)
 - West Germany's constitution (may 1949)
 - Soviet Union's atomic bomb (aug 1949)
 - Mao wins the civil war in China (oct 1949)
 - Japan becomes the pillar of USA policy in Asia
 - Sino-Soviet Treaty of Friendship (february 1950)
 - Joe McCarthy's witch hunt (feb 1950)
 - Korean War (june 1950)
 - China promoted to the status of military power
 - China annexes Tibet (oct 1950)

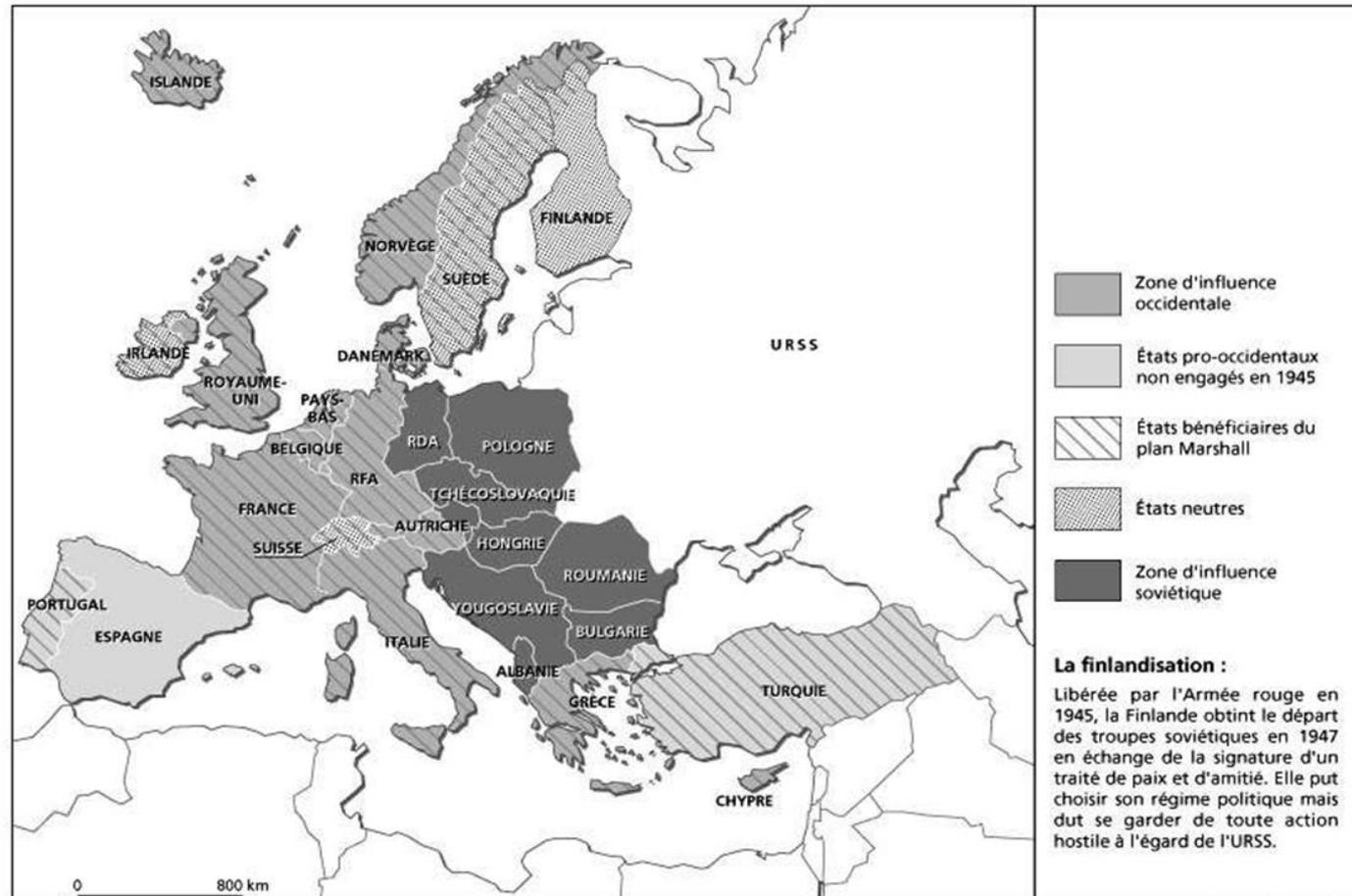
The Modern Age

- Cold War



SCIENCES PO
cartographie

La division de l'Europe en 1949



The Modern Age

- Cold War
 - 1951: USA's aircraft production back to peak level
 - Remilitarization of Germany
 - 500,000 people murdered by Stalin 1945-53
 - 1953-61: Dwight Eisenhower's economic boom
 - CIA's coup in Iran (aug 1953)
 - KGB (march 1954)
 - Dwight Eisenhower's "Domino Theory" (april 1954)
 - Warsaw Pact (may 1955)
 - "The Thaw": Khrushchev meets with Eisenhower in Geneva (july 1955)
 - India's Jawaharlal Nehru visits the USSR (june 1955)
 - Egypt buys weapons from USSR (sep 1955)

The Modern Age

- Cold War
 - Nikita Khrushchev denounces Stalin (feb 1956)
 - Suez War (oct 1956)
 - Andrei Gromyko foreign minister of USSR (feb 1957)
 - Fidel Castro seizes power in Cuba (feb 1959)
 - USSR invades Imre Nagy's Hungary (nov 1956)
 - European Union (march 1957)
 - Failed CIA coup in Indonesia (aug 1958)
 - “The Thaw”: Khrushchev visits the USA (sep 1959)
 - Split between China and the Soviet Union (june 1960)
 - North Vietnam forms the National Liberation Front for South Vietnam, or “Vietcong” (dec 1960)

The Modern Age

- Cold War
 - Failed “Bay of Pigs” invasion of Cuba (april 1961)
 - USSR erects the Berlin Wall (august 1961)
 - Non-Aligned Movement (sep 1961)
 - John Kennedy sends “advisors” to South Vietnam (dec 1961)



Krushev and Fidel Castro, 1963

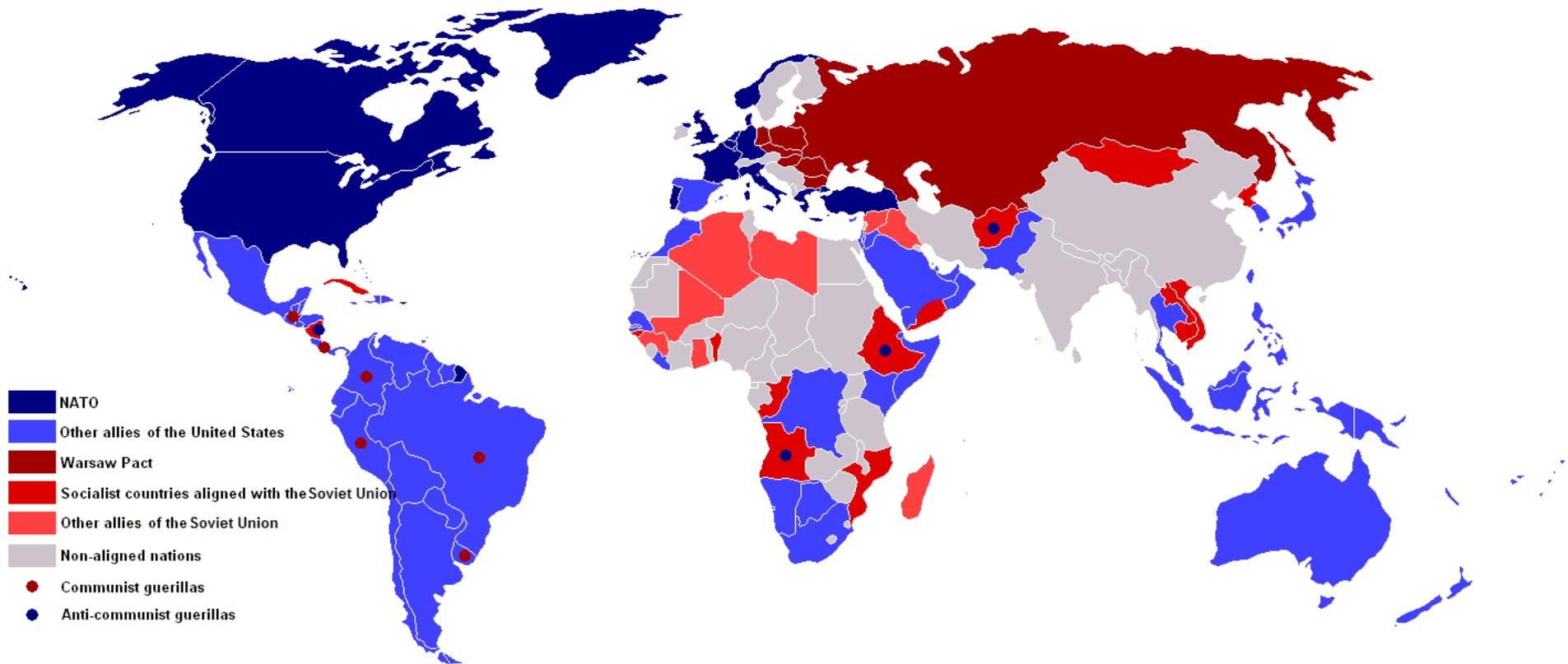
The Modern Age



- Cold War
 - India-China war with USSR on India's side (oct 1962)
 - Cuban Missile Crisis (october 1962)
 - China's atomic bomb (oct 1964)
 - Brezhnev's coup against Khrushchev (oct 1964)
 - USA sends troops to Vietnam (march 1965)
 - Communist coup in Indonesia (oct 1965)
 - KGB helps Palestinian terrorists (april 1968)
 - Student riots in France (may 1968)
 - "Non-proliferation Treaty" (june 1968)
 - USSR invades Alexander Dubcek's Czechoslovakia (aug 1968)

The Modern Age

- Cold War
 - Most of the actual war takes place in the developing world

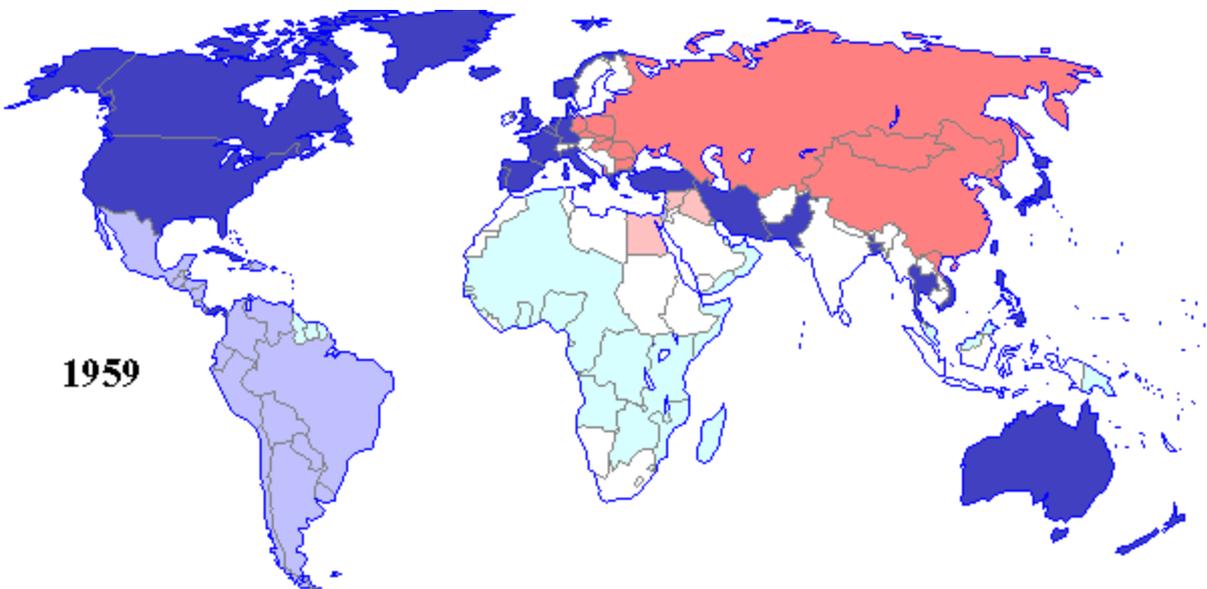


The Modern Age

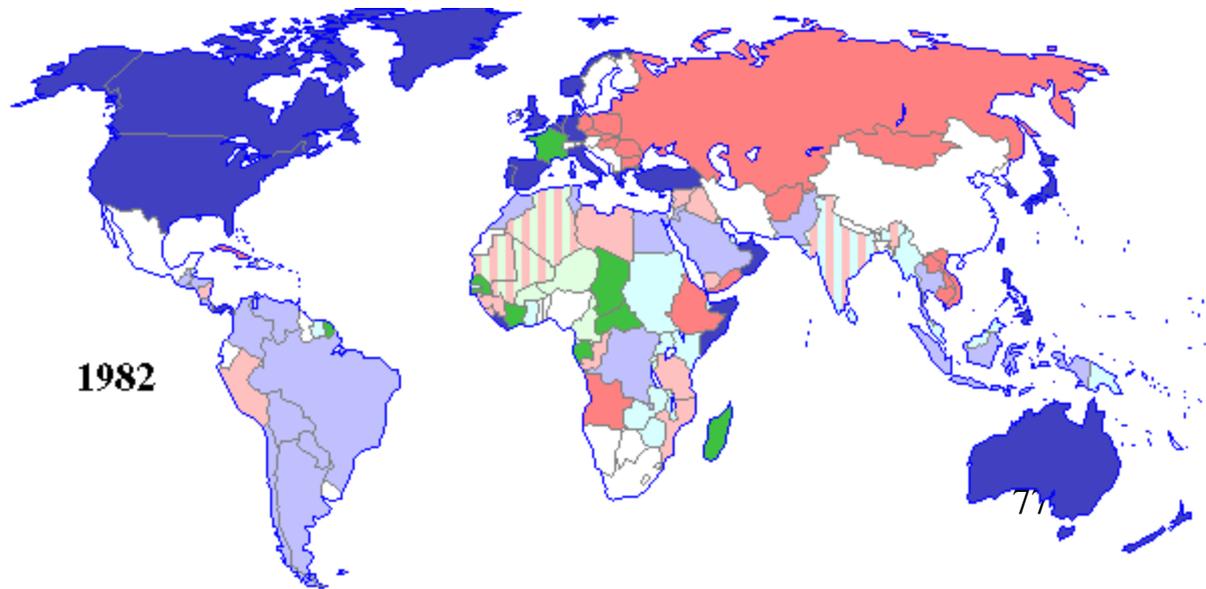
- Cold War
 - Cold War in Europe: Democracy vs Communism
 - Cold War in Eastern Asia: European colonialism vs independence movements (supported by the Soviet Union) and later fascist/military dictatorships (Western proxies) vs democratic movements
 - Cold war in Latin America: Fascist regimes of the landholding aristocracy (USA proxies) vs populist movements (supported by the Soviet Union)
 - Cold war in the Middle East: Medieval monarchies (Western European proxies) vs socialist republics (supported by the Soviet Union)
 - Cold war in Africa: European colonialism vs independence movements (supported by the Soviet Union)

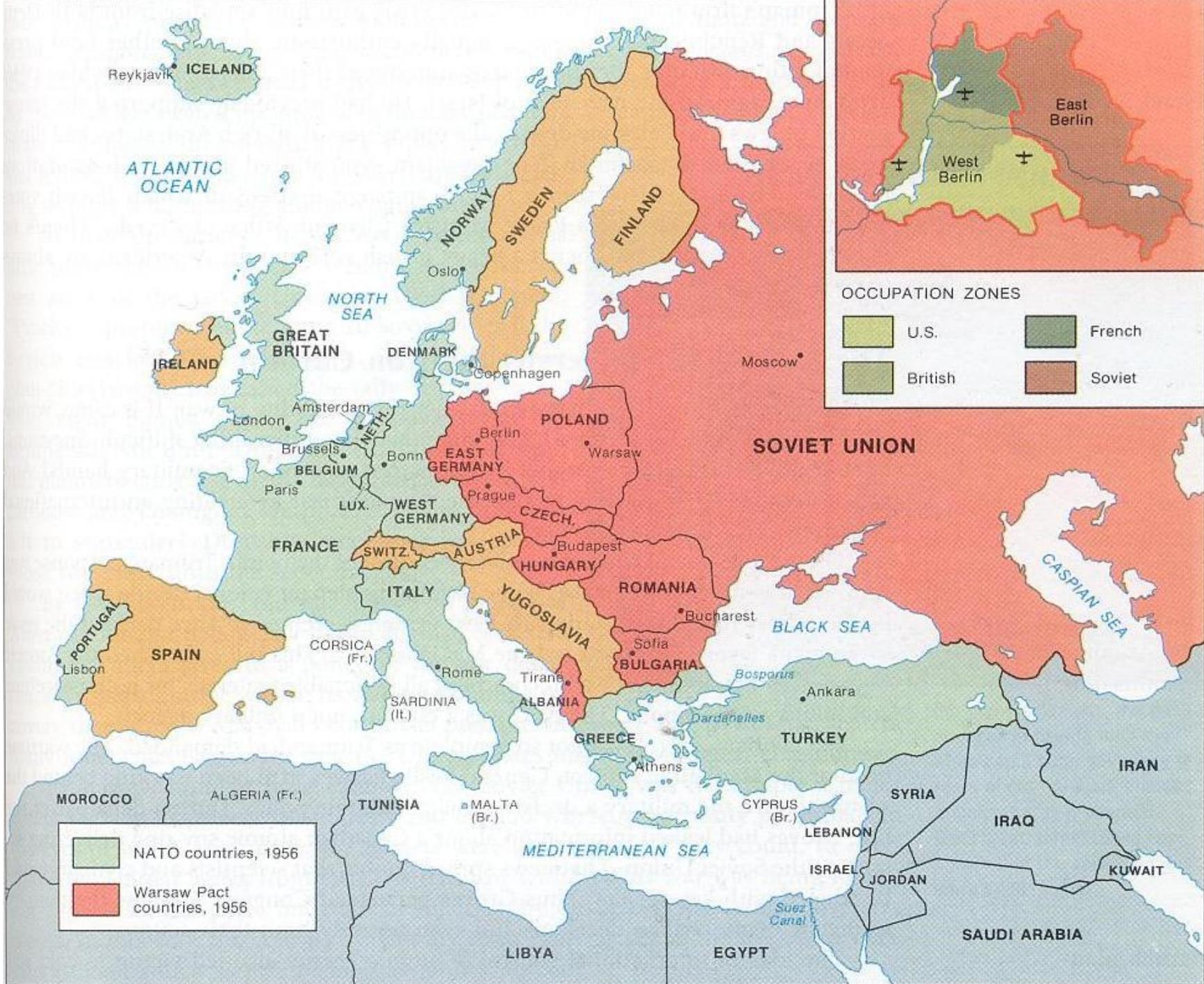
The Cold War

1959



1982





The Modern Age

- Exporting the (Marxist) revolution
 - Mao Tze-tung's China in 1949,
 - Ho Chi Min's Vietnam in 1954,
 - Sekow Toure's Guinea in 1958,
 - Fidel Castro's Cuba in 1959,
 - Julius Nyerere's Tanzania in 1961,
 - Kenneth Kaunda's Zambia in 1964,
 - Siad Barre's Somalia in 1969,
 - Haile Mengitsu's Ethiopia in 1974,
 - Samora Machel's Mozambique in 1975,
 - Pol Pot's Cambodia in 1975,
 - Robert Mugabe's Zimbabwe in 1980,
 - Arap Moi's Kenya in 1982,

The Modern Age

- Effect of the Cold War
 - Uniting the West beyond ethnic, linguistic, religious barrier
 - Largest weapon market of all times
 - USA sells to its allies
 - Soviet Union sells to its allies

The Modern Age

- Civil wars of the Cold War
 - China 1946-49 (USSR wins)
 - Korea 1950 (USA wins) 4,000,000
 - Vietnam 1962-75 (USSR wins) 3,000,000
 - Laos 1965-75 (USSR wins)
 - Cambodia 1969-75 (USSR wins)
 - Indonesia 1966 (USA wins)
 - Malaysia 1950-65 (USA wins)
 - Bolivia 1965-67 (USA wins)
 - Cuba 1959-today (USSR wins)
 - Chile 1973-89 (USA wins)
 - Peru 1970-99 (USA wins) 20,000
 - Colombia 1979-today (USA wins)
 - Ethiopia 1974-91 (USSR wins) 1,000,000
 - Angola 1975-2002 (USSR wins) 500,000
 - El Salvador 1980-92 (USA wins) 100,000
 - Guatemala 1960-96 (USA wins) 40,000

The Modern Age

- Cold War
 - USA block
 - Western Europe
 - Japan
 - South Korea
 - Taiwan
 - ASEAN
 - Latin America
 - Israel
 - Turkey
 - Iran (till 1979)
 - Pakistan
 - British Commonwealth
 - French Africa
 - USSR block
 - Eastern Europe
 - China (till 1962)
 - North Korea
 - Indochina
 - Most Arabs
 - India
 - Cuba
 - Nicaragua
 - Ethiopia
 - Angola
 - Mozambique

The Modern Age

- USA
 - USA dogma: spreading around the world USA-style political and economic institutions (from human rights to multi-party politics to market economy to free trade to women's rights) creates a better world, and fulfills the goal of history
 - Massive program of wealth creation
 - Western Europe
 - Far East
 - Israel
 - All USA allies develop quickly and become wealthy

The Modern Age

- USA
 - Expanding middle class
 - Secure lifetime jobs
 - Strong family values
 - High church attendance
 - Distinct gender roles
 - Polite media
 - Friendly politics
 - Prejudices towards other cultures
 - White (85% of the population) or black (10%)
 - Immigration mostly from Europe

The Modern Age

- Cold War
 - Peak of Christian power
 - Last major conflict between Christian powers

The Modern Age

- Wars and massacres:
 - see www.scaruffi.com/politics/massacre.html

The Modern Age

- Middle East
 - See logos10 (From “Arab independence” to “the oil era”)

The Modern Age

- Latin America
 - 1952: Latin America posts the highest population growth of all regions in the world
 - Mexico:
 - 1946: Miguel Aleman Valdez of the PRI is elected president of Mexico, the first civilian president of Mexico since the revolution, and the PRI wins all subsequent elections until 2000
 - 1968: 300 students are killed by the police during riots in Mexico between July and October
 - 1969: Pedro Aviles Perez founds the Sinaloa Cartel in Mexico

The Modern Age

- Latin America
 - Cuba
 - 1934-1959: Fulgencio Batista dictatorship (except 8 years)
 - 1956: Fidel Castro and Ernesto "Che" Guevara lead a second failed insurrection against Batista
 - 1959: Fidel Castro wins the revolution and installs a communist regime
 - 1962: Missile crisis between USA and Soviet Union
 - Cuba would remain one of the last communist countries in the world until 20??
 - Haiti
 - 1957: Francois Duvalier seizes power in Haiti, followed by his son JeanClaude (until 1986)

The Modern Age

- Latin America
 - Guatemala
 - 1931-44: Jorge Ubico dictatorship
 - 1945-54: Civilian rule with elections ("Democratic Spring")
 - 1952: Agrarian reform to distribute land to the peasants
 - 1954: US-engineered coup by Castillo Armas
 - 1957: President Castillo Armas assassinated
 - 1960: Communist guerrilla groups start a civil war
 - 1963: Another military coup
 - 1966: Return to civilian rule

The Modern Age

- Latin America
 - Nicaragua
 - 1934-80: Dictatorship of the Somoza family
 - 1961: The Frente Sandinista de Liberacion Nacional founded
 - Panama
 - 1946: The USA founds the School of the Americas in Panama to train military officers to fight against leftist regimes and insurgency
 - 1968-81: Omar Torrijos Herrera dictatorship

The Modern Age

- Latin America
 - Colombia:
 - 1946: The conservative Mariano Ospina Perez is elected president
 - 1948-58: Civil war caused by the assassination of leftist leader Jorge leads ("La Violencia")
 - 1958: A National Front government ends the civil war and civilian rule returns
 - 1966: Carlos Lleras Restrepo's program of land redistribution
 - 1966: Manuel (FARC) Marulanda (Pedro Antonio Marin) establishes the "Fuerza Armada Revolucionaria de Colombia" (FARC) is founded
 - Leftist insurgency and drug trafficking

The Modern Age

- Latin America
 - Ecuador
 - 1941: Peru-Ecuador war
 - 1944: A coup restores civilian rule
 - 1961: A military coup begins a period of chaos
 - 1934-72: Jose Maria Velasco-Ibarra elected president five times

The Modern Age

- Latin America
 - Venezuela
 - 1908-35 Juan Vicente Gomez dictatorship
 - 1929: Venezuela is the second world producer of oil after the USA
 - 1935-47 Decade of chaos
 - 1948-58 Marcos Perez Jimenez dictatorship
 - 1959: Return to civilian rule with regular elections
 - 1960: Venezuelan joins Arab countries to found OPEC (Organization of the Petroleum Exporting Countries)

