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**LEGAL FACTS IN THE VIRTUAL ENVIRONMENT**

**ABSTRACT**

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# **1. General description of the dissertation**

## **1.1. Relevance of the topic**

With the development of information and communication technologies, more and more elements with virtual nature are included in societal relations. In some cases, these elements only provide a new form for storage of information concerning these relations, in others – they provide a new environment for practically instantaneous communication between the parties. Completely new social relations are also emerging, which depend entirely on the possibilities of the virtual environment.

More abstract rules of law such as freedom of contract can also apply to e-commerce; the same can be said with regard to the provisions of the Administrative Procedure Code in relation to electronic administrative services.

However, this abstract regulation presents problems in at least two directions. First of all, even when considering phenomena in the virtual environment that are analogous to those in the material reality – such as e-commerce and e-government services – the former demonstrate original properties. Secondly, the virtual environment also allows new opportunities, which affect both the relationships that have an analogue in material reality, and are a prerequisite for the development of completely new relationships. New types of services related to the storage and processing of information are also possible.

Legal regulation at the national level faces significant difficulties on its own: the virtual environment, due to its relative independence from material reality, allows the exchange of information regardless of the distance between sender and recipient. This underlines the meaning of acts adopted at international level as well as those that are adopted as part of EU secondary law.

In this regard, a number of specific features of these relations should be highlighted, which have a direct bearing on their legal regulation. On the one hand, access to the virtual environment allows interaction with the

administration, shopping, even working from home. On the other hand, the virtual environment allows to a greater degree the predetermination of human behavior in it, as well as the recording of each individual action for the purpose of tracking it.

It becomes necessary to regulate also the relations with regard to its construction precisely as an environment in which both private law and public law interactions take place.

At present, the aforementioned is not a problem that will arise before legal theory in a decade or two. Relations in the virtual environment demonstrate the need for specific decisions not only at the level of legislation, but also the application of already established rules, as well as the resolution of already existing disputes.

The diversity of phenomena in the virtual environment has not been neglected by research in the field of legal theory. A number of tasks of primary importance have been completed – such as justifying the need for legal regulation of relations, formulating the fundamental differences compared to material reality, even clarifying the mechanism of action of law in the virtual environment.

However, the growing volume of legal norms also poses other problems, the clarification of which is a condition for creating a consistent and effective legal framework. The elucidation of this regulation remains the task before the specific fields of legal research. But the virtual environment with its properties is a central phenomenon for this new regulation, regardless of its affiliation to a specific field of law.

Therefore, the study of the significance of the virtual environment for the law is a task of theoretical nature. It is within the framework of the general theory of law that the problems related to its properties should be developed, respectively clarified how they affect the relations that take place in it and the possibilities of legal regulation of the latter.

The initial thesis in this regard is that the legislator is limited by the nature of the virtual environment when assessing which features of the circumstances in the latter should be legalized. There is no reason to transform impossible circumstances into legal facts, nor to envisage rights and obligations that cannot be fulfilled. But what is possible depends on the environment: it has one set of dimensions in the material reality and completely different set in the virtual environment.

The present study is aimed precisely at delineating these dimensions based on the concept of a virtual environment already formulated in legal theory. Its original properties have already been outlined in the legal literature. However, it is necessary to clarify the connections between these abstract properties and their consequences for social relations. At the same time, the study is limited to examining the legal facts in the virtual environment separate from other matters and only in their static aspect. The volume and tasks of the dissertation do not allow to enter into the more complex manifestations of the properties of the virtual environment in the context of the dynamic aspects of the legal system.

At this level of research, no solutions are offered as to how social relations should be regulated, as this is a task for the sciences focused on the specific fields of law in consideration to their subject and method of regulation.

Studying the legal facts in the virtual environment turns out to be a sufficiently ambitious task in itself. Within its framework must be considered, on the one hand, the particularities of those circumstances that the legislator has already raised into legal facts. On the other hand, those relationships that have social significance and therefore might need to be regulated by law should also be discussed.

The study of legal facts in the virtual environment and the development of a type model for the same is a useful next step for legal science and specifically for the general theory of law. The present dissertation offers a general

framework that will serve branch sciences on the one hand, and on the other hand - the next, more in-depth level of general theoretical research. A field for such subsequent research is clearly found in more complex phenomena that go beyond the individual legal fact: factual compositions and normative-factual complexes. These phenomena demonstrate original new properties that exceed the sum of the properties of their elements.

## **1.2. Object and subject-matter of the research**

The object of the study is the law as a social normative system that also operates in the virtual environment. The views on the heterogeneous nature of the legal system<sup>1</sup>, as well as its orientation towards the protection of certain values<sup>2</sup>, are accepted as basis for the research. These values remain outside the scope of the study, but the orientation of the law towards them was taken into account at each stage. Precisely because of the need to protect these values in the virtual environment, a conclusion is formulated that the law also operates in it.

