

ТЕОРЕТИЧНІ ПРОБЛЕМИ ПРАВОВИЗНАВСТВА

Orlov Yuri –
Doctor of Law, Senior
Research Fellow National
Academy of Internal Affairs;
Dzhuzha Alexander –
Doctor of Law, Professor
National Academy of Internal
Affairs;
Orlova Elena –
master student Paris 1
Pantheon-Sorbonne University

SYNERGETICS AND COGNITION OF LEGAL PHENOMENA

The possibility of application of the synergetic method to the cognition of legal phenomena has been investigated; promising directions for scientific research have been identified.

Keywords: synergetics; synergistic method; knowledge of legal phenomena.

Досліджено можливість застосування синергетичного методу до пізнання правових явищ. Визначено перспективні напрями наукових розробок у зазначеній сфері.

Ключові слова: синергетика; синергетичний метод; пізнання правових явищ.

Исследована возможность применения синергетического метода к познанию правовых явлений. Определены перспективные направления научных разработок в указанной сфере.

Ключевые слова: синергетика; синергетический метод; познание правовых явлений.

Synergetics is one of the most advanced and productive methods used in modern science. The term «synergetics» (from Greek «synergetikos» meaning «to act in coordination») was suggested by German scientist Herman Haken who implied by that a scientific method which allows to explain the mechanism of spontaneous appearance of structures in a complex system as a result of interaction between its elements.

Synergetics investigates the relationships between the elements of a structure (subsystems) which appear in open systems (physical and chemical, biological, social, psychological, or technical) due to intensive exchange of matter and energy with the environment in non-equilibrium conditions. In such systems concerted behaviour of subsystems is observed; as a result, the degree of order in such systems increases, that is, entropy decreases. This process has an objective nature and is referred to by the term «self-organization». The theoretical basis of synergetics is composed by non-equilibrium thermodynamics, the theory of stochastic processes, and the theory of nonlinear fluctuations and waves.

The essential difference between synergetics and the other traditional methods of scientific cognition is that the former studies complex systems with the emphasis not on the investigation of the components (elements) of these systems (which is the core of the classical scientific analysis) but on the character of intrasystem relationships between these elements. Such an approach gives unusual results; and the main of them, obviously, is the discovery of the universal laws which are inherent in all system formations regardless of the level of complexity of their elements: physical, chemical, biological, ecological, psychological, social or technical ones. Such universality, such isomorphism of the synergetic laws opens the possibility of gradually forming the language of interdisciplinary scientific level which would lead to better understanding between representatives of natural and humanitarian sciences: a physicist and a sociologist, a technician and a lawyer.

It should be noted that the possibility of explaining social (including legal) phenomena from the «natural science» positions of synergetics is revolutionary from the methodological point of view, and that is why it attracts the researchers and promises unobvious and progressive scientific results.

The authors share these optimistic expectations on the whole, but have to mention that the laws of synergetics as philosophical laws describe the most general properties of system dynamics. Thus, there are no ready «recipes» which would allow applying them directly in one or another area of knowledge. This same statement holds true for legal science. The application of synergetics to cognition of legal phenomena must be preceded by the creative comprehension of its concepts, categories and methods, their proper interpretation, and adaptation for description of legal phenomena.

It should be noted that in Ukraine and other countries of the former Soviet Union, the attempts of direct application of the synergetic approach to the study of legal phenomena are not numerous. Those scientific works which have been published are devoted, mainly, to problem formulation [3; 4; 9].

Obviously, application of the synergetic method in legal science should be preceded by the research aimed at determining the possible domain of such application. In other words, it has to be ascertained: which legal phenomena can be studied with the use of the laws of synergetics on condition that scientific correctness is maintained which is necessary for obtaining objective results.

To answer this question, let us state that only systems can be the object of study for synergetics, that is, those sets of elements which have internal (intrasystem) relationships. It is known that all legal phenomena can be presented as the elements of an integrated system which is called the legal system. By this term one denotes the whole set of interdependent legal facilities (phenomena), which have regulatory-organizing and stabilizing influence on social relations and conduct of people [6, p. 158]. A specific legal system is an essential attribute of a particular country. Nowadays it is possible to define about two hundred national legal systems which are at the different levels (stages) of their development.

In order for synergetic laws to work in a system, the system should be complicated enough. Obviously, the phenomenon of self-organization (formation of structures) can be observed only in those systems where the number of elements is high enough (otherwise there would be nothing to take part in the processes of structuring at «macro level»). Moreover, the investigated system must have

sufficient complication exactly at the level (in the «phase»¹) of legal phenomena. That is to say, the elements of the system which take part in formation of structures must be legal phenomena and be described in legal terms.