The Modern Age

- Latin America
 - Bolivia
 - 1946: US-engineered coup in Bolivia
 - 1952: A revolution installs Victor Paz Estenssoro, ending more than a century of coups (a total of 179, including six presidents assassinated)
 - 1964: Military coup
 - 1967: The CIA kills Ernesto "Che" Guevara

The Modern Age

- Latin America
 - Brazil
 - 1930-1954: Getulio Vargas dictatorship
 - 1956-61: Juscelino Kubitschek presidency
 - builds Brasilia
 - hyper-inflation
 - 1961-64: Joao Goulart, a leftist reformist
 - 1964: military coup
 - 1970: Brazil's population is 93 million and the number of university students has increased from 144,000 in 1964 to 430,000
 - 1964-74 Brazil's GDP grows 56%

The Modern Age

- Latin America
 - Uruguay
 - 1903-1973: Oldest uninterrupted democracy in Latin America
 - 1960: Inflation spirals out of control in Brazil (2900%), Uruguay (1100%), Argentina (900%), Chile (500%)
 - 1963: Tupamaros rebellion, robberies and kidnappings
 - Paraguay
 - 1954-89: Alfredo Stroessner dictatorship

The Modern Age

- Latin America
 - Peru
 - 1945: First free election, won by liberal jurist Jose Luis Bustamante
 - 1948: Military coup
 - 1948-56: Manuel Odria's populist Peronista-style program
 - 1963: Return to civilian rule
 - 1965: Marxist guerrillas
 - 1967: the landowners (2% of the population) own 90% of the productive land
 - Hyper-inflation
 - 1968: Leftist military revolution led by general Juan Velasco Alvarado, who enacts a massive socialist-inspired agrarian reform

The Modern Age

- Latin America
 - Argentina
 - 1946: Juan Peron elected president
 - 1947: Female suffrage in Argentina
 - 1955: A military coup deposes Peron
 - 1958-66: Return to democracy with control from the Peronist Party
 - 1960: Inflation at 900%
 - 1966: Military coup

The Modern Age

- Latin America
 - Chile
 - 1938: The candidate of the Frente Popular, Pedro Aguirre Cerda, narrowly wins presidential elections (beginning of the Radical Years)
 - 1951: Chile's inflation is 1550%
 - 1952: Former dictator Carlos Ibanez wins elections (end of the "Radical Years")
 - 1957: Student riots kill dozens
 - 1960: Inflation at 500%
 - 1964: Eduardo Frei-Montalva of the Christian Democratic Party is elected president
 - 1967: Chile redistributes 15 million acres of land to the peasants

What the Modern Age knew

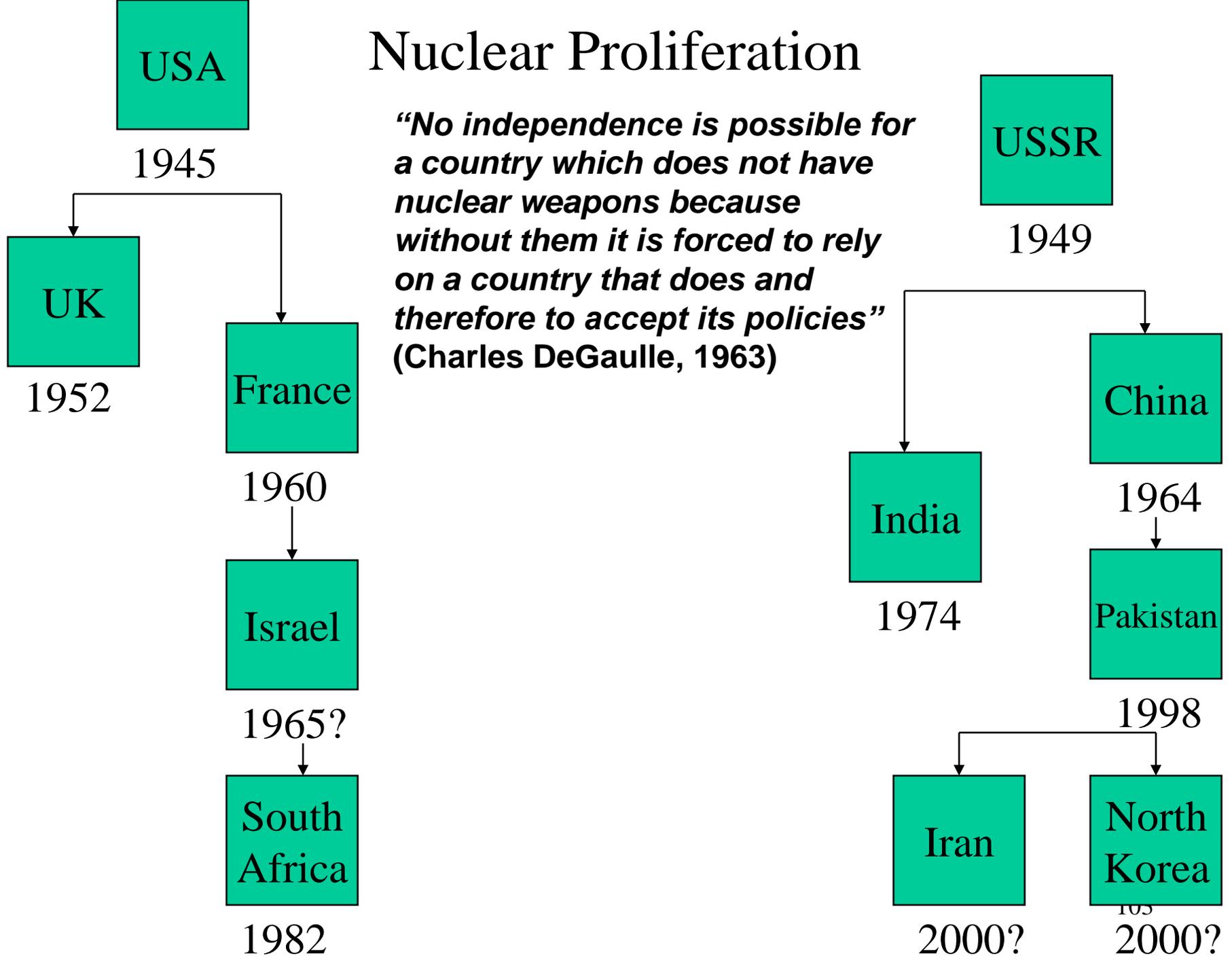
- World War II inventions
 - Computer (Tommy Flowers, Britain, 1943, vs Konrad Zuse, Germany, 1914)
 - Nuclear power (Enrico Fermi, USA, 1942, vs Werner Heisenberg, Germany, and Yoshio Nishina, Japan)
 - Rocket (Wernher von Braun, Germany, 1942)
 - Radar (Robert Watson-Watt, Britain, 1935)

What the Modern Age knew

- Cold War inventions
 - Spaceships
 - Internet
 - GPS

Nuclear Proliferation

“No independence is possible for a country which does not have nuclear weapons because without them it is forced to rely on a country that does and therefore to accept its policies”
(Charles DeGaulle, 1963)

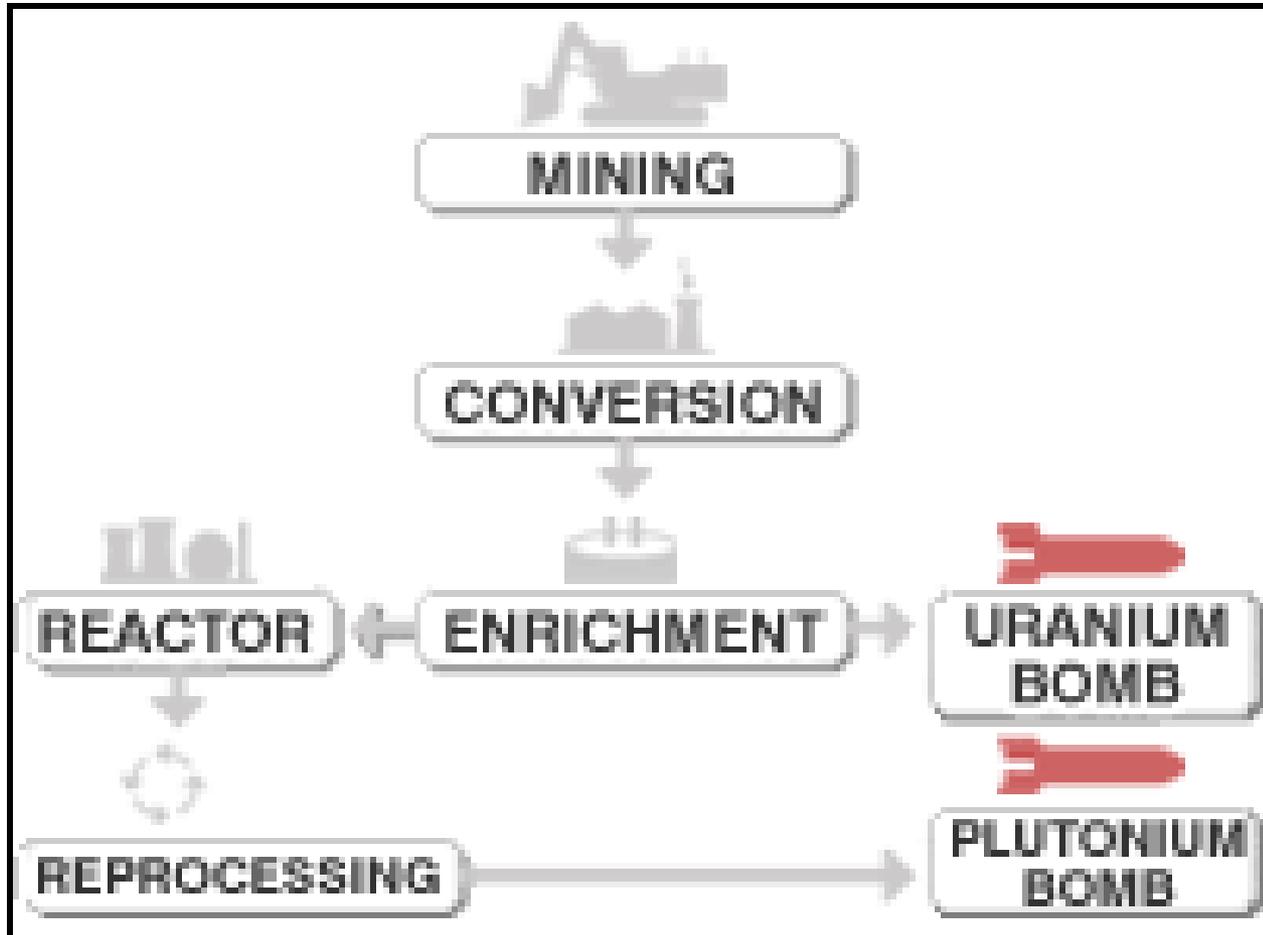


The Modern Age

- Nuclear weapons:
 - 1905, Switzerland: Albert Einstein discovers that $E=mc^2$
 - 1934, Italy: Enrico Fermi produces radioactive isotopes by neutron bombardment
 - 1938, Sweden: Lise Meitner discovers nuclear fission
 - 1941, USA: Glenn Seaborg discovers plutonium
 - 1942, USA: Edward Teller conceives the hydrogen fusion bomb
 - 1942, USA: Robert Oppenheimer leads the “Manhattan Project” to develop an atomic bomb
 - 1942, USA: Fermi achieves a nuclear chain reaction

The Modern Age

- Nuclear weapons





Hiroshima 1945

The Modern Age

- **Nuclear weapons**



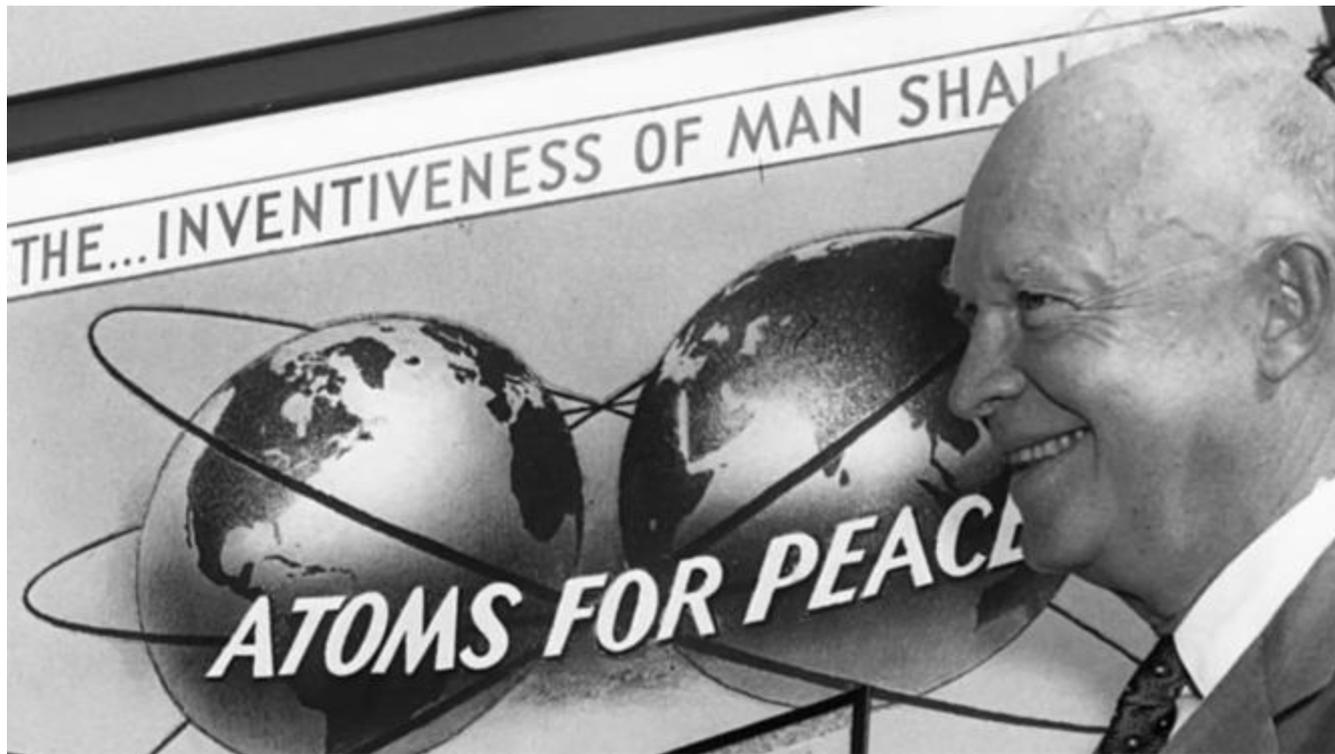
First hydrogen bomb: Eugenlab is vaporized in 1952¹⁰⁸

The Modern Age

- Weapons of Mass Destruction
 - Chemistry: gunpowder, explosives, chemical weapons
 - Nuclear physics: nuclear bombs
 - Biotechnology: biological weapons

The Modern Age

- Nuclear Power
 - 1953 Eisenhower's speech "Atoms for Peace"



The Modern Age

- Arab-Israeli wars:
 - I (1947-49): 6,373 Israeli and 15,000 Arabs die
 - II (1956): 231 Israeli and 3,000 Egyptians die
 - III (1967): 776 Israeli and 20,000 Arabs die
 - IV (1973): 2,688 Israeli and 18,000 Arabs die
 - Intifada I (1987-92): 170 Israelis and 1,000 Palestinians
 - Intifada II (2000-03): 700 Israelis and 2,000 Palestinians

Map & Graph: Europe: Economy: GDP per capita in 1950

↓ Scroll down for more information ↓

[Show map full screen](#)

	<u>Country</u>	<u>Description</u>	<u>Amount</u>
1.	Switzerland	\$8939	
2.	United Kingdom	\$6847	
3.	Sweden	\$6738	
4.	Denmark	\$6683	
5.	Netherlands	\$5850	
6.	Belgium	\$5346	
7.	France	\$5221	
8.	Norway	\$4969	
9.	Germany	\$4281	
10.	Finland	\$4131	
11.	Austria	\$3731	
12.	Ireland	\$3518	
13.	Italy	\$3425	
14.	Hungary	\$2480	
15.	Poland	\$2447	
16.	Spain	\$2397	
17.	Portugal	\$2132	
18.	Greece	\$1951	
19.	Bulgaria	\$1651	
20.	Romania	\$1182	
	Average	\$4,195.95	

Source: [Angus Maddison](#)

The Modern Age

- **Per capita income in 1950 (and 2000)**
 - **USA** **\$2,536** **(\$38,000)**
 - **Britain** **\$1,393** **(\$26,000)**
 - **Germany** **\$1,001** **(\$27,000)**
 - **France** **\$1,172** **(\$26,000)**
 - **Japan** **\$382** **(\$38,000)**

The Modern Age

• Share of world product		1960	1970	1980	2000
– USA	25.9	23.0	21.5		31.9
– European Union	26.0	24.7	22.5		27
– Japan	4.5	7.7	9.0		13.4
– Soviet Union	12,5	12.4	11.4		-
– China	3.1	3.4	4.5		3.7

The Modern Age

- Energy production and consumption

Year	Energy Consumption by Sector (Quads)					Population (million)
	Resid.	Comm.	Indus.	Trans.	Total	
1950	6.0	3.9	16.2	8.5	34.6	152.3
1955	7.7	3.9	19.5	9.6	40.2	165.9
1960	9.1	4.6	20.8	10.6	45.1	180.7
1965	10.7	5.8	25.1	12.4	54.0	194.3
1970	13.8	8.3	29.6	16.1	67.9	205.1
1975	14.9	9.5	29.4	18.2	72.0	216.0
1980	15.9	10.6	32.2	19.7	78.4	227.2
1985	16.1	11.6	29.1	20.1	76.8	237.9
1990	16.4	12.8	32.4	22.5	84.3	249.5
1995	17.8	13.8	34.9	24.0	90.9	262.8
1996	18.7	14.3	35.9	24.5	93.9	265.2
1997	18.2	14.8	36.2	24.8	94.3	267.8
1998	18.0	14.9	35.9	25.4	94.6	270.2
1999	19.6	16.3	38.0	26.3	96.9	272.7
2000	20.4	17.0	38.8	26.6	98.5	282.1

What the Modern Age knew

- **USA**

- **1948: Merrill Lynch helps the middle class invest in the stock market**
- **1951: Franklin National Bank introduces the credit card**
- **1960s: Decline of manufacturing and rise of services**

What the Modern Age knew

- USA
 - Chemistry
 - 1946: Herman Mark founds New York's Polymer Research Institute to study the properties of rubbers, plastics and fibers
 - Mark's students join Du Pont
 - 1946-71: Plastic production grows at an average rate of 13% and it is mostly polyethylene
 - Plastics replace glass, leather, wood, steel, aluminum, paper
 - 1951: Du Pont, Remington and the Imperial Chemical Industries (ICI) settle an antitrust suit from the government by licensing technology to competitors, a fact that lowers the barrier for other companies to enter the field

What the Modern Age knew

- USA
 - Chemistry
 - Textile fibers replace silk, cotton and wool in clothing and home furnishings
 - Polymers depend on petroleum, abundant in the USA (in Germany the chemical industry focused on coal)
 - Huge government funding for pharmaceuticals

What the Modern Age knew

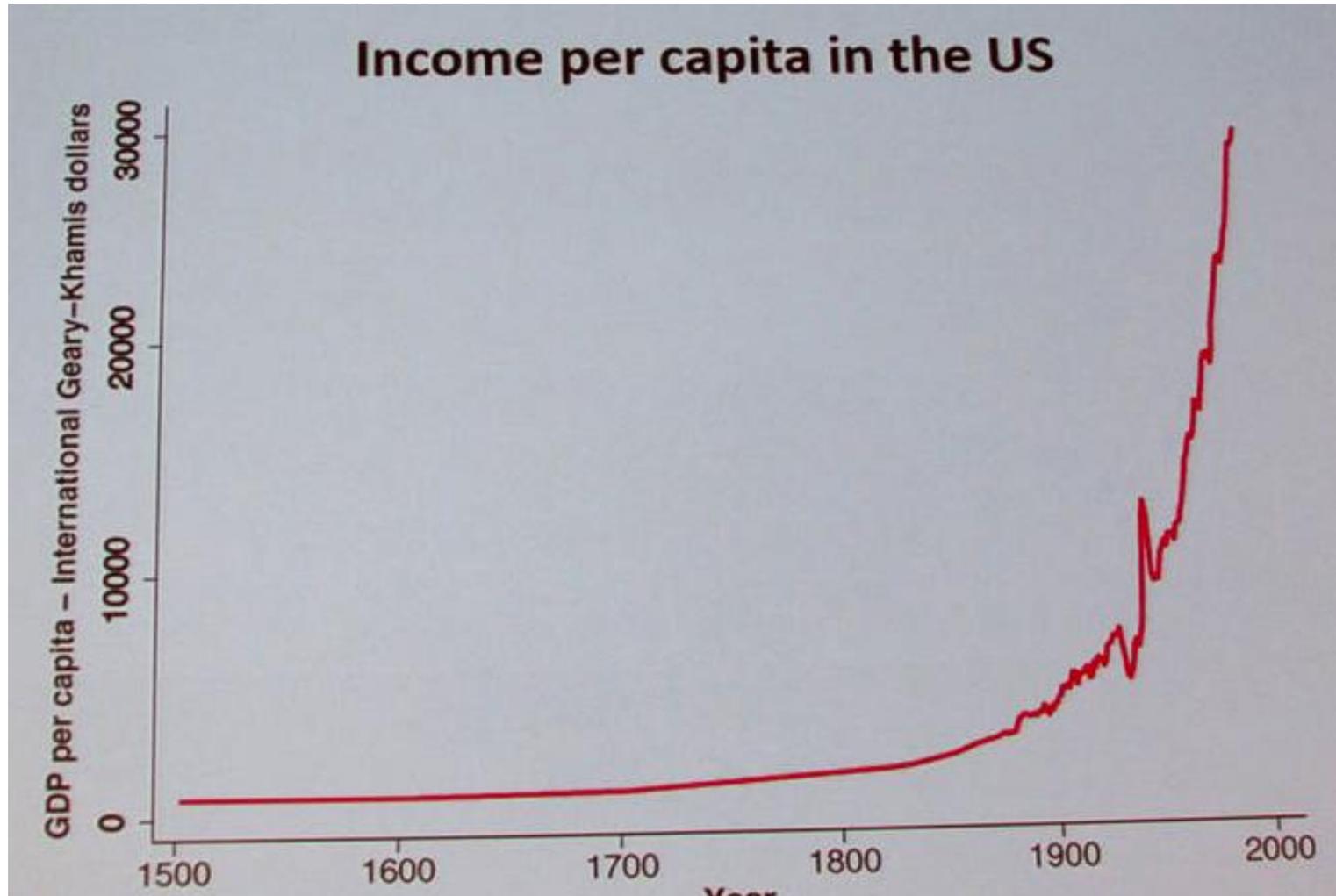
- USA
 - Government-assisted capitalism
 - Giant multi-purpose dams, canals, aqueducts of the 1930s
 - Freeway system (1956)
 - Moon Landing (1969)
 - Internet (1969)
 - GPS (1972)

What the Modern Age knew

- USA/ Boom of the middle class
 - 1950s
 - Upper mobility: working class becomes the middle class without any need for revolution
 - One-class society
 - Actually a myth propagated by tv shows and cinema (more than 50% are still low-income blue-collar or agricultural workers)
 - 1960s
 - Tax revolt
 - Counterculture (hippies)
 - Baby boom

What the Modern Age knew

- **USA/ Boom of the middle class**



What the Modern Age knew

- USA
 - Historical accidents layered the market economy (Phoenicians, Athens), democracy (Athens, Italian colonies) and the rule of law (Rome) on top of each other that Alexander's empire, the Roman Empire, the Italian seafaring republics (Venezia in particular), and, finally, after the pioneering colonization of the Iberian powers (Spain, Portugal), the multi-continental Western empires, namely Britain, France, Holland and the USA exported to the rest of the world.

