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## The levels of information objectification in the context of legal protection ability

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**Abstract.** The subject of the study is the essential content and interpretation of the essence of “information”, its symbolic metaphysics. The emphasis is on the sign-symbolic level of perception of information, as well as its meaning (significance) of the sequence in the subsequent interpretation of information. Special attention is paid to the analysis of the concept of “information”. including as a result of intellectual activity. Also discusses the legal mechanisms that are designed to regulate such a multi-border phenomenon as “information”. The conclusions are formulated that due to the original immaterial (ideal) nature of information, including for the purpose of its perception, it is inextricably linked with the corresponding material (physical) carrier, which acts as a form for its objectification, thereby the form and content of information are inextricably linked within the framework of the regulation of the information exchange process. Based on the research carried out, the authors define and substantiate the concept of systematization of legal regimes of information, which is based on the levels of its objectification.

**Key words:** information access modes, legal protection and guard of intellectual activity results, information and communication technologies, non-fungible tokens

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## Уровни объективизации информации в значении правовой охраноспособности

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**Аннотация.** Предмет исследования - содержание и трактовки сущности «информации», ее условная метафизика. Акцент направлен на знаково-символьный уровень восприятия информации, а также его значение (значимость) последовательности в последующей интерпретации. Особое внимание уделено анализу понятия «информация», в том числе как результату интеллектуальной деятельности. Рассматриваются и правовые механизмы, которые призваны урегулировать такое многогранное явление как «информация». Сформулированы выводы о том, что в связи с изначальной нематериальной (идеальный) природой информации, в том числе для цели ее восприятия, она неразрывно связана с соответствующим материальным (физическим) носителем, который выступает формой для ее объективизации, тем самым форма и содержание информации неразрывно связаны между собой в рамках регламентации процесса обмена информацией. На основе осуществленного исследования авторы определяют и обосновывают концепцию систематизации правовых режимов информации, в основе которой лежат уровни ее объективизации.

**Ключевые слова:** режимы доступа информации, правовая охрана и защита результатов интеллектуальной деятельности, информационно-коммуникационные технологии, невзаимозаменяемые токены

**Конфликт интересов.** Авторы заявляют об отсутствии конфликта интересов.

**Вклад авторов:** нераздельное соавторство.

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## Introduction

With regards to the technological development and digitalization of many spheres of the economy and social relations, new challenges arise for legal doctrine and science. They focus on the emergence of new virtual objects that have real economic value and are in turnover, however, legal regulation of such objects has not been formed. In this regard, it is proposed to determine their legal status using the concept of material space (and its units) in combination with the new provisions of legislation regulating information and communication technologies. Whereas the volume of information is constantly increasing in the conditions of innovative technologies rapid development, the importance and specifics of this phenomenon have led to the emergence of different legal regimes.

The information continues to occupy a fundamentally important place in the modern world. Among other things, this is evidenced by the stable dynamics of the growth of the volume of information: in 2006, 0.16 zettabytes were generated by mankind; according to statistics for 2011, the volume of generated data was already 1.8 zettabayt<sup>1</sup>; in 2012 – 2.8 zettabayt<sup>2</sup>; for 2018, IDC's analytics cites a figure of 33 zettabytes<sup>3</sup>, predicting an increase in the volume of information to 175 zettabytes by 2025<sup>4</sup>. The situation with a gradual increase in the volume of information illustrates the demand for information, which, in turn, justifies the designation of the post-industrial information era of the knowledge society.

Information continuously accompanies a person during the life: everyone has a name and surname, which is personal data; under his name a person enters legal relations. Moreover, a person has certain rights arising from his name when engaged in a creative work, science or art (a pseudonym is also a means of individualization). People have already learned to extract certain commercial benefits from the fact of information ownership, for example, using the production secret in business activities and preventing *leakage* of information to third parties; for the purpose of selling goods, works and services, commercial entities actively use advertising not only to convey certain information about characteristics and features to the counterparties but also to offer a potential consumer a product relevant to meet their needs by analyzing their personal data and actions in the global public network Internet; social networks also collect and analyze information about users to offer more interesting publics, groups, communities, thereby helping them find their audience that allow to improve their financial welfare.

The modern material content of the economy and commercial turnover is being completely transformed under the influence and introduction of information (digital) technologies. Within the framework of the digital *revolution*, the borderline between users of these technologies and their creators and copyright holders practically disappears, since digital technologies are not so much tools as processes that subjects adapt to their needs, i.e., transform, modify and develop (Odintsov, 2019).

### **Information essence and interpretation**

Due to the ever-increasing volume of information in the modern world, and its significance, it is highly essential to understand its nature and consider the current situation with its regulation. Legal regulation is aimed at coordinating public relations by establishing certain prohibitions and permits in regulatory acts. The rules of law may both prescribe proper behavior to the subjects of law and, accordingly, give freedom of expression: to act in accordance with their will and independently, by concluding contracts and agreements, to set conduct frameworks and rules for themselves and other subjects, to create and endow each other with a certain scope of duties.