The subject-matter of the research are the legal facts that take place in the virtual environment - i.e. those circumstances in it, with which the law binds the emergence of rights and obligations. Considered strictly, this subject-matter implies considering only those circumstances that have already been transformed into legal facts. But the peculiarities, the original properties of the virtual environment are not fully reflected in the current law. Therefore, the considerations for the development of the law require discussion of those circumstances which, for one reason or another, have not yet been transformed into legal facts, but should be – precisely in view of their connection with values.

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<sup>1</sup> **Tashev, R.** Theory of the legal system. S.: Sibi, 2006.

<sup>2</sup> **Nenovski, N.** Law and values. S.: BAS Press, 1983.

### **1.3. Goal and tasks**

The immediate goal of the study is to clarify the concept of a legal fact in the virtual environment, by proposing its definition, designed to be useful for the practice, as well as to serve as a basis for the development of legal theory.

The tasks that have been carried out to achieve this goal are the following:

- clarification of the concept of legal fact in the virtual environment;
- formulation of classification criteria for legal facts in the virtual environment;
- discussion of examples of specific legal facts in the virtual environment through the prism of the formulated classification criteria;
- construction of a type model of a legal fact in accordance with the proposed classification criteria.



#### **1.4. Research methods**

The research was carried out by predominantly applying the juridical method as a system of rules for interaction with the outlined object and subject-matter to achieve the specified tasks. An element of this system is legal dogmatics, understood as a relatively separate group of rules for explaining legal phenomena through the prism of concepts such as legal norm, legal validity, etc. In the same way, the methods or ways of interpretation established in law are applied – linguistic, historical, systematic, logical, functional.

In order to include in the subject of the study also circumstances that have not yet been legalized, empirical methods are also necessary - such as observation, synthesis, analysis, etc. – to clarify their nature. It should be noted here that this clarification is limited, for the purposes of formulating general concepts only. Therefore, the application of such empirical methods is limited to what is usual for legal research. Considering such phenomena lying outside of the law, however, means that the methodology of research is not entirely juridical in nature.

Concepts developed within the framework of systems theory are also used within the research: system, information, model, etc. This conceptual apparatus is necessary to clarify the phenomena in the virtual environment and, accordingly, the possibilities and limitations in their transformation into legal facts.

## **1.5. Structure and volume of the dissertation**

The dissertation is divided into three chapters, each of which contains points and subpoints.

Chapter one consists of three parts. In the first, the traditional concept of a legal fact is examined. The second is dedicated to the concept of a virtual environment and its properties, which affect every circumstance that takes place in it. The third part examines the legal fact in a virtual environment, formulating those main features that allow it to be distinguished from other types of legal facts.

Chapter two examines in detail the impact of the properties of the virtual environment on the circumstances that take place in it. The chapter is divided into three parts, the first of which is aimed at clarifying the meaning of the primary and secondary properties of the virtual environment. The second part examines in detail the primary properties, viz. those that are characteristic of any virtual environment. The third part explores the reflection of five secondary properties that are characteristic of the Internet as a particular virtual environment.

The third chapter develops a type model of legal fact in the virtual environment, being divided into three parts. The first outlines the essential novelties of this type of legal facts compared to traditional ones and the second offers a classification according to criteria specific only to legal facts in the virtual environment. The third part of chapter three contains the suggested type model, whereas the decisions that the legislator can make in transforming the circumstances that take place in the virtual environment into legal facts are considered – i.e. which of their marks to describe in the hypothesis of a legal norm.

The results and conclusions of the research are summarized in the conclusion of the dissertation.

The dissertation consists of 335 pages, of which the introduction represents 46 pages, the exposition – 279 pages, the conclusion – 8 pages, and the bibliography and the list of used normative and other acts includes 17 pages.

There are 474 footnotes to the dissertation, and the bibliography includes 131 titles, of which 60 are in Bulgarian, 5 in Russian, 64 in English and 2 in German.

## **2. Contents of the dissertation**

### **2.1. Chapter one – General concepts**

The first chapter is aimed at clarifying the doctrinal concepts of legal fact and virtual environment. On this basis, the point of intersection between them is also clarified: the concept of a legal fact in a virtual environment.

#### **2.1.1. The classical concept of legal fact**

A prerequisite for the fulfillment of the tasks of the dissertation is the clarification of the classical notion of legal fact. It is central to continental legal theory, but it is not entirely consensualized.

At least three main views on the concept of legal fact can be outlined in legal theory. These views are largely unanimous regarding the criteria for distinguishing classifications of legal facts. It is these points of intersection between these views that are used as a guide as to which view should be adopted.

The first and most widespread view of the nature of a legal fact is that it represents a fact of the material and social reality, with the occurrence of which legal consequences are bound<sup>3</sup>.

