

THE HISTORY OF TOURIST TRANSPORT AFTER THE MODERN INDUSTRIAL REVOLUTION

The history of tourist transport

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Abstract

The article focuses on the changes in the development of tourism transportation, which occurred after the invention of the steam engine in 1769 by Watt. The stages in tourism transport after the industrial revolution have been introduced. The article also deals with changes occurred in all modes of transportation, taking into account the speed of the trip, the quality of transport services and the pace of the development of the touristic movement as well as the pro-ecological actions.

Key words: tourism transport, the industrial revolution in transport, stages in the history of transport, modes of tourism transportation

Introduction

The factors affecting the growth of tourist traffic include the development of tourist transport. The changes that have taken place in tourist transport over the centuries show how intensely this industry is connected with all forms of human activity, including tourist activity.

The progress of resources and transport infrastructure, resulting in acceleration of travel, its greater comfort and lower cost, allowed for mass public participation in tourism [1]. However the greatest transformations in tourist transport that influence covering enormous distance in a very short time, have been seen in the last two centuries, specifically since 1769. That year marks the conventional starting point of the Great Industrial Revolution, which changed transport. From then on, all the activities related to tourist transport, have been aiming to improve the quality of services and increase the speed of transport modes in order to cover space quickly.

The revolution in tourist transport was associated and took place with the adjustment of its resources, infrastructure and organization to the ever changing needs that had arisen in connection with changing preferences in tourist services. Also the role of transport in tourism is not only limited to its instrumental function of transportation. Transportation service is an integral part of each tourist programme, and the creation of appropriate transportation facilities determines the development of tourist traffic [2].

In the 19th century, the widespread use of the steam engine made travel by rail and steamships popular, and the invention of the gasoline engine as well as the development of hard surface roads resulted in the development of motorised tourism. 20th century innovations led primarily to the development of air transport, and the 21st century allows for the development of space tourism.

The relationship between transport and tourism is in the form of feedback and full mutual correlation. Transport development is *conditio sine quo non* of the development of tourism, and progress as well as changes in tourism affect the development of transport.

Changing trends in tourism, increased awareness and maturity of travellers as well as their growing requirements and expectations, have initiated a number of activities in tourist transport. New transport modes that enable their implementation have emerged with the development of new disciplines, specialisations and directions in tourism.

The purpose of this article is to describe and systematise the changes in the history of transport after 1769 in the context of tourist phenomena. In addition, the study attempts to identify and indicate the phases in the development of tourist transport after the Great Industrial Revolution. Technological changes in various branches of transport affecting the quality and time of travelling as well as pro-eco activities related to transport infrastructure were primarily taken into consideration when identifying the phases.

Determinants of the development of tourist transport

Both, biological and social needs, initiate the motivation process, prompting the individual to specific actions aimed at satisfying them [3]. The needs related to the transportation of people for touristic reasons now play an important role in the entire hierarchy of human needs.

The ability to move quickly which enables us to see more as tourists is not the only asset of the modern tourist transport. In order to meet the needs of tourists and tourism, in addition to its principal transport function, transportation has become an end in itself. The examples are tourist trains and the latest models of aircraft. They provide high on-board quality and a wide range of attractions and entertainment. Recently the innovative transport activity in tourism has also been apparent in other areas. Research enables the invention of means of transport which owing to their technological capabilities initiate the creation or development of tourism in areas or places that have so far remained almost a dream. Here, in turn, a good example are space ships, submarines and aircraft-hotels. Transport is said to have become a key tourist link between existing tourist motivations and reception areas.

The demand for transport services stimulates the growth of transportation offers, which can be seen in the increase of the number and quality of means of transport. The decision which means of transport to choose is determined not only by the need of reaching the required destination but also by the quality level and attractiveness of the services the means offers. Table 1 shows the number and a variety of means of transport which a modern tourist can use.