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<sup>1</sup> Luggage storage. Available at: <https://special.kommersant.ru/hranitel-spokojstviya-oceanstor-dorado-huawei/kamera.html>. [Accessed 11th April 2022].

<sup>2</sup> BigData shagaet po planete. Rossiiskaya Gazeta. Available at: <https://rg.ru/2013/05/14/infa-site.html> [Accessed 11th April 2022].

<sup>3</sup> The growth of the volume of information – the realities of the digital universe. Available at: <http://tssonline.ru/articles2/fix-corp/rost-obema-informatsii--realii-tsifrovoy-vseleynoy>. [Accessed 11th April 2022].

<sup>4</sup> Information accumulation. How to safely and securely store data in the clouds. N+1. Available at: <https://nplus1.ru/material/2019/12/20/akronis>. [Accessed 11th April 2022].

The Russian legislation gives definition to *information* which is enshrined in Article 2 of Federal Law No. 149-FZ of 27.07.2006 On Information, Information Technologies and Information Protection (hereinafter the Federal Law on Information). It reads as follows: information is messages, data regardless of the form of their presentation<sup>5</sup>. It is worth noting that this formulation opens the possibility of rather extensive interpretation. For example, Alexey P. Voevodin notes that the definition of information “cannot be derived from the information itself, separately from its functions and place, in isolation from the context: he also argues that in order to understand this phenomenon, scientists tend to objectify information, attribute it to things” (Voevodin, 2014). It is so since information is a multifaceted and complex phenomenon that permeates all spheres of the modern world and society and challenges legal science and legislator to identify a structural and integrated approach to its regulation.

Sergey I. Ozhegov defines the word *information* in the Explanatory Dictionary of the Russian language as follows: 1 awareness of surrounding world and processes, perceived by a person or a special device (*specific*); 2 reports notifying about the state of things and/or situation<sup>6</sup>. It suggests some knowledge about something, so it has some content. However, in order to gain access to this content a person or device needs certain necessary conditions.

To begin with, a person interacts with the outside world through senses: surrounding objects are visible due to the diffuse reflection of light from their surfaces (light emission) and its capture by the organs of vision (eye retina); sound waves (sounds) are heard due to the eardrum, and so on. By analogy, devices that mankind creates also possess sensors and transducers capable of detecting light, waves and other environmental influences. In other words, we are talking about the “*first signal system*” as “a set of analyzers that perceive environmental signals coming through senses (feelings of color, smell, sound, taste, tactile sensations, and visual images)<sup>7</sup>. Therefore, the target receiver of external signals, i.e., information, must demonstrate appropriate capabilities for this.

However, we should mention that information should be *dressed* in a form. Since people, things and other natural objects and phenomena are objects of the physical world, their interaction with each other is possible due to their material embodiment and certain properties under the rules of physics, chemistry and/or biology. Therefore, a person or communication device, including computer, must be objectified to interact with information. This does not mean that information does not exist in the nature without physical embodiment, however, for a person and a computer, it may exist, only and exclusively, with the mediating material carrier. Moreover, the form of information must be suitable for appropriate acquisition. For example, the photo camera that works due to the perception of light emission will not be able to detect sound vibrations, so the information they carry will not be perceived. The photo camera must be equipped with a sensitive microphone to take in such information. Thus, the primary condition for the perception of information is its embodiment in a material form. At the same time, the form in which information is expressed and its relationship with the properties and potential

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<sup>5</sup> Federal Law No. 149-FZ of 27.07.2006 On Information, Information Technologies and Information Protection. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_61798/](https://www.consultant.ru/document/cons_doc_LAW_61798/). [Accessed 12th September 2022].

<sup>6</sup> Ozhegov S.I. Defining Dictionary. Available at: <http://www.endic.ru/ozhegov/Informacija-11081.html>. [Accessed 12th October 2022].

<sup>7</sup> Dud'ev V. P. (2008) Psychomotorics. Reference book. Moskow, Vlados Publ. (in Russian).

(functionality) of the receiver are also criteria for obtaining and perceiving the essence (content) of information, including its interpretation.

Scientific and technological progress in all manifestations of Industry 4.0 of the modern world allows to transfer information from one material carrier to another without difficulty and, therefore, possibility of disseminating information and its accessibility has increased. However, the condition of the need for the material embodiment of information continues to operate invariably (at least for now). As a result, the need to ensure legal protection of information continues to be of fundamental significance (e.g., the use of cryptographic methods of information encryption).

It is particularly noteworthy that Dmitry N. Ushakov draws attention to the fact that the word / term *information* can only be used in the singular, that may indicate the property of its homogeneity, inseparability, and integrity<sup>8</sup>. Incidentally, the same applies to the integrity of the term *data* (in Russian and English). The information content, that is, information being an object of legal turnover, unlike things isolated by physical parameters, objects of material world, does not have spatial, habitual frameworks. At the same time, *data*, which legally explains the term *information*, is often used as a synonym.