The second view puts the emphasis precisely on the normative component in the definition: the legal fact is the model of the circumstance from the material or social reality in the hypothesis of the legal norm<sup>4</sup>.

The third view combines the previous two, assuming that a legal fact is the circumstance of the material and social reality as a whole with its model in the legal norm<sup>5</sup> and thus combines all their advantages.

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<sup>3</sup> This view is accepted – whereas no comprehensive listing is possible – in **Ganev, V.** Textbook in general theory of law. Part one. Second supplemented edition. S.: 7M Graphic, 1990, p. 25; **Tadjer, V.** Civil law of the PRB. General part. Section I. Second edition. S.: Sofi-R, 2001, p. 162 and following; **Milkova, D.** General theory of law. S.: Albatross, 2008, p. 128 and following; **Isakov, V.** Legal facts in soviet law. M.: Juridical literature, 1984; **Krasavitchkov, O.** Juridical facts in soviet civil law. M.: State press juridical literature, 1958, 11 – 19.

<sup>4</sup> **Tashev, R.** General theory of law. General legal concepts. 4<sup>th</sup> edition. S.: Sibi, 2016, p. 228 and following.

<sup>5</sup> **Boychev, G.** Course in general theory of law. S. University press “St. Kliment Ohridski”, 2010, 352 – 353; **Djerov, Al.** Civil law. General part. Third reworked and supplemented edition. S.: Trud i

For the purposes of the research, it is precisely the third view of the essence of legal facts that is shared. It allows reflecting the complex interaction between the factual and the normative: the law predetermines the relevant framework for the interpretation of facts from reality, but takes into account their essence and peculiarities. Therefore, the legal fact within the framework of the study is defined as a fact set forth a legal norm, which contains characteristics of a circumstance that takes place in social reality and the occurrence of which is bound with legal consequences.

The law uses simplified models of the circumstances of reality, but these models remain connected to the essence of the phenomena of material and social reality. This specific interrelationship reflects the need for law to offer practical solutions to everyday problems – these solutions must be related to phenomena as they are perceived by a person, without the need to clarify their scientific and metaphysical nature.

These simplified models at each historical moment correspond to human senses and understanding of the phenomena of reality. They are also tied to language, which is the only vehicle for sharing these concepts, but is inherently imperfect.

As a prerequisite for the fulfillment of the tasks of the research, several more questions are considered: the connections of legal facts with the mechanism of legal regulation and the theory of evidence; the functions of legal facts; the classifications applicable to them; factual compositions and other more intricate complexes of legal facts; presumptions and fictions.

Additional arguments for the meaning of the chosen complex definition of a legal fact are derived from the foregoing. In addition, a conclusion can be formulated that the theory of legal facts is closely related to material reality.

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pravo, 2012, 327 – 328; **Shopov, At.** The concept of legal fact. – In: **Tokushev, D. (comp.)** 100 years from the birth of prof. Mikhail Andreev, S.: University press “St. Kliment Ohridski”, 2011, p. 573; **Kiskinov, V.** The legal system. Part II: Composition and operation. S.: University press “St. Kliment Ohridski”, 2019, 358 – 364.

### **2.1.2. The concept of virtual environment**

Material reality is the environment, the rules of which each person understands intuitively, and until now all social interactions take place in it. However, the virtual environment also allows such interactions as well, but it functions in a very different way. Therefore, it can be assumed that both the material and the virtual environment are part of the social reality. However, it is necessary to clarify the properties of the virtual environment by which it differs from the material reality.

For the purposes of the dissertation, the concept of a virtual environment developed in the theory is used as a non-physical, ideal, artificial environment formed by man by means of information and communication technologies<sup>6</sup>. The combination of an information and communication component – i.e. the creation of a network of individual devices – grants the virtual environment social significance and the properties that are discussed in the dissertation.

The virtual environment is the subject of a number of legal studies, as a prerequisite for the current research is the clarification of several theories about the application of law in it. First of all, in the dissertation will not be adopted the view of sovereignty of the virtual environment, on the grounds that the latter does not create a community that can replace the state. In addition, the theory of the normativity of the software code is not accepted: the latter may represent a de facto restriction on behavior in it, but this does not mean that it creates rights or obligations. On the other hand, the distinction of internal and external perspective to the processes in the virtual environment is applied in the dissertation as means for explaining some phenomena in the virtual environment. Finally, it is accepted that a variety of social relations take place in the virtual environment, many of which require legal regulation.

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<sup>6</sup> **Kiskinov, V.** The legal system. Part I: Ontology and methodology. S.: University press “St. Kliment Ohridski”, 2019, p. 171.

The virtual environment has original properties compared to the material reality, but they do not exclude the possibility of the application of the law. This is a moderate position between the extremes that deny the need for a specific regulation of relations in the virtual environment or assume that the law cannot be applied to them at all.

