

HISTORY OF TRANSPORTATION DEVELOPMENT.

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Transport plays an integral role in modern life. The economy of any country is based on it, as transport provides links between production and consumers, meets the transportation needs of the population, and is of great defense importance. The volume and structure of transportation determine the level of development and the specifics of the economic structure of a country or region. Of course, like everything else in life, the history of transportation has its origins. Therefore, in this article, I want to talk about the history of transport and transportation.

To begin with, we need to consider how transport and transportation are classified. By type of transportation, transport is divided into two groups - freight and passenger; by type of connection - land, which also includes rail; water (sea and river) and air; by type of vehicle use - road, rail, sea, aviation, pipeline, horse-drawn carriage, etc. There is a distinction between transportation within the state (domestic transportation, sea transportation - cabotage) and international transportation. The total length of road, rail, water (without sea), and air routes is about 30 million conventional kilometers [1]

So I propose to start with land transportation. Land transportation has its roots in antiquity, when people first emerged from caves and began to travel the world. The first forms of overland transportation were primitive trails and paths that arose naturally from the flows of migration and hunting, people walked on foot and babies and belongings were carried on their backs or heads. Later, people began to use sleds made of logs, poles, or anything else that could support the load and that could be pulled by one or more people. But over time, this ceased to meet people's needs, and the development of transportation required new solutions and ideas, and this was the invention of the wheel. The wheel was invented about 3500 B.C. The invention took place in Mesopotamia. The first wheeled vehicles were used to move goods and

facilitate travel. Over time, animals such as horses and camels were used, which became not only reliable partners for pulling goods, but also means of transporting passengers. In ancient times, land transportation played a key role in wars. The emergence of horse-drawn soldiers and chariots made it possible to move troops quickly.

Development of roads and highways: Empires and civilizations have developed systems of paths and roads to improve land transportation. The Roman Empire, in particular, is known for its extensive road system that connected large parts of Europe. In the Middle Ages and the Renaissance, the growth of trade and cultural exchange fostered the development of land transportation. Carriages, that people used for a long time and other types of vehicles appeared

Let's look at how sea transport developed at that time. Initial stages: Ancient people have been using ships for fishing and trade since prehistoric times. The first information about ships dates back to about 4,000 years ago in the Aegean Sea. The use of sails and oars allowed them to travel the seas and discover new territories. Ancient World: In the Ancient World, Greece and Rome developed maritime trade and a military fleet. The first commercial ships and large galleys appeared, using slave labor to propel them. [2]

Middle Ages: In the Middle Ages, the development of maritime transportation slowed down. Trade remained important, but was limited by the technological capabilities of the time. Byzantine and Arab navigators played an important role. The fifteenth century was marked by the Great Discoveries, when European explorers such as Columbus, Vasco da Gama, and Magellan opened new sea routes to the Americas, India, and the Far East. This led to the active development of maritime trade and the creation of large fleets. The era of large sailing ships (16-18 centuries): With the advent of new technologies, large sailing ships became the primary means of transporting large amounts of cargo and passengers. Advances in shipbuilding, such as carcasses, improvements in painting and navigation, allowed for the expansion of trade routes and increased transportation. [3]

In the 18-19th century, the development of transportation was greatly influenced

by the industrial revolution. Let's see how exactly. Transport has played a key role in the development of society over the past four centuries, reflecting the scientific, technological, and socioeconomic changes that have shaped the world. Let us consider the stages and achievements of transport development from the 18th to the 21st century.

The 18th century: The beginning of the Industrial Revolution and changes in transportation
Horse-drawn transport and stone roads: The beginning of the 18th century was marked by the active development of horse-drawn transport and the construction of roads to improve the efficiency of cargo transportation. The first stone roads appeared, opening up new opportunities for trade and urban development.

The Industrial Revolution, which began in the mid-18th century in the United Kingdom, had a significant impact on all sectors of the economy, including transportation. The invention of the steam engine by James Watt in 1769 was a defining moment of this period, marking the transition from manual labor to machine production. Steam engines made it possible to use steam as a source of energy to drive mechanisms, which opened up new opportunities for transportation. The first to emerge were steam trolleys, which replaced horses and handcarts. This significantly increased the efficiency and speed of cargo and passenger transportation. On the other hand, steam trains revolutionized rail transportation. In 1804, the first steam train, designed by Richard Trevith, was launched in England. With the help of steam power, trains could move much faster and were able to carry more cargo compared to traditional horse-powered railroad locomotives. These innovations in transportation spurred industrial development, enabling faster and more efficient movement of goods and people. Steam transportation was a key element of the Industrial Revolution, helping to expand markets and make the economy more global.