It is known that the elements of the legal system are: positive law, law-making, legal relations, justice, legal regulation, legal institutions, legal awareness etc. Each of these elements is a legal phenomenon and, at the same time, is a complex system itself. However, it should be taken into account that the exhaustive list of the legal system elements is not compiled by legal science, since there are no clear criteria for attributing one or another social phenomenon to it.

In our opinion, the study of the legal system from the positions of synergetics will allow not only to determine regularities of its self-organization but also, and most importantly, to understand the essence of its elements as results and causes of its development.

The laws of synergetics work only in open systems which interact with the environment. The legal system is produced by society and is developing given the necessity of regulating certain social relations by legal norms. Thus, society constitutes the environment for the legal system. In other words, the legal system is an element, a subsystem of a more global formation – the social system. Permanent processes of energy and information exchange take place between society and the legal system. Information about public needs, speaking the language of synergetics, serves as exactly that very «pumping» which leads to the formation of structures in the legal system (legal norms, legal institutions, legal relations and other ones). In its turn, the legal system actively influences the state of society, changing its energetic characteristics and stimulating

¹ In systems theory by the term «phase» one denotes the level of organization of a system which includes the elements with identical degree of determination of their motion [8, p. 30]. For example, in a biological organism it is possible to define the followings phases: atoms, macromolecules, organoids, cells, organs, organism as a whole. In the legal system there are numerous spheres (subsystems) inside which phases (levels) can be defined. For example, for the sphere of legal institutions the phases are: individual, legal entity, local self-government body, state body, state as a whole etc. For the system of legislation the phases are: branch of law, subbranch of law, legal institution, legal substitution, legal norm etc.

(or hindering) its motion to the attractor which is characterized by minimum potential energy.

The social system also contains other subsystems such as economic, political, ideological, and other ones which have close relationships with the legal system and influence it considerably. Thus, in order to detect and study synergetic regularities in the legal system, a researcher has to examine it in relation to the other subsystems of society.

It should be noted that such a complex approach to the study of legal phenomena is almost never used today. According to K. V. Shundikov, «so far we do not know much about the real interconnection between legal and non-legal phenomena in the complex modern system of public life. Most researchers, while theoretically agreeing about the close interconnection between law and economy, politics, morality, avoid special research of these problems in their works. Moreover, the idea of necessity to fight for the «purity of subject» prevails among jurists which in practice results in ignoring all those issues that are beyond the scope of legal problematics.

If the process of legal regulation was comparable to some laboratory process which flows in specified and permanently sustained conditions with any changes being insignificantly small so that they can be ignored, we could have agreed with the above point of view. However, in reality, just the opposite happens: it is an example of a non-stationary open process whose development and the outcomes of development are significantly affected by an «external factor». Without the analysis of this factor, jurists' notion of their subject of cognition would be very vague, and would impoverish and simplify the real picture substantially» [9, p. 150–151].

Introduction of the complex interdisciplinary approach to the study of legal phenomena would enable the future development of methods for modelling social consequences of enactment of certain pieces of legislation. It would allow us to depart from the current practice of law-making which consists in improving gradually the enacted pieces of legislation by means of carrying out a «social experiment» through trial and error.

Synergetic laws in action can be observed solely in dynamic (moving, changeable) systems. Here motion should to be understood

in philosophical sense – as development of a system, which from the positions of synergetics is viewed as a sequence of processes of structuring (ordering) and destructuring (chaotication). It should be noted that development of the system can take place not only in time but also in space (in the form of spatial distribution, or expansion).

It is known that the legal system and its elements are permanently developing. Directions and intensity of their development are determined by the number of factors, but the main of them is the need for ordering (structuring) social relations. Obviously, development of legal systems in different countries does not happen in the same way.

It is clear that the processes of self-organization do not take place in static motionless systems. Therefore, one should not expect to get any significant scientific results from the attempts of studying from the positions of synergetics, for example, the system of legislation considered outside the historical process of its forming, or separately (isolated from the systems of legislation of other countries).

However, in our opinion, studying the regularities of development of the system of legislation and its elements might be quite promising, as well as application of the laws of synergetics in comparative jurisprudence. What also appears interesting is the application of the synergetic method for studying the dynamics of development and transformation of legal systems of different states, discovering the mechanisms of formation of legal families and their mutual influence, with the purpose of identifying global trends in development of legal phenomena.

Thus, it can be concluded that there exists a theoretical possibility of studying legal phenomena from the positions of synergetics, since they are characterized by systemness, complexity, openness and dynamics.

It should be added that studying legal systems and legal phenomena in general from the positions of synergetics is not only possible but also necessary for the future development of legal science.

Let us consider possible directions for studying legal phenomena. For this purpose, let us analyse separate elements of the legal system.

In positive law the operation of synergetic laws, in our opinion, can be observed in relation to all of its forms (sources). What is critical

to the effectiveness of the scientific research is the right choice of the aspect of research for every particular source of law.