However, there is a lack of unanimity in legal theory as to what the properties of the virtual environment are, and some of the mentioned properties are closely related to a certain correlation between society, state and market. Therefore, it is necessary to distinguish between a virtual environment as a scientific concept with a high degree of abstraction and the Internet as a specific virtual environment with its own characteristics, along with which other concrete manifestations of the abstract concept may exist.

This, in turn, allows two groups of properties to be outlined: primary, which follow from the nature of the virtual environment, and secondary, which are the result of the specific way in which the technical means for storing and exchanging information are connected.

Primary properties should be seen as immutable, intrinsic to the virtual environment. The separate examination of the secondary properties allows them to be outlined as the result of human decisions and therefore the relations on the occasion of their creation and development to be subject to legal regulation.

It is in this sense that the primary properties of the virtual environment are inherent to all circumstances in it, while the secondary ones are themselves a function of specific human behavior in its construction. This human behavior can be a legal fact with a more specific role, which is discussed in detail in chapters two and three of the study.

As the main primary properties of the virtual environment, the properties confirmed in the theory are considered<sup>7</sup>: its existence as an ideal phenomenon;

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<sup>7</sup> The utilized concept of virtual environment and its primary properties is developed by **Kiskinov, V.** The legal system. Part I . . . ., 170 – 179 and following.

systematicity; technological basis; relative independence from material reality; human creation; modeling, controllability and constructability; universal accessibility; global and local virtual reality; automatism; variability and recoverability.

The question of secondary properties is considerably more complicated, inasmuch as they may vary within wide limits defined by primary properties and manifest themselves in different ways. Therefore, a comprehensive study is not possible, with only a few secondary properties of the Internet discussed, regarding the importance of which there is some consensus in legal theory. When considering them, it should be taken into account that these properties are the result of specific decisions, which are also connected with certain values.

Anonymity, decentralization, freedom to connect devices and applications, network neutrality and non-homogeneity are outlined as the secondary properties most significant for the research tasks.

As a prerequisite for the following parts of the study, a number of concepts such as the Internet, blockchain, cryptocurrency, artificial intelligence, etc. are defined.

### **2.1.3. Manifestation of legal facts in the virtual environment**

As the legal facts in the virtual environment are discussed in detail in chapters two and three of the study, only a working definition is formulated at this stage. If this concept is too narrow, the law will not bind with consequences significant phenomena in the virtual environment; conversely, if it is too broad, it will not be useful in clarifying the operation of the law.

Therefore, the proposed definition of a legal fact in a virtual environment is a fact provided by a legal norm that contains the characteristics of a circumstance that manifests itself in the virtual environment. This concept allows three large groups of circumstances to be covered.



First of all, as virtual legal facts<sup>8</sup> are considered those facts that are provided in legal norms and are realized in the virtual environment through the functionalities of its technological basis. Virtual legal facts have a number of specifics precisely because of their realization in the virtual environment<sup>9</sup>. On the one hand must be distinguished actions to use the opportunities existing in the virtual environment, which are primarily presupposed by models in information technology; on the other hand, the activities of creating such models, which represent a de facto limitation for its users. Due to this nature of the models in the virtual environment, it is necessary to clarify how far they correspond to the provisions of the law. At the same time, new functions are discovered, specific only of virtual legal facts: they allow the accumulation of data on the course of public relations; are recognizable as such to information technology and can serve as a prerequisite for automated solutions; as models in the virtual environment can guarantee the lawful development of social relations.

As a second group of legal facts in a virtual environment should be indicated those that took place in material reality but were recorded in electronic form. Recording them is an additional virtual legal fact, but it gives them all the qualities characteristic of information in the virtual environment. This allows the recorded to perform some of the functions characteristic of virtual legal facts – for example, the accumulation of data concerning societal relations and the possibility of automated processing.

Thirdly, it is considered that some circumstances have a result in the virtual environment directly, and not by using the possibilities existing in it. Into this classification group fall circumstances from the material reality, which include both human actions aimed at building, connecting or damaging the

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<sup>8</sup> **Kiskinov, V.** The legal system. Part I ..., 205 – 209; **Kiskinov, V.** The legal system. Part II ..., 364 – 366

<sup>9</sup> The discussed specifics have been researched initially in **Kiskinov, V.** The legal system. Part I ..., 205 – 206.

means of exchanging and storing information, as well as natural phenomena or processes that affect these means. These circumstances should also be considered because of their results in the virtual environment, but do not fall into the other two classification groups.

In connection with the formulated conclusions, at this stage in the research, the importance of storing data on realized legal facts in a virtual environment is also outlined. The properties of the virtual environment allow the data to be separated from its material carrier, which allows on the one hand to be accessed remotely. On the other hand, the problem with their credibility emerges with particular sharpness. Therefore, the problems of electronic registers and personal environments for saving personal data and individual legal acts are briefly highlighted.