What the Modern Age knew



- China/ After WWII
 - 1945: the USA tries to mediate between KMT and Communists but the KMT attacks the Communists
 - 1949: Chiang Kai-shek retreats to Taiwan while Mao Zedong enters Beijing and declares the People's Republic of China
 - 1950: Land reform (one million rural landlords killed)
 - 1951: Campaign against “counterrevolutionaries” (hundreds of thousands are executed)
 - 1951: Campaign against the capitalists (“Five Anti”)

What the Modern Age knew

- China/ Mao



Mao and wife Jiang Qing

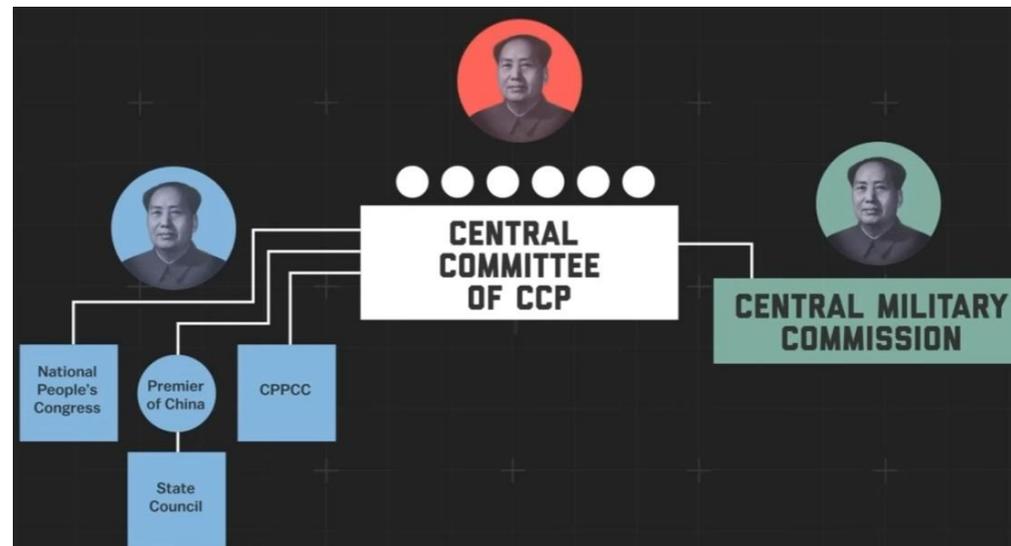


What the Modern Age knew

- China/ Mao



Mao seizes power in CCP



What the Modern Age knew

- China/ Mao



What the Modern Age knew

- China/ After WWII
 - Mao's "people's democratic dictatorship": workers, peasants, petty bourgeoisie, national bourgeoisie
 - Alliance with the Soviet Union
 - Mao-Stalin dissent:
 - Leninist theory based on the revolutionary struggle of the urban working class, Maoist theory aimed at mobilizing the peasantry
 - Stalin's priority is to contain Japan (I.e., Mao-Chiang alliance against Japan), Mao's priority is to defeat Chiang

What the Modern Age knew

- China/ After WWII
 - 1950-53: Korean war against the USA (800,000 Chinese soldiers die)
 - 1951: China invades Tibet
 - 1954: China attends the Geneva Convention over Vietnam
 - 1954: Mutual defense treaty between the USA and Taiwan
 - 1954: Deng Xiaoping secretary general of party
 - 1955: Soviet assistance to China's nuclear program
 - 1956: Khrushchev's attack against Stalin
 - 1956: Mao's "Hundred Flowers" movement to allow intellectuals voice their dissent
 - 1957: Beijing students erect the "democratic wall"

What the Modern Age knew

- China/ After WWII
 - 1956: Third Ministry of Machinery Building established, and nuclear research conducted at the Institute of Physics and Atomic Energy in Beijing.
 - 1957: A gaseous diffusion uranium enrichment plant in Lanzhou
 - 1957: China and the USSR sign an agreement on sharing defense technology including atomic technology
 - Uranium from Xinjiang

What the Modern Age knew

- China/ After WWII
 - 1957: Crackdown on intellectuals
 - 1958: Great Leap Forward: sustained growth through the mobilization of the masses and energy (26,000 communes for 120 million households)
 - 1959: Industry accounts for 43.4% of GDP but imported equipment from the Soviet Union paid in grain
 - 1961: Grain available to average Chinese down to 154 Kgs from 205 Kgs in 1957
 - 1959-62: Famine (20 million die, 4.5% decline in China's population)
 - 1959: Tibetan insurrection (87,000 dead, hundreds of temples destroyed, Dalai Lama flees to India)

What the Modern Age knew

- China/ After WWII
 - Xi Jinping's father



What the Modern Age knew

- China/ After WWII
 - June 1959: Project 596, an independent nuclear project, after Nikita Khrushchev stops helping China's atomic program
 - 1960: Break with the Soviet Union
 - 1960: China begins building the Lop Nur atomic test site in Xinjiang
 - 1961: China sends aid to Albania (first Chinese intervention in Europe since WWI)
 - 1962: China-India border war
 - Dalai Lama refugee in India (1959)
 - Indian efforts to undermine Chinese control of Tibet
 - No clear border treaty
 - Cuban missile crisis between USA and Soviet Union keeps them from protecting India

What the Modern Age knew

- China/ After WWII
 - 1964: First atomic test at Lop Nur - China becomes the fifth nuclear power, the first one in Asia
 - 1966: Cultural Revolution
 - Mao's dissatisfaction with party conservatism
 - Disgruntled urban youth
 - Purge of the cultural bureaucracy
 - Demolition of historical buildings
 - Destruction of schools and universities
 - Persecution of teachers
 - Deng Xiaoping fired from party
 - 1969: Border clashes with the Soviet Union



What the Modern Age knew



What the Modern Age knew

- China/ After WWII
 - Cultural Revolution



What the Modern Age knew

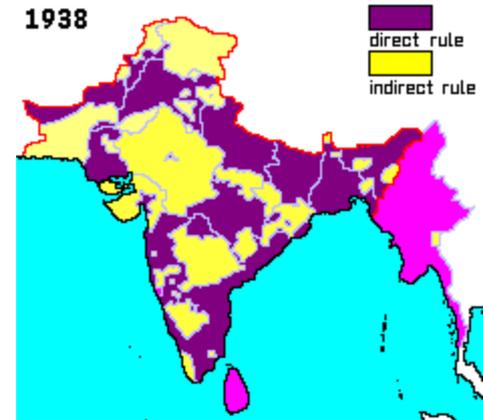
- China/ After WWII



Deng and Zhou Enlai

What the Modern Age knew

- India
 - Gandhi's vision:
 - A melting pot of religions
 - Demise of caste system
 - Rights of women
 - Bhimrao Ramji Ambedkar "The Annihilation of Caste" (1936)



What the Modern Age knew

- India
 - India was unified by the colonial power not by an independence movement or an internal revolution (unlike Italy, Germany, China, Soviet Union...)
 - British India comprises more than 500 political units, some as large as a European country (Kashmir, Hyderabad)
 - Britain on behalf of the Congress convinces the princely states to join India

What the Modern Age knew

- India
 - What the British built in two centuries the Muslim League undid in two months
 - Gandhi's peaceful non-violent activism succeeds with Christian Britain but fails with Hindus and Muslims of his own land
 - The largest mass migration in history (millions of people move in 1947)
 - Which entails the largest land redistribution in history, including entire new cities (the Sikh are the losers, having fled fertile lands in Pakistan and given barren lands in India)

What the Modern Age knew

- India
 - Rape and abduction of women commonplace (many end up in brothels)
 - The first government of India features two untouchables but only one woman

What the Modern Age knew

- India
 - Agriculture accounts for 60% of GDP (wheat in the north and west, rice in the south and east, cotton and sugar in
 - No irrigation (except for Tamil Nadu), dependence on monsoon season
 - Rural stagnation: peasants, carpenters, weavers and shepherds still live like their ancestors
 - Most of the population is illiterate
 - Widespread unemployment
 - Only 0.1% of GDP spent on scientific research

What the Modern Age knew

- India
 - India after independence is more similar to the Soviet Union after the civil war than to the USA after its revolution
 - But:
 - British medical system causes population boom in India; from 257 million in 1881 to 389 million in 1941
 - Britain retained Dharmashastra as the law of the land for Hindus
 - English as the language of higher education and of administration
 - Delhi political capital, Mumbai financial capital, Kolkata cultural capital

What the Modern Age knew

- India
 - Religious conflicts cause the partition with Pakistan
 - Linguistic conflicts drive the division in provinces
 - Ideological conflicts cause Gandhi's assassination and Telengana's communist rebellion
 - Caste conflicts do not cause significant political events
 - Class conflict (rich vs poor) do not cause significant political events

What the Modern Age knew

- India/ Domestic politics
 - Constitution draft chaired by Bhimrao Ramji Ambedkar, an untouchable:
 - Freedom of religion,
 - Abolition of untouchability,
 - Outlawing of caste discrimination,
 - Women's rights,
 - Protection of minorities.
 - Freedom of the press
 - 1,108 scheduled castes and 744 scheduled tribes with reserved seats in parliament
 - Hindi as the official language but English tolerated

What the Modern Age knew

- India/ Domestic politics
 - Socialist-leaning Jawaharlal Nehru (Brahman caste, well travelled) vs capitalist-leaning Vallabhbhai Patel (farming caste, nonsmoker, vegetarian, teetotaler)
 - Nehru's inclusive policy vs Hindu nationalism: reconciliation with Muslims, India as a secular state (unlike Pakistan), rights of the minorities
 - A secular state in a very religious country
 - But upper castes dominate government

What the Modern Age knew

- India/ Domestic politics
 - The Muslim issue
 - The remaining Muslims in India are an even smaller minority than they were before partition
 - Because the upper classes moved to Pakistan, the remaining Muslims in India are under-represented in engineering, medicine, etc
 - The “scheduled” castes and tribes have reserved seats in parliament but Muslims have not
 - The untouchables have a charismatic leader like Ambedkar but the Muslims have none

What the Modern Age knew

- India/ Domestic politics
 - The Untouchables issue
 - More progress in the first 20 years of India than in the previous 2000 years

What the Modern Age knew

- India/ Domestic politics
 - The Hindu issue
 - Hindus themselves are divided by caste, sect, language and region

What the Modern Age knew

- India/ Domestic politics
 - Right wing: Hindu theocratic nationalists of the RSS under Golwalkar, a Brahman
 - Left wing: Communists under Ranadive, a Brahman
 - New parties rebelling against Congress: Socialist Party (1948), socialist-leaning Jivatram Bhagwandas Kripalani (1951), Hindu nationalist Jana Sangh (1951), Scheduled Caste Federation (1951) plus the Communist Party and the Union Muslim League (1951)
 - General elections of 1952: 176 million people entitled to vote of which 85% are illiterate

What the Modern Age knew

- India/ Domestic politics
 - Linguistic partition of India (1956-60, opposed by Nehru): Tamil (Tamil Nadu), Malayalam (Kerala), Telugu (Andhra Pradesh), Kannada (Karnataka), Urdu (Jammu and Kashmir), Rajasthani (Rajasthan), Konkani (Goa), Marathi (Maharashtra), Gujarati (Gujarat), Hindi (Uttar Pradesh, Madhya Pradesh), Bihari languages (Bihar), Bengali (West Bengal), Punjabi (Punjab after 1966)

What the Modern Age knew

- India/ Economy
 - Bhimrao Ramji Ambedkar's legal reforms challenge the Dharmashastra for the first time (e.g. the Hindu Marriage Act of 1955 abolishes polygamy) but are not applied to Muslims (only to Hindus, Buddhists and Sikhs)
 - Land reform
 - Irrigation and fertilizers
 - Industrialization (Nehru models it on Japan and Russia, two countries that industrialized late and had to rely on state intervention)
 - Steel, coal, shipbuilding, nuclear and aerospace reserved to state enterprises

What the Modern Age knew

- India/ Economy
 - Steel plants built by Germany (1955, Rourkela, Odisha), Britain (Durgapur, West Bengal) and Soviet Union (1955, Bhilai, Chhattisgarh)
 - Dams: Tungabhadra (1953), Bhakra (1963, second highest in the world)
 - Research laboratories independent of universities (French model): Tata Institute in Mumbai under Homi Bhabha (1946), Indian Institute of Technology in Kharagpur (1950), IIT in Kanpur associated with 9 US Universities (1959)

What the Modern Age knew

- India/ Economy
 - Most entrepreneurs come from the Marwaris of Rajasthan, Jains, Banias of Bengal, Chettiars of Tamil Nadu, Parsis of Mumbai
 - Jains constitute 0.4% of the population but have the highest literacy rate (also among women) and the highest rate of business people

What the Modern Age knew

- India/ Separatist threats
 - Separatism in Kashmir (1948-53)
 - Separatism in northeast India (Nagaland, 1954-56)
 - Separatism in south India (Dravida Munnetra Kazhagam, 1949)

What the Modern Age knew

- India/ Internal tensions
 - Tara Singh's campaign for a Punjabi-speaking state (1960)
 - Mumbai state split into Maharashtra and Gujarat (1960)
 - Kerala's communist government (1957-59)
 - Chakravarti Rajagopalachari's conservative capitalist-leaning Swatantra Party (1959)

What the Modern Age knew

- India/ Internal tensions
 - 1967 elections:
 - Congress loses elections in Chennai (to the Dravida Munnetra Kazhagam, led by Tamil movie star Marudhur Gopalan Ramachandran), in Kerala (to the Communist Party), in West Bengal (to a union of leftist parties), and in other states (to anti-Congress alliances, the Samyukta Vidhayak Dal or SVD)
 - Second non-violent revolution: Congress loses power from Delhi to Kolkata
 - Muslim president

What the Modern Age knew

- India/ Foreign policy
 - 1947: Nehru's policy of "non-alignment" (neutral in the Cold War between the USA and the Soviet Union)
 - Nehru's vision: Indian independence as the first step for the resurgence of Asia
 - India sides with Mao's China at the United Nations against Chiang Kai-shek's Taiwan
 - Partition of Kashmir (1947)

What the Modern Age knew

- India/ Foreign policy
 - Tibet's Dalai Lama flees to India (1959)
 - Annexation of Portuguese colonies (1961)
 - China-India border incidents (1959) and border war (1962), second international humiliation of India (after Pakistan's invasion of Kashmir)

What the Modern Age knew

- India/ Foreign policy
 - The Indian elite views the USA as a barbaric nation: imperialist, materialist, warmonger, with gross social injustice
 - Indian intellectuals dislike unbridled capitalism
 - The USA knows mainly three sections of Indian society: the wealthy maharajas, the religious gurus and the starving masses
 - India is too appeasing towards communism (eg recognizes China's rule over Tibet in 1954, does not condemn the Soviet Union for the invasion of Hungary in 1956)
 - The USA is too appeasing towards colonialism (much of Asia and most of Africa is still under European rule)

What the Modern Age knew

- India/ Foreign policy
 - Hostility between the USA and India despite similarities: large democracies, former British colonies, multiethnic, multireligious
 - The USA and India eat, drink, sing, dress and think differently
 - 1954: Military treaty between the USA and Pakistan

What the Modern Age knew

- India/ Atomic program
 - 1956: Apsara, the first nuclear reactor of Asia, with uranium from Britain
 - 1959: Homi Sethna sets up a plutonium plant in Trombay, designed and constructed entirely by Indian scientists
 - Thorium from Travancore in south India
 - 1960: The nuclear reactor CIRUS (Canada India Reactor Utility Services) supplied by Canada in 1954, goes live at Trombay
 - 1964: Plutonium reprocessing plant Phoenix (with help from USA)
 - 1964: Nehru (opposed to nuclear bombs) dies
 - 1964: China detonates its atomic bomb
 - 1965: War against Pakistan
 - 1966: Homi Bhabha dies
 - 1971: Vikram Sarabhai dies, the last dissenting voice

The Modern Age

- Pakistan
 - An Islamic republic (1956)
 - Mostly a military dictatorship
 - Obsessed with fighting India (especially in Kashmir)
 - West Pakistan (mostly Punjabi) dominates East Pakistan (Bengali) economically and culturally
 - Urdu forced on Bangladesh and Bengali banned from offices
 - West Pakistan sees Bengalis as uncivilized
 - East Pakistan sees Punjabis as colonists/oppressors

The Modern Age

- Pakistan
 - Ethnic cleansing dramatically reduces the Hindu, Buddhist and Christian populations
 - Sunni-Shiite religious strife kills tens of thousands
 - Destabilization of Afghanistan
 - Opportunistic alliance with the USA to repel the Soviet Union
 - Use of Islamic fighters against Pakistan's enemies (Afghanistan, India, Soviet Union)
 - Birthplace of the Taliban

What the Modern Age knew

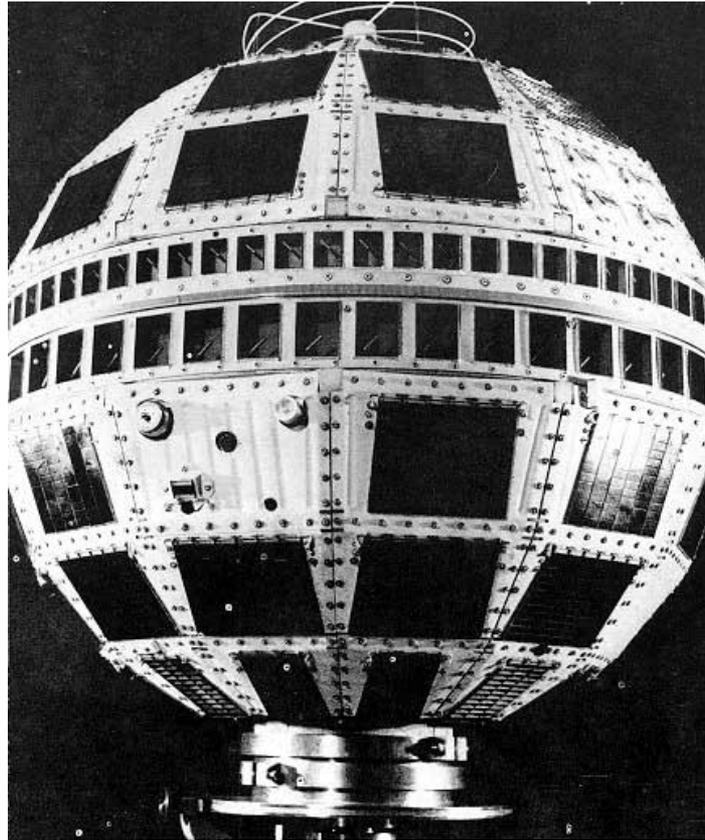
- Western World: the Welfare State
 - William Temple (1941): Christian social principles
 - William Beveridge (1942): national health service and unemployment benefits

What the Modern Age knew

- Mechanical Office (1900-1950)
 - Typewriter (1829)
 - Telegraph (1858)
 - Telephone (1876)
 - Adding Machine (1885)
- Electrified Office (1950s)
 - Electric Typewriter
 - Calculating Machine
 - Photocopier
 - Telefax
 - Telex (1958)
 - Touch-tone Phone (1963)
 - Hand-held Calculator (1967)
 - IBM mainframes (1964)

What the Modern Age knew

- Communication
 - Telephone cable across the Atlantic (1956)
 - First telecommunication satellite (1962, Telstar)



What the Modern Age knew

- Transportation
 - Pan Am's first transatlantic flight (1939)
 - Boeing's first commercial jet, the 707: long-distance jet (1958)
 - East Coast to West Coast in five hours instead of three days
 - New York to London in eight hours instead of five days
 - Decline of passenger ships and railroads

What the Modern Age knew

– Transportation

- Shinkansen (1964)
- Wide-body jet (1967)
- The Concorde, a supersonic passenger airplane (1969)



What the Modern Age knew



What the Modern Age knew

- Media Revolutions
 - Radio (Charles Herrold, San Jose, 1909)
 - Stereo radio (BBC, 1925)
 - Talkies (“Jazz Singer”, 1927)
 - FM radio (Edwin Armstrong, 1933)
 - Magnetic reel-to-reel tape recorder (AEG, 1935)
 - Commercial Television (CBS & NBC, New York, 1941)
 - LP (Columbia, 1948)
 - Ampex tape recorder (Ampex, 1948)
 - Stereo magnetic tape (EMI, 1954)
 - Stereo record (Audio Fidelity, 1957)
 - Stereo FM (WGFM, 1961)
 - Compact Cassette (Philips, 1963)



1948 Admiral tv set

What the Modern Age knew

- Sport

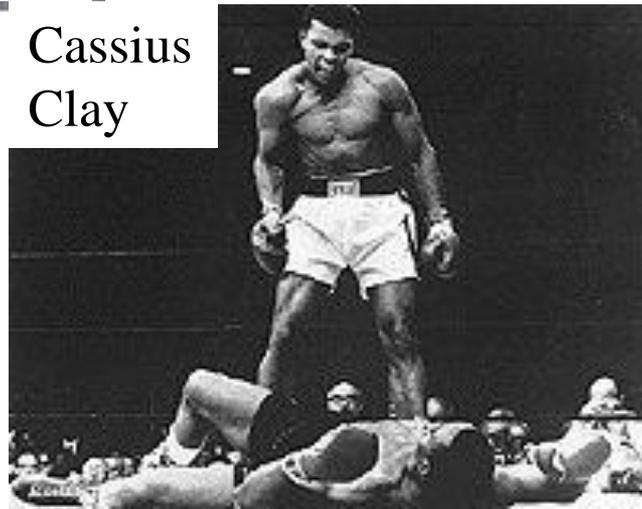


Pele



Fausto Coppi

Cassius
Clay



Juan Fangio

What the Modern Age knew

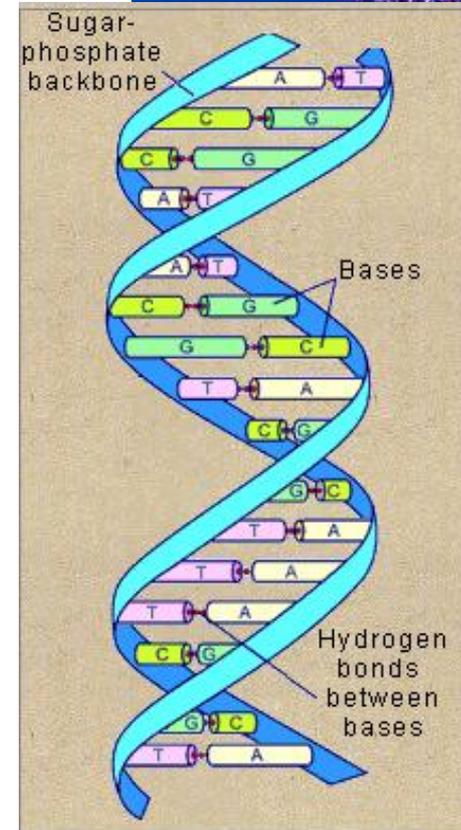
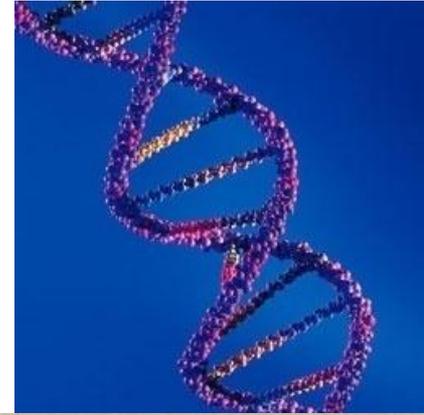
Genetics

1944: Oswald Avery (DNA)

1953: Francis Crick and James Watson discover the double helix of the DNA

1961: Jacob and Monod discover gene regulation

1961: Marshall Nirenberg cracks the genetic code (translation of four-letter genetic code into twenty-letter language of proteins)