Thus, the research of normative legal acts and normative agreements should be conducted in relation to the particular type of social relations which are regulated by them. Moreover, such research should be done either in retrospect (motion in time), or over the range of the systems of legislation (motion in space), or both in temporal and spatial aspects at the same time. The purpose of the research can be, for example, revelation of regularities in the processes of globalization in law: expansion of the paradigm of human rights observance in all systems of legislation, convergence of the mechanisms of law-making and legal regulation towards each other in Romano-Germanic and Anglo-Saxon law families, the ways of transformation of Islamic law in the direction of the European legal tradition, etc.

The study of judicial precedents appears to be promising, since the processes of social self-organization are directly reflected in them. A court judgement in a particular court case, being an act of law-making, is at the same time a process of organization of certain social relations. Here the judge's choice of a court judgement from a set of possible ones could be considered as a bifurcation point (the point at which the system chooses its further way of development), while factual circumstances influencing the judge's choice – as fluctuations (stochastic processes). Thus, the system of legal norms which is formed on the basis of court precedents proves to be the direct result of self-organization processes in society.

Legal customs are the result of social self-organization processes; they develop in a «natural way» as a form of expression of public opinion about specific behavioural acts. It should be noted that the mechanism of public opinion formation is relatively well studied from the positions of synergetics (see, for example, [2]). That is why, in our opinion, application of synergetic approaches to the study of the genesis of law is reasonable to be started with examining the mechanisms of formation of legal customs and moral norms as the sources of law.

Studying the law-making process also seems interesting. In democratic society, legislation is enacted by a representative authority (parliament) based on discussion in specialized committees

(commissions) and debates at a plenary session. The content of the bill is constantly changing as a result of opposing ideas and attempts of the different political parties to convince each other of their correctness with respect to every piece of legislation. One of the ideas gradually starts to prevail and becomes that same parameter of order which afterwards leads the subsequent process of law-making. It generates corollary conclusions that become the actual content of the future law. The same regularities (in the form of discussions of specialists) can be observed during the process of preparation of subordinate legislation.

The laws of synergetics can also be observed in the process of revision of active legislation, when it is adjusted for changing public needs by adopting various amendments. In this case the content of the piece of legislation is transformed towards the state of maximal accordance with existing social needs, that is, speaking the language of synergetics, towards the attractor state. A particular feature of this process is that it is carried out in a step by step mode (discretely). By contrast, the process of social needs formation can be considered as taking place continuously. Therefore, there is always a «gap» between social relations requiring legal regulation and respective pieces of legislation; this «gap» determines the lag between law and social realities which grows with time, generating chaotic phenomena and unsteady (bifurcation) states in society. This «gap» is the main reason for law-making as a social relations regulation activity.

The lag between legal norms and social needs becomes the reason for the display of elements of self-organization in the field of law enforcement. When executive authorities enforce legal norms that do not meet current social needs or dominant public moods, it generates social discontent which can take the form of social unrest.

The peculiarities of legal norms enforcement (causative interpretation of law, legal characterization of specific actions, imposing relatively defined and alternative sanctions etc) often allow officials to act in a sense «at their own discretion» based on specific circumstances. It gives a law necessary flexibility and applicability to any life situation. The discretion of the official who enforces the law is that very sphere where possibilities for socio-legal self-organization are fully exploited. In a democratic society the law enforcement authority

discretion should promote harmonization of law and justice, and convergence of legal and moral norms towards each other.

At the same time, excessive discretion of the law enforcement authority can lead to abuse of power. Moreover, substantial limitation of such discretion is necessary for realization of some legal institutions. For example, effective human rights protection is impossible without normative minimization of the law enforcement officials' discretion.

Concerning the possibility of studying legal relations from the positions of synergetics, it should be noted that such study is inseparable from the study of self-organization processes in the field of social relations, because legal relations are nothing but social relations regulated by law. It is through legal relations that the legal system is most closely linked to the other elements of the social system (economic, political system and the other ones). The development of democracy, the separation of public life from the state, and the development of market relations testify to intensification of self-organization processes in society, and are today its most important forms. Therefore, the value of the synergetic method for the study of legal phenomena increases in present circumstances.

Social relations, being the elements of society as a system, are permanently developing and forming structures. These structures are formed to a certain extent erratically and do not always stimulate the move of society towards the attractor state. Their ordering takes place through deliberate human actions and since long ago is performed in the form of law. However, not every legal ordering (also see above) facilitates social progress.