### **Information as a result of intellectual activity**

In his study of legal relations within the framework of copyright Alexander P. Sergeev asserts that it is possible to describe information in terms of intellectual activity (Sergeev, 1994). The example is know-how<sup>9</sup>. In accordance with Article 1465 of the Civil Code of the Russian Federation, "the data of any nature (production, technical, economic, organizational and/or others) on the results of intellectual activity in the scientific and technical sphere and on the methods of professional activity is recognized as a secret of production (know-how)"; however, it must be of certain commercial value, potential or actual, which is determined by lack of such information by third parties. In view of this, it may be concluded that know-how refers to information known to a limited number of people, therefore, the legal protection of its content is important. Further, the above article provides the conditions for such protection: "...if third parties do not have free access to such information on a legal basis and the owner of such information takes reasonable measures to maintain its confidentiality, including by introducing a commercial secret regime"<sup>10</sup>. These conditions are mainly aimed at maintaining information secrecy for third parties; however, production secret is also the result of intellectual activity. In fact, a copyright holder has an exclusive right to his intellectual property, which he can dispose of at his discretion, including, to conclude an alienation deal, as well as license agreements with other civil law subjects or to use the results of intellectual activity independently. There is an opinion that "keeping the details of production for some time "in secret" is not enjoyment, since enjoyment suggests employment of useful features, in this case, information (data)" (Slesaryuk, 2022).

The patent rights also protect the content of the result of intellectual activity; the regime of restricted access to information is maintained only until application for such a

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<sup>8</sup> Ushakov's explanatory dictionary online. Available at: <https://ushakovdictionary.ru/?ysclid=ljwn1b17oi896105564>. [Accessed 12th October 2022].

<sup>9</sup> Civil Code of the Russian Federation, part 4. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/). [Accessed 12th September 2022].

<sup>10</sup> Civil Code of the Russian Federation, part 4. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/). [Accessed 12th September 2022].

patent is approved, then the content becomes publicly known and is posted on the official website of the Federal Service for Intellectual Property (Rospatent). Thus, the holder of the patent is also included to general access, therefore, in case of illegal use of the result of intellectual activity, the patent holder will have to put less effort into proving his exclusive right than the copyright holder of a trade secret, when keeping the content secret entails hiding information about the owner. The authorized entity (Rospatent) allows to publicly certify that the patent holder owns the particular result of intellectual activity.

Despite the fact that know-how and inventions, utility models and industrial designs are subject to exclusive rights, the mechanism of legal protection differs since it relies more on the protection of exclusive rights, while legal protection of a trade secret (know-how) is based on the regime of limited access to the result of intellectual activity. Thus, we can conclude that for a certain category of information, more precisely, for the result of intellectual activity, including industrial property, not only the right of access, but also exclusive rights may be established. In some cases, a person may have access to the content of a patent, but he will not have any legitimate grounds to use its content. Unlike patent law, it is believed that copyright in works of science, literature and art, including computer programs vested with the exclusive right, protects most of all the form of the result of intellectual activity. As it is enshrined in paragraph 5 of Article 1259 of the Civil Code of the Russian Federation, “methods, ideas, solutions of technical, organizational or other tasks, principles of discovery, methods of facts, programming languages, geological information about the subsoil may not be objects of copyright”<sup>11</sup>. The same principle is set out in Article 2 of the Treaty of the World Intellectual Property Organization on Performances and Phonograms of 20.12.1996<sup>12</sup>. Consequently, an improperly placed result of intellectual activity (content) on a tangible medium (form) may significantly affect such a medium, including its tradability.

In accordance with Article 1256 of the Civil Code, a prerequisite for the emergence of an exclusive right to such results of intellectual activity is their expression in an objective form. At the same time, the information (data) must also be objectified to be able to interact with it. In this connection the question arises: what is the form of the result of intellectual activity that entails the proper legal protection? Most experts are of the opinion that the form of the work is ideal non-material and intangible object. For example, it is argued that creation of the form of mental image is a cognitive process within the invisible, spiritual and moral world; “in the first moments of creative process, the author first abstractly constructs an image, and only then embodies it in material reality” (Vitko, 2019). Ekaterina A. Fleishits asserts that “the products of creativity expressed in the objective form of the author's thoughts are protected by law. These thoughts are expressed in a certain verbal form in a literary work. Copyright in a musical work protects the pattern of sounds that the author designed in his mind. Copyright in a work of fine art protects the author's thoughts and experiences expressed with the help of colors in the picture, with the help of the material of sculpture, etc.” (Fleishits, 2015:440–441). In such approach, one can trace the Platonic concept of an idea as a prototype of a thing that allows it to materialize.

As a conditional apotheosis, one should consider the concept of owning works of digital art indirectly by non-fungible tokens (NFTs), that is, when the relevant information

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<sup>11</sup> Civil Code of the Russian Federation, Part 4. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/). [Accessed 12th September 2022].

