Development of the transport system in line with a systematic approach: legal opinion

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Abstract. The relevance of the research topic is caused by the role and importance of transport in human life. The development of integration processes leads to the need to create in the near future a unified transport model of a planetary scale, managed at a fundamentally new level reflecting the digital nature of modern public relations. The object of the study is the social relations that arise in the process of functioning of automobile transport, although many conclusions are fully applicable to the problems of developing a unified transport model that covers all types of vehicles. The purpose of scientific research is to prove that the successful development of the transport model and transport as its component element is possible only from the position of a systematic approach. During the study, dialectical and materialistic, systemic, logical methods were used, as well as methods of interpreting law and forecasting. It is concluded that the reform of the transport model should be carried out through the prism of the meaning of human life. The regulation of relations in society is carried out through a variety of rules of behavior, among which technical norms have gained particular importance in recent years. Life, health, and fate of man depend on their observance or non-observance. Therefore, the development of transport is unthinkable without improving technical standards. The main regulator of behavior is law, the specification of which is faced with many difficulties. Legal support of the transport model is an essential component of its successful functioning. The modern transport model is classified as inorganic. Its transformation from the perspective of a systematic approach, taking into account the need to improve the person himself, social and technical norms, objects, primarily transport and technology, will allow moving to a qualitatively new level - to become organic. Considering the ratio of the transport model and the person, it should be borne in mind that, on the one hand, a person acts as its creator, and on the other - an indispensable element. Therefore, the transformation of transport and the transport model in general into an organic whole is possible only when the person himself, his competence changes.

1. Introduction

The transport model is a complex relationship that develops between its elements (traffic control center, traffic entities, vehicles, transport infrastructure) in connection with the necessity to meet the needs for moving people, animals, goods.

Nowadays, the car has become almost the main mode of transport. This necessitates the creation of a unified, and in the very near future, planetary communication transport model driven at a fundamentally new intellectual level.

History convincingly proved that the elimination of transport restrictions was precisely the missing link that allowed moving to the era of modern economic growth [1].
Transport is the material basis of global commodity exchange. Stimulation of transport innovations is the most important means of cardinal acceleration of economic growth [2].

Therefore, the most important activity of any modern country is the creation of innovative transport models, the development of transport infrastructure, and increased transport security. In order to achieve this goal, the latest digital information systems are being introduced and improved, which allow, in particular, providing automatic traffic control through the potential of artificial intelligence. It should be borne in mind that the development of digital technologies not only transforms familiar processes, but also changes society itself. A digital society is being actively formed. This process can no longer be stopped. However, it must be remembered that new technologies entail both positive and negative consequences. Behind the numbers we forget about the person, which can have disastrous consequences in the future. There is a high probability of abuse of new technologies. “Human-like categories become key ones” [3]. The problem of meaning in life becomes global.

The COVID-19 pandemic has shown that personal transportation is the safest way to move a person. But in addition to many obvious advantages, the use of vehicles has negative aspects, primarily because the vehicle is the main polluter. The use of vehicles adversely affects the composition of the soil, destroys the asphalt surface. The latter is especially dangerous for humans. And not only because we are tramping down budgetary funds and public-private partnership funds. The fact is that as a result of traffic, the road surface wears out, dust appears, the main element of which is silicon dioxide, which adversely affects human health and affects climate change.

Many researchers pay attention to climate change as a new socio-economic burden that undermines human well-being [4]. N.A. Kasavina analyzes the category “decent life”, considering it as a meaning-forming goal and organizational principle. The scientist is absolutely right, noting the substantial problematic nature of this concept. On the one hand, it is difficult to define social criteria that would reveal the meaning of a decent life, and on the other hand, a decent life expresses the quality of a person’s living space. The organization of a decent life in modern society implies, first of all, the implementation of measures to protect the environment [5].

The development and improvement of transport models is an objective necessity and need, which at the same time involves the solution of environmental problems, their prevention.