Table 1. The modes of individual and collective tourism transportation

Air transport	Land transport	Water transport (inland, sea and ocean)
<ul style="list-style-type: none"> • The balloon • The paraglider • The airplane • The spaceship • Other means of transport 	<ul style="list-style-type: none"> • The bus, the coach • The train • The tram • The car • The bicycle • The underground • The rotel • The ski • The moped • The snow scooter • The sledges • The Quad • The Horse-drawn carriages • The Chinese rickshaw • The campers • Animals: the horse, the camel, the elephant, the donkey • Cable transport: aerial lifts and surface cable transportation • Other means of transport 	<ul style="list-style-type: none"> • The ferry • The yacht • The passenger ship • The jet ski • The hovercraft • The kayak • The motor boat • The water bicycle • The water tram • Other means of transport

The development of tourist transport in each country and continent depends on many factors which can be arranged in the following groups, namely [4]:

1. natural and cultural – the environment (such as topography, climate), geographical location, territorial size, the condition and distribution of natural resources including natural attractions, the location and uniqueness of historical objects, the periodicity of cultural and artistic events, religious and cultural diversity, the existence or absence of natural transport routes;
2. economic – the level of productive forces, the level of technology and the organization of production, economic structure, the level of industrialization, production technology, the size and structure of industrial and agricultural production, the organization of trade, the regional system and geographical distribution of various branches of production, the adapted economic policy, the size of national income and its distribution, research funding for the development of the latest means of transport, openness to innovation;
3. demographic – the demographic structure of society, population growth, urbanization level;
4. social and welfare – the state of relations of production, the level of social needs including needs related to travel and leisure, social and territorial division of labour, the level of living standards, the level of spiritual culture, the level of population mobility, education, tourist culture and ethics of transportation services;
5. political – the system of the management of the country in the transport sector, clarity and transparency of legal regulations in tourism.

The development of transport in tourism is a continuous process that takes both the above mentioned factors and also many others into account. The subject literature shows various divisions of transport into periods of development [quot. after 4].

It is also believed that the development of transport in the last two centuries appears to be comprehensible only after being examined by the rhythm of long-term economic cycles of oscillation, the so-called Kondratieff-Schumpeter cycles [5].

However, there are no references and studies related to the periodisation and division of tourist transport. Thus this division must take into account mainly the changes in tourism apart from political events, geographical discoveries, the changes in technology and quality of service. In addition, critique of the modern tourist industry [6], which is the result of the opinion that the development of tourism has also been accompanied by negative phenomena listed below, has proven helpful in arranging certain facts:

- the opportunity to travel for only the privileged social groups (aristocratic strata) that have money and time,
- excessive ‘mass’ nature of tourism, reflected in the ‘seriality’ and the lack of customization of offers,
- pathologies, cultural conflicts, crime-related phenomena, commercialization of hospitality,
- devastation and pollution.

The periods in the development of tourism have also been of significant importance when dividing tourist transport into periods [7]. The history of tourist transport after 1769 was divided into the following phases or periods:

1. from 1769 to 1879 – the steam engine phase,
2. from 1879 to 1945 – electricity and the internal combustion engine phase,
3. from 1945 to the present – the jet phase.

The above mentioned contractual phases are breakthroughs in qualitative changes in the development and operation of mechanized tourist transport, which have taken place as a result of gradual and continuous changes in transport volume.

Tourist transport between 1769-1879

The first phase in the history of tourist transport was commenced by Watt's steam engine invention in 1769. That was considered the beginning of the Great Industrial Revolution, which also encompasses tourist transportation. Then followed travel boom, which gave rise to the modern tourism.

The needs of tourist activities were becoming bigger since a new, rich and resilient social group called the bourgeoisie, spending more and more time and money on exploration and relaxation journeys, had entered the international tourism market. Owing to the bourgeoisie the so far absent consumptionist tourism had been created, which was primarily focused on meeting tourism demand.

The first new tourist organizations were created with the dissemination of tourism and regulations. Travel time from home to the places of high tourist attractiveness was also significantly reduced. The way to travel became more comfortable and customer-oriented. Changes in public awareness of perceptions of tourism and travel took place. The customers then became more demanding and the idea and possibility of relocation seemed to have been insufficient.

The invention of the steam engine contributed to the invention of steam cars, unfortunately extremely heavy and noisy, resembling road rollers thus not suitable for passenger transport.

The implementation of the steam engine in steamboats was of more importance for tourist transport. Already in 1801-1802 William Symington had built and tested the ‘Charlotte Dundas’ – the first fully practical steamboat for inland navigation. But she did not meet expectations as the stern wheel paddle steamer generated waves which eroded ground channel banks [8].