## **2.2. Chapter two – Reflection of the properties of the virtual environment on the legal facts**

### **2.2.1. General notes**

The properties of the virtual environment leave their mark on every circumstance that occurs in it. To consider the interrelationships between this environment and the circumstances that take place in it, the distinction already made between primary and secondary properties is of fundamental importance.

Primary properties are characteristic of all circumstances that take place in the virtual environment and are neutral in terms of law. These properties are significantly different from material reality, therefore the application of traditional legal norms in the virtual environment would lead to problems. It is the primary properties of the virtual environment that are both opportunities for the emergence of new relations, but also limitations that should be taken into account in the course of their legal regulation.

Secondary properties also play this role from the point of view of the average user of the virtual environment. But these properties are the result of purposeful human activity in connecting and configuring the devices for storing

and exchanging information. This activity – which is connected to value judgments – can be regulated by law.

### **2.2.2. Reflection of the primary properties of the virtual environment**

Considering the primary properties separately poses practical difficulties - as they mutually influence each other. Nevertheless, they are investigated separately.

First of all, the virtual environment is an ideal phenomenon, therefore only information-related processes take place in it, but not biological, physical, chemical or other phenomena closely related to material reality. However, information about such phenomena can be recorded in the virtual environment. This information is not directly linked to its material carrier – which means that it can be fabricated without any possibility for verification.

However, the virtual environment has an objective being, which allows it to serve to record data about realized circumstances without tying them to certain material carriers. On the other hand, a conflict arises between the possibility of easy dissemination of information and the need to control it, for example for the purpose of protecting intellectual property.

Secondly, the virtual environment and the phenomena in it are constructed through human activity. Exceptionally, it is possible for legal events to have a result in it, but for the most part, the circumstances in the virtual environment represent legal actions. Artificial intelligence could change the situation in this direction – and at this stage only some possibilities for the development of the topic can be outlined.

As a third property of the virtual environment, the complex interrelationship with its technological basis should be taken into account. The processes in the virtual environment are mediated by the action of technical means for entering, storing and reproducing information. It is through interaction with them that the activity in the virtual environment takes place.

In the research, emphasis is placed on human actions in constructing the virtual environment – including through the creation and programming of the various devices from its technological base. However, the settlement of these actions also implies specific problems before the law – for example, the requirement of technological neutrality.

The virtual environment can also be studied as a set of technical devices and information that are bound by complex connections – i.e. as a system. This system is constructed through human action, but manifests itself at every level in the virtual environment.

This property corresponds to the systemic nature of law – and therefore complex sequences of actions, organizational structures, etc. can be reproduced in the virtual environment. But when the correlations between individual elements are disturbed, the functioning of the virtual environment can significantly deviate from what is desired. The issue of ensuring compliance between what is provided by law and what exists in the virtual environment in this sense acquires special importance.

Fifth, the virtual environment is relatively independent of physical reality, since information is not tied to the devices through which it is stored and exchanged. Therefore, interactions with one device may not affect the data stored on it and vice versa. In addition, information can be exchanged regardless of the distance between two devices. It is this aspect that allows discussing the creation of a community independent of the territory.

Again, it is a matter of human judgment to what extent this independence is enhanced or limited by tying information to specific devices.

Two closely related properties of the virtual environment are the possibilities for modeling and controllability of the phenomena in it. However, the virtual environment may contain fully automated processes, i.e. the phenomena in it can demonstrate dynamics on their own.

The distinction between modeling and controllability is conditional, as modeling is understood as the process of creating a model that should, to the maximum extent, resemble the properties of another phenomenon. In the virtual environment, this model is necessarily always informational, which means that only certain properties of the modeled phenomenon can be reproduced. However, this phenomenon can also represent a complex of legal norms or a legal act. In these cases arise the questions of ensuring conformity and maintaining it when the original phenomenon is modified or changed.

Controllability is in a sense very close to modeling if it is seen as creating models of processes. However, it should be considered separately because it emphasizes the possibility that each process can be changed at each stage of its development. Thus, the importance of human decisions for all actions that take place in the virtual environment is outlined yet again.

In summary, the combination of modeling and controllability allows legal regulation to be realized in the virtual environment not simply by assigning rights and obligations, but by creating models of sequences of legal actions corresponding to the requirements of individual norms or entire legal institutes for example.

Two other closely related properties of the virtual environment are its universal accessibility and the option to distinguish between global and local virtual environments. As a result, both new opportunities for information exchange and problems with keeping a legally protected secret arise.

