By the end of medieval period, the inception of "trading class" occurred.

Steam engine was one of the driving forces in this period.
Invention of lathe machine/mother machine occurred.
Slowly, specialists of steam engine, other machines came into existence.
This period is called "a cult of individualisation" i.e. a period of individualism.
Individualism was based on 3 sides:

- Adam Smith — father of economics, was born in this period (18th century)
- He preached that "individuals' selfishness ultimately make the society wealthy" and "selfishness is the driving force of the economy"
- Laissez-faire — lead alone, if he is known by this name. "An ideal gov't is the one which doesn't interfere in business of businessmen" A.S.

How to get rich:
- Jared Diamond
  - Per capita income of US, India, Norway
  - Who is Whitney? How is he related to invent his other contributions
- In pure communism, there is no private property, hence communism failed in ownership e.g. Communist Russia.

Communism — facts & historical development:

- Adam Smith encouraged people to explore their selfish interests and help in betterment of the society.
- His statements were substantiated by Charles Darwin — Father of Evolution. He preached "every living creature will try to maximise his gain even if it needs to kill the weakest for survival of the fittest"
- Darwin got the "inspiration" after he visited islands near Ecuador, Galápagos Islands (1835)
  - In 1770, England enacted a "patent act" and copyright act. It simply recognised (i) the talents of individuals and (ii) transparency in invention &
PPP of India indicates inherent strength of Rupee. PPP also depends upon price of commodities e.g. Nescafe costs here 5/- compared to $1 in US.

But real per capita income (1489 $) shows study of rupee compared to dollars is necessary strength and also it shows quantum of exports from the US.

(ii) Interchangeability:
- Eli Whitney discovered Cotton Gin (patented)
- Cotton Gin increased the productivity of cotton industry
- In 1798, US floated a tender of long guns (it's armies needed guns). So, Eli used his interchangeability for producing guns.
- He planned the standardization of gun parts i.e., he created a machine to produce only barrels, another to produce triggers.
- But, he couldn't assemble the parts due to a small variation in dismantled parts.

- He solved the problem within 10 yrs and understood the concept of clearance and delivered 10k guns in 1808 (instead of 180)
- He made special number for standard sizes.

- Introduced mass production

- More production, less price, more affordable for customers and portability of power.

- To do all this, money was required and to solve capital problem, floating/advent of shares came into existence.

- Concept of shares came to increase flow of capital & productivity.

- In 1862, British Parliament enacted Industrial Act, which declared industry as an individual.

Buying shares of a company → meant lending money to an individual i.e., money the company loses is not paid by the shareholder (owner) but he may lose the money he invested. The concept is called "limited liability of the shareholders".
Fredrick Winslow Taylor:
- He was a mechanical engineer.
- He invented HSS (high speed steel) tool in 1841.
- He was the Father of Scientific Management.
- Scientific management is an activity of planning and measurement used to manage the phenomenon of measurement is core of scientific management.

Lord Kelvin — If u describe the phenomenon in terms of quantitative no., then we know what we are talking about.

Taylor's Methodology of Measuring Work:
- He simply divided large tasks into smaller appropriate units i.e. division of labour.
- His philosophy is that every job/process there is one best method. Try to find out that method using experiments.
- Also, standardise the method and cause least harassment to the worker and pay the workers according to the benchmark. Also there was no systematic method of doing soldering. It was a strategy used by the workers to defend their domain and to defend themselves against more work; workers bringing their own tools.

He got the idea of analysing work.
- Taylor undertook the management task and calculated the optimum weight a worker can lift throughout the day without fatigue.
- He manufactured different tools for lifting up different materials. e.g. a small shovel for pig iron, a larger one for large density. a large shovel for wheat husk.
* Self-esteem needs ->
  If somebody is satisfied with acceptance needs, offer him self-esteem needs.
  It urges people for authority and power, urge of making some difference.