Each person, regardless of their ethnic, social, professional differences, has certain individually unique motivational preferences. They are formed under the influence of a number of objective and subjective factors. The value of motivational values is caused by the fact that they make it possible to distinguish between “the best and the most desirable” for a person from the “worst and the least” for him. The basis of choice, according to K.Kh. Momdzhyan, are the objective goals of life. The scientist identifies three levels of value motivation. The first level is the historically unchanging basic values as goals. The second level of value motivation is represented by “values of choice” [6]. The regime of self-isolation as a way to combat coronavirus radically changed the situation. Many people appreciated the value of basic needs and the state when they could not fully satisfy them. In our opinion, this influenced a significant transformation of the second level of value motivation. If earlier, before the pandemic, the goals were set to obtain economic benefits in any way, today more and more countries, governments, and citizens are beginning to realize their duty to nature, the strength of nature (we proceed from official reports about the natural nature of coronavirus). Accordingly, the improvement of transport models will go (we really hope for it) along the path of recognizing the priority of environmental protection, since without this it is not only impossible to satisfy the needs of the first level, but also human life as a biological creature is not possible.

The need to protect the environment, ensure environmental safety, protect nature from the harmful effects of human activity change not only the system of human values, but also affect the mechanism of legal regulation, the content of the legal rules. Jody Freeman explores the relationship between energy and environmental law. He notes the trend towards a clear convergence of these legal entities [7]. Richard L. Revesz notes the role of judicial practice in shaping the state’s environmental policy [8]. Their conclusions can be summarized - environmental law in its essence becomes a system-forming branch of law (conclusions are drawn in relation to the Roman-German legal family, which
involves the division of law into branches). Environmental goals and norms should determine the content of transport law, which underlies the development of transport models of the country.

All of the above suggests that transport models require their further development. Nowadays, the necessary concept is not clearly developed, the optimal paths for progressive movement forward are not defined. Meanwhile, the life of man and the whole planet depends on this.

2. Materials and Methods
During the study, dialectical-materialistic, systemic, logical methods were used, as well as methods of interpreting law and forecasting.

The development of transport models can be effective only if it is based on a systematic approach.

L. Bertalanffy proposed to conduct research from the perspective of the general theory of systems, proceeding from the unity, interconnection and integrity of the system. He wrote that the concept of a system is not limited exclusively to the theoretical sphere, it becomes central in certain areas of applied science [9].

The idea of L. Bertalanffy was supported by G. Hegel. He wrote that all content makes sense only when it appears as a moment of the whole. Otherwise, this is an unfounded assumption or subjective certainty [10].

The systematic approach differs from the structural-functional one. Moreover, a number of researchers contrast them, consider them as peculiar antonyms. But this is not worth doing. The systems approach is simply broader. The researcher is focused on the system, the analysis of which involves the study and the relationship of its constituent elements and their organizational management, their functional characteristics.

The difficulties of using a systematic approach are caused by the fact that up to now, there is no universal definition of a system, there are completely different approaches to the classification of systems. As the basis of our study, we took ideas developed by I.V. Blauberg, V.N. Sadovsky, E.G. Yudin in the seventies of the last century. They distinguished three classes of systems: unorganized unity (“sum total”), inorganic (simply organized systems) and organic systems.

Modern transport models are classified as inorganic. The elements included in them are interconnected. In the aggregate, they endow the system with those qualities that they do not have separately. So far, inextricable, self-developing relations have not developed between them. But with the development, with the improvement of man himself, social norms, other objects of the material and intellectual world, the transport model can move to a qualitatively new level - transform into an organic system.

The regulation of social relations required the development of a huge number of rules of behavior - social norms, among which the rule of law occupies a special place. Law is the main regulator of human behavior. When conducting the study, we relied on an integrative understanding of law, according to which law is a system of principles and norms contained in a unified, developing multi-level system of forms of national and international law implemented in the state.

3. Results
Reforming transport, the transport model, we must clearly determine for ourselves, for what purpose this is done, what results we want to achieve. Human capital has been and will be the main driving force of social progress. A group of scientists has developed an innovative structure for the development of human capital, taking into account the role and importance of control [11]. And although it was developed in order to develop the federative unit, many provisions, in our opinion, are universal in nature and can be used in the development of innovative transport models.

Our society, according to A.V. Schipkov, waiting for “another period of a cardinal social shift” [12].