<sup>12</sup> World Intellectual Property Organization Performances and Phonograms Treaty (WPPT). Available at: <http://www.wipo.int/wipolex/ru/details.jsp?id=12743>. [Accessed 15th September 2022].

about a certain asset, unique in nature (although not necessarily exclusively virtual), is placed in the blockchain network (distributed and, as a rule, decentralized registry) including with the possibility of turnover using so-called *smart contracts*. As for the features and parameters of protecting the owner's rights in the original, its value will only increase with unauthorized use (copying, distribution), since it is accompanied with dissemination of information about the original.

### Metaphysics of information

In view of the above, it is worth noting that it is not entirely correct to designate a thought/idea as definitely something intangible. Human thoughts in terms of neurobiology are nerve impulses that move through neural networks; such a phenomenon may probably be called intangible, at least, it is very difficult to feel it with the sense organ, the skin, but we cannot assert that this phenomenon is intangible since human brain consists of matter (Deputat, Griбанov & Nekhoroshkova, 2012). The perception of information cannot be carried out without its objectification, and since there are devices (e.g., electroencephalograph) capable of reading brain activity, the information in the neural network can be considered objectively expressed. We believe that understanding the data, as well as subsequent conclusions concerning the content and form, will be useful in the future. Jurisprudence faces an acute problem in regulating information with the advent of publicly available technologies capable of reading and recognizing nerve impulses so the process of objectifying meaning will be significantly reduced. For example, in 2021, Neuralink Corporation successfully implanted a chip into the monkey's brain, which reads brain activity and allows the *power of thought* to control a computer game<sup>13</sup>. Early in 2022 it announced clinical trials on humans as part of the above-mentioned project<sup>14</sup>.

As a result, a thought/idea may be represented in two elements: neural (physico-chemical and biological) activity, which embodies the material aspect, and semantic (essential-meaningful), the *ideal* component, which the above authors wrote about. Truly intangible is meaning; it is the essence and content of the information itself. It should be emphasized that objectification of non-material meaning may have several levels of expression. However, we allow that there is an intermediate component in the inseparable link of “information – material carrier”. Hans-Georg Gadamer laid foundation of modern philosophical hermeneutics, engaged in text interpretation, reconstruction, and construction of meaning. Prior, Frederic Paulhan, who introduced the distinction between the meaning of a word (as part of a text) and its sense, argued that the latter is determined by the context. Lev S. Vygotsky introduced the concept of *subtext* coined by Konstantin S. Stanislavski, who understood *subtext* as a generator of sense in the theater and/or as an indication of the motive of the act. According to Vygotsky, it is from the *subtext* (not from the *context*), that sense is derived (Vygotsky, 1982).

As an illustration, we will trace the literary work's path from its idea to objectification in the form of a text on paper. The essential content initially arises in the form of a thought/idea in a completely physical (material) brain. Then the thought acquires a verbal

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<sup>13</sup> Elon Musk's Neuralink Allows Monkey to Play Video Games with its Mind [Electronic resource]. Available at: <https://finance.yahoo.com/news/elon-musks-neuralink-chip-allows-233055862.html>. [Accessed 15th October 2022].

<sup>14</sup> Musk's Brain Chip Company is Looking for a Human trial leader. Forbes. Available at: <https://www.forbes.ru/tekhnologii/453133-sozdausaa-cip-dla-mozga-kompania-maski-nacala-poiski-rukovoditela-ispytanij-na-ludah>. [Accessed 15th October 2022].

expression. The text of literary work consists of words, and words consist of letters, that is, signs to which certain sound (phonetic) and pictorial designations (mediations) are assigned in spite that they are different in each language. Thus, words can be expressed both orally and in writing, but in any case, they are a certain ordered set of sound or written symbols.

And when it comes to the norms of law, the concept of *formalization* of relations is applied; the term stems from *form*, which is associated with appropriate objectified signs and symbols whose significance was indicated by researchers of the Enlightenment era<sup>15</sup>. Visible signs and symbols are important for legal protection of property rights and objects, e.g., border markers of land boundaries and trademarks.

### **The sign and symbolic level of information and the meaning (significance) of the sequence**

To begin with, it is essential to address the science whose object of study is information – to computer science. It defines the code as an algorithm for matching each specific message with a strictly defined combination of characters (symbols, signs, or signals); code is also a separate combination of such symbols (signs) – a word<sup>16</sup>. There are several generally accepted standards for encoding text in binary code, e.g., the ASCII table has become the international standard for personal computers. In accordance with it, the capital letter “A” from the Russian alphabet in the binary system looks like 11000000, and the lowercase “a” looks like 11100000<sup>17</sup>.