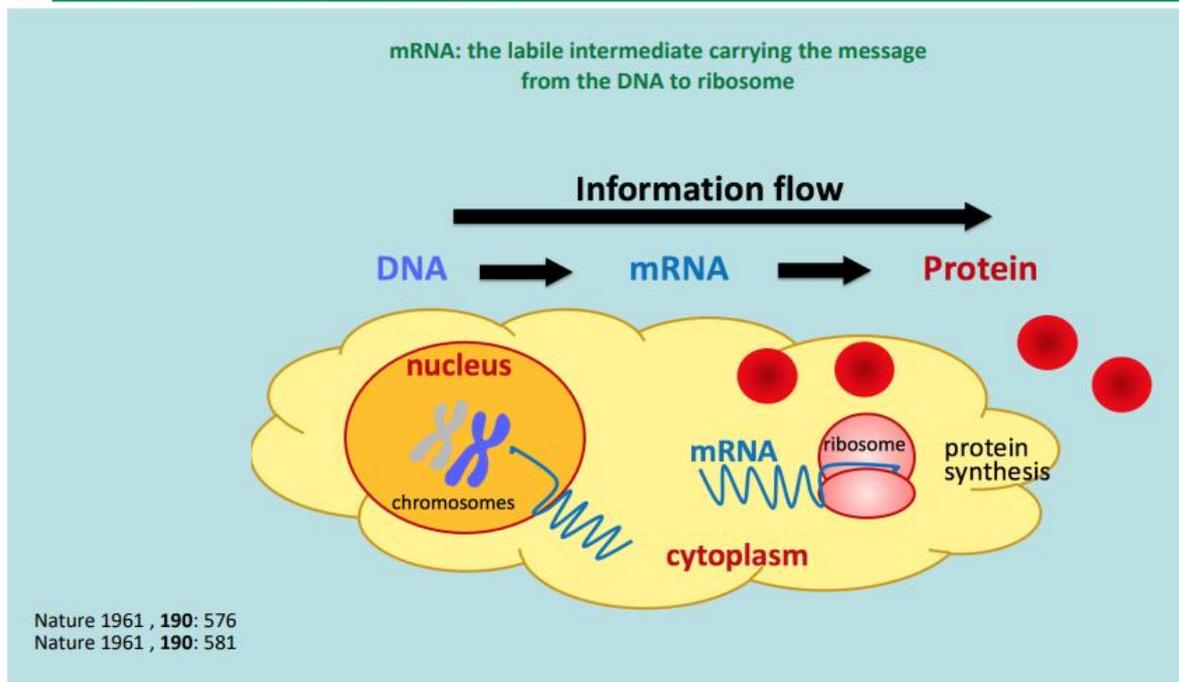


What the Modern Age knew

Genetics

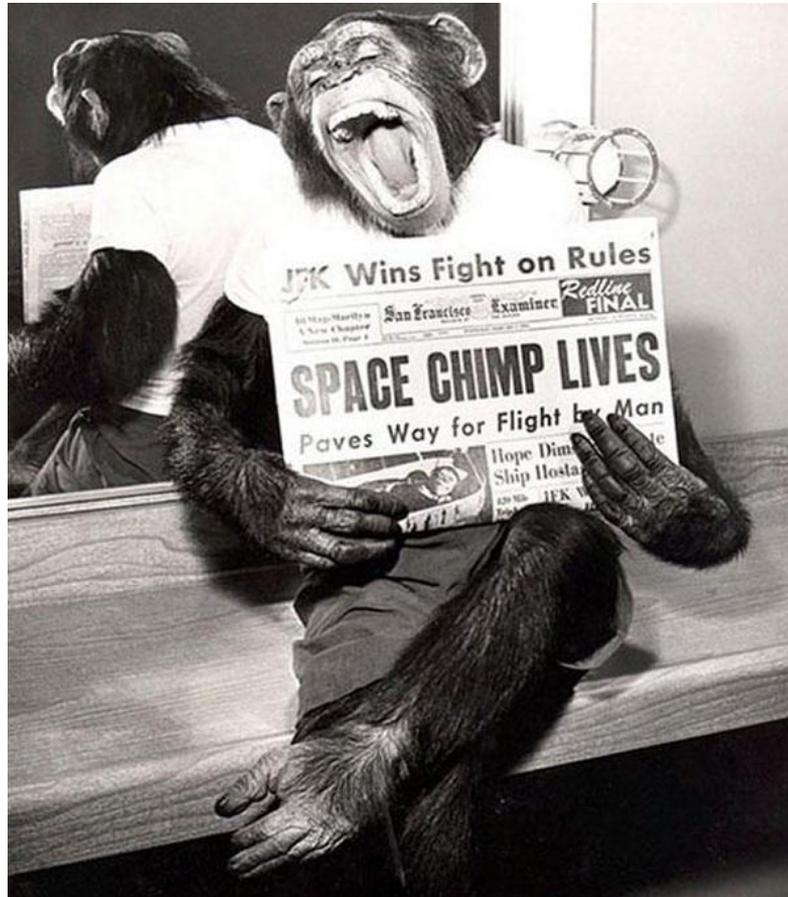
1961: Jacob and Brenner discover messenger RNA

1961 - Discovery of mRNA



What the Modern Age knew

Space exploration



Space chimp, 1961

What the Modern Age knew

Space exploration

1957: International Geophysical Year (67 countries)

1957: the Soviet Union launches the first artificial satellite (Sputnik)

1961: Yuri Gagarin becomes the first astronaut

1962: the USA launches the first telecom satellite (Telstar)

1962: The first successful mission to another planet (Mariner 2 flies by Venus)

1969: Neil Armstrong walks on the Moon



Vostok spaceship



Telstar

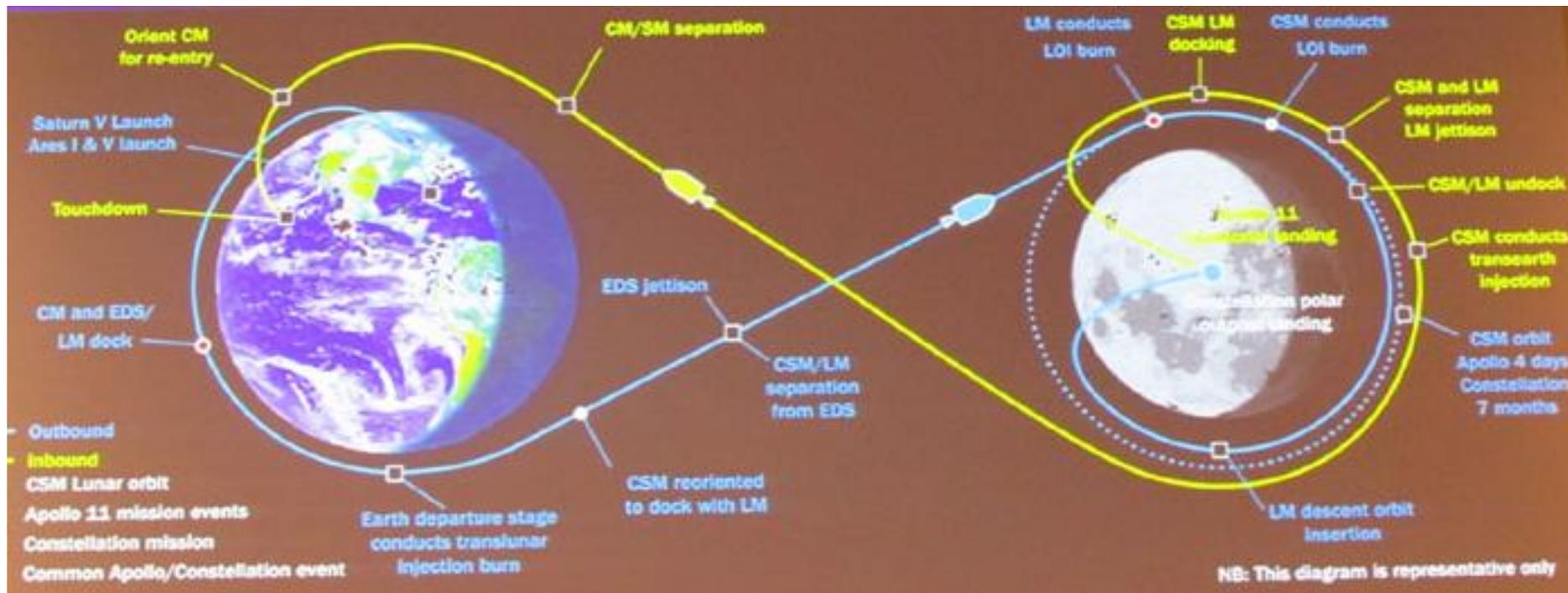


What the Modern Age knew

- Astronauts
 - 1961 Soviet Union: Yuri Gagarin
 - 1961 United States: Alan Shepard

What the Modern Age knew

- Apollo mission: using gravity to reach the Moon (the rocket started in the opposite direction of the Moon to use gravity to pick up speed)



What the Modern Age knew

- Astronauts
 - 1978 Czechoslovakia: Vladimir Remek
 - 1978 Poland: Mirosław Hermaszewski
 - 1978 East Germany: Sigmund Jahn
 - 1979 Bulgaria: Georgi Ivanov
 - 1980 Hungary: Bertalan Farkas - Vietnam: Pham Tuan - Cuba: Arnaldo Tamayo Mendez
 - 1981 Romania: Dumitru Prunariu - Mongolia: Jugderdemidiyn Gurragcha
 - 1982 France: Jean-Loup Chretien
 - 1983 West Germany: Ulf Merbold
 - 1984 Canada: Marc Garneau - India: Rakesh Sharma
 - 1985 Netherlands: Wubbo Ockels - Mexico: Rodolfo Neri - Saudi Arabia: Salman al-Saud
 - 1987 Syria: Mohammed Faris
 - 1988 Afghanistan: Abdul Ahad Mohmand
 - 1990 Japan: Toyohiro Akiyama

What the Modern Age knew

- Astronauts
 - 1991 United Kingdom: Helen Sharman
 - 1991 Austria: Franz Viehboeck
 - 1992 Belgium: Dirk Frimout
 - 1992 Italy: Franco Malerba
 - 1992 Switzerland: Claude Nicollier
 - 1994 Kazakhstan: Talgat Musabayev
 - 1996 Australia: Andy Thomas
 - 1997 Ukraine: Leonid Kadenjuk
 - 1998 Spain: Pedro Duque
 - 1999 Slovakia: Ivan Bella
 - 2002 South Africa: Mark Shuttleworth
 - 2003 Israel: Ilan Ramon (died)
 - 2003 China: Yang Liwei

What the Modern Age knew

Astronomy

- 50 billion galaxies in the universe
- 200 billion stars in the Milky Way (our galaxy)
- Nine planets around the Sun (our star)
- One light-year = 9,461 billion km
- Pluto (last solar planet) = 5.9 billion kms from the Sun (less than 0.001 light-years)
- Alpha Centauri (nearest star) = 4.3 light-years
- Sirius (brightest star in the sky) = 8.7 light-years
- Center of the Milky Way = 26,000 light-years from the Sun
- Andromeda (nearest galaxy) = 2.2 million light-years

What the Modern Age knew

Physics

1946: Willard Libby invents radiocarbon dating

1948: Theory of Big Bang (George Gamow)

1953: Clair Patterson dates the Earth to 4.5 billion years old

1963: Theory of Quarks, Quantum Chromodynamics (Murray Gell-mann)

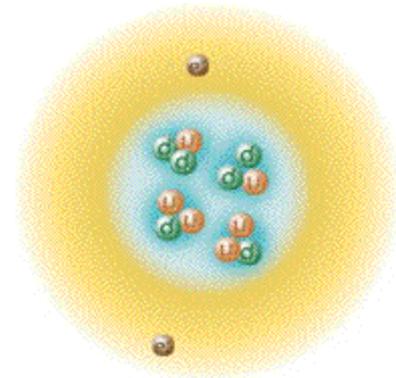
1964: Peter Higgs' boson

1965: The microwave background radiation is discovered

1967: Unification of weak and electromagnetic force (Steven Weinberg and Abdus Salam)

1967: Jocelyn Bell discovers a pulsar

1981: Inflationary Model (Alan Guth)



What the Modern Age knew

Medicine

1927: First vaccines for tuberculosis and tetanus

1928: Alexander Fleming discovers penicillin

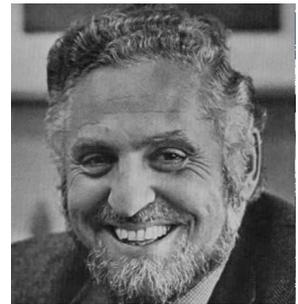
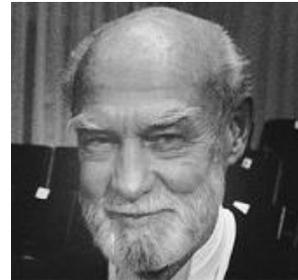
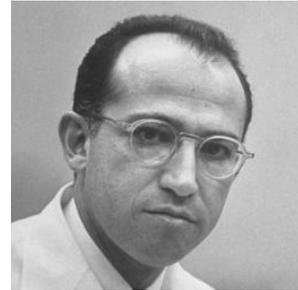
1945: Howard Florey and Ernst Chain develop the first antibiotics

1951: Carl Djerassi and others invent the oral contraceptive pill

1956: Jonas Salk develops the oral polio vaccine

1958: Roger Sperry performs split-brain surgery

1959: Min Chueh Chang invents in-vitro fertilization



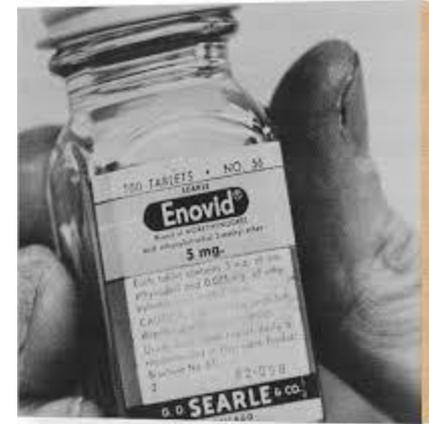
What the Modern Age knew

Medicine

1960: The birth control pill goes on sale

1967: Christian Barnard performs the first human heart transplant

1973: Mani Lal Bhaumik 's Laser Eye Surgery (LASIK)



What the Modern Age knew

Mutagenesis

1926: Hermann Muller demonstrates that exposure to x-rays caused genetic mutations in the genome of fruit flies

1920s: Lewis Stadler studies corn mutations caused by X-rays and ultraviolet rays

Radiation can speed up evolution

1949 "atomic garden" at Brookhaven National Laboratories in Rhode Island: vegetables exposed to radioactive isotopes like cobalt-60 and caesium-137

1950s: Vogue of "atomic" plants and seeds

Atomic gardens create 2,700 new varieties of plants, including most sweetcorn varieties

Most of today's mint oil comes from a disease-resistance peppermint plant developed in 1971 at the Brookhaven National Laboratory

Radiation breeding is responsible for many of the gorgeous orchid, tulip and rose varieties

1958: Edward Knippling's "sterile insect" technique (sterilizing pupae with radiations)

What the Modern Age knew

Atomic gardens



**ATOMIC ENERGY
for THE FARMER**

A true radioactive soil conditioner (not a fertilizer) is now available. Dept. of Agriculture report shows a 20% increase in tomato crop, used for sugar beets, lettuce, carrots and most crops, it remains active in the soil for 20 years, quite harmless.

*Applied mixed with water as a spray,
or mixed with fertilizer.*

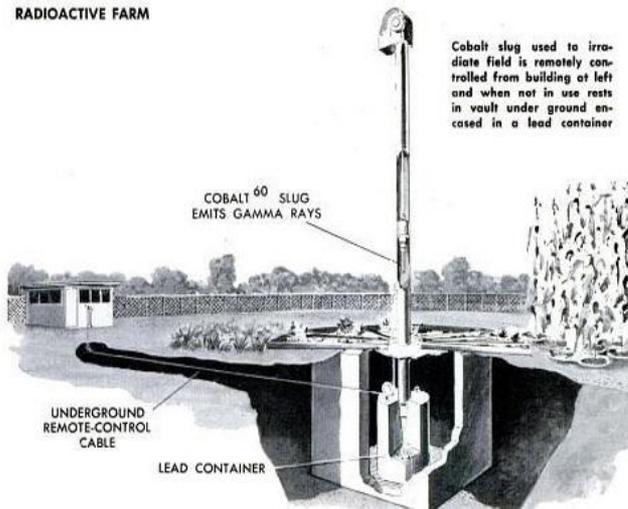
15 pounds for a half acre . . . \$15.00
30 pounds for one acre . . . \$30.00

DATA ON REQUEST

FERTIL-CEL. • Reg. U. S. Pat. Office
P. O. Box 111 San Mateo, California



RADIOACTIVE FARM



What the Modern Age knew

Psychology

Viktor Frankl: "Man's Search for Meaning" (1946)

Hebb, Donald: THE ORGANIZATION OF BEHAVIOR (1949)

Hovland, Carl: "Experiments on Mass Communication" (1949)

Miller, George: "Language and Communication" (1951)

Penfield, Wilder: "Epilepsy and the Functional Anatomy of the Human Brain" (1954)

Fromm, Erich: "The Sane Society" (1955)

Marcuse, Herbert: "Eros and Civilization" (1955)

Eissler, Kurt: "The Psychiatrist and The Dying Patient" (1955)

Bruner Jerome: A STUDY OF THINKING (Wiley, 1956)

Whorf, Benjamin-Lee: LANGUAGE, THOUGHT AND REALITY (1956)

Festinger, Leon: "A Theory of Cognitive Dissonance" (1957)

Osgood, Charles: "The Measurement of Meaning" (1957)

Chomsky, Noam: SYNTACTIC STRUCTURES (1957)

What the Modern Age knew

Psychology

Broadbent, Donald: PERCEPTION AND COMMUNICATION
(Pergamon, 1958)

Kohlberg, Lawrence: "The Development of Modes of Thinking
and Choices in Years
10 to 16" (1958)

Brown, Norman: "Life Against Death" (1959)

Laing, Ronald: The Divided Self (1960)

George Miller, Eugene Galanter, and Karl Pribram: "Plans and
the Structure of
Human Behavior" (1960)

James Taylor: "The Behavioral Basis of Perception" (1962)

Hamilton, William: "The Genetic Evolution of Social Behavior"
(1963)

Rheingold, Joseph: "The Mother, Anxiety, and Death: the
Oedipal Complex"
(1967)

Neisser, Ulric: Cognitive Science (1967)

What the Modern Age knew

- Agriculture: Green Revolution
 - George Shull’s “The composition of a field of maize” (1908)
 - Henry Wallace sells the first hybrid maize seeds (1924) and hybrid begins spreading (Iowa: hybrid corn was 10% in 1935 and 90% in 1939)
 - High-yield hybrids: maize from the USA (1930s), dwarf wheat from Mexico (Norman Borlaug, 1944), dwarf rice (Hank Beachell, 1966)

What the Modern Age knew

Beauty

- **1943: A poster of Betty Grable launches the fad for shaved legs**
- **1946: Louis Reard and Jacques Heim introduce the bikini**
- **1947: Christian Dior promotes wide hips and tiny waists as fashionable causing a renaissance of the corset**
- **1950: Hazel Bishop invents kiss-proof lipstick**
- **1952: Mum introduces the underarm deodorant**
- **1954: Roger Vivier invents the stiletto heel**
- **1958: Silhouette introduces the all-elastic X girdle that causes the decline of the corset**
- **1960: An article in Harper's Bazaar publicizes the face-lift to ordinary women**
- **1962: Frank Gerow and Thomas Cronin perform the first silicone breast implant**

What the Modern Age knew

Office

- **1959: the Xerox 914, the first photocopier using xerography**

What the Modern Age knew

Computation

- 1945: John Von Neumann's EDVAC specifications
- 1946: The ENIAC, general-purpose, all-electronic, but not digital
- 1947: The transistor invented at Bell Labs
- 1949: Manchester "Baby" and Cambridge's EDSAC stored-program digital electronic computers
- 1950: SEAC, the first computer to use semiconductor devices
- 1951: The first commercial computers, the Ferranti Mark-1 and the Univac
- 1951: The "Whirlwind", the first real-time system
- 1951: The first compiler (Grace Murray)

What the Modern Age knew

Computation

- 1955: Artificial Intelligence
- 1958: Texas Instruments: the first integrated circuit
- 1964: IBM: the 360 series
- 1965: Gordon Moore predicts that the processing power of computers will double every 18 months
- 1965: DEC: the first mini-computer, the PDP-8, that uses integrated circuits

What the Modern Age knew

Computation

- Antitrust policies contribute to the rapid diffusion of intellectual property throughout the computer and semiconductor industries
- 1956: IBM and AT&T settle antitrust suits by licensing their technologies to competitors
- 1969: The “unbundling” of software by IBM creates the software industry

What the Modern Age knew

Computer



Z1 (1936)



ABC (1942)

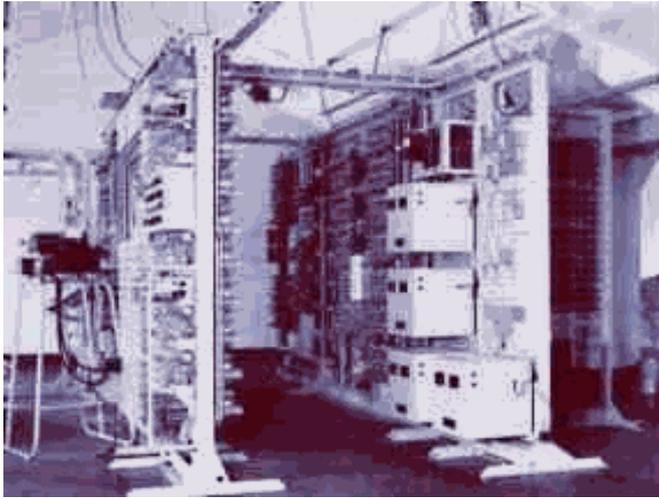


Harvard Mark I (1944)

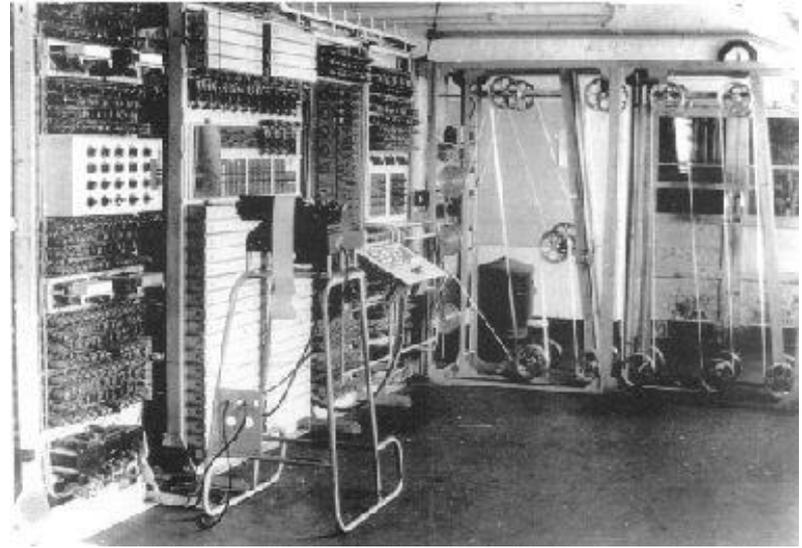


IBM 701 (1952)

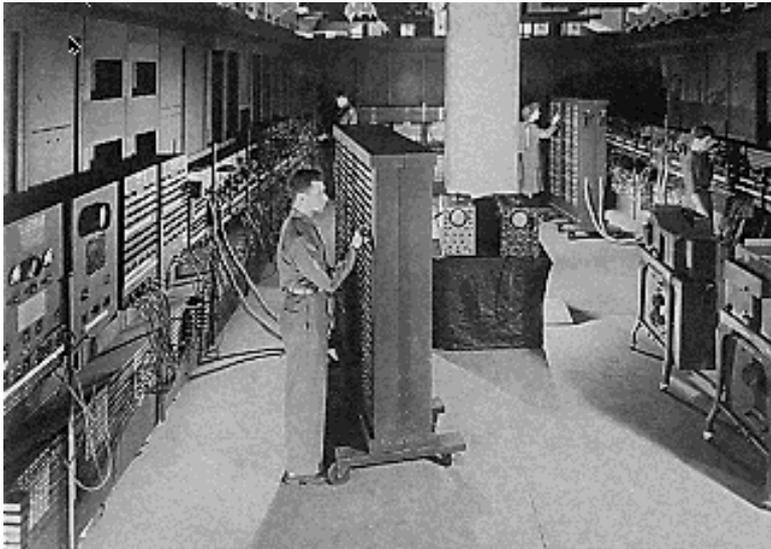
What the Modern Age knew



Colossus



Univac 1951



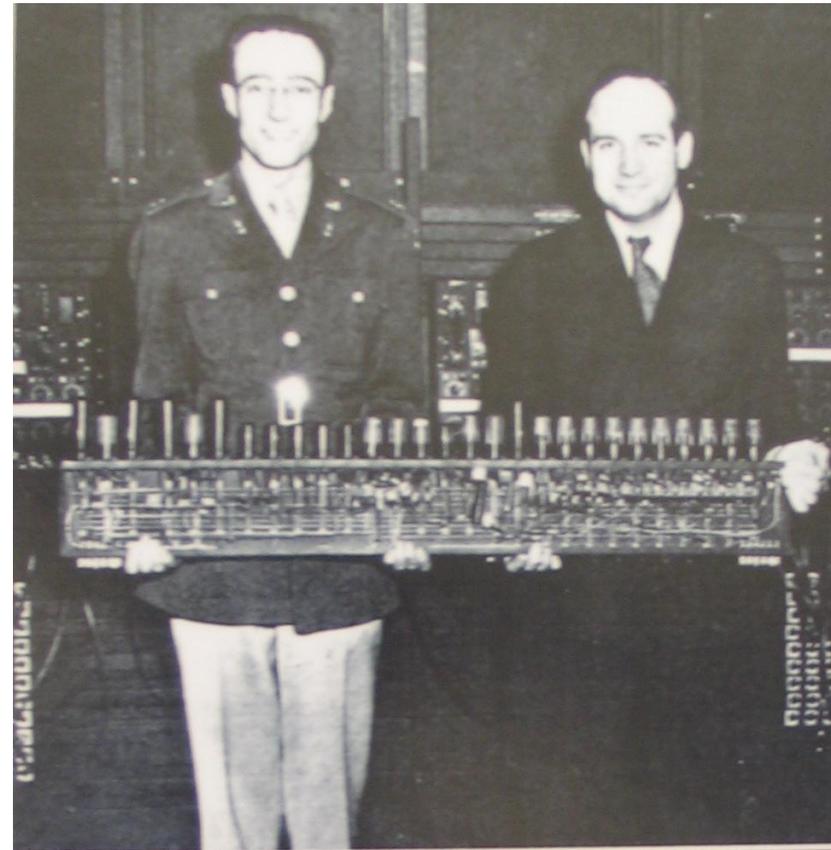
Eniac 1947



IBM /360

What the Modern Age knew

- **Goldstine and Eckert with the electronics needed to store a single decimal digit**



(Computer History Museum, Mountain View)

What the Modern Age knew



IBM 360 (1964)
(Computer History Museum, Mountain View)

What the Modern Age knew

Software

- 1958: Jim Backus (at IBM) invents the FORTRAN programming language, the first machine-independent language
- 1962: Paul Baran proposes a distributed network as the form of communication least vulnerable to a nuclear strike
- 1964: IBM introduces the first "operating system" for computers (the OS/360)
- 1968: The Arpanet is established based on Baran's idea (four nodes: UCLA, Stanford Research Institute, UCSB, University of Utah)
- 1969: the Unix operating system is born

What the Modern Age knew



Ancient technologies (going back to the Egyptians) can be divided into three classes:

1. The textile tech (looms and the likes): basically improve the "user interface" (they help humans do the same thing but faster and easier)
2. The power tech (windmills, watermills, nurias): generate and transmit power (they increase the "strength" of humans)
3. The time-keeping tech (clocks): use gears, springs, etc to calculate something more and more accurately than humans can



What the Modern Age knew

Computers are simply the merge of these three trends:

- they are enabled by exponentially increasing power,**
- they calculate with digital accuracy**
- and they have a general-purpose user interface.**

Computers are the great-great-great-....- grandchildren of the loom, the watermill and the clock.