* Self-Actualisation ->
  Highest form of human achievement i.e., after reaching self-actualisation, a person
  works for his passion.

Hierarchy of needs:
- Physical needs
- Security needs
- Social & acceptance needs
- Self-esteem needs
- Self-Actualisation

Baba Amte - a successful criminal lawyer.

Idea Factory - Bell Labs about self-actualisation.

Q: Who invented C++? Why he invented C++?

Lee Diamond - How to get rich:
  (1) Core idea was "violation" leads to degradation of society.
  (2) He went to a place called Tasmania (Aus) where people had forgotten their skills due to "violations".

Limitation of Maslow's theory:
  (1) Man needn't follow this hierarchy as he can jump-start from anywhere.
  (2) To implement self-actualisation in an organisation is quite difficult.

- Stroustrup - In Spurnstain -> worked in Bell Labs.
  - invented C, C++, Unix (OS).
  - Bell Labs succeeded because they work on self-actualisation theory. They give lot of freedom to the researchers.
  - He came out with OOP Object-Oriented
Programming) and thought existing languages weren’t too suitable for human needs.

Note: Recently inventor of STM (Scanned Tunneling Microscope) died. He was Father of Nanotechnology (HEINRICH ROHRER)

3rd model — Herzberg Two factor theory:

(1) He says that there are 2 kinds of needs (and these 2 needs were the people’s motives)

(2) There are certain needs which drive the people while certain needs provide only satisfaction

(3) He categorised Maslow’s needs into 2 parts

(4) Hygiene factors —
They simply satisfy the employees e.g. increments, food needs; they never motivate

(5) Motivational factors —
They motivate the people e.g. if you work well, you will be promoted to General Manager; these are motivators

Self-actualisation — it gives autonomy about the position

(6) His model is valid for middle to top level executives

Akiro Morita:

(i) Founder of Sony Corporation
(ii) His book is “Made in Japan”
(iii) The idea of “Walk-Man” was given by him

Self-esteem

Social acceptance

Security

Hygiene factors

Motivational factors

Physiological needs

Japanese electronics industrialist

(4) He had Ubuka as his R&D in charge to create walkman

(5) Ubuka took the task assigned to him as a challenge and invented it

(6) Ubuka didn’t do it out of any greed, but out of self-actualisation

James Godom — Invented of MASER (Microwave Amplifier by Stimulated Emission of Radiation)

He did his PhD under a prof. who invented a LASER
Leadership:
(1) Part of Delegating Functions of Management
(2) Experiment - How a leader will evolve - Hawthorne Experiment:

- Hawthorne is a place near Chicago and Western Electrical Plant is located there. Production.
- It is a division of AT&T (American Telephone & Telegraph).
- It's founder was none other than Alexander Graham Bell.
- The R&D part of AT&T - Bell Labs produced "W. Electrical Plant".
- These experiments started in 1923 and ended in 1927.
- The motivation for his exp. was that workers were not giving out their best.
- Even the company plant had chalked out a Wage Incentive Scheme. But, the scenario changed when not a single worker earned bonus and they became lethargic.
- Taylor's philosophy - Pay more to those who do overtime & vice-versa, according to an optimum wage defined for a worker.
- Underpay those who are lethargic.

Elton Mayo & R.J. Roethlisberger

These 2 were brought from Harvard to investigate about the half-hearted approach of the workers.

They found out that may be the physical environment, e.g., work schedule is hindering the workers to perform well. 1923-27.

They performed "Lighting Experiment".
overnight, rather he strictly adheres to the norms of the group; addresses his subordinates with their first names.

The primary groups influence the working of the organization and cause the "informal organization structure.

- If the organization is well planned then the norms of the primary group fit in with the organizational norms—better than formal organizational structure.
- Any manager has to influence the primary groups or identify a group and influence its leader.
- Formal organization structure is highly bureaucratic (red tape).
- Managers always try to plague the primary groups as they fear they may develop their own norms. They plague the groups by transferring them but this is harmful as it causes chaos and involves mob fury.