Another example was the steamboat the 'Clermont,' which thanks to Robert Fulton had made her first cruise on the Hudson River in 1907 and became the first coastal steamer on the New York-Philadelphia route. However, the first steamer to have sailed the North Atlantic in 1818 was the 'Savannah' [8].

Owing to steamboats travel became faster, cheaper, more convenient and accessible to the wider public. Passenger steamers had already offered comfortable passenger compartments. Luxurious multi-class steamers considered floating hotels were in use especially along Russian and American rivers.

The industrialization process led to changes in lifestyle and increased the need for rest after work. This rest, which later improved the quality of transport and tourist services, was meant to fully meet the needs of travellers. Good quality and high standard of the services offered were no longer exclusively the domain of the rich and influential.

Huge changes were also evident in road transport. The end of the 18th century and the first half of the 19th century were concerned with equipage land transport. Innovation was expressed in the spread of the construction of hard surface roads, or motorways, which were built by the method of building the breakstone surface on flexible substrate. Such roads had already been present in the Kingdom of Poland in 1822 [9].

It is worth noting that already in 1817 the first bike without pedals (dandy-horse) had been invented by von Drais of Germany. It was propelled by the rider pushing along the ground with the feet [7].

Throughout the first quarter of the 19th century experiments were being carried out that led to the creation of efficient rail transport. Tests of mechanisation of trackless road transport were commenced. In England, in 1801 Richard Trevithick made the experiment driving such a vehicle accompanied by 7 passengers. In 1803 the improved Trevithick steam vehicle took 10 passengers on a 150-kilometre journey at 16 km/h, then in 1824 a 15-passenger steam coach was invented that reached a top speed of 12 km/h [8].

On September 27, 1825 Stephenson's locomotive had pulled the first purpose-built passenger car along the Stockton to Darlington route. Then the world's first railway was created. However, Stephenson had improved his invention and on 28 September 1829 his 'Rocket' won the historical contest, beating his competitors. The 'Rocket' locomotive weighed 4.5 tonnes and reached the speed of 56 km/h. Stephenson's victory gave birth to railway [10].

In the same year a regular Gloucester to Cheltenham Railway service was opened in England. Soon railroads had been created in France, Germany and Russia in order to conquer all continents later. In 1830 a 56-kilometre Liverpool-Manchester Railway service was created, which was intended only for steam trains.

The second quarter of the 19th century was considered a pioneer period in rail transport. In 1840 there were 8 000 km of railway lines, of which 5 000 km in North America, and 3 000 km in Europe. In 1850 these lines expanded to 38,000 km and were mainly located in Europe (24 000) [8], then in 1890 the total length of the world's railway lines was 615 000 km.

Undeniably rail transport became the main means of tourist transport. Travellers were not at all discouraged by low speed and lack of comforts or even the press campaign that presented ridiculous arguments about how harmful such rapid travel on passengers' health had been.

Inland water transport and stagecoach companies were against rail transport and operated only in rail-free areas. Although the mail coach, the fastest means of land transportation capable of carrying a dozen people, reached a maximum speed of

15-16 km/h, passenger trains carrying many more people at a time at the speed of 70-80 km/h were very popular [11].

Tourist services performing in cooperation with railways became the first form of organized excursions. In 1841 Thomas Cook's 'holiday train' from Leicester to Loughborough should be mentioned. 570 passengers that had tea and biscuits served were conveyed to the strains of music at the distance of 10 miles for a single shilling. Less than 20 years later, in 1858 the first sleeping cars and restaurants meant for carrying tourists on long distances were created [9]. George Pullman developed a prototype of the present day railway sleeping car. In 1863 he created the Pullman sleeping car on spring carts, divided into compartments and the corridor. Later in 1888 gas lamps were used to illuminate wagons [12].

The development of railway transport was accompanied by continuous progress in the improvement of rolling stock, routes, and traffic safety equipment. Magnificent metal structures of great span bridges were created including the Simplon tunnel which is 19 803 m long, St. Gothard - 14 900 m long and railway structures to cover long distances (such as the Siberian railway which is 7 400 km long).

The first phase in the history of tourist transport was characterized by an overall increased interest in travel and leisure, although a rich social group called the bourgeoisie constituted the predominant group of tourists. Mainly railway and steamships, two transport modes that dominated the development of tourism in that period, enabled tourist transport.

