

VARIOUS INTERPRETATIONS OF THE TERMINOLOGY CONCERNING MIXED TRANSPORT

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***Summary:** The system of export freight delivery is analyzed in association with all forms of interaction between various modes of transportation and the subjects of the transport service market (TSM).*

***Keyword:** mixed transport; transportation hub; export and import of transport services; multimodal transport*

Mixed transport involving steam-powered railway transportation dates back to the early 19th century. In 1813-1814, the British began transporting coal from collieries to the River Tyne near Wylam, a small village in the county of Northumberland (among its renowned residents was George Stephenson, 'Father of Railway'). There the coal was loaded from railway carts onto river barges to be further carried to the Newcastle sea port.

Everybody knows that England is the country where first steam locomotives were put into operation. More than that: this country is the home to mixed steam-powered railway-water transport and (why not!) to transport logistics.

In future, to avoid delays caused by reconsignment at the points where the goods are transferred from one carrier to the other, stealing or other commercial drawbacks this transport is to be carried out not only in removable transport units (containers, conrailers, railtrailers, roadtrailers, etc.), but also according to a single document. Transport is to be monitored and controlled from one logistics dispatcher center (multimodal, intermodal, transmodal, amodal, bimodal, unimodal, threemodal, combined, segmented and other types of mixed transport involving various modes of transport).

However there are various approaches to interpreting the terms mentioned above. According to UNCTAD (United Nation Conference on Trade and Development) intermodal transport refers to carrying goods by several modes of transport when one carrier is responsible for the whole delivery from one departure point through one or more transshipment points to the destination point. Depending on responsibility for transporting goods various shipping documents are issued. The person organizing multimodal transport is responsible for

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transporting the goods along the whole route, irrespective of the number of carriers when completing the single shipping document [3].

At the European Conference of Ministers of Transport held in 1994 it was stated that multimodal transport refers to transporting one type of freight by not less than two modes of transport, whereas intermodal transport means transporting goods by one mode of transport with the transshipment of the sealed container en route [1].

A. Avetikyan and N. Solovyeva [2] say that “integration between transporting and manufacturing processes gradually shifts from intermodality of cargo movement, i.e. internal isolation and autonomy from the results of producing goods, to transmodality (integration of freight transport by various modes of transport according to the single documents)”.

According to V. Goryainov [5], L. Mirotina and Y. Tashbaev [11], intermodality is integrated ‘from door to door’ freight transport according to the single consignment; the transport involves at least two modes of transport.

The similar definition is given by V. Galaburda [13]: “Under the intermodal system the cargo is carried ‘from door to door’ by two or more modes of transport under single management and according to a single document (such system is also called ‘direct mixed transport’, though we don’t think this is an apt term to describe the process).

O. Goncharuk [4] as well as L. Mirotin and Y. Tashbaev [11] say that “in contrast to intermodal systems where ULD are carried according to the single tariffs and shipping documents with all carriers having equal rights, in multimodal transport one mode of transport is the carrier whereas interacting modes of transport are the customers paying for the services”.

S. Miloslavskaya [10] says: “Intermodal transport is successive transportation of cargo by several modes of transport in the same freight unit or vehicle without its reloading in transshipment. According to [10] “intermodal transport means carrying cargo in the same freight unit and the same vehicle which are successively used by the modes of transport without cargo handling when changing the mode of transport”.

In the proceedings of the Conference on Transport and Environment (1996) we read: “Combined transport is intermodal transport with the largest part of the European route handled by railway, inland water or sea transport; any initial and/or final route section operated by road transport is maximally short”.

According to N.Venzik [3] “combined transport in contrast to intermodal transport is transporting cargo in the same piece of freight or vehicle by combining road, railway and inland water transport”. L. Matyshina and L. Izosimova [28] write that ‘according to the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC) combined transport means transporting cargo in the same piece of freight, the same transport installations (large capacity containers, swap bodies, semitrailers and trucks) using several modes of transport”.

In the materials prepared for the board meeting of the Russian Transport Ministry (1998)

[6] we read: “Combined transport means carrying cargo using more than one modes of transport and organizing door to door transportation according to the single document”. The definitions mentioned above are published in the digest prepared by the United Nation and Economic Commission for Europe – UN/ECE, European Conference of Ministers of Transport – ECMT and European Commission (Terminology on Combined Transport) [1], where all these definitions are reduced to the same denominator.

As for the terms like amodal, bimodal, unimodal, threemodal, segmented and other transport, there is no confusion about their interpreting because they are used not often.

Amodal transport is control of moving transport and freight units irrespective of the modes of transport involved and the role each one plays in the transportation process (successive, parallel or combined). Amodal transport is controlled from one dispatcher center [2].

Bimodal transport is carrying cargo in specialized vehicles having chassis and wheelsets capable of moving both on highways as tractor trailers and on rails as wagons of freight trains and even as passenger cars.