Hence, managers are advised to develop a sense of ownership among primary groups.

- A primary group at max. has 5-7 members and they interact regularly. A primary group is formed when people with physical limitations meet.
- People say, "It is better to lead a primary group than to lead a mob."

Leadership—(criterias)

1. Leadership is always based on situations—e.g. when ppl find a suitable leader for a situation, they choose him as their leader.
2. Leaders evolve from a group when they satisfy group norms.
3. A good leader will lead people with minimum time limits through medium of primary groups.
4. A good manager operates through primary groups.

Halo effect—appearing to be divine. E.g., a leader should use Halo effect i.e., a leader is democratic (NTR used this effect).
(3) Positioning — 
It means reserving yourself a slot with certain characteristics in a 
given segment:
  e.g. Maruti — Stringray, 
  handbag — counts on performance & speed.
Rolls Royce — counts on social status.
Mercedes — emphasis in design as well.
So, positioning helps on both as well.
  e.g. Colgate — tooth decay segment.
  Pepsodent — germ check.
So, toothpastes position itself themselves in segments as well.

(4) 4 P’s of Marketing mix:
  (1) Product
  (2) Place
  (3) Promotion
  (4) Price

(1) Strength
(2) Performance
(3) Features {e.g. whether a walkman has bass, volume}
(4) Reliability — is measured through MTBF.
  i.e., Mean Time Between Failures
  (larger the MTBF, reliable is product.)
   Mean Time to Repair i.e.
  how much time is required to bring
  a product back to work.
(7) Aesthetics —
  mean the look, colour, dynamics of a product.
(b) Brand —
  e.g. Raymond — The Complete Man.
(vii) Warranty
These 8 dimensions come under product.

Note: Mercedes’ latest ad campaign was: The only sound you hear in our car is the tick of your watch.
* If you say no too many times to a customer, you will lose his goodwill.
  Your losses are:
  • Tangible
  • Intangible

If depending on your history of product breakdown, you must maintain optimal inventory amount.

§1 What to buy?
§2 How much to buy? (guess for a factory)
§3 When to buy?

Sol\(1\): We must see if it’s cheaper to buy from market than making it in house:
  e.g. bolts and nuts.
  Mass products may make market products cheaper for you
  (i) you may get expertise in the market
  (ii) Maybe, you don’t want to share

Sol\(2\): Modelled by F.W. Harris in 1915
Sol\(3\): He has come with a decision model of how much & when to buy to reduce the inventory cost.
  • He called his model as EOQ model — Economic Order Quantity model
  • His work was to arrive at an optimal frequency of buying.
  • His models were launched to make products simple and feasible.
  His assumptions — (in EOQ model):
  (1) Demand rate is constant:
    It is not possible in a real life situation & you can’t keep inventory amount as zero.
  (2) Lead time is constant:
    It is the time gap when you order and when you actually get the material.
    e.g. in India, it can’t be kept.com
(3) No stock-outs:

It means there are no situations of saying no to customers.

If assumptions 1 and 2 are true, the 3rd assumption will be true as well.

(4) No quantity discount:

If more quantity is purchased, it does not affect discounts, and discount is independent of quantity of products bought.

E.g. Buy 1 get 1 free.

In real life, we violate this assumption.

(5) Instantaneous replenishment:

If you order 3000 units (say), all 3000 units shall come in one go, and no installment business should be entertained.

However, in real life, we experience its violation.

(6) Only 1 item per order:

This rarely happens in practice as normally, we order 2 or 3 products from a supplier to save transportation cost as well.

These assumptions are like benchmarking
carnot cycle A similar to Carnot cycle (Ideal)

6 Assumptions:

1. It defines max. \( Q \) for it defines max. \( Q \) for comparison of engine mean inventory &
efficiencies

If 6 assumptions are assumed to be ideal, we have to figure out how much we are deviating from ideal situations with it.