Tourist transport between 1879-1945

The second phase in the history of the development of tourist transport was commenced in 1879. On 31 May the first electric train debuted at the Berlin Trades Exposition. It did not resemble today's giants. A miniature locomotive pulled three carriages - platforms carrying 6 people. This was Ernst Werner von Siemens' first invention that was soon used up. In 1881 the electric railway had been built along 2.5 distance near Berlin, and two years later the railway between Burgdorf and Thun in Switzerland was electrified. Since then, electric traction had dominated trams, industrial railway, underground, and finally, along with the internal combustion engine eliminated locomotives [10].

The second half of the 19th century was also a period of expansion of passenger transport in urban areas, initially with horse trams, followed by electric, and underground (subway) in large cities [11]. This greatly facilitated tourist and visitor mobility.

In 1888 Bürgenstockbahn, Europe's first electric cable car, was created [13]. In the meantime, an idea that would change the world developed. In fact there came the moment when Gottlieb Daimler pioneered the development of the internal combustion engine, and his son drove in a two-wheeler for the first time, combining fuel, fire, and the piston to drive his vehicle.

Soon, the first car called 'Rover' was created, which would significantly contribute to mass tourism in the future. But it was unattainable and unfamiliar to the majority of people. This vehicle, created in 1885, had equal-sized wheels and ball bearings [9].

However, the creation and development of the motor vehicle did not make tourism flourish. Road infrastructure was a significant and necessary factor of this development. The first asphalt road was created in France in 1854 [9].

The history of the car began at the 1889 Paris Exposition, where the Daimler Company exhibited a 700 RPM two-cylinder engine. However, the car had not been made popular until wheels were supplied with tyres. An Englishman, Robert Thomson, was their inventor and in 1845 he patented a rubber tube

design filled with air, which provided a cushion of air between the road and vehicle itself [11].

The inventions and improvements in car transport relieved rail transport, also greatly improved and spread individual tourism and local traffic among travellers. Many travellers found numerous advantages of car transport, so far absent in rail transport, including the 'door to door' transportation.

The second half of the 19th century was also a crucial period for maritime transport, especially for ocean travel on emerging and developing passenger ships. In addition to cruise packages, transatlantic lines played an important role in tourist transport then.

In 1840 Cunard, a British company, operated the first regular transatlantic voyage. Passenger shipping developed intensively thanks to emigration, and since World War I also owing to tourism. Until the end of World War II transatlantic ships were the only means of intercontinental transport in tourism [14].

The construction and opening of channels such as the Suez Canal, the Corinth Canal and Kiel Canal significantly affected passenger transport and shortened travel time.

New ships, prototypes of modern cruisers, were very well-equipped and offered not only board accommodation and catering services but also additional services that made the voyage pleasant for the travellers.

In 1872, T. Cook had organized the first round the world tour on a ship called the 'Oceanic' [9], and 40 years later in 1912 a passenger liner the 'Titanic' began her maiden cruise. It was the largest passenger steamship in the world at the time, 268 m long and 53 m wide [15], with marble tiled corridors, luxurious restaurants and rooms. 2 584 adventurous tourists who were in the mood for sun were on board of this ship.

Skis, also used by tourists mainly for sports and leisure activities, are worth mentioning as a non-standard and somewhat surprising transport mode. 1888 was the symbolic year as Fritjof Nansen set out on a ski expedition across the Greenland icecap thereby launching the development of skiing.

In the meantime, the bike, an already improved transport mode, used for travelling outdoors and for recreational purposes was introduced in land transport. In 1868 two Frenchmen Pierre and Ernest Michaux invented a chain-driven bicycle with pedals. 20 years later there had appeared a bicycle with rubber tyres [7], then in 1899 the bicycle with Deraillleur gears was developed [9]. This was a very important turning point as it marked the beginning of the development of bicycle tourism.

Yet at the beginning of 20th century, coaches for mass transport of people had appeared and their mass production started in 1907 in America.

The early 20th century was also the birth of aviation. Although the first air trip had taken place much earlier, the invention and construction of a flying machine by the Wright brothers, Orville and Wilbur in 1903 [9] gave a new dimension to air travel. In 1903 the first flight was made on a helicopter called 'Kits Hawk' in North Carolina [7]. Six years later, in 1909 Bleriot completed the first flight across the English Channel in 37 minutes [11]. Since then a race against time has taken place also in the air.