However, universal accessibility enables much more than access to information: the exchange of opinions in real time allows entirely new social relations in this regard. Some of these phenomena can be seen as entirely positive, as they demonstrate the new frontiers of human creativity and the possibilities of cooperation. Universal accessibility also opens up possibilities for coordinating behavior between different actors, which radically change the processes in society.

The distinction between global and local virtual reality allows precisely to separate certain information and guarantee its privacy. These benefits are not limited to the level of protection of certain data, but are also an element of electronic authentication services. However, it is possible that the creation of an isolated local virtual reality is part of social control measures with a view to limiting freedom of expression and the exchange of information.

The information in the virtual environment can be changed without limitation, including being restored to a previous state. These properties interact contradictorily with the requirements of legal regulation, which presupposes on the one hand certainty of what happened, and on the other, in some cases, presupposes the restoration to a previous factual state.

Therefore, it is necessary to develop and regulate mechanisms that guarantee that certain information has not been changed. One option is to irreversibly bind the information to a material carrier. The other option is binding with other information to be stored separately or to be kept secret by means of cryptographic measures – this are exactly the principles on which electronic authentication services are based.

The restorability of the virtual environment, in turn, poses serious questions to the law – when a reversion to a previous factual state is necessary, respectively, how to guarantee its implementation. The possibilities in this direction open up new social relations with no analogue in material reality, which have yet to be regulated by law.

Finally, automatism is considered as an additional primary property of the virtual environment in the study. In terms of automatism, a comparison can again be made between law and the virtual environment. Legal consequences occur automatically, but human behavior is necessary for their actual implementation. In the virtual environment, the normative relationship can be objectified and the consequences realized without human intervention.

The automation of the virtual environment implies a serious analysis in which cases and with what corrections to allow certain actions without human intervention. At the moment, there is a lack of a comprehensive theory that outlines the acceptable limits of automatism in the virtual environment. On the other hand, more and more examples such as smart contracts, electronic agents, etc. emphasize the importance of the topic.

The topic of automatism is further complicated by the development of artificial intelligence – which can be a source of uncertainty in public relations. Again, we come to the need to debate to what extent uncertainty is acceptable, when the law should guarantee the predictability of socially significant behavior.

### **2.2.3. Reflection of the secondary properties of the virtual environment**

The Internet as a specific virtual environment is built on the exchange of information, in which identification of the sender and recipient is not necessary. At the same time, enough data is recorded about these individuals so that their identification – or at least influencing them for one purpose or another – remains possible. Therefore, as a first secondary property of the Internet, anonymity is studied.

In this regard, two main groups of problems are outlined: how to carry out the identification of users on the Internet, when this is necessary, and under what conditions to recognize the legal significance of the provided means of identification. The technology offers various options in that regard, and for the moment the most significance have the cryptographic measures underlying the electronic authentication services and the exchange of cryptocurrencies. However, the law should regulate what are the consequences of the use of these technical means by another person without the consent of their owner – and how to distribute the risks in this regard. The lack of timely regulation of this subject-matter already results in the emergence of social conflicts.

In addition, the correlations between the topics of anonymity on the Internet and the measures for the protection of personal data provided for in GDPR should be taken into account. As a result of these considerations, the conclusion emerges that anonymity is actually not absolute and the Internet allows monitoring and recording of all actions on this network.

In the second place, decentralization is a direct result of how the technical means of communication are constructed and programmed: there are no central nodes through which certain information must pass, respectively, the services related to the provision of access to the Internet can be provided by different persons.

This property of the virtual environment can be seen as a guarantee of absolute freedom of expression – but this raises the question of protecting other values, such as intellectual property, combating disinformation, etc. Therefore, it is necessary to consider the various measures to limit decentralization, which may allow the protection of such values. The question of how compatible such measures are with the principles of the legal system, for example freedom of expression or free economic initiative, should also be highlighted.

Special attention should also be given to the importance of decentralization for blockchain and decentralized autonomous organizations, which demonstrate the possibilities for new public relations.

As a third property specific to the Internet is considered the freedom to connect devices and applications. Internet users have choices about which devices and applications to use, which often function in new and not always legitimate ways – so this secondary property is another obstacle to exercising control. At the same time, it allows the development of new social relations and is an expression of free economic initiative.

The regulation at the national, European and international level outlines a difficult balance between measures to limit and at the same time to guarantee this freedom. On the one hand, banning certain devices and applications is a



necessary measure to protect rights and legitimate interests. On the other hand, certain practices impair the autonomy of the will and affect the freedom of economic initiative without guaranteeing any values, recognized by law.

Fourth, net neutrality poses similar problems – but on the plane of the obligation of Internet intermediaries to treat information traffic equally, regardless of sender and receiver. Net neutrality makes it difficult to exercise control – in some cases, blocking certain addresses is the only means of preventing an illegal activity. On the other hand, the blocking of certain senders or recipients may again infringe on personal freedom, freedom of expression or lead to unequal treatment, respectively hindering free competition. Therefore, once again, a careful approach is necessary, which takes into account the achieved balance between different values.