Beside the mentioned *first signal system*, according to the construction of the “second signal system” formulated by Ivan P. Pavlov, a word (as a signal, an abstract system of sounds) in the framework of written and oral speech, as well as manifestations of abstract logical thinking, sets up “effective forms of information exchange between people when conditional signals of an individual acquire certain values and significance accepted by the group” (Pavlov, 1951). For perception and subsequent interpretation of information, it is necessary to consider the meaning of symbols and their sequences including when analyzing the form and content of work as a result of intellectual activity. For perception of corresponding symbols, a physical data carrier or a text editor / program is needed to display the letters on paper. It should be noted that symbols themselves have their own boundaries, and when they form words, collocations and phrases, they form such boundaries. This level of objectification, existing at the junction of the intangible and physical components, is notable for the fact that such symbols, although they have their own *contours*, may be placed on any matter (carriers), including electronic and digital, and that is why they may be called *quasi-material*, but not material in full. L. Thorne McCarty emphasizes: “the reification of relationships accords with common linguistic practice, which means that it has become part of legal practice as well (McCarty, 1989).

Johann Gottlieb Fichte, who put forward the idea of protecting the form of the work, distinguished two elements: “Körperliche – physical, to which he referred paper, and Geistiges – ideal, which in turn he divided into Materielle – matter (the content of the book and the idea presented in it) and Form, in which connection, phrases and words thoughts and ideas are presented” (Fichte, 1793). Josef Kohler also drew attention to “the language in which the work is written, and the sequence in dividing the form into internal and

<sup>15</sup> Du Cange et al. *Glossarium ad scriptores mediae et infimae latinitatis*. 1733. V. III. Art. ‘Investitura’. Col. 1520

<sup>16</sup> <https://dic.academic.ru/dic.nsf/ruwiki/110856>

<sup>17</sup> ASCII table. Available at: <http://school497.ru/download/u/02/les10/les.html#n>



external" (Kohler, 1880). V.S. Vitko argues that "the law understands something different by the objective form of a work: it means any external expression of the ideas, thoughts, images of the author in a concrete form accessible to perception by human feelings: orally, in writing, as a drawing, etc. Eduard P. Gavrilov identifies "theme, storyline, idea and morality as the content of the work, and language, character traits, artistic images and sequence of the event narrative refers to the form, which he interprets as a way of expression and existence of content". In this connection, he subsequently comes to the conclusion that "the elements of the content of work are not protected by copyright unless they are used in the form of the work, which indicates the inseparable connection of form and content" (Gavrilov, 2010). Although it may be argued that the features of characters, artistic images and the sequence of the event narrative, which are pointed out by Gavrilov, do not relate to the characters and their sequence.

In such a result of intellectual activity as an image, there is also an objectification of the content into symbols. If we analyze a digital photograph, we may argue that the content of the image is represented in the form of color symbols (pixels) arranged relatively to each other in two-dimensional space in contrast to a text, where the symbols (usually letters) are arranged linearly. Colored elements of the same category, e.g., spectral yellow (with a wavelength of electromagnetic radiation from 550 to 590 nm), may form a circle. With a high probability, most people will have an association with the sun in the sky: a person "thinks out" the meaning based on previously acquired knowledge and what he has already seen, experienced and remembers (in his subjective interpretation). Artistic images, character traits and events also relate more to what and how a person perceives based on his experience and previous emotions. But at the same time, they are all reflected by means of symbols (letters) that are composed into words and phrases. The images that arise in the subject are the entity *clothed* in a symbolic form, which, in turn, also has a form – a material carrier.

However, it should be borne in mind that such an entity can be realized or perceived by a person in different ways depending on numerous components, primarily related to the person perceiving this information. Here it would be appropriate to recall the well-known example used by Avram Noam Chomsky in the book *Syntactic Structures*, which, in fact, led to the emergence of cognitive science (*colorless green ideas sleep furiously*) to demonstrate the non-equivalence of the concepts of *grammatical correctness* and *meaningfulness* (Chomsky, 1957).

But still, the sequence of characters/signs is of fundamental importance. For example, using only three characters о, к, т, you can make six possible combinations in Russian; three of them will be recognized as familiar: *кот*, *кто* and *ток*. The meanings of these words are not identical, which means that the semantic component also differs. We believe that a certain interconnected symbol character sequence as an integrity that has essential content for a person is supported by legal protection. However, it should be noted that not every character/symbol sequence will be subject to legal protection, since the result of intellectual activity must demonstrate a creative component invented by the author.

Gabriel F. Shershenevich distinguishes two possible ways of violating the author's rights to his work: "a) any repetition, for monetary gain, of a work of art in its entirety, without the formal consent of the person who has the exclusive right to it, is called counterfeiting or illegal copying... , b) repetition of separate parts from someone else's work of art in one's own work is called plagiarism or illegal borrowing... It would be plagiarism to select a group, figure, head, landscape and/or sea views from someone else's painting and place it in your painting with the same pattern and lighting" (Shershenevich, 1907).

Actual doctrinal interpretation of the text is as follows: “a semantically and logically interconnected (through various lexical, grammatical, logical and other connections) sequence of symbols, fixed (objectified) on a material medium (including in a virtual form, indirectly on a material medium) and expressing human thought (statement, informative message) or representing a set of lexical constructions, as well as a sequence of characters in any programming language, symbol language or markup language (computer program text), which can be read and understood by a person” (Ponkin & Redkina, 2019).