Scientists rightly draw attention to the fact that it is technologization, digitalization, national intellectual capital that are the main competitive advantages of any modern country. But these advantages require adequate protection [13]. Without a well-thought-out, technologically advanced
information security system, we will not be able to move forward, achieve our goals, improve our lives. Moreover, information security is important both for the macro and the micro level - both for the country and for each business entity, each individual person.

The transport model from the point of view of a systematic approach is characterized by complex relationships that develop between the elements. The transport model performs certain functions. They are the reflection of those properties that are inherent exclusively to the transport model. The system-forming element, in our opinion, is the goal. The transport model was created by man, it refers to objects of artificial origin (in contrast to biological systems generated by nature). Accordingly, the objectives of the functioning of the transport model are derived from human needs. The transport model is designed to ensure the safe movement of people, animals, goods. Today, it is necessary to add one more goal to such obvious goals - to live in harmony with nature, not to violate its laws, not to cross the borders beyond which climatic chaos begins.

When considering the transport model from the point of view of a systematic approach, it is necessary to take into account that, since the transport model was created by man, it differs in that everything is in his hands. Man, on the one hand, is the creator of the model, and on the other, its essential element. In addition to it, the system under consideration includes transport, roads, digital technologies, social norms, safety requirements and other elements that are the product of human thought. Therefore, if we want the transport model to go along the path of its transformation into organic unity, first of all, the person himself must change. Then, as a result of increasing its competence, level of culture, the content of social, technical and legal norms will change, which determine, among other things, the content of technical characteristics of transport, the attitude to their implementation will change - environmentally friendly technologies of road surfaces, production of vehicles, digital management and control technologies will be improved.

4. Discussion
As we all know, there were two difficulties in Russia - “fools and roads”. Since the domestic transport infrastructure takes only the first, although quite successful steps, it is advisable to turn to the experience of foreign countries.

For a long time in the field of view of the United States government are the problems of reducing fuel consumption. Michael Greenstone, Cass R. Sunstein, and Sam Ori consider vehicle fuel economy standards the cornerstone of the US policy [14].

This, in our opinion, is connected with a number of circumstances. The American automobile industry is notable for increased “gluttony”. Fuel economy is not only dry mathematical numbers that positively affect the wallet of consumers. This issue is global in terms of world oil prices, the need to reduce oil consumption, and finally, minimize greenhouse gas emissions.

Scientists pay attention to the significance of already made decisions aimed at solving environmental problems. In 2018, in the USA, CAS decided to introduce new standards, which were met with a mixed response in society. Thus, the Environmental Protection Agency and the National Highway Traffic Safety Administration proposed to freeze the new rules until the end of 2020, since their implementation requires huge financial resources.

Michael Greenstone, Cass R. Sunstein, and Sam Ori talk about the possibility of achieving their goals in other ways involving lower costs. They offer a new model based on direct regulation of expected fuel consumption and greenhouse gas emissions without taking into account the type of vehicle, taking into account fuel consumption over the entire life of the vehicle, and improving the market for car manufacturers.

Many researchers draw attention to the limited ability of the state to conduct experiments in the field of climate. Thoughtless actions lead to lengthy and costly litigation. Felix Mormann notes the importance of a single integrated approach developed at the federal level when deciding on the use of renewable energy sources [15]. It seems that this conclusion is fully applicable to our study. Only a clear delineation of competencies and responsibility for decisions made will allow achieving the goals with minimal cost.
Achieving goals involves the active use of innovative technologies. Lorna McGregor rightly draws attention to the fact that the use of new and emerging technologies must be accompanied by an adequate explanation that these technologies do not harm human rights. New principles of accountability should be developed when using them, since the problems of the influence of artificial intelligence and other similar technologies on the quality of management, including public administration, are still not sufficiently understood [16].

One of the goals of reforming the transport model is to reduce mortality in road traffic accidents. Its achievement is possible only on the basis of a systematic approach. Road safety is only possible if not only road factors (improving the quality of roads, reducing traffic congestion), but also transport (the quality of the vehicles themselves) are taken into account. It's no secret that the cost of cars varies significantly. It depends on a number of factors, including the quality of parts, level of safety, degree of comfort. Machine parts have undergone so-called fatigue destruction over time. Specialists have developed:

- formulas that allow calculating the reliability of parts with the greatest possible accuracy, given that “the calculated and ultimate stresses are random variables with known distribution laws”;
- “a methodology for calculating the durability of machine parts in the event of a random change in a component of a plane stress state” [17].