What the Modern Age knew

- Science Fiction
 - Ancient times
 - Monsters
 - Unicorn
 - Loch Ness
 - Abominable Snowman
 - Werewolves
 - Vampires
 - Frankenstein (1818)

What the Modern Age knew

- **Science Fiction**

- **Novels**

- **Jules Verne: "From the Earth to the Moon" (1865)**
 - **Herbert Wells: "The Time Machine" (1895)**
 - **Herbert Wells: "The War of the worlds" (1898)**

- **Films**

- **Georges Melies: "A Trip to the Moon" (1902)**
 - **Protazanov: "Aelita" (1924)**
 - **Fritz Lang: "Metropolis" (1926)**

- **Radio**

- **Orson Wells's "The War of the Worlds"**

What the Modern Age knew

- Science Fiction
 - Novels
 - Karel Capek: "R.U.R." (1921)
 - Yevgeny Zamjatin: "We" (1924)
 - Hugo Gernsback' sci-fi magazine "Amazing Stories" (1926)
 - Aldous Huxley: "Brave new world" (1932)
 - Comics
 - "Buck Rogers" (1929, Phil Nowlan & Dick Calkins)
 - "Alley Oop" (1933, Vincent Hamlin)
 - "Brick Bradford" (1933, Clarence Gray & William Ritt)
 - "Flash Gordon" (1934, Alex Raymond)
 - "Superman" (1938, Jerome Siegel/Joe Shuster)

What the Modern Age knew

- Science Fiction
 - Films
 - Robert Wise: "The Day the Earth Stood Still" (1950)
 - Mate: "When Worlds Collide" (1951)
 - Christian Nyby: "The Thing" (1952)
 - Fred Wilcox: "Forbidden Planet" (1956)
 - Siegel: "The Invasion of the Body Snatchers" (1956)
 - Kurt Neumann: "The Fly" (1958)
 - Comics
 - "Fantastic Four" (1961, Stan Lee/Jack Kirby)
 - "Barbarella" (1962, Jean-Claude Forest)
 - "Spiderman" (1962, Stan Lee/Steve Ditko)

What the Modern Age knew

- Science Fiction
 - TV Series
 - "The Twilight Zone" (1959-1964)
 - "The Outer Limits" (1963-1965)
 - "Lost in Space" (1965-1968)
 - "Land of the Giants" (1968-1970)
 - "The Immortal" (1970-1971)
 - "Star Trek" (1966-1969)

What the Modern Age knew

- Science Fiction
 - Novels
 - George Orwell: "Nineteen Eighty-four" (1949)
 - Isaac Asimov: Foundation (1953)
 - Ray Bradbury: "Fahrenheit 451" (1953)
 - Ivan Efremov: "Andromeda Nebula" (1956)
 - Stanislaw Lem: "Solaris" (1961)
 - Frank Herbert: "Dune" (1965)
 - Roger Zelazny: "Lord of Light" (1967)
 - Philip Dick: Do Androids Dream (1968)
 - Michael Crichton: "Andromeda Strain" (1969)
 - Neil Stephenson: "Snow Crash" (1991)

What the Modern Age knew

- Science Fiction
 - Films
 - Godard: "Alphaville" (1965)
 - Schaeffer: "Planet of the Apes" (1968)
 - Stanley Kubrick: "2001: A Space Odyssey" (1968)
 - Spielberg: "Close Encounters of the Third Kind" (1977)
 - George Lucas: "Star Wars" (1977)
 - George Miller: "Mad Max" (1979)
 - Ridley Scott: "Blade Runner" (1982)

What the Modern Age knew

- Science Fiction
 - Novels
 - James Ballard: "Crash" (1973)
 - Michael Moorcock: "Cornelius" (1977)
 - William Gibson: "Neuromancer" (1984), cyberpunk

What the Modern Age knew

- The Flying Saucers
 - 1947: Kenneth Arnold reports the first "flying saucers"
 - Mikel Conrad's film The Flying Saucer (1950)
 - Robert Wise's film The Day the Earth Stood Still (1951)
 - Howard Hawks' film The Thing from Another World (1951)
 - George VanTassel's book "I Rode a Flying Saucer" (1952)
 - Fred Wilcox's film Forbidden Planet (1956)
 - Fred Sears' film Earth Vs The Flying Saucers (1956)
 - Ed Wood's Plan 9 From Outer Space (1957)
 - 1961: Yuri Gagarin, the first astronaut



What the Modern Age knew

- Horror/comic books
 - Eerie #1 1946
 - Adventures into the Unknown (1948)
 - Johnny Craig's comic book "Zombie Terror" (1948)
 - Amazing Mysteries #32 (1949)
 - 1950: The Haunt of Fear, The Vault of Horror, The Crypt of Terror (aka Tales from the Crypt)
 - House of Mystery (1951)
 - Strange Tales (1951)
 - Journey into Mystery (1952)

What the Modern Age knew

- Horror/cinema
 - Don Siegel's Invasion of the Body Snatchers (1956)
 - George Romero's "Night of the Living Dead" (1968)

What the Modern Age knew

- Women's condition in the 1950s
 - Child rearing becomes a medical discipline
 - The woman becomes a sexual object (pornography)
 - The woman as a consumer (products such as appliances and cosmetics and fashion target women)
 - Housekeeping becomes a profession (not just a “role”)

What the Modern Age knew

- **Sexual Revolution**
 - **1928: Margaret Mead's book on Samoa's teenage sex (discredited only in 1983)**
 - **1948: Alfred Kinsey's "Sexual Behavior of the Human Male"**
 - **1948: John Rock fertilizes a human egg in a test tube**
 - **1953: the magazine "Playboy"**
 - **1962: Helen Gurley Brown publishes "Sex and the Single Girl"**
 - **1964: Syntex introduces the birth-control pill**
 - **1973: abortion is legalized in the USA (France 1975, West Germany 1976, Italy 1978)**

What the Modern Age knew

- Civil Rights
 - 1954: The Supreme Court rules that segregation in public schools is unconstitutional
 - 1955: Rosa Parks refuses to give up her seat at the front of a bus to a white passenger
 - 1957: Soldiers escort nine black students to a white-only school in Little Rock
 - 1960: First sit-in of black students (North Carolina)
 - 1961: “Freedom Riders”
 - 1962: James Meredith, escorted by soldiers, becomes the first black student to enroll at the University of Mississippi
 - 1962: Malcolm X becomes national minister of the Nation of Islam

What the Modern Age knew

- Civil Rights
 - 1963: Martin Luther King delivers the "I Have a Dream" speech in Washington
 - 1964: President Johnson signs the Civil Rights Act
 - 1964: Cassius Clay wins the World Heavyweight Boxing Championship
 - 1965: Blacks riot in Los Angeles' Watts district
 - 1966: Black Panthers are founded by Huey Newton and Bobby Seale in Oakland
 - 1967: Riots in Newark and Detroit
 - 1968: Martin Luther King is assassinated
 - 1968: Olympic gold medal winner Tommie Jones salutes the US anthem with the Black Panther fist

What the Modern Age knew

- Feminism
 - 1949: Simone de Beauvoir's "Le Deuxieme Sexe"
 - 1960: The birth-control pill
 - 1963: Betty Friedan's "The Feminine Mystique"
 - 1964: Civil Rights Act prohibits discrimination on the basis of sex
 - 1966: William Howell Masters and Virginia Johnson's "Human Sexual Response"
 - 1966: National Organization for Women (NOW)
 - 1975: Susan Brownmiller's "Against Our Will: Men, Women and Rape"

What the Modern Age knew

- Gay rights
 - 1950: Mattachine Society in Los Angeles, the first gay political organization
 - 1955: The "Daughters of Bilitis" in San Francisco, the first lesbian organization
 - 1969: Stonewall riots in New York
 - 1970: First gay pride parade



What the Modern Age knew

- Environmentalism/ India
 - Kumarappa (Joseph Chelladurai Cornelius) against dams, chemical fertilizers, deforestation, etc: "Why the village movement?" (1949)
 - Mira Behn: "The tragedy today is that educated and moneyed classes are altogether out of touch with the vital fundamentals of existence - our Mother Earth... This world of Nature's planning is ruthlessly plundered, despoiled... We have got to study Nature's balance and develop our lives within her laws if we are to survive as a physically healthy and morally decent species" (1949)

What the Modern Age knew

- Environmentalism/ West
 - Arie Jan Haagen-Smit (1943): gasoline is responsible for smog
 - Richard Doll & Bradford Hill and Ernst Wynder & Evarts Graham (1950): tobacco is responsible for lung cancer
 - Roger Revelle & Hans Suess (1957): greenhouse-gas emissions cause global warming
 - Frank Sherwood-Rowland (1974): chlorofluorocarbons are responsible for the ozone depletion

What the Modern Age knew

- Environmentalism
 - Rachel Carson's anti-pesticide "Silent Spring" (1962)
 - Ishimure Michiko' ecologist "Kukai jodo/ Sea of Suffering" (1968)
 - Paul Ehrlich's "The Population Bomb" (1968)
 - John Holdren writes about rising atmospheric carbon dioxide
 - Barry Commoner: "The Closing Circle" (1971)
 - Club of Rome: "The Limits to Growth" (1972)

What the Modern Age knew

- Death
 - 1963: The Catholic Church ends opposition to cremation
 - Jessica Mitford 's “The American Way of Death” (1963)
 - Robert Ettinger's "The Prospect of Immortality" (1962) – cryonics
 - 1967: Cicely Saunders founds the first hospice (St Christopher's Hospice in London)
 - Elisabeth Kubler-Ross' “On Death and Dying” (1968)
 - Ernest Becker's "The Denial of Death" (1974)

What the Modern Age knew

- Death
 - Over thousands of years, humans developed all sorts of rituals to celebrate, mourn, remember and “accompany” the dead
 - Traditional Western/Christian practice:
 - the person died at home, assisted by the family, a doctor and a priest
 - The corpse washed and dressed by women
 - A wake during which the body was displayed at home
 - A funeral, the coffin carried by members of the family (or hearse, followed by the family)
 - Burial in the church’s graveyard
 - A period of mourning, with women wearing black clothes
 - Periodic masses for the dead and lifelong visits to the cemetery

What the Modern Age knew

- Death
 - New Western/Christian practice:
 - Most people die at the hospital, assisted by strangers
 - The funeral is a commercial enterprise
 - The graveyard belongs to townhall, subject to bureaucratic rules
 - Increasing numbers are cremated with no grave
 - The physical relationship between the living and the dead has completely changed
 - Death is hidden from public view

What the Modern Age knew

- Death
 - New Western/Christian practice:
 - Medicine and technology keep people alive much longer (life-extending tech)
 - But they don't rejuvenate: they live with increased senescence and loss of autonomy
 - Institutionalized care (hospital, hospice, nursing home) away from family
 - The prospect of senescence becomes more scary than death itself

What the Modern Age knew

Ideas

- Philosophy of Mind (Machine Intelligence, Theories of Mind)
- Holism
- Structuralism (Anthropology, Linguistics, Semiotics)

What the Modern Age knew

- Capitalism
 - Joseph Schumpeter: Capitalism, Socialism and Democracy (1942)
 - John Kenneth Galbraith: The Affluent Society (1958)
 - Milton Friedman: Capitalism and Freedom (1962)
 - Michael Porter: Competitive Strategy (1980)

What the Modern Age knew

- Claude Shannon (1948)
 - Information is a probability function
 - Informational entropy is a weighted sum of the logarithms of the probabilities of the various uncertain outcomes
 - Information is a reduction in uncertainty, i.e. of entropy (the quantity of information produced by a process equals the amount of entropy that has been reduced)
 - Information decoupled from the body that carries it and uses it
 - Information divorced from meaning

What the Modern Age knew

- The Brain
 - 1891: Santiago Ramon y Cajal's neuron
 - 1898: Edward Thorndike's connectionism
 - 1949: Donald Hebb's selective strengthening of synapses and cell assemblies
 - 1950s: Electrical activity of the brain
 - 1953: Nathaniel Kleitman's REM
 - 1958: Roger Sperry's split brain experiment
 - 1960s: Neurons communicate via chemicals ("neurotransmitters")
 - 1960s: The left hemisphere is dominant for language and speech, the right hemisphere excels at visual and motor tasks

What the Modern Age knew

- Absurdism
 - Alfred Jarry: Ubu Roi (1896)
 - Franz Kafka
 - Theatre of the absurd: Samuel Beckett (1949), Jean Genet, Eugene Ionesco
 - Human beings exist in a meaningless, irrational universe
 - Senseless dialogue and senseless action to describe senseless lives

What the Modern Age knew

- Reginald Sprigg (1946)
 - Discovery of pre-Cambrian fossils
 - Darwin: “During these vast, yet quite unknown, periods of time, the world swarmed with living creatures... To the question why we do not find records of these vast primordial periods, I can give no satisfactory answer”.
 - Sprigg: Geometric impressions on rocks of Australia are the fossil remains of ancient soft-bodied creatures



What the Modern Age knew

- Paul Samuelson (1947)
 - Mathematization of economics

What the Modern Age knew

- Norman Wiener (1947)
 - Cybernetics: the science of biological and mechanical control mechanisms
 - Are we to machines what God is to the Golem?

What the Modern Age knew

- Norman Wiener (1947)
 - Bridge between machines and nature, between "artificial" systems and natural systems
 - Feedback, by sending back the output as input, helps control the proper functioning of the machine
 - Nicholas Bernstein (1920s): self-regulatory character of the human nervous system
 - A control system is realized by a loop of action and feedback
 - A control system is capable of achieving a "goal", is capable of "purposeful" behavior
 - Living organisms are control systems

What the Modern Age knew

- Norman Wiener (1947)
 - Walter Cannon (1930s): Feedback is crucial for "homeostasis", the process by which an organism tends to compensate variations in the environment in order to maintain its internal stability
 - Message
 - Noise
 - Information

What the Modern Age knew

- Norman Wiener (1947)
 - “Society can only be understood through a study of the messages and the communication facilities which belong to it”

What the Modern Age knew

- Max Horkheimer (1947)
 - Rational society has moved from objective to subjective and to instrumental reason

What the Modern Age knew



- Gilbert Ryle (1949)
 - The mind is not a separate substance but simply a domain of discourse
 - The mental vocabulary does not refer to the structure of something, but simply to the way somebody behaves or will behave
 - The mind "is" the behavior of the body
 - Physical objects exist, mental objects are merely vocabulary
 - There is no difference between body and mind, except for the language we use to talk of them
 - Descartes invented a myth: the mind inside the body ("the ghost in the machine")

What the Modern Age knew

- Gilbert Ryle (1949)
 - *There is immured in a windowless cell a prisoner, who has lived there in solitary confinement since birth. All that comes to him from the outside world is flickers of light thrown upon his cell-walls and tappings heard through the stones; yet from these observed flashes and tappings he becomes, or seems to become, apprised of unobserved football-matches, flower-gardens and eclipses of the sun. How then does he learn the ciphers in which his signals are arranged, or even find out that there are such things as ciphers? How can he interpret the messages which he somehow deciphers, given that the vocabularies of those messages are the vocabularies of football and astronomy and not those of flickers and tappings?*²³⁸

What the Modern Age knew

- Gilbert Ryle (1949)
 - *On seeing a locomotive for the first time, a peasant in India asked what makes it move. British engineers explained in detail its workings (the steam, the pistons, the wheels, etc). The peasant asked “yes, I understand, but what is it that makes it move”?*

What the Modern Age knew

- Ghose Aurobindo (1949)
 - Brahman first involutes (focuses on itself), next materializes (the material universe), and then evolves into consciousness
 - Human consciousness is the highest stage of consciousness so far achieved by Brahman
 - Social, cultural and individual life in human societies are still imperfect because the human stage is not the last, highest stage

What the Modern Age knew

- Simone de Beauvoir (1949)
 - Women have been historically oppressed
 - Women can realize themselves by becoming like men

What the Modern Age knew

- Simone Weil (1949)
 - Uprootedness: the widespread condition of contemporary individuals due to the destruction of links with the past and to the dissolution of the sense of community
 - Society should be rooted in the supernatural

What the Modern Age knew

- Carl Schmitt (1950)
 - Critique of Liberalism
 - The political is, ultimately, a friend/enemy distinction
 - Armed force used to be a means to achieve limited territorial goals
 - European nation-states fought territorial wars
 - Wars became increasingly ideological

What the Modern Age knew

- Carl Schmitt (1950)
 - America developed a universal friend/enemy distinction
 - America makes a universal claim for its moral values ("liberal democracy")
 - The American wars became a crusade for universal goodness against a criminalized enemy
 - America's mission became to export "liberal democracy"
 - American politics tends toward a universal state
 - Soviet expansionism was a primitive military despotism
 - American expansionism is ideological in nature

What the Modern Age knew

- Gabriel Marcel (1950)
 - Embodied subjectivity
 - It is "my body" that perceives and thinks
 - "I" and "my body" are not distinct
 - Whatever state my body is in, it is "my" state
 - The mind-body relation is only a "my body"

What the Modern Age knew

- Harold Innis (1950)
 - Communications determine civilizations
 - Communications determine people's interests (what they think about),
 - languages (how they think about them) and
 - communities (where they think about them).
 - Mesopotamia: clay tablet, stylus, cuneiform script
 - Greece: pen and alphabet
 - Middle Ages: pen and paper
 - Reformation: press and paper
 - 20th century: celluloid, radio waves, ...

What the Modern Age knew

- Hannah Arendt (1951)
 - Decline of the European nation state due to global capitalism and colonialism
 - The crisis of the nation state leads to the delegitimation of political institutions

What the Modern Age knew

- Hannah Arendt (1951)
 - The appeal of totalitarian ideologies, with their capacity to mobilize huge number of people, rests upon the devastation of the ordered and stable societies in which those people once lived
 - Totalitarian ideologies offer explanations for the events of the past (what caused the evil that destroyed the old order) and thus for the present, and offer a reassuring path to reestablishing order and stability in the future

What the Modern Age knew

- Hannah Arendt (1951)
 - New imperial ideologies
 - Pan-Germanic (Nazism)
 - Pan-Slavic (Soviet Union)

What the Modern Age knew

- Hannah Arendt (1958)
 - The human condition in modern society is one of political alienation
 - It will evolve away from ideology and towards issue-oriented politics

What the Modern Age knew

- Antonio Gramsci (1951)
 - Society's structure is not only determined by its economic model
 - Politics is also essential
 - Politics is due to philosophy which is a generalization of common sense (philosophers are influenced by the view of the world of their times and in turn influence the political mood)
 - Ideological struggles are struggles for “hegemony”, for changing common sense, philosophy, politics

What the Modern Age knew



- David Bohm (1952):
 - The quantum "wave" is a real wave, due to a real field, that acts upon particles the same way a classical potential does
 - This field is due to a potential that permeates the universe
 - Position and momentum of a particle are no longer incompatible
 - Bohm's wave is a real wave that guides the particle (the "pilot-wave")
 - Everything is both a particle and a wave, and is acted upon by both a classical potential and a quantum potential

What the Modern Age knew

- David Bohm (1952):
 - Bohm's potential plays the role of Einstein's "hidden variables"
 - Bohm's quantum potential acts beyond the 4-dimensional geometry of spacetime
 - The quantum field is, in turn, affected by all particles
 - Everything in the universe is entangled in everything else
 - The universe is one indivisible whole

What the Modern Age knew

- David Bohm (1952):
 - The universe is an undivided whole in constant flux
 - The thinker and the thought cannot be separated
 - "subject- verb- object: the key actor is the verb, not the subject, and the verb unites the subject and the object in one, undivided action
 - At the level of the “implicate order” (“higher dimension”) there is no difference between matter and mind
 - That difference arises within the “explicate order” (the conventional space-time of Physics)
 - As we travel inwards, we travel towards that higher dimension, the implicate order, in which mind and matter are the same

What the Modern Age knew

- David Bohm (1952):
 - As we travel outwards, we travel towards the explicate order in which subject and object are separate
 - Every particle has a rudimentary mind-like quality
 - Matter has mental properties, as well as physical properties
 - The two sides cannot be separated because they are entangled in the same quantum field

What the Modern Age knew

- Peter-Frederick Strawson (1952)
 - Formal logic is inadequate to represent the complexity of ordinary language
 - "Is the king of France bald?" is meaningful but is neither true nor false (there is no such king)

What the Modern Age knew

- Leo Strauss (1952)
 - The solution to the crisis of rationalism is a new form of rationalism, not Heidegger's forsaking of rationalism
 - "Philosophy is the attempt to replace opinion by knowledge", thus it is subversive in nature
 - Philosophy is a threat to society because it uncovers that there are no gods and that morality is prejudice
 - Philosophy is ultimately political
 - Philosophers concealed their true message from the masses: their texts contained both an esoteric (for philosophers only) and an exoteric (for the masses) level

What the Modern Age knew

- Leo Strauss (1952)
 - Liberalism contains within itself an intrinsic tendency towards nihilism
 - The liberal view of politics is artificial while the view of the ancient philosophers is universal and authentic
 - Athens vs Jerusalem (revelation vs reason): the overemphasis on reason leads to the deterioration of society
 - The elite should use deception, religious fervor and perpetual war to control the ignorant masses
 - "the universal society, a society consisting of free and equal nations, each consisting of free and equal men and women"

What the Modern Age knew

- Leo Strauss (1952)
 - Was Strauss himself an esoteric philosopher? What did Strauss really believe?