The trailer transportation system is a system of freight delivery in ULDs – trailers (automobile trailers or semitrailers with canopy or special demountable bodies). Main goods transported are trucks, self propelled machinery, bulky and heavy freight.

Bulky and heavy freight (pipes, steelwork) is placed on the vehicles (trailers, rolltrailers, heavy-load chassis) which avoids the need to dismantle the equipment into separate units for their transportation from the consigner to the consignee. Rolltrailers are used only for carrying freight in the sea and river links of this transport system. Other ULDs are used in continental transport involving motor and road and railway transport. Both vertical and horizontal (with various tractors) crane loading-unloading is used in depot processing.

Mixed road-rail transport has been known for over 60 years. At the turn of 1980-90s, new types of mixed transport were introduced: carrying semitrailers on RoadRailer railway bogies, transportation of ACTS with transshipping containers or bodies on rollers as well as carrying Cargo freight units for less-than-car loads (LCLs). Manufacturers producing semitrailers, swap bodies and containers are to meet additional requirements with regard to contrailers and containers.

Transportation of semitrailers on RoadRailer rail bogies is popular in the USA. European alternatives of RoadRailer are Kombitrailer, Trailerzug, Transtrailer Semirail, etc. For transporting semitrailers on the wagons with vertical crane transshipment the semitrailers are to be equipped with special brackets. According to the RoadRailer system, semitrailers are to have a reinforced frame with special devices to put them onto the railway bogies. As compared with ordinary semitrailers used only for road traffic and piggybacking with vertical transshipment the heavier frame results in reducing semitrailer carrying capacity.

Depending on the way the cargo is loaded onto the ship there are Ro-ro and Lo-Lo systems.

Under the ro-ro system automobiles, trucks, rail cars or intermodal transport units are driven on and off the ship on their own wheels. Rolling highways are used to load and unload

only motor vehicles.

Under the lo-lo system, intermodal transport units are loaded with lifting equipment. In trailer transport ro-ro vessels are used; they have built-in ramps that allow the cargo to be efficiently rolled on and off the vessel when in port. The time of cargo handling is reduced and the vessel does not stay at the port berth for a long time.

The American TOFC (trailer on flat car) system was introduced in 1955. It is also called piggyback. The trailers are brought from the consigner to the railway station by the motor transport. The railway station is equipped with special loading-unloading machinery. The trailers are transshipped onto the flat wagons moving to a certain station. From that station the trailers are delivered to the destination point by the tractor.

Calculations of various models of con trailer business organization demonstrate that its payback and profitability are possible only with the government investment support, particularly with regard to building service terminals, track service development, as well as the development, certification and series production of the required rolling stock.

In Europe the swap body system (known as bimodal transport) is widely used. The body is taken from the chassis, and then it is transported by rail to the certain station. After that it is put onto another chassis and brought to the destination station.

Bimodal rolling stock refers to semitrailers-roadtrailers initially used in the USA. They can move both on highways and railways. This rolling stock is used to carry various goods, including frozen foods, automobiles and mail. Their use increases the potential of combines road-railway transport.

Roadtrailers are used to build specialized trains, they can be coupled to ordinary railway cars. Roadtrailers can be of any size and configuration.

Various types of semitrailers can be put onto the same bogies and all these trailers can be coupled to each other.

On June 28, 1988, France saw a Combitrans vehicle designed for transporting containers, swap bodies, tank cars, refrigerators and trucks on road and railway lines. Combitrans consists of one road element and two uniform railway elements (bogies).

The road element is a strengthened chassis of the truck semitrailer equipped with the standard coupling pin; it has two points to fasten the railway bogies and braking mechanisms. When on the road, Combitrans is towed by the tractor forming a tractor and trailer rig.

Every railway element consists of a standard bogie with the braking equipment and an intermediate unit fixed on the bogie and providing connection with the road element; it is equipped with the buffer, drawbar and auxiliary braking mechanisms.

When on the railway, Combitrans is a separate car; it may be included into regular and high-speed trains as well as route freight trains and descend from the hump.

Removing the Combitrans chassis and placing it into the operational mode is done with the

built-in jacks.

It takes just a few minutes to bring Combitrans from 'on the road mode' to 'on the railway mode' and vice versa. There is no need in using any transport-lifting mechanisms; the operations can be carried out at any station or on any approaching track (where there is a short section with the asphalted intertrack space) and controlled by the tractor driver working at the terminal.