I.F. Diakov offers a way to increase the strength of machine parts by applying wear-resistant coatings by the ultrasonic method, which provides thin hard layers with high wear resistance. This not only enhances the strength and wear resistance of vehicle parts, but also improves traffic safety [18].

Many scientists analyze the consequences of traffic accidents and offer specific ways to improve transport safety, paying attention, for example, to the use of metamodels in the analysis of vehicle accidents [19], the need to optimize the construction of vehicle roofs [20], parking problems [21], the possibility of using new logistics solutions (model of joint logistics) [22].

Considering the issues of improving the technological parameters of vehicles, it is necessary to take into account that various rules of behavior have historically arisen and operate to regulate social relations. Thanks to them, public administration and the interaction of people are carried out. A person’s relationship with technology is based on technical norms created by society. Life, health, and fate of man depend on their observance or non-observance. In some cases, the catastrophic consequences of a violation of technical standards lead to adverse planetary consequences. Therefore, the development of a transport model is unthinkable without improving technical standards that determine, in particular, the technical characteristics of vehicles and fuel quality indicators. Technical standards embody scientifically based methods, ways, and techniques for handling transport, technological operations, and other artificial objects.

These rules are organically linked to social norms, among which, by virtue of their generally binding nature, the norms of law stand out. Law is the main regulator of human behavior. And although the operation of legal norms is supported by measures of legal responsibility, their concretization and implementation are accompanied by enormous difficulties, most of which, in our opinion, are due to an underestimation of the scientific approach and a neglect of social sciences. Without going into details on this issue, I would like to note only one thing - all the problems that arise in the practice of legal and individual regulation are caused by ignoring the legal doctrine. Science should be at the basis of the development of transport models.

Considering the problems of the development of transport models, one cannot ignore the issues of fiscal payments. Individuals and legal entities for which vehicles are registered are payers of transport tax. The framework conditions for its calculation and collection determined by the norms of the Tax Code of the Russian Federation are specified by the relevant laws of the constituent entities of the Federation.

Unfortunately, the objectives of collecting transport tax are limited mainly by fiscal issues. The stimulating potential of this payment is actually reduced to zero, although it is precisely with the help of legal norms that form the legal basis of the transport tax that the situation can be radically changed.
in terms of stimulating the acquisition and use of vehicles with a high level of environmental class; equipped with innovative protection systems for drivers, passengers, and pedestrians.

In recent years, disputes over the cancellation or maintenance of the transport tax have not stopped in the Russian Federation. The solution to this issue should be based on a systematic approach - it is necessary to take into account the need for greening mandatory payments, taking into account the expenses of owners (in particular, the fee for using toll sections of federal roads).

In addition to the transport tax, certain categories of vehicle owners in the Russian Federation pay a special fee in the Platon charging system (the name “Platon” is an abbreviation for the phrase “pay per tons” (Rus.: “plata za tonny”)).

This fee was introduced in order to compensate for damage caused to public roads of federal significance by vehicles that have a permissible maximum weight of over 12 tons. The fee is established by decision of the Government of the Russian Federation. Currently, it is equal to 3.73 rubles per kilometer of the path traveled along the indicated roads. The fee is subject to annual indexation in accordance with the actual change in the consumer price index.

The introduction of the Platon system was met with a mixed response. At the initial stage, there was a lot of reasonable criticism. At the same time, it is obvious that consensus must be sought. Its platform should be strict reporting on the use of collected funds. The attitude to Platon will change, first of all, on the part of carriers, when they are sure that the amounts paid are strictly targeted - they help improve the transport infrastructure, in the development of which absolutely all road users are interested. Today, a fee for damages is positioned as a non-fiscal payment. It seems that this is a conceptual mistake of the lawmaker. According to its characteristics, this fee is no different from the tax fee. Giving it a fiscal structure will allow, in our opinion, disciplining the lawmakers, developing the vital certainty and stability of the rule of law that make up the legal basis of the Platon system.