Air tourism started in 1918 and 1919 with the introduction of regular lines on the Paris-Brussels and London-Paris routes and the first regular passenger flights in Europe on the Berlin-Leipzig route. In 1927, American Charles Lindberg made his first solo non-stop flight over the Atlantic on the New York-Berlin route [7]. In 1925 air transport had been prevalent in all the continents, and the regular transatlantic transportation began in 1939. In the same year, the first transatlantic passenger service from America to Europe (Pan American Airways) was commenced [9].

The hovercraft, built in 1828, had been an invention that blended aviation and maritime, but did not become fully implemented in mass transport of people until the 60's [5].

The 20's and 30's of the 20th century were the era of fascinating stories about the legendary Orient-Express train. This was the 'luxurious' train, which travelled from the West to the East along the historic Paris-Istanbul route. Its passengers consisted of mostly military men, aristocrats and industrial barons. This fascination continued until 1940 [16].

The second phase in the development of tourist transport, fundamentally changed its structure to the benefit of less affluent social strata. Particularly, there was the increase in the number of middle class tourists, and in the late 20's lower-level officials and even workers [6].

The 30's and 40's of the 20th century are quite unique in the history of tourism transport. Progress and development had been halted by the war, which clearly restrained tourism growth for a few years, and thus a number of improvement activities of transport modes that served tourism.

Tourist transport after World War II

After 1945 tourism entered a new phase of development, which was characterized by mass travel. The desire to travel that had arisen before the war was so strong that shortly after the war termination special tourist train services were introduced. In 1952 TOUROPA, a German company, launched the first so-called holiday express train on the route from Lucerne to Innsbruck via Lugano, Florence, Rome, Capri and Venice [6].

The third phase of the development of tourist transport brought the most important changes. This phase placed great emphasis on the speed of the transport mode and the quality, which was the level and standard of service. These were the two fundamental aspects that would dominate all tourist activities like never before.

In 1953 the first specialist Vickers Viking aircraft had been designed, a 36-seat twin-engine airliner, which took tourists on two-day tours with a stopover in Lyon, Barcelona, Madrid, Tangiers, Casablanca and Agadir [6].

Also there emerged an idea on the so-called combined trips, especially to the Mediterranean region, partially by train, bus, boat and plane. The 60's brought exotic journeys, first to Africa, soon to South America, North America and South-East Asia [6].

After the jet had been built by the British in 1954, 1956 saw the beginning of jet aircraft era, and yet in 1964 turbojet and turboprop planes flew almost exclusively on long- and medium-range routes [17].

The exact period of the development of mass airline tourism began, which allowed for travel on a global scale and at a very high level of service.

The plane as transport mode, particularly public transport, began to play an important role in the development of tourism. As a result of organizational and technical progress and thanks to the main advantage of the aircraft, speed, as well as the increase in the quality of services, this mode grew and strengthened its position on the transport market. Each subsequent model became safer, more comfortable and faster than its predecessor.

The further progress in air transport resulted in the creation of Concorde, a supersonic passenger airliner in 1976 [9]. On 17 June 1974 Concorde made the first double Atlantic crossing in one day. Such airliners flew mainly on long, inconvenient and time consuming routes including London-Sydney, crossing the Atlantic in less than 3 hours.

They were withdrawn from use in 2003 as they were cramped and uneconomical.

In the meantime, work on the creation of the world's largest passenger airliner was conducted by Airbus company.

The result was the Airbus 380 jet airliner, nicknamed Superjumbo, providing seating for 555 people in a typical three-class configuration or up to 853 people in all-economy class configurations [18].

On April 27, 2005 the A 380 made its maiden flight. The period of the second revolution in aviation has begun since the early 21st century. Air travel is becoming more common, and most passengers are no longer satisfied with the idea of a flight but the conditions it provides.