Bringing the automobile semitrailer onto the railway vehicle is carried out in the following way:

- The tractor puts the automobile semitrailer over the railway tracks;
- The rear part of the automobile semitrailer is lifted (with the modernized devices of the chassis) and the railway two-axle bogie is rolled under the automobile semitrailer;
- The rear part of the automobile semitrailer is fixed on the railway bogie; the chassis wheels are lifted into the transportation mode. Then the front part of the automobile semitrailer is lifted with the ordinary pull-out support device;
- The tractor drives off the automobile semitrailer; the second bogie is rolled under it;
- The front part of the automobile semitrailer is fixed on the railway bogie; its roll-out support device is lifted in the transportation mode.

At the destination station these operations are carried out inversely.

The threemodal terminal (apart from traditional road and railway options) has one more option – a river one.

The unimodal transport means carrying freight by one mode of transport and one or more carriers. If one carrier is involved, it issues its own transport document: a bill of lading, consignment note, etc. If there are more carriers (e.g. the carrier that moves freight from one port to the other with the transshipment in an intermediate port), one of them can issue a through B/L covering the whole journey. On the return side of the B/L certain terms of transportation may be specified, and the carrier is responsible for the whole trip or only for the part of the trip covered by its own vessel [10].

The segmented transport means that the carrier organizing transportation may take responsibility only for its own part of the process. In this case it issues the B/L to carry intermodal or combined transport [10].

Nowadays several systems of organizing transportation are used in the international practice, among them: container, palletized, trailer transport (and its varieties such as contrailer, ro-ro, lo-lo and others), ferry and feeder systems.

There also lightgrade and roll-on/roll-off systems as well as systems operating river-sea vessels or using land bridges and air bridges.

Containerization has been successfully used since 1950s. According to "Internationale Transport Journal" (Switzerland), in 1995 the share of containerized cargo was 95 percent – one third was transported 'port-to-port' whereas the rest was carried out by mixed traffic. In 1995

the world container fleet was over 50 million units.

In the 1970s, shipping companies started unloading containers on the western coast of the USA; from there they were brought across the whole country to railway flat wagons with the final delivery by the road transport. American President Lines Ltd., a transportation and shipping company, that operated only in the Pacific region bought its own railway flat wagons and organized traffic of separate container trains. Initially, these trains went only to the East coast ports of the USA; from there containers were carried by road transport to eastern markets.

Later, amendments in the legislation enabled shipping companies to carry goods to the inland destination points, and these companies started transporting containers by rail from the western coast to every part of the country. Actually, this type of service known as 'landbridge' took the place of the marine container route across the Panama Canal to the East coast of the USA and to the Mexican Gulf.

This traffic can be divided into 'minibrige', 'microbridge' and 'landbridge'. Their common feature is that they are carried out according to the single tariff, to the single B/L or other document; profit distribution between marine carriers responsible for door-to-door delivery and land carriers as their customers is agreed upon in the tariff.

The "minibrige" transport includes carrying freight/container according to the single marine B/L from the port of one country to the port of another country, then by rail (landbridge) to the second port of this country and from there to the railway inland terminal of the destination country.

Its basis is the through container rate calculated from the port of the departure country to the end terminal in the destination country. The "minibrige" tariffs are issued by marine carriers, not by railways that receive commissions for transporting freight (containers) on the land section of the route. A classical example of the "minibrige" land section is the route carrying freight between the East and West coasts of the USA.

Compare with the marine transport the "minibrige" system has a number of advantages' both the total time and transportation costs are reduced. Since 1983 double-deck trains have been operating between the USA coasts for container transportation, which resulted in 20-25 percent cost saving.

The terms of commerce have various interpretations. Thus, for example, the B/L tells about the cargo whereas the Customs code about the goods. One and the same cargo can be declared under different codes which may cause incorrect charging of the customs duty.

From what has been said above we can draw a conclusion that the definitions of the types of the mixed transport are to be formulated depending on what party is responsible for transportation, what procedure is followed when completing the shipment documents, the role of each mode of transport, the number of national boundaries to be crossed and geography of these countries and other factors.

However it should be admitted that the terminology concerning freight traffic involving various modes of transport is far from perfect.

It is easier to use the common definitions of various modes of transport: local, direct, mixed direct, direct international, direct mixed international, etc. However, to play an equal role on the international transport market and be adapted to globalization processes we are to know generally accepted terminology which is not as simple as one may think [8, 12, 14].

Some authors say that “there are several forms of interaction between various transport modes: economic technical, technological, organizational, commercial and legal”.

Latest achievements in computer engineering encourage the development of the informational form of interaction.

Integration and partnership of TSM subjects, EDM, latest computing technologies, flexible tariff and tax policy supported by the normative and legal basis, complex management of transport, freight, information, financial and energetic flows in the legal framework are certain to improve management efficiency at every stage of export freight traffic in the mixed transport.

To improve the quality of transport service the term “legal logistics” should be used meaning timely preparation and approval of normative legal acts regulating the interrelations in the legal framework, particularly, between the TSM subjects when carrying out export freight traffic in the mixed transport.

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