The environmental regulation of road transport in Russia is taking only the first steps, in contrast to European countries in which standards for the content of harmful substances in exhaust gases began to appear back in the 60s of the last century. The most harmful emissions - sulfur and nitrogen oxides, volatile hydrocarbons, are subject to control.

Today, absolutely all automotive giants are engaged in the search and implementation of environmentally friendly technologies.

Environmental regulation has become an essential function of a number of modern countries. This activity is carried out in a number of areas.

First of all, countries are striving to reduce the number of vehicles in the city, to push the population to consciously abandon their personal cars and use public transportation to travel. For this, various economic and legal instruments are used, for example, by establishing a significant one-time fee when purchasing a car. In many countries, transport tax rates depend on engine power and the number of grams of carbon dioxide, which encourages entities to purchase cars that have a high environmental class.

Transport infrastructure is also developing through the construction of toll road sections. Toll roads exist in more than thirty countries of the world, but their share does not exceed 1 percent. Most toll roads have low fares. Countries do not set themselves the task of replenishing the revenue side of the budget. The fee is calculated in such a way that the collected money is minimally sufficient only to regulate transport flows and achieve environmental goals.

Moreover, in some countries, for example in the USA, there is no collection similar to the Platon system at all. It is based on the basic principle that the roads are designed for movement, transportation of goods. The introduction of any additional fee is an increase in the value of goods. Yes, this is true. At the same time, it should be borne in mind that the financial resources of the state today are not unlimited. Uncontrolled automobile flows give rise to many problems of a social, economic, and environmental nature. That is why European countries have chosen a different path.

Nowadays, various tools are used to regulate freight traffic flows.
For example, in Denmark, Luxembourg, the Netherlands, and Sweden, the Eurovignette system operates. Trucks with a gross weight of at least 12 tons are required to buy a Eurovignette for driving on motorways [23].

In Germany, Austria, and Switzerland, there are systems that are based on electronic control of the path traveled by a vehicle. This method, the most complex and most expensive one, was chosen in the Russian Federation. However, there are significant differences between the European and Russian systems. In the EU countries, tolls are not dependent on the weight of the cargo. It is believed that all trucks go fully loaded. The amount paid depends on the number of axles and the environmental class of the car. It seems that this experience deserves attention. Russian legislation should become environmentally friendly. Nature no longer forgives man his disrespectful attitude towards it. In this connection, the following is proposed:

- a fee for the use of public roads of federal significance shall be recognized as a fiscal fee, supplementing part two of the Tax Code of the Russian Federation with the corresponding chapter. In this case, it is necessary to conduct a serious economic analysis. Maybe, indeed, it is worth abandoning such a criterion as the allowed maximum mass of the vehicle. In this case, there is a likelihood of improving the logistics component - reducing the number of transportations without cargo;
- make changes to the legal regulation of the transport tax, obliging the constituent entities of the Federation to set transport tax rates depending on the environmental class of the vehicle, the degree of protection of the driver, passengers and pedestrians.

Legal support of transport models is the most important component of its successful functioning. Half-baked measures reinforce conflict in legal relations, lead to an increase in social tension, and form a negative social background [24]. The argument about the “heavenly punishment” somehow does not convince.

**Figure 1.** Transportation model.

### 5. Conclusions

A transport model is a complex relationship that arises between its constituent elements. The model under consideration includes: subjects, objects in the form of a variety of transport, transport routes, technologies, technical and social norms, as well as other elements. It should be noted that a person, on the one hand, acts as its creator, architect, and on the other, as an obligatory participant.

The events of recent years and months convincingly prove the importance of complying with technical norms and rules that determine the technical characteristics of transport, establishing requirements for the organization and functioning of transport infrastructure.
In practice, the concretization of social norms, among which, by virtue of their obligatory nature, the norms of law stand out, encounters many difficulties of an objective and subjective nature. The emerging problems are caused by the underestimation of the scientific approach, the opposition of technical and social sciences.

The modern transport model is essentially an inorganic system. Its transformation from the position of a systematic approach involves the improvement, first of all, of the person himself a law of a systematic approach involves the improvement, first of all, of the person himself. His competence, level of culture, level of legal awareness. Only in this case the transport model will acquire new qualities that raise it to a fundamentally new level of the organic system.

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