The Airbus A 380 is the 21st century flagship aircraft, which begins a new era in the history of aviation and sets higher standards of air travel. This plane is not only fast, but way ahead of its competitors in terms of cabin volume. The Airbus is the first plane ever to have two passenger decks, the upper and the main (middle), extending along the entire length of the fuselage and the third deck, the lowest, which serves as staff room and luggage compartment. There is 40% more space on board, which gave way to wider seats arranged in larger distances between the rows. The decks are connected by wide stairs that passengers can use to move freely making use of the available facilities. The gigantic size of the interior allows for luxurious amenities including bathrooms with showers, bars, beauty salons, conference rooms, duty-free shops, libraries, restaurants, cafes, gyms and private cabins [18]. Each passenger can use an on-board telephone, the Internet, and a handset, which is both a remote control for the armchair as well as a TV screen. Passenger facilities are equipped with flexible lamps and video players. The stay and flight are enjoyable thanks to delicious meals prepared by chefs [19].

Airbus competitor Boeing is preparing a new version of the aircraft to compete with the A 380. 450-passenger Boeing 747-8 is meant to be lighter and more economical than Airbus [20].

A French-Japanese team who has entered the competition intends to build a 300-passenger airplane that will have covered a distance of 10-12 thousand kilometres 2-3 times faster than sound by 2020 [21].

It is worth mentioning that in the third phase of the development of tourist transport, precisely between 1960-1980, we heard many opinions about harmful effects of the tourist transportation modes on the environment. For example after a conference in Stockholm there was a need recommendation to use energy-efficient and environmentally friendly procedures for all projects, including transport services. This criticism and many recommendations resulted in a number of beneficial changes for both people and the environment in the transport infrastructure.

The rail became the other transport mode in terms of speed. The idea for the fast train had been born in France, almost 20 years before the first TGV train was introduced. Since the 70's experimental work had been under way to improve this transport mode as far as comfort, safety and speed were concerned. The work resulted in Paris-Lyon TGV train, which reached a maximum speed of 380 km/h on 27 September 1981 [9]. The train is very fast, and each of its specialist carriages is comfortably equipped for travellers. A passenger heads up folding stairs and enters quiet, air-conditioned carriages through the broad, centrally supported, sliding doors and sits down in a comfortably positioned airline seat. Nearly every seat is equipped with a TV set, and the travellers can also use a computer, fax and telephone. Moreover, the train accommodates special rooms for mothers with babies, children's playroom and a fully-stocked buffet [22]. The Italian 'Pendolino', Japanese 'Shinkansen', German 'ICE' and Spanish 'TALGO' offer a similar level of service.

The Japanese go by trains the longest. The first Shinkansen railway line was opened in October 1964. The Japanese also use Maglev (magnetic levitation) technology, which – in the unanimous opinion of experts – will be technology of the future [22]. Maglev technology replaces the track with a system of electromagnets. Owing to the magnetic field, carriages have no contact with the surface of the track, as they constantly hover over it (about 10 cm above the track). The use of magnets has entirely eliminated wheel friction, which greatly reduces the speed in traditional trains. A smooth train track is built of concrete, equipped with electricity supply lines, sensors and two types of electromagnets which must be cooled to very low temperatures.

A magnetic cushion train was scheduled for the first time in 2003 in Shanghai. It reaches an unbelievable speed of 430 km/h over a distance of 31 km and is the fastest passenger train in the world today, although the speed record is beaten every year. The last one of December 2003 was 581 km/h [23]. The world's speed record is also held by the French TGV, which reached the world's rail vehicle speed record of 574.8 km/h in April 2007 [22].

Modern rail is not only a dizzying speed and comfort. It is also very precise and highly developed technology that allows and enables tourists to reach places that are inaccessible and demanding huge sacrifices or preparation. A great Chinese investment would serve as a perfect example: the Beijing-Lhasa route, which was opened at the beginning of July 2006. It is believed to be the highest one because of field accumulation at the height of 5 072 m above sea level. It is about 225 meters higher than the route Oroya-Cerro de Pasco in the Peruvian Andes [24]. The 21st century railway is meant to fascinate with dizzying speed, cosmic shape, advanced technology and to encourage passengers to travel and change tourism.

High comfort and quality can also be seen in the resurgent myth of the Orient-Express. In 1982, through the initiative of the American James Sherwood a luxury cruise ship on rails was reintroduced, which operates occasionally, carrying wealthy tourists.

The staff consists of cooks, the train manager, restaurant manager, chief waiter, chief steward and cashier who take care of passenger comfort. The train travels through seven countries and the exclusivity of the compartment gives you the impression that these exquisite services are only intended for your comfort. All you need is supplied by the steward, who is called with a bell button [24].