What the Modern Age knew

- Sayyid Qutb (1952)
 - Philosopher of militant Islam
 - Islamic holy war (jihad) as the duty of every Muslim
 - Civilization clash of Islam with the Western democracies is inevitable
 - Against Islamic regimes
 - Integralist view of society
 - Violent Muslim resistance to regimes that are not truly Islamic
 - Ibn Taymiyya's verdict of 1300: Jihad legitimate against Mongols even if they converted to Islam
 - A Muslim might justly assassinate an unjust Muslim ruler (he is not a Muslim anymore)

What the Modern Age knew

- Sayyid Qutb (1952)
 - Jahiliyya ("pagan ignorance") is the main evil in the world
 - Secular society violates God's sovereignty on Earth by creating new rules which override the wishes of God
 - Jahiliyya is rebellion against God's sovereignty on earth
 - Christians are all destined for hell
 - Jewish conspiracy against Muslims
 - America's separation of church and state is "the" problem
 - Capitalism is evil

What the Modern Age knew

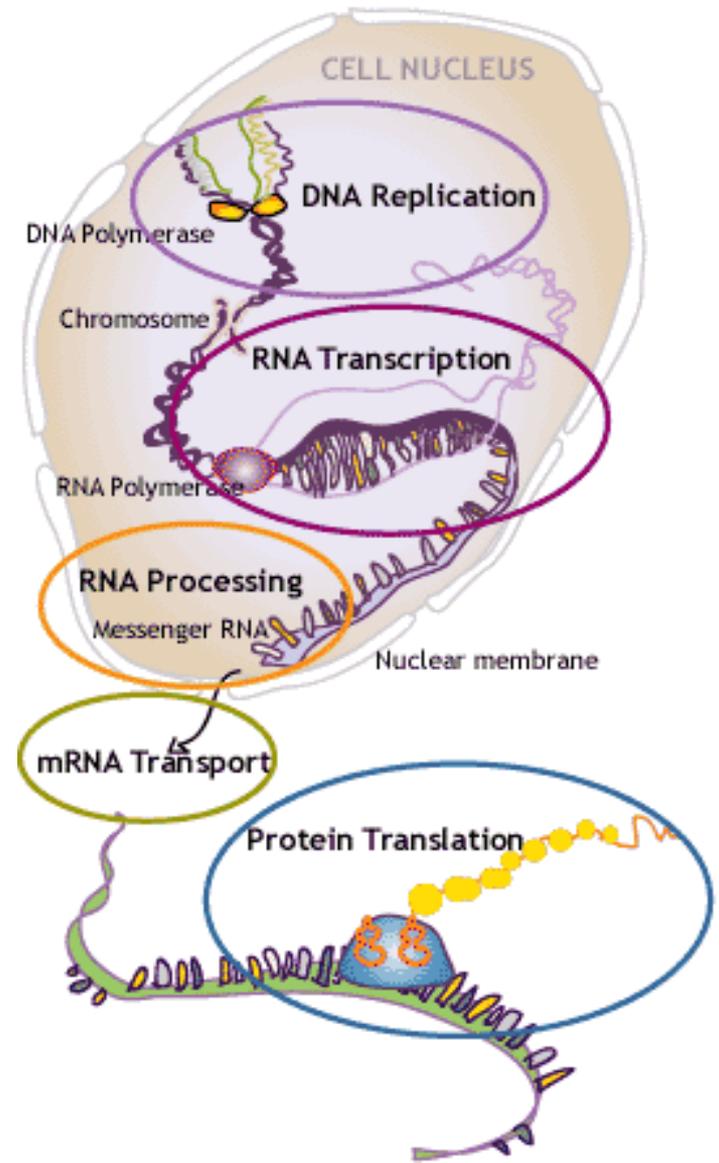
- Sayyid Qutb (1952)
 - Dream of a purified world
 - “the worship of God alone,
 - the foundation of human relationships on the belief in the Unity of God,
 - the supremacy of the humanity of man over material things,
 - the development of human values and the control of animalistic desires,
 - respect for the family,
 - the assumption of the vice-regency of God on earth according to His guidance and instruction
 - the rule of God's law (Shari'a) “

What the Modern Age knew

- Francis Crick and James Watson (1953)
 - Life is encoded in the double helix of the DNA
 - It is not the chemical composition that matters (it is almost the same for every individual) but the sequence (the order) of the nucleotides (which varies from individual to individual)

What the Modern Age knew

- DNA, RNA, Protein



What the Modern Age knew

- Leonard Savage (1954)
 - Subjective probability



What the Modern Age knew

- Popular music of the white Anglosaxon youth
 - 1955: Rock music
 - 1961: Surf music
 - 1962: Singer songwriters
 - 1962: Mersey beat (UK)
 - 1965: Folk-rock
 - 1965: Psychedelic rock
 - 1968: Progressive rock (UK)
 - 1969: Hard rock (UK)

What the Modern Age knew

- Erich Fromm (1947)
 - Humanistic Ethics
 - “Humanistic ethics is based on the principle that only man himself can determine the criterion for virtue and sin, and not an authority transcending him: "good" is what is good for man and "evil" what is detrimental to man; the sole criterion of ethical value being man's welfare. “
 - “The humanistic position is that there is nothing higher and nothing more dignified than human existence. “
 - “There is only one solution to [the human condition]: for one to face the truth, to acknowledge his fundamental aloneness and solitude in a universe indifferent to his fate, to recognize that there is no power transcending him which can solve his problem for him. Man must accept the responsibility for himself and the fact that only by using his powers can he give meaning to his life. “

What the Modern Age knew

- **Erich Fromm (1955)**
 - **19th century: God is dead**
 - **20th century: Man is dead**
 - **Mass society (capitalism) kills humanity**
 - **Work is what machine cannot do yet**
 - **The issue is not liberty but dignity**

What the Modern Age knew

- **Erich Fromm (1956)**
 - **Love**
 - **Standing in love vs Falling in love**
 - **Love is an art**

What the Modern Age knew

- **Artificial Intelligence (1955)**
 - 1936: Turing machine**
 - 1940: Von Neumann's distinction between data and instructions**
 - 1943: first electronic computer**
 - 1943 McCulloch & Pitts neuron**
 - 1947: John Von Neumann's self-reproducing automata**
 - 1947: Norman Wiener's Cybernetics**
 - 1948: Claude Shannon's Theory of Information**
 - 1950: Turing's test**
 - 1952: Yehoshua Bar-Hillel's Machine Translation**
 - 1956: John McCarthy's Artificial intelligence**



What the Modern Age knew

- **Artificial Intelligence (1955)**
 - 1957: Newell & Simon's General Problem Solver**
 - 1957: Rosenblatt's Perceptron**
 - 1958: Selfridge's Pandemonium**
 - 1957: Chomsky's Grammar**
 - 1959: Samuel's Checkers**
 - 1960: Widrow's Adaline**
 - 1965: Feigenbaum's Dendral**
 - Expert Systems: Knowledge VS Information (1965)**
 - 1965: Zadeh's Fuzzy Logic**
 - 1966: Weizenbaum's Eliza**

What the Modern Age knew

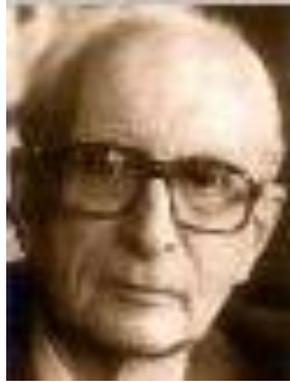
- **Artificial Intelligence (1955)**
 - 1967: Hayes-Roth's Hearsay**
 - 1967: Fillmore's Case Frame Grammar**
 - 1969: Minsky & Papert's Paper on Neural Networks**
 - 1970: Woods' Atn**
 - 1972: Buchanan's Mycin**
 - 1972: Winograd's Shrdlu**
 - 1974: Marvin Minsky's Frame**
 - 1975: Roger Schank's Script**
 - 1975: John Holland's Genetic Algorithms**



What the Modern Age knew

- **Artificial Intelligence (1955)**
 - 1980: John Searle's Chinese Room Article**
 - 1980: John McDermott's Xcon**
 - 1982: John Hopfield's Neural Net**
 - 1982: Kuniyuki Fukushima's Neocognitron**
 - 1985: Geoffrey Hinton and Terrence Sejnowsky's Boltzmann's Machine**
 - 1986: David Rumelhart's and Geoffrey Hinton's "back-propagation"**

What the Modern Age knew



- Claude Lévi-Strauss (1955)
 - Extending structuralism to social phenomena, which are also systems of signs like language
 - Myths from different cultures (myths whose contents are very different) share similar structures
 - Myth is a language: Myth is made of units that are combined together according to certain rules
 - These are the equivalent of "langue" and "parole" for myth: its "langue" is its timeless meaning, its "parole" is its historical setting
 - Myth also exists on a third level: its flexibility/adaptability (myth can be manipulated -without losing its basic shape)

What the Modern Age knew

- Claude Levi-Strauss (1955)
 - Mytheme is the elementary unit of Myth (several sentences representing an event, a scene, etc)
 - A mytheme is a "bundle of relations"
 - Mythemes can be read both diachronically (the story that is being told, the sequence of events) and synchronically (the timeless meaning of it, the "themes")
 - The themes of myths are relations/tensions between two opposing concepts (e.g., between selfishness and altruism)
 - Mythical thinking is logical thinking

What the Modern Age knew

- Claude Levi-Strauss (1955)
 - Myths use that binary logic because it is the logic employed by the human mind
 - "Myths think in men without their knowing"
 - Mythical thinking is inherent to the human mind
 - Mythical thinking is the human way of understanding nature and the human condition
 - Myths provide access to the way the human mind works

What the Modern Age knew

- **Disneyland (1955)**
 - **The distinction between real and unreal disappears**
 - **People are only connected to the world by images created by someone else**

What the Modern Age knew

- Georges Canguilhem (1955)
 - Knowledge proceeds by jumps
 - Science is about clarifying concepts invented by humans rather than the ultimate nature of the universe
 - Life itself is a concept that changed over the centuries

What the Modern Age knew

- Wilfred Sellars (1956)
 - Critique of Descartes
 - Verbal behaviorism: thoughts are to the linguistic acts of linguistic agents what molecules are to the behavior of gases
 - We can perceive something as something only after we have formed a concept of that something
 - The "aboutness" of sensations (e.g., "red") is not the same intentional "aboutness" of thoughts

What the Modern Age knew

- Roman Jakobson (1956)
 - Formalism
 - Six elements of communication:
 - A message
 - ...is sent by an addresser
 - ...to an addressee
 - ...who shares a common code,
 - ...a physical channel (contact)
 - ... and a context

What the Modern Age knew

- Roman Jakobson (1956)
 - Emotive function: the speaker's attitude to the topic
 - Conative function: the addressee (eg, vocative and imperative sentences)
 - Referential function: cognitive use of language (entails the presence of a self-conscious narrator)
 - Poetic function: aesthetic function of language (the message for its own sake)
 - Metalingual function: the verbal code itself
 - Phatic function: the contact between speaker and addressee

What the Modern Age knew

- Robert Solow (1956)
 - Technological progress drives economic growth
 - The economy's output increases without necessarily adding more labor and capital

What the Modern Age knew

- **Aleksandr Koyre' (1957)**
 - **Scientific progress is not linear**

What the Modern Age knew



- Noam Chomsky (1957)
 - Human brains are designed to acquire a language
 - They contain a "universal grammar"
 - We speak because our brain is meant to speak

What the Modern Age knew

- Chomsky (1957)
 - Performance vs competence
 - We understand sentences that we have never heard before
 - Behaviorists: we are trained to learn the meaning of sentences. Chomsky: we understand sentences that we have never encountered before.

What the Modern Age knew

- Chomsky (1957)
 - The number of sentences in a language is potentially infinite, but there is a finite system of rules that defines which sentences can be built
 - That system of rules is what identifies a language and differentiates it from other languages.
 - Grammar= rules that account for all valid sentences of the language
 - Independence of syntax from semantics (well-formed vs meaningful sentence)

What the Modern Age knew

- Chomsky (1957)
 - Application of formal logic to linguistics
 - Language = set of sentences
 - Sentence = finite string of words from a lexicon
 - Grammar = set of rules that determine whether a sentence belongs to the language
 - A language is "recursively enumerable"
 - Deductive approach to language: how to derive all possible sentences of a language from an abstract structure

What the Modern Age knew

- Chomsky (1957)
 - "Deep structure" = fundamental relationships among linguistic components
 - "Surface structure" = the sentences that are actually uttered
 - One deep structure for many surface structures
 - Chomsky's "standard theory": a grammar is made of a syntactic component (phrase structure rules, lexicon and transformational component), a semantic component (a "logical form" that assigns a meaning to the sentence) and a phonologic component (which transforms it into sounds)

What the Modern Age knew

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What the Modern Age knew

- Chomsky (1957)
 - Learning a language = innate knowledge plus experience
 - Universal linguistic knowledge (“universal grammar”)
 - Language "happens" to a child, just like growth
 - Government binding: differences between languages can be summarized into a set of constraints
 - Universal grammar = linguistic genotype

What the Modern Age knew

- Chomsky (1957)
 - The linguistic ability is inherent as much as arms: we do not learn to have arms, we just have them. Experience simply shapes them.

What the Modern Age knew

- Linguistics
 - Syntax
 - Semantics: anaphora, ambiguity, ...
 - Pragmatics

Soviet virgin lands short of goal again

Prostitutes appeal to Pope

Panda mating fails - veterinarian takes over

Killer sentenced to die for second time

Miners refuse to mine after death

Survivor of Siamese twins joins parents

Reagan wins on budget but more lies ahead

(Actual newspaper headlines)

What the Modern Age knew

- Eric Hoffer (1958)
 - "Mass movements do not usually rise until the prevailing order has been discredited.
 - "The discrediting is not an automatic result of the blunders and abuses of those in power, but the deliberate work of men of words with a grievance. "
 - "The preliminary work of undermining existing institutions, of familiarising the masses with the idea of change, and of creating a receptivity to a new faith, can be done only by men who are, first and foremost, talkers or writers. . . . "

What the Modern Age knew

- Eric Hoffer (1958)
 - “The masses listen to him because they know that his words, however urgent, cannot have immediate results. The authorities either ignore him or use mild methods to muzzle him”
 - “Thus imperceptibly the man of words undermines established institutions, discredits those in power, weakens prevailing beliefs and loyalties, and sets the stage for the rise of a mass movement.”

What the Modern Age knew

- John Kenneth Galbraith (1958)
 - Modern society removes economic insecurity from ordinary lives
 - The emphasis shifts from goods that are essential to survival to goods that are inessential
 - Inessential goods need to be advertised (the need has to be created artificially)
 - Inflation is inevitable
 - Big-government liberalism
 - Economies do not live in a vacuum: politics matters

What the Modern Age knew

- Carl Hempel (1958)
 - Logical empiricism
 - “Covering law” theory of explanation
 - application of symbolic logic

What the Modern Age knew

- Ernst Bloch (1959)
 - Utopias and ideals (such as Marxism) foreshadow a future that we cannot fully imagine
 - We are “not yet conscious” of the future we want to build

What the Modern Age knew



- Hilary Putnam (1960)
 - Semantic externalism
 - Meaning is not in the mind” (“water” in “twin earths”)
 - Meaning exhibits an identity through time, but not in its essence
 - Most people know what gold is, and still they cannot explain what it is
 - If some day we found out that Chemistry has erred in counting the electrons of the atom of gold, this would not change what it is
 - The meaning of the word "gold" is not its scientific definition, but the meaning that a community has given it

What the Modern Age knew

- Hilary Putnam (1960)
 - Functionalism
 - If a mental state can be realized in more than one physical state (more than one brain), is the physical state important at all?
 - What is it that makes a physical state of the brain also a mental state? the function it performs (eg, thermometer)
 - Mental states have a function
 - A mind doesn't necessarily require a brain
 - The mind is a symbol processor, and mental states are related to computational states
 - The mind is the software and the brain is its hardware

What the Modern Age knew

- Hilary Putnam (1960)
 - Functionalism
 - The execution of that program (the mind) in that hardware (brain, computer,...) yields behavior

DUALISM	SUBSTANCE DUALISM	Descartes, Hume
	PROPERTY DUALISM	Broad
		SUPERVENIENCE Kim, Chalmers
	TRIALISM	Popper, Penrose, Rucker
	EPIPHENOMENALISM	Bonnet
MONISM	IDEALISM	Berkeley
		PANPSYCHISM Leibniz
	Spinoza	
	NEUTRAL MONISM	Russell
	MATERIALISM	
		IDENTITY THEORY Place, Feigl, Smart
		TOKEN IDENTITY THEORY Davidson
BEHAVIORISM	Ryle, Wittgenstein	
	Eliminative materialism	(Feyerabend, Rorty, Churchland)
FUNCTIONALISM	Amstrong, Lewis	
	Computational functionalism	Putnam, Fodor, Stich, Block
	Homuncular functionalism	Dennett, Lycan, Minsky

What the Modern Age knew

- Holism
 - Pierre Duhem: Scientific hypotheses cannot be tested in isolation from the whole theoretical network in which they appear

What the Modern Age knew



- Willard Quine (1960):
 - Purely analytic truths do not exist: all truth depends on both language and facts
 - Even Logic and Mathematics are, ultimately, empirical
 - A statement alone cannot be verified: only the totality of statements (science in its totality) can be verified

What the Modern Age knew

- Willard Quine (1960):
 - A hypothesis is verified true or false only relative to background assumptions
 - Each statement in a theory partially determines the meaning of every other statement in the same theory
 - The structure of concepts is determined by the positions that their constituents occupy in the "web of belief" of the individual
 - No part of a scientific theory can be proved or disproved; only the whole can

What the Modern Age knew

- Willard Quine (1960):
 - Several different theories may offer equally plausible accounts of the same situation
 - Scientific theories are “undetermined” by experience

What the Modern Age knew

- Willard Quine (1960):
 - There are infinite interpretations of a discourse depending on the context
 - A single word has no meaning, its referent is "inscrutable"
 - Words have a meaning only relative to the other words they are connected to in the sentences that we assume to be true
 - The meaning of a sentence depends on the interpretation of the entire language. Its meaning can even change in time.
 - The meaning of language is not in the mind of the speaker

What the Modern Age knew

- Willard Quine (1960):
 - It is impossible to define what a "correct" translation of a statement is from one language to another, because that depends on the interpretations of both entire languages.
 - Translation from one language to another is indeterminate
 - Translation is possible only from the totality of one language to the totality of another language

What the Modern Age knew

- Hans Blumenberg (1960)
 - All theories are built on metaphors
 - Three historical stages
 - Absolutism of reality (absolute reality of nature)
 - Absolutism of transcendence (only one, absolute god)
 - Absolutism of science (absolute space and absolute time)

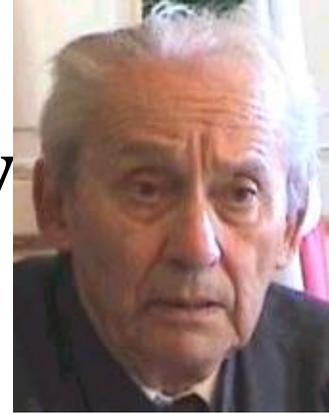
What the Modern Age knew

- Daniel Bell (1960)
 - Ideologies are dying because capitalism won
 - Post-industrial society centered around services
 - Preeminence of science
 - Cultural contradictions of capitalism: contradiction between the drive for efficiency and the drive for self-realization

What the Modern Age knew

- Hans-Georg Gadamer (1960)
 - Hermeneutic phenomenology
 - Hermeneutics = philosophy of understanding
 - All cultural productions, including science, are sets of signs that need to be deciphered
 - Understanding as the "fusion of horizons" between a past text and a present interpreter

What the Modern Age knew



- Paul Ricoeur (1960)
 - The symbols of pre-rational culture (myth, religion, art, ideology) hide meaning that can be discovered by interpretation
 - Interpretation can be backwards (towards the archaic, e.g. Freud) or forward (towards the telic, e.g. Hegel)
 - There are always a patent and a latent meaning
 - Ultimately, meaning can only be revealed indirectly (“there is no self-understanding that is not mediated by signs, symbols, and texts”)

What the Modern Age knew

- Paul Ricoeur (1960)
 - Hermeneutic phenomenology
 - Two-dimensional character of human existence: voluntary and involuntary
 - The voluntary and involuntary dimensions of human existence are complementary
 - The double nature of the self
 - This conflict is what gives identity and meaning to life

What the Modern Age knew

- Paul Ricoeur (1960)
 - The problem of evil
 - Caused by the gap between the finite and the infinite dimensions of a human being
 - Caused by the gap between bios (one's spatiotemporal life) and logos (one's ability to grasp universal spacetime)

What the Modern Age knew

- Paul Ricoeur (1960)
 - Human discourse and action both depend on and are independent of the context: they are meaningful only against the background of the context
 - The context might give our performances unintended meanings
 - Action is bilateral, not unilateral
 - “Man is this plural and collective unity in which the unity of destination and the differences of destinies are to be understood through each other”

What the Modern Age knew

- Paul Ricoeur (1960)
 - A language is timeless because it is only a system of signs, but discourse always occurs at some particular moment in time
 - A language is a necessary condition for communication, but it itself does not communicate
 - Only discourse communicates
 - The signs in a language system refer only to other signs in it, but discourse “refers to a world that it claims to describe, to express, or to represent.”

What the Modern Age knew

- Paul Ricoeur (1960)
 - Analogy between texts and actions
 - All action is in principle interaction just as all discourse is in principle dialogical
 - Action, like discourse is inherently subject to interpretation
 - Like discourse, actions are “open worlds” whose meanings are not fully determined by their performers and their immediate audiences
 - Action remains open to interpretation

What the Modern Age knew

- Paul Ricoeur (1960)
 - There is cosmic time, the uniform time of the universe, and there is lived time, the discontinuous time of our lives
 - “On a cosmic scale, our life is insignificant, yet this brief period when we appear in the world is the time in which all meaningful questions arise.”
 - A calendar “cosmologizes lived time... humanizes cosmic time”
 - The two kinds of time are not in opposition but they presuppose each other
 - Historical time harmonizes these two kinds of time and gives meaning to human action

What the Modern Age knew

- Paul Ricoeur (1960)
 - Historical time becomes human time “to the extent that it is articulated through a narrative mode”
 - “The narrative constructs the identity of the character... It is the identity of the story that makes the identity of the character”

What the Modern Age knew



- Ilya Prigogine (1961)
 - Non-equilibrium Thermodynamics
 - Irreversible processes are ubiquitous in nature
 - Life happens far from equilibrium
 - “Conservative” systems vs “dissipative” systems (subject to fluxes of energy and/or matter)
 - Dissipative systems give rise to irreversible processes
 - Order can be created either from equilibrium systems or from non-equilibrium systems that are sustained by a constant source (by a persistent dissipation) of matter/energy
 - All living organisms are non-equilibrium systems

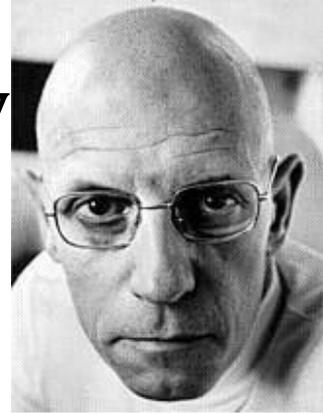
What the Modern Age knew

- Ilya Prigogine (1961)
 - The non-linearity of a system drives the system to ordered configurations, i.e. create order
 - Non-equilibrium and non-linearity favor the spontaneous development of self-organizing systems, which maintain their internal organization by trading matter/energy with the environment
 - Nonlinear systems driven away from equilibrium can generate instabilities that lead to bifurcations
 - When the system reaches the bifurcation point, it is impossible to determine which path it will take next: chance
 - Once the path is chosen, determinism resumes

What the Modern Age knew

- Emmanuel Levinas (1961)
 - The Other is not knowable and cannot be made into an object
 - One's experience of another individual is not founded on that Other (on the self of the other individual)
 - “The Other is otherwise than being”

What the Modern Age knew



- Michel Foucault (1961)
 - Western societies jail fools, while older societies acknowledged their existence
 - Western societies repress the creative force of madness
 - Western societies torture the minds of criminals, whereas older societies tortured their bodies: prisons are the chief instrument of social control
 - Western societies control individuals by training their minds
 - Western societies are vast mechanisms of supervision and repression

What the Modern Age knew

- Michel Foucault (1961)
 - Critique of modernism (Enlightenment, reason, progress) and humanism
 - Reason has created knowledge that has created new forms of power which have created new forms of oppression (biopower)
 - Nietzsche: the will to knowledge inevitably leads to the will to power
 - Knowledge is never neutral, it is inherently political

What the Modern Age knew

- Michel Foucault (1961)
 - What has really "progressed" in the modernist era are the techniques of power, both in terms of sophistication and ubiquity
 - Social institutions (schools, asylums, prisons), discourses and practices control the individual: bio-power
 - Discourse and practices determine what is accepted as rational, true, etc
 - The asylum and the prison work as laboratories to experiment on the control of individuals by society

What the Modern Age knew

- Michel Foucault (1976)
 - Western society has developed “bio-power”
 - Liberal democratic societies are not any less oppressive than totalitarian regimes
 - History is not a mono-dimensional class struggle, but many parallel social conflicts (prisons, asylums, schools...)