One of the tools for searching borrowings in the text are anti-plagiarism systems (as software/application with elements of artificial intelligence and machine learning). The mechanism/algorithm that checks the originality of the text first of all identifies the borrowed parts which the software believes to be such. At the same time, such software often uses hashing and shingle algorithms: splitting the text into separate small parts (shingles) consisting of a certain number of characters, then the hash is calculated for each shingle, which includes the content of the corresponding part of the text. Hashing is necessary because it allows to convert any amount of information into a unique set of characters relevant only to this array of incoming information. Thus, the software compares hashes from the text being checked and texts contained in open sources on the global Internet, as well as in its own plagiarism databases; the more similar, the lower the percentage of originality is. In other words, we can assert that hashing is a process in which information is written in characters other than the original ones.

Note that to identify violation of the author's rights to the work, a simple coincidence of the sequence is not enough, since “a legitimate borrowing is subject to indication of the author whose work is used and the source itself. In case of free use, other conditions are required: when quoting its volume should be justified by the purpose of such an action” (Rozhkova, 2021). Thus, the form of the work, which is protected by copyright, is a symbolic level of expression of the content of information. Copyright protects a certain sequence of symbols that reflects (mediates) the result of intellectual activity.

The sequence has already been fixed in the legislation, as in an audiovisual work, which in paragraph 1 of Article 1263 of the Civil Code is defined as “a work consisting of a fixed series of interconnected images (with or without the sound) designed for visual and auditory (in the case of sound) perception with the aid of appropriate technical devices”<sup>18</sup>. Such sequence heavily contributes, as it allows to individualize the result of intellectual activity and to distinguish it from another one. As a result of intellectual activity, a sculptural work also contains a set of certain conventional symbols that are formed at the molecular level as signs representing a certain part of the substance that preserves its physical and chemical properties; they are related to each other and exist in this case in three-dimensional space.

### **Interrelation and influence of legal regimes of different levels of information objectification**

Article 5 of the Federal Law on Information divides information by the criterion of accessibility into public available and limited access<sup>19</sup>. This classification allows to allocate

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<sup>18</sup> Civil Code of the Russian Federation, Part 4. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/) [Accessed 12th September 2022].

<sup>19</sup> Federal Law No. 149-FZ of 27.07.2006 On Information, Information Technologies and Information Protection. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_61798/](https://www.consultant.ru/document/cons_doc_LAW_61798/) [Accessed 12th September 2022].

the right to access information, or rather to its content, because the moment of access is accompanied by the disclosure of its content; also, the grounds that legitimately allow access to information are established. By legislatively establishing a restricted access regime, state and commercial secrets, personal data including medical are protected.

In fact, there are expert opinions that the results of intellectual activity and means of individualization are completely intangible by nature; it is evidenced by the provisions of Article 129 of the Civil Code, which states that “all objects can be alienated or transferred, with the exceptions being the result of intellectual activity and means of individualization”<sup>20</sup>. However, the legislator did not establish impossibility of alienation and transition from one subject to another for information that was considered an object of law under Article 128 of the Civil Code for a certain period of time, and then was excluded. As noted above, the Federal Law on Information discloses the concepts of *access to information* and its *provision* through the term *transfer*, which indicates the possibility of such actions with information, in contrast to non-negotiable results of intellectual activity, where not they themselves are transferred, but only the rights to them.

At the same time, it is doubtful that information itself, the copyright holder of which is one subject with their private (exclusive) access, may be completely transferred to another person. Since information tends to be copied and stored, including in the subject's memory, there are few guarantees that all copies are transferred to the new copyright holder and/or destroyed by the previous copyright holder. In this case, we can conclude that the legal regime of limited and free access to information is protected precisely at the first level of objectification, that is, the very meaning of information is protected. This is confirmed by the fact that the meaning of information can be conveyed by different symbols, while preserving its essential content, in relation to which only a few actions are possible: to find out this information, or to be unaware. That is why the access mode is introduced to get acquainted with the information/data and its meaning/content.

Full handover of rights to such information is certainly possible. It turns out that only transfer of rights to information is possible, and not the object of the right itself. Then, even if the former copyright holder uses the information, the rights to which have been transferred to another person, he acts illegally. At the same time, the non-transferability of the results of intellectual activity and means of individualization do not imply that the licensor or the holder of the exclusive right is not obliged to transfer the result of intellectual activity or means of individualization or at least its copy to the licensee or the acquirer of exclusive rights. Without access to such an object of right, it is impossible to fully exercise rights to it. For example, if a person acquires the right to use a work of art under a license agreement (method of familiarization, reading), then the fact that the licensor does not provide a copy of the work prevents the licensee from exercising the rights to this result of intellectual activity. The same occurs with the rights to access information; without information itself it is impossible to access it. Therefore, in any case, when concluding transactions with respect to such objects of right, another element is necessary, i.e., transfer of a material carrier containing information or its variety, in other words, the result of intellectual activity and a means of individualization.