The inhomogeneity of the Internet allows different "places" to be delineated, which have different characteristics – including in terms of the delineated secondary properties. Therefore, the latter cannot be considered exhaustively. Administrative portals for electronic services with enhanced identification requirements are thus possible; electronic stores; sites that do not imply any terms of access. This inhomogeneity allows the law to provide different requirements for different Internet participants according to the nature of their activity.

### **2.3. Chapter three – Developing a type model of a legal fact in virtual environment**

#### **2.3.1. Prerequisites for developing a type model of a legal fact in virtual environment**

A circumstance in the virtual environment may have an analogous significance to a circumstance in the material reality – but it always occurs in a different way. The reasons for this are the properties of the virtual environment.

In this regard, two separate categories of human actions in the virtual environment are clearly outlined:

- aimed at its construction;
- aimed at using its opportunities created so far.

Actions in the first group can be seen as elements of a gradual process with increasing complexity. At the same time, previous steps predetermine what possible subsequent actions are. Such effects can also be observed in the virtual environment, but they have a much wider field of application in the virtual environment - and this is precisely one of its essential features from the point of view of legal regulation.

But these models exclude the human consciousness from the processes of interpreting and applying the legal norms: the automatism of the virtual environment means that the models created by the law are realized automatically when the conditions for this are present. At the same time, it should be taken into account that such models are difficult to apply to the actions of constructing the virtual environment: restrictions on them are much more difficult to impose in view of their nature.

This gradual process of creating more and more specific models can be found in a different relationship with the requirements of law: lack of regulation in relation to it; that regulation is in place and the process is in accordance with it; or that there is a discrepancy. In order to assess whether there is compliance, however, a distinction must be made between legal norms that provide for the due behavior at a different level of abstraction: only to describe its features in general or to provide for a way, even the specific content, including through establishing forms that exclude the possibility of deviation. The model of the given action in the virtual environment should be tailored precisely to these requirements of the law.

However, the topic of the research also touches on the legal consequences, albeit to a limit extent – when they are at the same time a legal fact that is bound to subsequent legal consequences.

At this stage, the importance of legal facts in a virtual environment for the mechanism of legal regulation should also be taken into account. This meaning goes beyond the limited regulatory function of classical legal facts – if the creation of models for behavior in the virtual environment is subject to law, then when using these models, legal actions are performed again and again. On the other hand, information technologies may exclude the possibility of legal behavior - therefore their creation on the basis of law is imperative.

The above is an argument that legal intervention in these relations is necessary. Modeling is a mandatory stage of the functioning of the virtual environment, and it is easy to affect the rights and legitimate interests of the users. Therefore, the law must intervene by assigning rights and obligations, establishing standards to be observed in this process.

### **2.3.2. Classification of the legal facts in the virtual environment**

All the classifications of traditional legal facts apply to legal facts in a virtual environment. It should be taken into account, however, that some individual types have a greater importance in the virtual environment – for example, actions. Moreover, given the formality of this environment, explicit actions are more important than tacit and conclusory ones – which, however, retain their application in the virtual environment.

The study also examines a number of classification criteria specifically related to the virtual environment. First of all, legal facts can be classified according to whether they have consequences in it. Three classification groups are proposed: actions that have no consequences in the virtual environment; those that have implications in both physical and virtual environments; and those that have consequences only in the latter. According to their orientation, the actions of the second and third groups can be classified into those that are aimed at the consequences in the virtual environment and those where these consequences are only a side effect. At this stage, a distinction must be made between legal facts that originally arise in the virtual environment and those that

are reproduced or recorded in it. In addition, a classification is needed according to whether the actions were carried out by direct human actions, by automated systems<sup>10</sup>, including with the participation of artificial intelligence.

From the point of view of the description of the legal fact in the hypothesis of the legal norm, other classifications are possible. First of all, of legal facts that can be realized only in the material reality, only in the virtual environment or in both. For legal facts that can only be realized in the virtual environment, the law can provide requirements for the technology by which they should be realized.

In addition, classifications are proposed according to the various secondary properties that are discussed in the dissertation – anonymity, decentralization, freedom to connect devices and applications, network neutrality. Regarding inhomogeneity, however, no further classification is necessary.

### **2.3.3. Type model of a legal fact in the virtual environment**

The general properties of the virtual environment – which find expression in relation to relations in all branches of law – allow the general theory of law to propose a type model of legal fact in a virtual environment. This model can consider precisely the different types of law-making decisions, which do not depend on the sectoral specificities of the regulated matter, but on the fact that certain circumstances are realized or reflected in the virtual environment.