The history of rail travel is also the specialist rail history, whose tremendous growth and diversification was observed in the 20th and 21st centuries. In 1945 in Austria there were only 26 such devices. In 2007 there operated almost 3 300 ski lifts and cable cars and the new ones are still created [13].

These transport modes including cog railways, cable cars and ski lifts are used for tourist purposes. Wagons lifts, chair lifts and T-bar lifts are especially important for winter hiking. Currently, they are installed in all tourist centres and still developed.

The formation and uniqueness of the area meant that various design solutions were used. Tourist lifts can be classified into two groups: field and overhead [25]. The field ones can be divided into: rail, sledge and ski, and the overhead ones consist of cabins, gondolas and chair lifts.

We need to discuss the history and development of the cable car in detail, because it has been one of the fastest growing transport modes in recent years. We cannot imagine tourist traffic in various mountain ski resorts without it today. In winter it is indispensable for skiers and tourists that aim at higher parts of mountains. However, carriages, gondolas, ski lifts or chairs are not only transportation modes but also tourist attractions. Modern lifts have panoramic windows and glass roofs that allow for the admiration of stunning views. Tinted windows are ideal dur-

ing sunny days. Popular are large rotating cabins that enable admiring beautiful mountain views at no need to change places inside the cabin. The cabin revolves unnoticeably. One of them reaches the top of the Titlis (3 020 m above sea level) in central Switzerland [13].

In addition to high quality services offered, the speed and throughput of a cable car are also of high importance. Since 2003 'Vanoise Express' has been operating in the French Alps, a huge double-decker cable car capable of taking about 200 people at one time. The speed of the wagons (booths) often exceeds 30 km/h [13].

Cable cars are built in very high mountains, as exemplified by the world's highest cable car station location – Pico Espejo (4 765 m above sea level) in Venezuela, and European funicular railway from Zermatt to the Klein Matterhorn (3 820 m above sea level) in Switzerland which was scheduled for completion in 1977. But the most noteworthy is the Alpine cable car in Chamonix (France), which takes tourists with the world's largest elevation difference to the top station at Aiguille du Midi, at the height of 3 795 m above sea level. Another example is Männlichen Peak (in Switzerland) at the height of 2 230 m above sea level with the longest of 6.2 kilometre chairlift in Europe [13].

When discussing winter tourism transport, attention should be paid to snowmobiles (motorised sleds) and slides (commonly known as ice boats), which together with quads and jet skis are invaluable transport modes in tourist destinations.

It should be mentioned that the first motorized sled, or the prototype of the snowmobile, was designed by a Russian, Kuzin, in 1908. At the same time in the USA, there had been some attempts to adapt the Ford Model T car to drive in winter, but it was only in 1924 when an American inventor and designer Carl Eliason, created his first prototype [26], which was patented in 1927. Skidoo speeds up to 150 km/h and can move well both on snow and ice.

The 21st century will be fascinated and delighted by passenger shipping, mainly by its diversity and the quality of service. Although water transport is the slowest of all main tourist transport modes, it is the most popular tourist attraction. Large passenger vessels are not in fact hotels floating at a speed of 30-40 km/h but hotel and entertainment complexes. They are considered the complexes because in addition to luxurious cabins, such ships offer a choice of several restaurants, bars and numerous duty free shops located in real shopping centres. The entertainment and recreation facilities generally consist of the theatre, cinema, a casino, discos, spectacular rooms, a skating track, a gym, swimming pools and jacuzzi, a spa centre and beauty salons as well as additional facilities for children and teenagers. On board the luxury cruise ship there are a climbing wall, a place for surfing, golf course and even... a rink. The biggest, 300-350 meter long liners, can accommodate on board even more than 4.5 thousand passengers in nearly two thousand cabins [27]. Full luxury and high quality services offered make them the most desired transport modes by today's tourists. Their size and capacity exceed all the other modes of transportation. By August 2010 work on the 'Genesis' passenger ship capable of carrying 5 800 passengers should have been completed [27].

There are two more water transport modes such as yachts and motor boats for tourist use. Today's luxury yachts often meet the standards of even a few star hotel. The modern marine yacht is equipped with virtually everything that we can find in an elegant hotel room. So there are the kitchen, bathroom with a shower, a satellite TV, radio communication, bedrooms, the living room, a stereo and a DVD player. Moreover yachts are fast and manoeuvrable, which make the cruise easy.