In view of the foregoing, agreements concerning the results of intellectual activity and means of individualization are consensual. Using this analogy, we can conclude that all agreements that formalize relations between subjects on transfer, use, and storage of

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<sup>20</sup> Civil Code of the Russian Federation, Part 1. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/) [Accessed 12th September 2022].

information are consensual, that is, it is believed that the right passes at the moment of reaching an agreement on all essential conditions, which is symbolized by signing the agreement by authorized representatives of the parties.

Some experts argue that the statement *Copyright protects the form, patent protects the content* is not true and refer to the example of industrial design, where patent law protects the appearance of the product (Rozhkova, 2021). In this regard, design is protected, which belongs to the second level of objectification of information and which, in accordance with the norms of law, may also be protected by copyright; the legislator provides a choice. This is confirmed by the Resolution of the Plenum of the Supreme Court of the Russian Federation No. 10 of 23.04.2019 On Application of Part Four of the Civil Code of the Russian Federation which reads as follows: “If, simultaneously with violation of the exclusive right to use an industrial design, the exclusive right to use a work is violated (Article 1270 of the Civil Code), both the copyright holder and the patent holder have the right to protect it in the manner specified for protection of the relevant rights”<sup>21</sup>. Despite the fact that copyright protection of the result of intellectual activity arises from the moment of its creation, the formalized process of establishing one's exclusive right by registering it with a specialized body allows to reliably and publicly certify that a particular person has the right to a certain result of intellectual activity. Such public placement in the unified national Register allows for a fast, systematic and consolidated search for patents. For the exclusive right to a trademark to arise, its registration is also necessary, but at the same time the image of the trademark is an object of copyright that does not require mandatory registration.

Despite the fact that different legal regimes are aimed at legal regulation of different levels of objectification of information, content and form are always related. Returning to the fact that copyright protects the form of a work, it is worth paying attention to the fact that in practice there are cases when there are also certain rights to the content of the result of intellectual activity, which is the object of copyright.

In recent years, the number of legal disputes concerning media personalities, where photographers and photo agencies act as plaintiffs, has increased due to posting by media personalities of their images on their social networks. Many of their pages are subject to monetization, which means that the photos are used for commercial purposes. As a result, the plaintiffs make financial claims since they have lost profit from images posted by media personalities. For example, in July 2021 Integral Images Inc. initiated a lawsuit in the District Court of the Central District of California to recover 150,000 dollars from Dua Lipa, a singer from the United Kingdom<sup>22</sup>. Basically, such litigation usually ends in amicable agreement by the parties involved in the case, while photographic elements are subject to removal from social media pages<sup>23</sup>. In this case, the photograph is a form in relation to what is depicted on it; in this example, a person is its content.

The legislation of the Russian Federation enshrines Article 152.2 of the Civil Code, whose provisions establish legal protection for the image of a person while the image means

<sup>21</sup> Resolution of the Plenum of the Supreme Court of the Russian Federation No. 10 of 23.04.2019 On Application of Part Four of the Civil Code of the Russian Federation. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_323470/](https://www.consultant.ru/document/cons_doc_LAW_323470/) [Accessed 12th September 2022].

<sup>22</sup> Integral Images, Inc. v. Dua Lipa. US District Court for the Central District of California. Available at: <https://dockets.justia.com/docket/california/caedce/2:2021cv05470/825154>. [Accessed 12th September 2022].

<sup>23</sup> Yashina, V. Smile, you are being photographed: Who owns the copyright on the photo of the stars. Electronic resource. Pravo.ru. 2022. Available at: [https://pravo.ru/story/239035/?utm\\_source=ip\\_club%2C+vkontakte&utm\\_term=ip%2Bclub&utm\\_campaign=IP\\_CLUB](https://pravo.ru/story/239035/?utm_source=ip_club%2C+vkontakte&utm_term=ip%2Bclub&utm_campaign=IP_CLUB). [Accessed 17th April 2022].

not only photos, but also video recordings, as well as other images and works of art<sup>24</sup>. In accordance with this legal norm, the use and publication of such result of intellectual activity is possible only with the consent of this person. However, there are a number of exceptions when such consent is not required. Firstly, a person who received a reward for posing does not have the right to make demands on the author, since he acted within the framework of a service agreement, which means that he has already given his consent to use the image. Secondly, if the shooting location was publicly available, public event or access to such a place was allowed for an unlimited number of people. Thirdly, the use of the image without the person's consent is possible in the state, public or other common interests. Thus, in the absence of the above conditions, the person recorded in the image may affect the right of the author to dispose and use his result of intellectual activity. Thus, in the absence of the above conditions, the person recorded in the image may challenge the right of the author to dispose and use the result of intellectual activity.

Another example of the content impact on the form is recognition of a material carrier as counterfeit and its withdrawal from circulation due to the illegal use of the results of intellectual activity or the means of individualization expressed in it. Only a court may recognize a material carrier as counterfeit (either *duplicate goods* or *imitating goods*). However, these types of counterfeits should also include cases when the result of intellectual activity finds another material embodiment for the purpose of selling the material carrier itself; in this way, it serves to attract attention, using the achievements of the copyright holder or another person lawfully using such a result of intellectual activity in advertising and their business reputation.