19th century: Railroads, Steamboats and Automobiles. Railroads and network expansion: During the second half of the 19th century, the rapid expansion of rail transport marked a transformative period in the realm of connectivity and industrialization. The emergence of the first railway lines played a pivotal role in linking cities and fostering the growth of industrialization. Railroads emerged as a

cornerstone for economic development and the expansion of trade networks.

Railway systems provided a reliable and efficient means of transporting goods and people over long distances. The ease of travel facilitated by railroads spurred urbanization as cities became more accessible and interconnected. The construction of extensive rail networks enabled the integration of previously isolated regions into broader economic systems. This connectivity facilitated the exchange of goods and ideas, fostering regional and national unity. The influence of railroads extended beyond national borders, as international railway connections began to form. Cross-border rail links contributed to the globalization of trade, allowing for the efficient movement of goods between countries. This period saw the rise of transcontinental railway systems, such as the First Transcontinental Railroad in the United States, which connected the East and West coasts and further stimulated economic expansion. In summary, the second half of the 19th century witnessed the profound impact of rail transport on economic growth, urbanization, and global connectivity.

In the 19th century, the advent of steamboats revolutionized maritime transportation, bringing about significant improvements in travel efficiency and greatly enhancing the scope of international trade between continents. The introduction of steam-powered propulsion marked a departure from traditional sailing vessels, offering a myriad of advantages that transformed the maritime industry. Steamboats played a pivotal role in reducing travel time across waterways. Unlike wind-dependent sailing ships, steamboats could navigate independently of weather conditions, allowing for more predictable and faster journeys. The use of steam engines powered by coal or later, oil, provided a reliable and continuous source of propulsion, enabling vessels to maintain consistent speeds and schedules. The introduction of steam navigation also had a transformative impact on passenger travel. Steamships offered a more comfortable and predictable mode of transportation, making long-distance voyages more accessible to a broader range of people. This led to an increase in migration, tourism, and cultural exchange between different parts of the world. [4]

The late 19th century and early 20th century witnessed a groundbreaking technological innovation that would transform the landscape of transportation: the

invention of the automobile. This revolutionary development marked a shift towards individualized transportation, making it accessible to the masses and paving the way for the widespread use of automobiles. The advent of the automobile era had profound effects on society, economy, and infrastructure. The era of automobile mobility had far-reaching consequences for urban planning and infrastructure. Cities began to adapt to accommodate the growing number of automobiles, leading to the construction of extensive road networks, highways, and parking facilities. The automobile industry itself became a major economic force, generating employment opportunities and fostering technological advancements. The assembly line production introduced by Henry Ford in the early 20th century revolutionized the manufacturing process, making cars more affordable and accelerating their mass production. However, the automobile era also brought challenges, including concerns about environmental impact, traffic congestion, and the need for sustainable transportation solutions. Despite these challenges, the widespread adoption of automobiles marked a significant milestone in the history of transportation, shaping the modern world and laying the groundwork for continued advancements in mobility. [5]

The 20th Century: Airplanes, Mass Transportation and Technological Progress

Airplanes and air transportation revolutionized global connectivity in the 20th century, offering unprecedented speed and efficiency in covering long distances. This breakthrough in aviation not only transformed international travel but also played a pivotal role in facilitating rapid trade across continents. Airplanes became indispensable for transporting goods and people, opening up new horizons for economic collaboration and cultural exchange on a global scale.

In parallel, the growth of megacities in the 20th and 21st centuries necessitated the development of efficient mass transportation systems, with subways emerging as a key solution. These specialized transit networks became crucial for overcoming the challenges of congestion and ensuring the swift movement of large populations within urban areas. Subways, with their underground infrastructure, provided a means of navigating densely populated cities, contributing to enhanced mobility and reduced reliance on individual vehicles.

The end of the 20th century and the beginning of the 21st century brought an information revolution that had a significant impact on transportation. GPS, smartphones, and other technologies allow for more efficient traffic management, route planning, and road safety.

In today's world, the development of transportation continues. The robotization of cars, the development of high-speed transport, and electric vehicles are becoming important areas of transport evolution.

Through innovation and strategic planning, transportation is becoming more efficient, environmentally friendly, and accessible to all. This never-ending dynamic of development demonstrates the importance of transportation in the evolution of humanity and in shaping our global lifestyle.

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INFORMATION TECHNOLOGIES IN TRANSPORT

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Recently, information is considered as one of the main resources for the development of society, and information systems and technologies - as a means of increasing labor productivity and the efficiency of personnel.[1]

According to the forecasts of many political scientists, at the current stage of the development of civilization, there is a gradual transition from an industrial to a post-industrial or information society. One of its definitions is as follows: information society is a theoretical concept of post-industrial society; historical phase of the possible development of civilization, in which the main products of production are