What the Modern Age knew

- Michel Foucault (1976)
 - However, Foucault never "names" the actors of this forms of power
 - Power remains impersonal and anonymous in Foucault's writings
 - Foucault only discusses the means by which it operates
 - Ana analysis of micropower not macropower
 - No distinction between legitimate and illegitimate power

What the Modern Age knew

- Michel Foucault (1976)
 - We “know” the world through the theories we believe in
 - Epistemes (structures of knowledge) determine our experience in the world (humans are not autonomous sources of knowledge - “man is a recent invention”)
 - The objects of science exist only insofar as science exists (“there was no life before biology”)
 - Knowledge and power are identical

What the Modern Age knew

- Michel Foucault (1976)
 - History of sexuality
 - Anatomico-politics (the politics of the human body)
 - Bio-politics (the politics of human population)

What the Modern Age knew

- Michel Foucault (1976)
 - Not history of ideas but archaeology of knowledge
 - The death of man: the subject of humanism (human nature) that is supposed to be at the center of knowledge and morality does not exist
 - The self is a byproduct or an epiphenomenon of technologies of domination

What the Modern Age knew

- Michel Foucault (1976)
 - Writing is “an interplay of signs arranged less according to its signified content than according to the very nature of the signifier” (1984)

What the Modern Age knew

- Emmanuel Levinas (1961)
 - Death is the impossibility of possibility

What the Modern Age knew

- Emmanuel Levinas (1961)
 - Ethical version of phenomenology
 - Ethics precedes ontology
 - Preeminence of the Other (the “you”)
 - Ethics is not a matter of self-convenience
 - God as the ultimate manifestation of the Other
 - “The essence of discourse is ethical”

What the Modern Age knew

- René Girard (1961)
 - Desire is mimetic: all of our desires are borrowed from other people, we desire what others desire
 - Violence is the evolution of competition among individuals who share the same desire
 - A scapegoat is killed to restore the peace, and is later deified
 - Rituals preexist language and culture
 - Sacrificial origin of human culture: sacrifice reenacts the event that gave birth to culture
 - The sacrifice is in fact the original symbol, the first time that something stood for something else

What the Modern Age knew

- **Max Black (1962)**
 - **"Interactionist" theory of metaphor: a metaphor consists in a transaction between two concepts**
 - **Literal language: two concepts can be combined to obtain another concept without changing the original concepts (e.g., "good" and "marriage" form "good marriage").**
 - **Metaphorical language: two concepts are combined so that they form a new concept (e.g., marriage as a nightmare), and additionally they change each other**
 - **The elements of a metaphor trade meaning**
 - **Metaphors act on the model of the world**

What the Modern Age knew

- John Langshaw Austin (1962):
 - Problems are expressed in sentences of the language, and they can be understood only after a meticulous analysis of the sentences
 - The function of sentences is not so much to describe the state of the world as to cause an action
 - “Performative” sentences (requests, promises, etc) are neither true nor false: they are meant to cause an action

What the Modern Age knew

- John Langshaw Austin (1962):
 - “Pragmatics” is the study of “speech acts”
 - “Locutionary” act (the words employed to deliver the utterance)
 - “Illocutionary” act (the type of action that it performs, such as warning, commanding, promising, asking)
 - “Perlocutionary” act (the effect that the act has on the listener, such as believing or answering)
 - All language is, ultimately, an illocutionary act

What the Modern Age knew



- Thomas Kuhn (1962)
 - Scientific progress is not linear
 - At any point in time a scientific paradigm (a consensus of the scientific community) rules
 - New evidence is accommodated in the ruling paradigm
 - A paradigm shift occurs when the ruling paradigm collapses

What the Modern Age knew

- Thomas Kuhn (1962)
 - The truth of a theory does not only depend on the correspondence with reality but also on the language in which it is formulated
 - The real history of science is the history of the transformations of language
 - Scientific revolutions are, ultimately, linguistic in character
 - A paradigm is composed of theoretical hypotheses and a set of techniques for testing them
 - A paradigm shift results in a different way of looking at the world, analogous to a religious conversion

What the Modern Age knew

- Jürgen Habermas (1962)
 - Critique of Western capitalist democracies but also of Marx's focus on labor
 - Marx's assessment of human evolution as an economic progression leaves out the human element: social interaction
 - Societies rely both on labor (instrumental action) and socialization (communicative action)
 - Rationality is generated by interpersonal linguistic communication (instead of an isolated subject confronting the objective world)
 - Not alienation but crisis: institutions manipulate individuals

What the Modern Age knew

- Jürgen Habermas (1962)
 - Not class revolution but Communicative Action (all thinking and language for the purpose of common action)
 - Communicative Action can transform the world and achieve a more humane, just, and egalitarian society
 - "Deliberative democracy" requires free, uncoerced, unconditioned, open debate among equal citizens, and would reject widely-held western assumptions (e.g., private property)

What the Modern Age knew

- Jürgen Habermas (1962)
 - Collapse of the public sphere
 - Birth of the studies of mass media

What the Modern Age knew

- Jaakko Hintikka (1962)
 - An agent's beliefs can be characterized as a set of possible worlds
 - An agent playing a card game is basically trying to deduce what cards are held by the opponent
 - A possible world represents one state of affairs which is compatible with what is known.
 - The agent “believes” something to be true if that fact is true in all possible worlds

What the Modern Age knew

- Michel Jouvet (1962)
 - REM sleep is generated in the pontine brain stem (or "pons")
 - REM sleep exhibits four main properties:
 - A low level of brain activity
 - Inhibition of muscle tone
 - Waves of excitation from the pons
 - Rapid eye movement
 - The pons sends signals and excites eye muscles (causing rapid eye movement), the midbrain (causing a low level of brain activity), and the thalamus.

What the Modern Age knew

- Michel Jouvet (1962)
 - The thalamus then excites the cortex.
 - The cortex therefore receives a valid sensory signal from the thalamus and interprets it as if it were coming from the sense organs
 - During REM sleep several areas of the brain are working frantically, and some of them are doing exactly the same job they do when the brain is awake.
 - The only major difference is that the stimuli they process are now coming from an internal source rather than from the environment: during dreams the sensory input comes from the sensory cortex.

What the Modern Age knew

- Vietnam War



What the Modern Age knew

- Evolutionary Psychology
 - Darwinian thinking applied to the social behavior of animals
 - William Hamilton: "The Genetic Evolution of Social Behavior" (1963)
 - George Williams (1966)
 - Robert Trivers: "The Evolution of Reciprocal Altruism" (1971)
 - John Maynard-Smith

What the Modern Age knew

- Evolutionary Psychology
 - A more scientific way to study human behavior than Psychiatry
 - Evolutionary Psychology studies human nature
 - Most behavior is mechanical, instinctive, although it makes a lot of sense: all the "thinking" has already been done by natural selection and summarized in DNA
 - Genes determine behavior that has been found to be rational over thousands of years
 - A new kind of "unconscious"

What the Modern Age knew

- Paul Feyerabend (1963)
 - Eliminative materialism
 - The mental does not exist
 - Sensations are not brain processes, but the things that we think are sensations are indeed brain processes

What the Modern Age knew

- Paul Feyerabend (1963)
 - Anarchist theory of knowledge (1975)
 - History of science proceeds by chance
 - There is no universal methodology for science
 - The boundary between science and nonscience is perpetually shifting
 - Disunity of science: science is a hodgepodge of theories, not a unified system
 - The world does not consist of one kind of thing but of countless kinds of things, things which cannot be 'reduced' to one another
 - There is actually no evidence that the world has a single, determinate nature

What the Modern Age knew

- Paul Feyerabend (1963)
 - Anarchist theory of knowledge (1975)
 - The world as it is in itself is unknowable to humans
 - Reason and Science have displaced the binding principles of previous world-views not as the result of having won an argument, but as the result of power-play (eg, Galileo made use of rhetoric and propaganda to support the heliocentric thesis, just like any politician to support an ideology)

What the Modern Age knew

- Paul MacLean (1964):
 - “Triune” brain: each brain corresponds to a different stage of evolution
 - Each brain is connected to the other two, but each operates individually with a distinct "personality"
 - Reptilian brain for instinctive behavior (brain stem, cerebellum, autonomic system)
 - Old mammalian brain for emotions that are functional to survival, as in “avoiding pain and achieving pleasure” (limbic system, i.e. hippocampus, thalamus amygdala)
 - New mammalian brain for higher cognitive functions (neo-cortex)

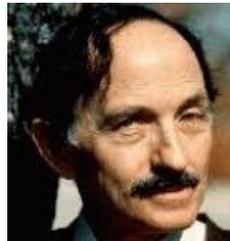
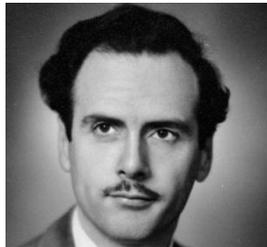
What the Modern Age knew

- Paul MacLean (1964):
 - Mechanical behavior, emotional behavior and rational behavior arose chronologically and now coexist and complement each other
 - Jung's conscious, unconscious, collective unconscious

What the Modern Age knew

Utopias of the 20th Century

- Teilhard de Chardin's noosphere (1922)
- Marshall McLuhan's global village (1962)
- Isadore Gudak/ Jack Good's singularity (1965)
- Buckminster Fuller's spaceship earth (1969)
- James Lovelock's Gaia (1972)
- Frank Tipler's omega point (1994)



What the Modern Age knew

Dystopias of the 20th Century/Literature

Karel Capek: "R.U.R." (1921)

Yevgeny Zamyatin: "We" (1921)

Franz Kafka: "The Trial" (1925)

Aldous Huxley: "Brave New World" (1932)

Herbert Wells: "The Shape of Things to Come"
(1933)

Sinclair Lewis: "It Can't Happen Here" (1935)

Vladimir Nabokov: "Invitation to a Beheading"
(1938)

George Orwell: "Nineteen Eighty-Four" (1949)

Ernst Juenger: "The Storm of Hell"
(1949)

John Wyndham: "The Day of the Triffids"
(1951)

Kurt Vonnegut: "Player Piano" (1952)

Ray Bradbury: "Fahrenheit 451" (1953)

William Golding: "Lord of the Flies" (1954)

John Wyndham: "The Chrysalids" (1955)

Philip Dick: "Minority Report" (1956)

Ayn Rand: "Atlas Shrugged" (1957)

Anthony Burgess: "A Clockwork Orange" (1962)

William Burroughs: "Nova Express" (1964)

William Gibson: "Neuromancer" (1984)

Margaret Atwood: "The Handmaid's Tale" (1985)

David Foster Wallace: "Infinite Jest" (1996)

Cormac McCarthy: "The Road" (2006)

What the Modern Age knew

Dystopias of the 20th Century/ Cinema

Fritz Lang: "Metropolis" (1927)

Charlie Chaplin: "Modern Times" (1936)

Jean-Luc Godard: "Alphaville" (1965)

John Frankenheimer: "Seconds" (1966)

Franklin Schaffner: "Planet of the Apes" (1968)

George Lucas: "THX 1138" (1971)

Richard Fleischer: "Soylent Green" (1973)

Rainer Werner Fassbinder: "World on a Wire"
(1973)

Woody Allen: "Sleeper" (1973)

Andrei Tarkovsky: "Stalker" (1979)

John Carpenter: "Escape From New York"
(1981)

Ridley Scott: "Blade Runner" (1982)

George Miller: "Road Warrior" (1982)

David Cronenberg: "Videodrome" (1985)

Terry Gilliam: "Brazil" (1985)

Paul Verhoeven: "RoboCop" (1987)

Katherine Bigelow: "Strange Days" (1995)

Mamoru Oshii: "Ghost in the Shell" (1995)

Andrew Niccol: "Gattaca" (1997)

Jean-Pierre Jeunet: "The City of Lost Children"
(1998)

Peter Weir: "The Truman Show" (1998)

Steven Spielberg: "Minority Report" (2002)

Alfonso Cuaron: "Children of Men" (2006)

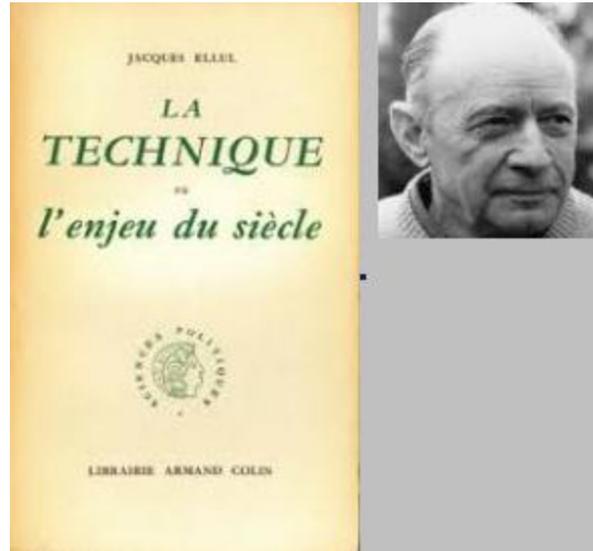
Andrew Stanton: "Wall-E" (2008)

Yorgos Lanthimos: "The Lobster" (2015)

Bong Joon-ho: "Okja" (2017)

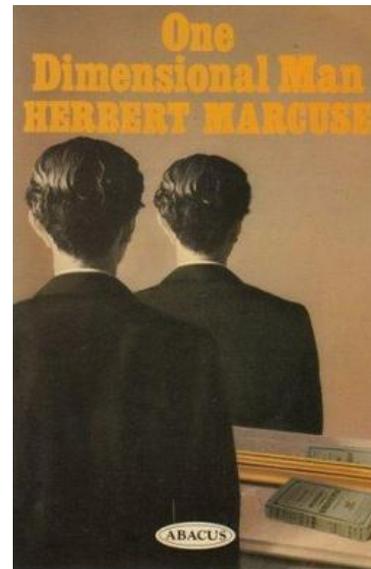
What the Modern Age knew

- Fear of the Technocracy
 - Jacques Ellul: “The Technological Society” (1954)
 - Technology: a force that has escaped our control and that is transforming the human being



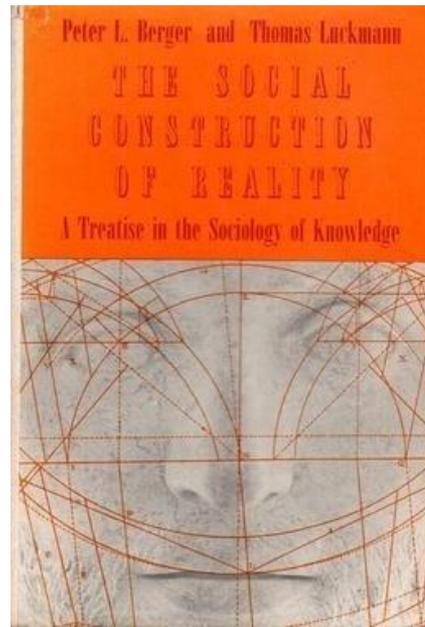
What the Modern Age knew

- Fear of the Technocracy
 - Wright Mills: "The Power Elite" (1956)
 - Marshall McLuhan: "Gutenberg Galaxy" (1962)
 - Buckminster Fuller: "Ideas and Integrities" (1963)
 - Herbert Marcuse: "One-dimensional Man" (1964)



What the Modern Age knew

- Fear of the Technocracy
 - Peter Berger and Thomas Luckmann: “The Social Construction of Reality” (1966): “reality” is constructed by us via “common sense knowledge”; “all societies are constructions in the face of chaos”



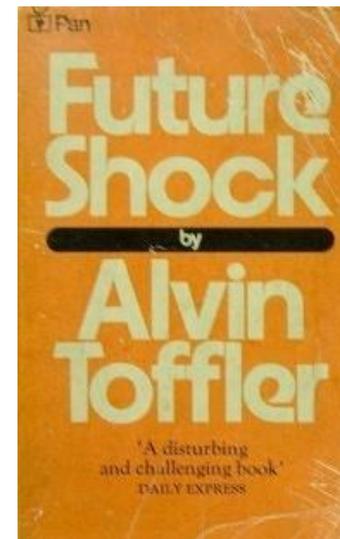
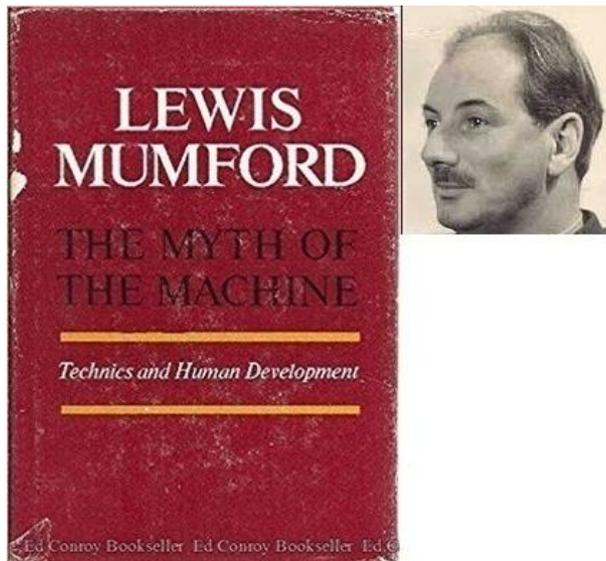
What the Modern Age knew

- Fear of the Technocracy
 - Alan Westin: "Privacy and Freedom" (1967)
 - The widespread computerization of personal records (legal, financial, medical) makes people's personal data more widely accessible by and distributed to more numerous organizations
 - Privacy = "the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others"
 - Citizens should retain ultimate control over their personal data

What the Modern Age knew

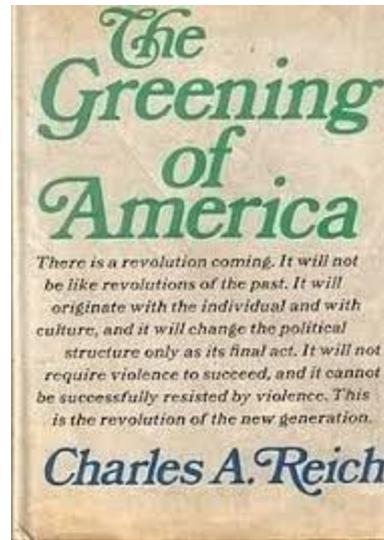
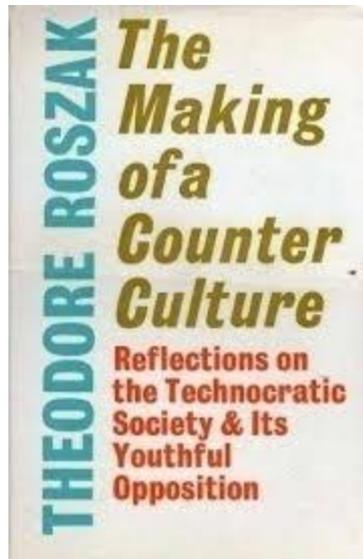
- Fear of the Technocracy

- John Kenneth Galbraith: "The New Industrial State" (1967)
- Lewis Mumford: "The Myth of the Machine" (1967)
- Alvin Toffler: "Future Shock" (1970)



What the Modern Age knew

- The Counterculture
 - Theodore Roszak: "The Making of a Counterculture" (1969)
 - Charles Reich: "The Greening of America" (1970)



What the Modern Age knew

- Fear of the Technocracy
 - Herbert Marcuse: "One-dimensional Man" (1964)
 - John Kenneth Galbraith: "The New Industrial State" (1967)
 - Lewis Mumford: "The Myth of the Machine" (1967)
 - Charles Reich: "The Greening of America" (1970)

What the Modern Age knew

- **Jacques Ellul (1964)**
 - **Technology creates an artificial world that replaces the natural world**
 - **Humans are the slaves, technology is the master**
 - **Technology's goal is to create perfect order and subject humans to it**
 - **Dehumanization of society**
 - **Technology is fundamentally atheistic because its goal is to create paradise on Earth and therefore to make the biblical Paradise irrelevant**

What the Modern Age knew

- Jacques Ellul (1964)
 - "Think globally, act locally"
 - Technology also enables mass media that in turn enable propaganda

What the Modern Age knew

- Gilbert Simondon (1964)
 - Theory of individuation
 - A general phenomenology of machines instead of cybernetics

What the Modern Age knew



- Buckminster Fuller (1963)
 - the universe is not made of objects: geometry describes forces
 - synergy: the strength of the whole exceeds the strength of the parts
 - environmentalism and peace (Spaceship Earth)
 - comprehensive anticipatory design science: "to make the world work for 100% of humanity, in the shortest possible time, through spontaneous cooperation"

What the Modern Age knew



- Marshall McLuhan (1964)



What the Modern Age knew



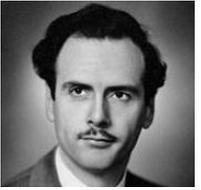
- Marshall McLuhan (1964)
 - The medium affects the communication (“the medium is the message”)
 - The content of the message is profoundly affected by the medium used to transmit it
 - Media shape our environment and therefore our civilization
 - The “global village”
 - The explosion of the electronic media will bring about an implosion of the old “literate” civilization by making the “literate” world more aware of illiterate cultures; an age of diversity instead of an age of homogeneity

What the Modern Age knew



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What the Modern Age knew



- Marshall McLuhan (1964)
 - The “global theater” (1970): the global communication network will create a perpetual happening, all performing for all
 - The explosion of the electronic media will bring about an implosion of the old “literate” civilization by making the “literate” world more aware of illiterate cultures; an age of diversity instead of an age of homogeneity

What the Modern Age knew

- Marshall McLuhan (1964)
 - *“After three thousand years of explosion, by means of fragmentary and mechanical technologies, the Western world is imploding. During the mechanical ages we had extended our bodies in space. Today, after more than a century of electric technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly, we approach the final phase of the extensions of man - the technological simulation of consciousness, when the creative process of knowing will be collectively and corporately extended to the whole of human society, much as we have already extended our senses and our nerves by the various media.”*

What the Modern Age knew

- Marshall McLuhan (1964)
 - Visual space of Western civilization (organized according to rigid laws of perspective and boundaries) vs acoustic space of primitive societies (multi-centered, “gyroscopic,” “everything happening at once, in a state of constant flux”)

What the Modern Age knew



- Herbert Marcuse (1964)
 - Analysis of the operation of mass societies
 - Analysis of the unhappiness caused on the individual by the operation of mass societies
 - Marx's analysis of socio-economic inequality + Freud's analysis of human psyche
 - Consumer society is sustained by sexual repression
 - Western (liberal capitalistic) society is inhuman and oppressive

What the Modern Age knew

- Herbert Marcuse (1964)
 - One-dimensional thought
 - Technocratic societies exploit the illusion of individual liberty to enslave their citizens
 - Whether capitalist or communist, the worker remains a slave of the instruments of production
 - We are living in a perverse loop in which humankind produces more than is needed, and enough to create a utopian society
 - Release from subjection to the economic sphere is the only true revolution

What the Modern Age knew

- Herbert Marcuse (1964)
 - One-dimensional thought
 - The true revolution is a reconciliation of technological rationality and individual happiness
 - This revolution can come only by rejecting the attempts by technocratic society to colonize the individual's daily life

What the Modern Age knew

- Herbert Marcuse (1964)
 - Hippie ideology
 - Eros = instinct of life, desire
 - Thanatos = instinct of death, suicidal impulse
 - Logos = repressive reason
 - Eros must be freed from Logos (love)
 - Thanatos must be channeled into art instead of aggression (peace)

What the Modern Age knew

- Ronald Laing (1964)
 - Schizophrenia is a rational reaction to alienation: alienation (the disintegration of the real self) causes the individual to invent a false self
 - Madness is an attempt by the individual to remedy the maddening conditions that society created
 - Madness is a natural healing process
 - Madness is a consequence of existential anxiety
 - "Schizophrenic is a special strategy that a person invents in order to live in an unlivable situation"
 - "Madness... is potential liberation and renewal"
 - "Schizophrenia is a social fact and the social fact a political event"

What the Modern Age knew

- Eliminative materialism
 - The mind-body dualism is a false problem that leads to false problems
 - Mental states (beliefs, hopes, etc) do not exist
 - The mental is the subject of "folk psychology"
- Rorty 1960s
- Feyerabend 1970s
- Churchland 1990s

What the Modern Age knew

- **Richard Rorty (1965)**
 - **Philosophical relativism**
 - **Any theory is inevitably conditioned by the zeitgeist of its era**
 - **Philosophy cannot discover the world**
 - **Philosophy is a genre of literature**
 - **Science cannot independently justify its findings**
 - **Science is a genre of literature**
 - **We cannot know the world**
 - **Pragmatic conception of truth: Truth is a relative concept**

What the Modern Age knew

- Richard Rorty (1965)
 - Philosophical relativism
 - Facts do not exist independently of the way we describe them with words
 - The goal of philosophy and science is not to verify if our propositions agree with reality but to create a vocabulary to express what we think is reality
 - Science is just one possible vocabulary, religion is another one: all possible vocabularies are equally valid

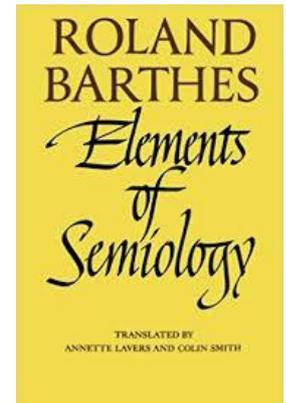
What the Modern Age knew

- Richard Rorty (1965)
 - Philosophical relativism
 - Metaphysics is nothing but lay religion
 - We need to free the minds of metaphysics the same way that the Enlightenment freed the minds of theology

What the Modern Age knew



- Roland Barthes (1964)
 - Saussure’s structuralism transformed into “semiology”, a science of signs to unveil the meaning hidden in the “langue”
 - “The death of the author” (1988): the original intention of the author does not matter in interpreting the creation of that author



What the Modern Age knew

- Donald Campbell (1965)
 - “Evolutionary epistemology”
 - A selectionist theory of human creativity
 - Darwinian systems beyond biology comply with a general principle: “Blind Variation and Selective Retention”

What the Modern Age knew

- John Good (1965)
 - The Singularity: “Let an ultraintelligent machine be defined as a machine that can far surpass all the intellectual activities of any man however clever. Since the design of machines is one of these intellectual activities, an ultraintelligent machine could design even better machines; there would then unquestionably be an ‘intelligence explosion,’ and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the last invention that man need ever make.”