As an example of the position of the Intellectual Property Court, we can cite the case No. A79-12943/2018 establishing the following: in 2018 an individual entrepreneur sold a set of toys created on images of the characters of Three Cats animated series; Network of Television Stations, JSC, being the copyright holder of exclusive rights, filed a claim for compensation for violation of the rights to five images of characters. Nevertheless, such a claim was only partially satisfied, since the plaintiff did not prove that the characters are independent result of intellectual activity; therefore, there is only one fact of violation of exclusive rights, i.e., to an animated film. So, the applicant had to file claims to compensation for copyright infringement on drawings, works of fine art, five characters, in which case the claim could have been satisfied in full<sup>25</sup>.

To identify the counterfeit products, copyright holders often use the method of test purchasing. Each method of using the result of intellectual activity or means of individualization is recognized as a separate violation of the exclusive right of the copyright holder, in accordance with paragraph 56 of the above-mentioned Resolution on Application of Part Four of the Civil Code<sup>26</sup>, however, if such methods are aimed at obtaining a single economic result, then this will be recognized as one fact of violation. To prevent the misuse of the result of intellectual activity or means of individualization, other persons may also

<sup>24</sup> Civil Code of the Russian Federation, Part 1. Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_64629/](https://www.consultant.ru/document/cons_doc_LAW_64629/). [Accessed 12th September 2022].

<sup>25</sup> Resolution of the Intellectual Property Court of the Russian Federation No. C01-1598/2019 of 28.02.2020 on case No. A79-12943/2018. Available at: <https://online3.consultant.ru/cgi/online.cgi?req=doc&ts=xTaV45TQnGwV1vkm&cacheid=12069E3B71CE7B7D1254E6D6F6FA94BA&mode=splus&rnd=MYi36A&base=SIP&n=59048#0VcV45TcJi9TZqfv3>. [Accessed 12th September 2022].

<sup>26</sup> Plenum of the Supreme Court of the Russian Federation dated 23.04.2019 No. 10 "On the application of Part Four of the Civil Code of the Russian Federation". Available at: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_323470/](https://www.consultant.ru/document/cons_doc_LAW_323470/). [Accessed 12th September 2022].

be involved. Thus, the copyright holder of the exclusive rights to *Angry Birds*, a legal entity – Rovio Entertainment Corporation – accused *Wildberries* trading platform (marketplace) operator, where counterfeit goods were placed, with violation of the applicant's rights, requested to remove the possibility of buying and selling such goods and claimed appropriate compensation<sup>27</sup>.

## Conclusion

In view of the foregoing, we proceed from the fact that information (as data to a certain extent relevant to a person/society) is a multifaceted phenomenon, and its definition as multifaceted phenomenon includes, among other things, the features and properties of information, the purpose of its creation, use, storage, transfer, destruction and dissemination, the form of embodiment, the content's essence and so forth. The complexity of interpreting information within the framework of its subjective perception by a person depends not only on the literal content, but also on the context and the so-called *subtext*. The definition of *information* will depend on the scope of application, on the purpose of disclosure of this multifaceted phenomenon, as well as on the need to highlight certain aspects. Law as a mechanism for legal regulation seeks to regulate such a complex phenomenon. As a result of the research and legal regimes' analysis of information, as well as its nature, it was found that any information is subject to perception and subsequent interpretation indirectly through human senses (including the neural system) or appropriate special device, and, as a rule, with a material carrier; there are several levels of information objectification – intangible /ideal, sign and symbolic and material; the form and content of information are interrelated, the right holder to the content may restrict the rights of the form owner, in this respect we have compared the legal regimes of information with the levels of its objectification in order to systematize the legal regulation in the information sphere.

We believe that this classification can also be used to program a genetic algorithm (as a variant of a heuristic algorithm) for searching and interpreting information in the framework of describing principles of functioning and regulating the use of artificial intelligence.

Thus, there are three levels in the process of objectifying the information content:

1 intangible (ideal) – reflects the essence, core and original content of information (in the form of ideas/thoughts), while legal regulation is mainly based on the regime of limited or free access,

2 sign and symbolic (quasi-material) – characterized by a certain sequence and interrelation of elements as an integrity that possesses essential content for a person and is protected as a result of intellectual activity,

3 material (physical) – as a rule, these are things (object of turnover) being a subject to *jus in re* norms to legal protection.

We suppose this version of the classification can also be used to program a genetic algorithm (as a variant of a heuristic algorithm) to search for information and interpret it within the framework of describing the principles of functioning and, in general, regulating the use of artificial intelligence (AI).

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<sup>27</sup> Ptichki podalis' po yagody. Kommersant. Available at: <https://www.kommersant.ru/doc/4791245>. (Accessed: 15.11.2022).

As for trends and forecasts of the information circulation, first of all, it should be mentioned that digital *traces* in information and communication environment are already turning into the most sought-after and expensive commodity. Also, information in all its manifestations is an integral part of virtual universes and meta-universes.

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