The proposed criteria for the classification of legal facts in a virtual environment allow to distinguish several main types of actions in it, which can be distinguished according to the sequence of reasoning that should be carried out in their legal regulation.

First of all are examined the models of legal fact of behavior aimed at using the already existing possibilities of the virtual environment, because from the methodological side they allow to better explain other types of

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<sup>10</sup>Kiskinov, V. The legal system. Part II ..., p. 366.

circumstances in the virtual environment. They always represent virtual legal facts. In these actions, the preset model serves to a large extent to limit the actual capabilities of its users.

It is possible that due to the nature of the specific action or according to the explicit provision of a legal norm, an action should be carried out only in the virtual environment. In these cases, it is sufficient for the legislator to define more abstractly or concretely what the marks of this action should be: should it be carried out in a virtual environment with certain properties; how to authenticate the data about its author, its content, the moment of execution, etc.; is it possible to do it automatically and under what conditions; should the manifestation of any of the secondary properties of the relevant virtual environment be restricted.

In other cases, the implementation of the action in the virtual environment is a matter of choice: the addressee of the norm can also implement it in the material reality. Then, as an additional step, the legislator should provide measures to ensure that the addressee of the legal norm has in the virtual environment all the possibilities that exist before him and in the material reality.

As a third subtype of virtual legal facts, those in which static models are created in the virtual environment should be outlined. With them, the specific requirements for recording the information and ensuring the credibility of the recorded, corresponding similarity of the model to the modeled phenomenon must be settled.

Attention is also paid to the processes of creating static models - i.e. the recording of data about other circumstances, regardless of whether they took place in the virtual or in the physical environment.

Actions aimed at constructing the virtual environment are considered separately. They predetermine the possibilities of the users, and several successive steps in this direction can be outlined.

First, actions to create a particular virtual environment can be outlined, which include the most fundamental questions about how it should function. At this stage, the legislator has, first of all, a choice whether to regulate relations with more abstract or more specific requirements to the created virtual environment.

When creating models of actions aimed at developing or limiting individual properties of a specific virtual environment, on the one hand, it must be taken into account what the possibilities and secondary properties of the latter are. On the other hand, the legislator at this level of regulation can provide requirements whether this virtual environment is centralized or not, whether users have a choice of what devices to connect to it, etc.

As a third level, activities should be outlined to establish specific dynamic models in the already created specific virtual environment. These models predetermine the possibilities for specific behavior, and the legislator must consider how the restrictions in the virtual environment will be limited to the addressees of the legal norms. It is the legislator who should take into account whether a given action can be carried out only in the virtual environment or also in the material reality. Accordingly, in the latter case, the legislator also has to decide with what means to guarantee functional correspondence between the possibilities for actions in the material and virtual environments.

### **3. Summary of the main contributions**

3.1. In the study, the importance of the relationship between the properties of the virtual environment and the peculiarities of all the circumstances that take place in it is brought to the fore.

3.2. A theory is proposed that unifies different views on the properties of the virtual environment.

3.3. A classification of the properties into primary and secondary is proposed, the relationships between them are clarified and the possibilities for regulating human activity aimed at building the virtual environment are outlined.

3.4. The applicability of traditional classification criteria to legal facts in the virtual environment is clarified.

3.5. A separate group of classification criteria applicable only to legal facts in a virtual environment is proposed.

3.6. A type model of a legal fact in a virtual environment is proposed, clarifying the different types of decisions that stand before the legislator when settling different types of legal facts in a virtual environment.

#### **4. Publications on the subject-matter of the dissertation**

4.1 Technological neutrality as guarantee for the predictability of law – report in collection Scientific readings on the topic “Predictability of law”, University press “St. Kliment Ohridski”, 2022, ISBN 978-954-07-5478-9

4.2. Problems of the electronic form of declarations of will and electronic trust services in private law – report in collection Recent problems of private law. Collection of reports from jubilee scientific conference in honour of acad. Lyuben Vassilev, Institute of state and law at Bulgarian academy of sciences, 2023, ISBN 978-954-9583-40-3

4.3. The smart contract as a legal concept – in mag. Contemporary law, vol. 4, 2022

4.4. Translating the language of law as part of digital transformation – in Conference proceedings from the first annual Transform4Europe PhD conference: Societal transformations and sustainable development with respect to environment in the post COVID-19 digital era, St. Kliment Ohridski University Press, 2023, ISBN 978-954-07-5666-0

4.5. The state border on the Internet – legal problems – report, presented in Scientific readings on topic “Law and war”, 17.05.2023, accepted for printing

4.6. Law as guarantee for freedom and equality on the Internet report, presented in Scientific readings on topic “Law, duty and freedom”, dedicated to the 300<sup>th</sup> jubilee from the birth of Immanuel Kant and the 125<sup>th</sup> jubilee from the birth of Tseko Torbov, 25-26.04.2024, accepted for printing