The last and probably the most popular tourist transport mode is road transport, both individualized (cars, caravanning) and collective (buses, rotels). Exclusive and very expensive caravans, commonly known as apartments or hotels on wheels are a good example of personalized tourist transport that is popular today. In English they are called *motor homes* [28] or campers.

The most luxurious vehicles enable wall expansion (outside the cylinder of the vehicle), which allows for the stationary train to gain more living area space. The additional equipment includes the wireless Internet, audio-visual equipment and a satellite TV set. Moreover the vehicle is equipped with modern and ecological floor heating and intelligent air conditioning. Some vehicles even have a small garage that allows for the storage of a motorcycle, a quad or even a small passenger car [28]. Today's campers are 4.5-7 meters long and make it possible to explore everything that a tourist passes on the road.

In turn, the bus is the most popular transport mode, used mainly for organised tourist events within the 2-3 thousand kilometre distance from the start of the journey. Depending on the quality of equipment, buses are ranked in a five-star category in terms of passengers as well as technical quality.

Another solution, though still of little popularity particularly in Europe, is a tourist vehicle called the rotel. It is used to transport passengers and goods and provide accommodation in areas with the lack of adequate road infrastructure (roads and highways) and accommodation. Rotels operate on organised tours, especially to exotic and remote locations. Passengers travelling on Rotels use special capsules. These are sleeping areas, equipped with tilt-in windows, curtains and individual lighting. When taking the vehicle construction into consideration, there are two types of rotel: one unit (on the bus chassis) and two-piece (a bus and tag-along sleeping quarters) [29].

The construction of orbital planes that would allow to travel around the world in 120 minutes is an example of the most revolutionary intention for tourist transport. For decades in the USA research has been carried out on this type of aircraft. France, however, intends to build the second-generation 200-passenger Concorde aircraft, which would exceed the speed of sound 22 times [14].

Human expansion into space seems to be inevitable. Space tourism cannot develop without transport vehicles and proper infrastructure. Therefore, these dreams and goals can be fulfilled with the construction of space vehicles enabling the plan implementation. The speed of 21 000 km/h seems to be the most surprising and incredible feature of these transport modes. Such vehicles will serve as a space station orbiting the Sun between the orbits of Mars and the Earth. This station is meant to be a spaceship driven by gravitational forces of the planets and the Sun [30].

It is anticipated that the first vehicles of that kind will be designed about 2018-2020. The Japanese are another example of the investment in space tourism as they intend to build a 50-passenger space shuttle powered by hydrogen liquid. This shuttle will reach the orbit in less than 5 minutes and will be able to take off existing airports.

It is believed that a group of wealthy tourists will soon enter a reusable capsule, orbit the Earth three times and land. A space shuttle will launch a capsule to a low orbit (280-400 km above the Earth) within 8 minutes. It will speed up to approximately 28 000 km/h and will orbit the Earth within 90 minutes. Such cosmic journeys will be especially attractive, because as many as eight sunrises and sunsets can be watched [30].

Summary

The development of civilization is partially depended on the development of technological ideas. Modern solutions in tourism are an excellent and undisputed example of such changes. They can be seen in the level and quality of transport infrastructure and the increasing number of tourists, who often regard a transport mode as the main attraction of their trip. Modern transportation is the area of innovation and numerous scientific research. It is meant to shorten travel time and provide the highest quality as well as the safety of transport services.

The presented analysis of the development of tourist transport after 1769 shows how fast mechanized transport underwent transformations after the Great Industrial Revolution. It is worth noticing that all of the branches of transport were prevalent in the last phase of the development of tourist transport. Technical, economic and organizational factors shape capacities of each individual transport mode including the rail as a means of mass transit, the car as a means of personal transport, bus and the aeroplane as a means of group transport. Transport is therefore a technical instrument to meet both, the individual and collective transportation needs of the population. Transport has become the biggest cultural phenomenon of modern society, the biggest civilization complex of the socio-economic-political life of every developed country. In fact, there is no branch of business, production or service sphere, no cultural sphere in which transportation would play an important role [31]. It is one of the most crucial elements of the tourist sector and directly affects the development of tourism.

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Submitted: December 15, 2010

Accepted: March 15, 2011