What the Modern Age knew

- Jacques Lacan (1966)
 - Fusion of psychoanalysis and structuralism
 - Permanent struggle between two consciousnesses: the self remains in eternal internal conflict (no Freud-ian reconciliation by bringing out the unconscious)
 - The "I" itself is a fiction of the subconscious
 - Freud: how the subconscious is created and how it can be subordinated to the I
 - Lacan: how the I is created by the subconscious

What the Modern Age knew

- **Jacques Lacan (1966)**

- Three aspects/phases of the psyche: the Imaginary, the Symbolic, and the Real

- The Imaginary (pre-linguistic aspect) formulates primitive self-knowledge
 - The Symbolic (linguistic aspect) generates a basic behavior through interaction with the community
 - Mathemes structure the Real the way language structures discourse

What the Modern Age knew

- Jacques Lacan (1966)
 - A baby is born in the Real, a life driven by needs and lived in unity with the mother.
 - Then it enters the "mirror stage" (the Imaginary stage) in which the baby separates from the mother and see its mirror image as itself (still incapable of realizing that the mirror image is actually different from the self)
 - Then it enters the Symbolic stage in which it recognizes the other and develops a self, a self that is driven by the desire to recover the original union

What the Modern Age knew

- Jacques Lacan (1966)
 - The unconscious is like language: a system of signs
 - Meaning is either condensed (in metaphor) or displaced (in metonymy)
 - Both are linguistic phenomena

What the Modern Age knew

- Jacques Lacan (1966)
 - Wishes, desires, etc are signifiers which form a "signifying chain" (one signifier has meaning only because it is not some other signifier)
 - The subconscious "is" that chain
 - There are no signifieds: there is nothing that a signifier ultimately refers to
 - This chain is permanently unstable because it does not refer to anything
 - The I is only a grammatical unit responsible for designating the subject

What the Modern Age knew

- Jacques Lacan (1966)
 - Saussure: what matters is not the signified but the differences among signifiers themselves
 - Lacan:
 - Signifieds don't exist, there is no a-priori signified, signifieds are products of signifiers,
 - There is no stable relationship between two signifiers, and therefore that the bond between signifier and signified is temporary
 - Signifiers “float”

What the Modern Age knew

- Jacques Lacan (1966)
 - “an incoherent system of pseudo-scientific gibberish” (Francois Roustang)
 - ”a conscious charlatan” (Noam Chomsky)

What the Modern Age knew

- James Jerome Gibson (1966)
 - "Ecological Realism"
 - Meaning is located in the interaction between living beings and the environment
 - The process of perceiving is a process of picking up information that is available in the environment
 - Information originates from the interaction between the organism and its environment
 - Information = continuous energy flow of the environment

What the Modern Age knew

- Theodor Adorno (1966)
 - Rational society is a self-organizing system from which one must escape but from which nobody can escape

What the Modern Age knew

- **Theodor Adorno (1966)**
 - **Philosophy still exists only because of its failure to free humans from alienation**
 - **“Suffering is the corporeal imprint of society”**
 - **Centuries of human sufferings are surprisingly missing from the history of philosophy**
 - **Art, not philosophy, is the memory of accumulated suffering**

What the Modern Age knew

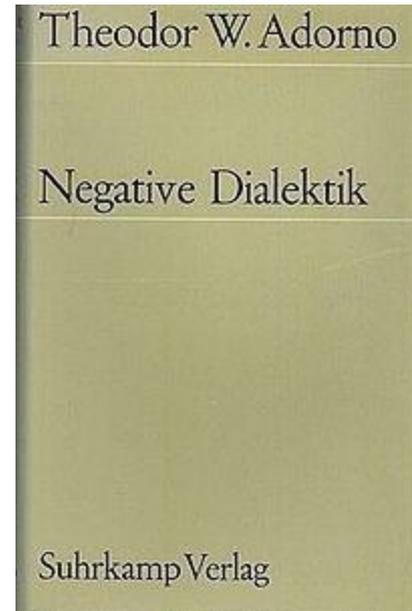
- Theodor Adorno (1966)
 - Subject and object are distinct
 - Dialectics is the attempt to recognize the non-identity between the subject (thought) and the object while trying to identify with the object.
 - Dialectics is "consciousness of nonidentity"
 - To think is to identify
 - Dialectics is thinking in contradictions
 - A "logic of disintegration" that does not reconcile opposites but realizes their identity

What the Modern Age knew

- Theodor Adorno (1966)
 - Western civilization is moving towards self-destruction
 - Reason has come to dominate not only nature, but also humanity itself

What the Modern Age knew

- Theodor Adorno (1966)
 - Critique of mass culture
 - Mass-culture industries manipulate the masses
 - People become passive
 - Pseudo- individualization: individuals are fed standardized cultural goods
 - Mass-culture industries cultivate false needs, needs created and satisfied by capitalism



What the Modern Age knew

- Jacques Derrida (1967)
 - Words have a history that is greater than any writer/reader's experience
 - Words mean both more and less than they appear to (“differance”)
 - Grammatology is the theory of archi-écriture, of penetrating the archi-écriture of a text (deconstruction)
 - There are as many readings of a text as there are readers
 - Meaning changes all the time
 - “Truth is plural”

What the Modern Age knew

- Jacques Derrida (1967)
 - Words mean both more and less than they appear to (“differance”)
 - Grammatology is the theory of archi-écriture, of penetrating the archi-écriture of a text (deconstruction)

What the Modern Age knew

- Jacques Derrida (1967)
 - Metaphysics is like a circle, closed on itself, a vicious loop from which the philosopher cannot escape
 - Metaphysics cannot be deconstructed without first deconstructing reason itself
 - The dead live in our memory

What the Modern Age knew

- Jacques Derrida (1967)
 - Language is not a tool to represent the world, but a world in which we live
 - Language changes ideas as it expresses them
 - The author of a text is not the only source of its meaning
 - The meaning of a text changes over time
 - There are multiple legitimate interpretations of a text, multiple layers of meaning
 - Language is constantly shifting

What the Modern Age knew



- Jacques Derrida (1967)
 - Reality can be defined only in the linguistic realm
 - “There is nothing outside the text”

What the Modern Age knew

- Guy Debord (1967)
 - Mass media and advertising play a role in an advanced capitalist society: to show a fake reality in order to hide the human condition caused by capitalism
 - Situationism (1957): encourage an alternative lifestyle

What the Modern Age knew

- Arthur Koestler (1967)
 - Beyond reductionism
 - A unified theory of open hierarchical systems (in language, biology, society, mind)
 - Each intermediary entity ("holon") functions as a self-contained whole relative to its subordinates and as one of the dependent parts of its superordinates
 - Each holon tends to persist and assert its pattern of activity

What the Modern Age knew

- **Arthur Koestler (1967)**
 - **Life exhibits an integrative property that enables the gradual construction of complex hierarchies out of simple holons.**
 - **There are no separated, indivisible, self-contained units.**
 - **An "individual" is an oxymoron.**
 - **An organism, instead, is a hierarchy of self-regulating holons (a "holarchy") that work in conjunction with their environment**

What the Modern Age knew

Human Be-in

- Hippies
 - Non-violence
 - Drugs
 - Sexual promiscuity
 - Reaction to the “American way of life”
 - Exotic travel (the “hippy road” from Morocco to India brings Eastern culture to the West)



What the Modern Age knew

- Hippies
 - 1954 - Aldous Huxley's "The Doors of Perception"
 - 1964 - Mario Savio's "Free Speech Movement"
 - 1964- Tim Leary' "The Psychedelic Experience"
 - 1964 - Ken Kesey and the Merry Pranksters
 - 1967 - San Francisco's "Summer of Love"
 - 1967 - Monterey Festival
 - 1969 - Woodstock Festival

What the Modern Age knew

- The Undo command (1968)
 - The hypertext system FRESS created by Andries van Dam at Brown University for the IBM 360 introduces the "undo" feature



What the Modern Age knew

- The Demo (1968)
 - Doug Engelbart demonstrates the mouse, a GUI and networking



What the Modern Age knew

- The Evolution of the Earth/ Part VII
 - 1930: Milutin Milankovitch's mathematical theory of climate change based on the motion of the Earth around the Sun
 - 1949: Willard Libby invents carbon-14 dating, useful for paleontologists to date fossils
 - 1969: Edwin Colbert discovers a dinosaur in Antarctica, proving that the South Pole was warm and thriving

What the Modern Age knew

- The Evolution of the Earth/ Part VII
 - 1980: Walter Alvarez and Luis Alvarez propose that the Cretaceous–Paleogene mass extinction was caused by an asteroid hitting the Earth
 - 1984: John Sepkoski identifies several mass extinctions every 26 million years
 - Five big extinctions
 - the Ordovician-silurian Extinction 440 million years ago
 - the Devonian Extinction 375 million years ago
 - the Permian-triassic Extinction 250 million years ago
 - the Triassic-jurassic Extinction 200 million years ago
 - the Cretaceous-Tertiary Extinction 66 million years ago

What the Modern World Knew

Poetry

Andrej Voznesensky (Russia): "Mosaika" (1960)

Jorge-Luis Borges (Argentina): "El Hacedor" (1960)

Ted Hughes (Britain): "Lupercal" (1960)

Gunnar Ekeloef (Sweden): "A Molna Elegy" (1960)

Pierpaolo Pasolini (Italy): "Religion of Our time" (1961)

Yevgeny Yevtushenko (Russia): "Babi Yar" (1961)

Tadeusz Rozewicz (Poland): "Nameless Voice" (1961)

Zbigniew Herbert (Poland): "Study of the Object" (1961)

Bella Akhmadulina (Russia): "String" (1962)

Wislaw Szymborska (Poland): "Salt" (1962)

Anna Akhmatova (Russia): "Poem Without A Hero" (1962)

Josif Brodsky (Russia): "Elegy to John Donne" (1963)

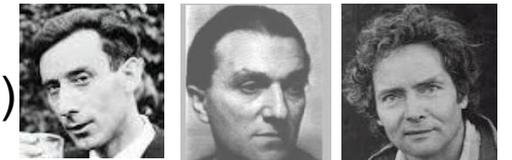
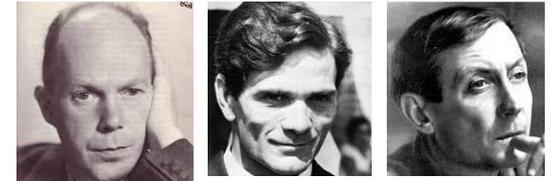
Mario Luzi (Italy): "In the Magma" (1963)

Vladimir Holan (Czech): "Histories" (1963)

William-Stanley Merwin (USA): "Moving Target" (1963)

John Berryman (USA): "77 Dream Songs" (1964)

Philip Larkin (Britain): "Whitsun Weddings" (1964)



What the Modern World Knew

Poetry

Sylvia Plath (USA): "Ariel" (1965)

Yannis Ritsos (Greece): "Philoctetes" (1965)

Vittorio Sereni (Italy): "Human Instruments" (1965)

Derek Walcott (Trinidad): "The Castaway" (1965)

Basil Bunting (Britain): "Briggflatts" (1966)

James Merrill (USA): "Nights and Days" (1966)

Philip Whalen (USA): "High Grade" (1966)

Seamus Heaney (Ireland): "Death of a Naturalist" (1966)

John Ashbery : "Rivers and Mountains" (1966)

Paul Celan (Germany): "Atemwende" (1967)

Gary Snyder (USA): "Mountains and Rivers without End" (1967)

Edward Brathwaite (Barbados): "Rights of Passage" (1967)

Octavio Paz (Mexico): "White" (1967)



What the Modern World Knew

Poetry

Louis Zukofsky (USA): "A" (1968)

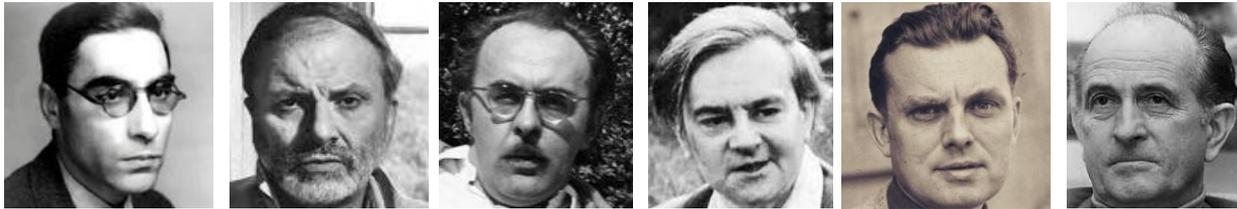
Geoffrey Hill (Britain): "King Log" (1968)

Charles Olson (USA): "Maximus" (1968)

Sandor Weores (Hungary): "Saturn Descending" (1968)

Czeslaw Milosz (Poland): "City Without a Name" (1969)

Miroslav Holub (Czech): "Although" (1969)



What the Modern Age knew

- Fiction 1946-68
 - Malcom Lowry (Britain, 1909): "Under the volcano" (1947)
 - Cesare Pavese (1908, Italy): "La Luna e i Falo" (1950)
 - Elsa Morante (1912): "L'Isola di Arturo" (1957)
 - Alejo Carpentier (1904, Cuba): "Los Pasos Perdidos" (1953)
 - William Gaddis (1922, USA): "The Recognitions" (1955)
 - Yukio Mishima (1925, Japan): "Golden Pavillion" (1956)
 - Boris Pasternak (1890, Russia): "Doctor Zivago" (1957)
 - Beppe Fenoglio (1922): "Una Questione Privata" (1963)
 - Jose Donoso (1925, Chile): "Coronacion" (1957)

What the Modern Age knew

- Fiction 1946-68
 - Gunther Grass (1927, Germany): "Die Brechtrommel" (1959)
 - Wilson Harris (Guyana, 1921): "Palace of the Peacock" (1960)
 - Witold Gombrowicz (1904, Poland): "Pornography" (1960)
 - Lem (1921, Poland): "Solaris" (1961)
 - Anthony Burgess (1917, Britain): "Clockwork Orange" (1962)
 - Kobe Abe (1929, Japan): "Woman of Sand" (1962)
 - Janet Frame (New Zealand, 1924): "Scented Gardens For The Blind" (1963)
 - Julio Cortazar (1914, Argentinian): "Rayuela" (1963)

What the Modern Age knew

- Fiction 1946-68
 - Carlo-Emilio Gadda (1893, Italy): "Cognizione del Dolore" (1963)
 - Boell (1917, Germany): "Opinions Of A Clown" (1963)
 - Saul Bellow (1915, USA): "Herzog" (1964)
 - Carlos Fuentes (1928, Mexico): "Artemio Cruz" (1964)
 - Jorge Amado (1912, Brazil): "Dona Flor" (1966)
 - John Barth (1930, USA): "Giles Goat Boy" (1966)
 - Elias Canetti (1905, Germany): "Auto da fe" (1967)
 - Kenzaburo Oe (1925, Japan): "Silent Cry" (1967)
 - Thomas Bernhard (1931, Germany): "Verstoerung" (1967)

What the Modern Age knew

- Fiction 1946-68
 - Gabriel Garcia Marquez (1928, Colombia): "Ciento Anos de Soledad/ One Hundred Years of Solitude" (1967)
 - “Nothing has happened in Macondo, nothing has ever happened and nothing will ever happen”
 - “Everything is known”
 - The building blocks of the plot are loops that allow the reader to project, at the same time, both ahead and behind
 - The loop of all loops is the story of the Buendias as the recapitulation of a story written 100 years earlier by the Melquiades
 - A postmodernist version of Diderot’s “great scroll of destiny”

What the Modern Age knew

- Theatre 1946-68
 - Tennessee Williams (1911, USA): "A Streetcar Named Desire" (1947)
 - Arthur Miller (1915, USA): "Death of a Salesman" (1949)
 - Samuel Beckett (1906, Ireland): "En Attendant Godot" (1949)
 - Friedrich Durrenmatt (1921, Switzerland): "The Visit of the Old Lady" (1956)
 - John Arden (Britain, 1930): "Serjeant Musgrave's Dance" (1959)
 - Max Frisch (1911): "Herr Biedermann und die Brandstifter" (1958)
 - Harold Pinter (1930, Britain): "Caretaker" (1959)
 - Eugene Ionesco (1912): "Rhinoceros" (1959)
 - Peter Weiss (1916): "Marat/Sade" (1964)

What the Modern Age knew

- Samuel Beckett's "En Attendant Godot" (1949)
 - Possible interpretations
 - Godot is meaning, and there is no meaning
 - Godot is God
 - Godot has come and gone but they did not recognize him
 - The audience in the theater (waiting for entertainment that will never come) behaves like the characters of the play (waiting for someone who will never come)

What the Modern Age knew

- Samuel Beckett's "En Attendant Godot" (1949)
 - Contemporary events:
 - Existentialism (Camus' "Myth of Sisyphus" of 1942, Sartre's "Being and Nothingness" of 1943)
 - Holocaust, Atomic bomb and Cold War
 - Second scientific revolution (indeterminacy, randomness, relativity)
 - Pierre Schaeffer's musique concrete and John Cage's aleatory music

What the Modern Age knew

- **Music 1946-68**
 - **Cage: Concerto for Prepared Piano (1951)**
 - **Boulez: Le Marteau Sans Maître (1954)**
 - **Nono: Canto Sospeso (1956)**
 - **Stockhausen: Gesang der Junglinge (1956)**
 - **Xenakis: Orient Occident (1960)**
 - **Britten: War Requiem (1962)**
 - **Penderecki: Passio Secundum Lucam (1965)**
 - **Berio: Sinfonia (1968)**

What the Modern Age knew

- Ballet/Europe
 - Rudolf Nureyev defects to Britain (1961) and becomes its second star after Margot Fonteyn
 - Alwin Nikolais' "Kaleidoscope" (1956) pioneers abstract and total dance theatre
 - Maurice Bejart (France) creates "Ninth Symphony" (1964) for 80 dancers and 250 musicians/singers
 - Kenneth MacMilan (Britain) creates brutal realistic ballets that feature suicide, drugs, prostitution, incest, gang rape, soft porn (e.g. "Mayerling", 1978), almost a return to pantomime but with a punk attitude

What the Modern Age knew

- Ballet/USA
 - Balanchine's and Lincoln Kirstein's New York City Ballet (1948)
 - Lincoln Center for the Performing Arts (1962)
 - Ballet becomes the most radically experimental art

What the Modern Age knew

- Ballet/USA
 - Merce Cunningham (1953): chance operations to choreograph ballets and set designs by painter Robert Rauschenberg
 - Jerome Robbins (choreographer) + Leonard Bernstein (composer) + Stephen Sondheim (lyrics): "West Side Story" (1957) about juvenile delinquents
 - George Balanchine + Igor Stravinsky: the abstract dissonant "Agon" (1957) with mystical and humanist overtones

What the Modern Age knew

- Ballet/USA
 - George Balanchine "The Nutcracker" (1954)
 - Maurice Bejart "Symphonie pour un Homme Seul" (1955)
 - Alwin Nikolais "Kaleidoscope" (1956)

What the Modern Age knew

- Ballet/USA
 - Roberts Blossom (1924, USA) dance and film (1961)
 - Robert Joffrey's hippy multimedia "Astarte" (1967)
 - Billy Kluver's Nine Evenings in New York (1966): dance and tech

What the Modern Age knew

- Dance/USA
 - Simone Forti's "Dance Constructions" at Yoko Ono's loft (May 1961)
 - July 1962: Robert Ellis Dunn's Judson Dance Theater
 - Yvonne Rainer: "Three Seascapes" (1962)
 - Carolee Schneemann: "Chromelodeon" (1963)
 - Trisha Brown: "Lightfall" (1963)
 - Deborah Hay: "Victory 14" (1964)
 - Freddie Herko: "Dervish" (1964)
 - Anna Halprin: "Parades and Changes" (1965)
"task performance" (improvisation based on everyday gestures)

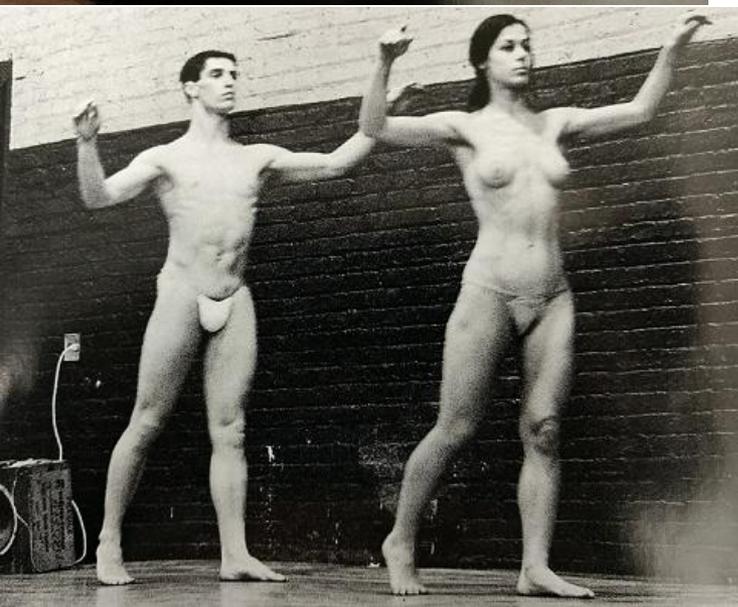
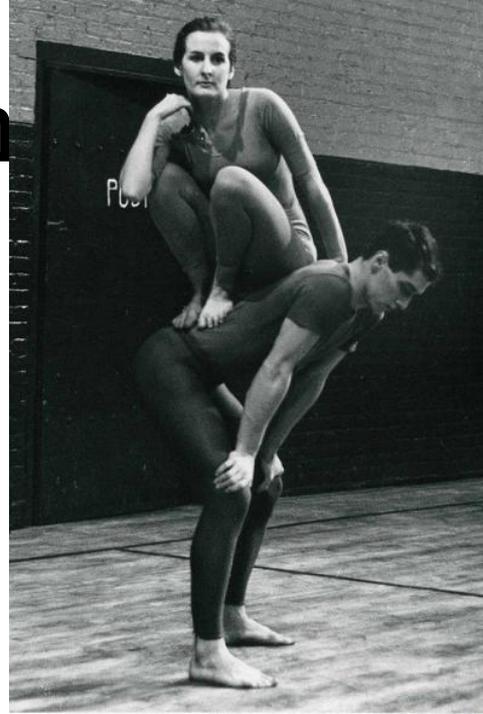
What the Modern Age kn

Judson Dance Theater



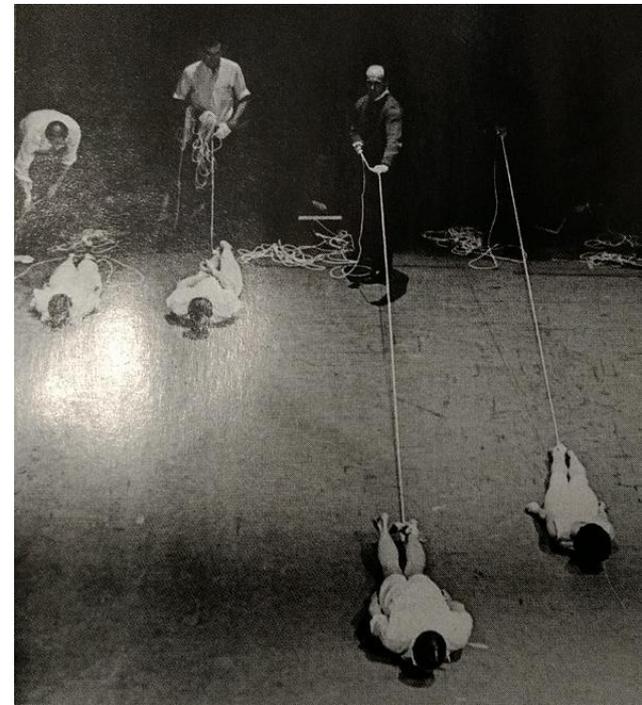
Yvonne Rainer: "Three Seascapes" (1962)

Trisha Brown:
"Lightfall" (1963)



Steve Paxton and
Yvonne Rainer

Deborah Hay:
"Victory 14" (1964)



What the Modern Age knew

- Dance/USA



Freddie Herko: "Dervish" (1964)



Carolee Schneemann:
"Chromelodeon" (1963)

What the Modern Age knew

- Multimedia Theater
 - Alfred Radok's and Josef Svoboda's *Laterna Magika* (1958, Czechoslovakia)
 - Milton Cohen's *Space Theater* (1958, USA)
 - Roberts Blossom's *dance and film* (1961)
 - ONCE's "*Unmarked Interchange*" (1965)

What the Modern Age knew

Piero Scaruffi

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