For many centuries a legislator tries to bring a «parameter of order» into the social system, but this parameter is brought from outside in the form of an «own will» and is based either on the ambitions of the rulers or on ideological dogmas. Such an approach does not satisfy the basic principles of synergetics and can generally be considered as authoritarian, based on acknowledgement of the decisive role of the individual's will in social development. As H. Haken points out, «the processes controlled outside are often exactly the reason which brings into chaos a self-organizing system» [7, p. 62].

The prominent scientific achievement of the German scientist is that he showed that the parameter of order always arises inside the

system. This assertion is of a fundamental nature, and with respect to the socio-legal phenomena it implies that stimulation of self-organization processes in society is perhaps the only right way of organizing public life. The strategy of manipulating social processes which does not account for the laws of social self-organization appears to be inefficient. Synergetics proves that it is wrong to view society as an object under absolute state control, the development of which is determined solely by subjective governmental decisions. The most far-sighted approach to governing society should be based on revelation and stimulation of the processes of social self-organization taking into account their objective nature.

Basing himself on H. Haken's research, Y. Vetyutnev makes one prominent, in our view, practical recommendation of a methodological nature claiming that «there is the only possible way to get a result, and it is the following: to study social relations, to find the «parameter of order», and to give it a legal form» [4, p. 66].

At the same time, we cannot agree with the statement of the Russian researcher saying that law hinders self-organization of social relations because it actively influences them. In our opinion, law does not impede the processes of social self-organization; it only sets «limits» for these processes and represents those «limiting conditions» which should be satisfied by the processes of social structuring. Absence of such «limiting conditions» leads to formation of social relations not regulated by law which are often accompanied by violation of social justice, breach of moral norms, destroying established traditions and other negative consequences. As an example, one can recall the recent story of formation of market economies in the post-soviet states. In the absence of proper legal regulation, the establishment of the new social relations was accompanied by the processes of uncontrolled appropriation of public property, tax evasion, widespread corruption, sharp increase in the number of the cases of criminal extortion, raider attacks etc.

The ways to form the «limiting conditions» by means of legal facilities are the following: establishment of social values and legal regulation of social processes (the regulatory function of law), and pushing out those social relations which are dangerous to society (the protective function of law).

The system of legal institutions of society (judicial authorities, law-enforcement authorities, human rights organizations etc) seems to be relatively static and thus not very suitable research area from the positions of synergetics. However, even here it is possible to detect the processes of self-organization. These processes flow differently in government and non-government legal institutions.

The legal status of government institutions (judicial authorities, public prosecutor's office, police etc) is determined by the corresponding normative documents, and thus it usually remains unchanged through time. However, «if the jurisdiction of a newly created government agency is not clearly defined then the laws of self-organization start working» [4, p. 68]. The actual status of the agency and each of its officers is then being formed as a result of a range of factors which require separate study. In practice this process goes towards greater discretion and narrower responsibility of the government agency, and consequently, social efficiency of the agency is reduced².

There are phenomena of the other kind on record when expansion of the actual scope of discretion exercised by a government agency was happening in violation of the active legal norms. There are many examples when, in the course of «self-organization of the state authorities» (which happens primarily in the form of a struggle for power), government agencies that had been established for performing certain relatively «narrow» functions were gradually taking over new and new powers up to the seizure of supreme power.

Millennia of state-building experience and aspirations for social stability have led to formulation of the fundamental legal principle: for government institutions only that is allowed which is directly stated in the law. This is equivalent to the prohibition of any unauthorized change of their legal status. From the point of view of synergetics, it means that government agencies in legal sense are static (motionless) systems.

At the same time, it should be noted that the composition and structure of the system of government legal institutions, in the

² In H. Haken's opinion, «vitality» of public institutions (unlike economic enterprises) does not depend on profit earning, which might well be the reason for bureaucratic phenomena [7, p. 218].

historical dimension, are always in a dynamic state and are determined by changing public needs. When new public needs unregulated by law arise, this leads not only to the development of new legal norms but also, if necessary, to the establishment of new legal institutions which perform law-making or law-enforcement functions, and are authorised for this accordingly. Thus, the permanent processes of transformation of the system of legal institutions are determined by the processes of social relations self-organization.

Concerning non-government legal institutions (the bar, notary offices etc), their composition, structure and particular characteristics of their activity are also determined by changing public needs. However, these institutions, being the components of civil society and defending its interests, operate under another principle: everything not directly prohibited by the law is allowed. Thus, they have much more degrees of freedom than government agencies. Accordingly, the processes of self-organization which take place in the course of functioning of these institutions are more pronounced and diverse. The specified processes are progressive and thus require special in-depth research.

The processes of self-organization in the field of legal awareness appear to the author to be the most evident and «tangible», as they become apparent as soon as the functions of legal awareness are being fulfilled. Legal norms are obeyed or employed through perception and comprehension of legal phenomena by an individual (ascertaining the events, actions, states etc), evaluation of specific circumstances as legally meaningful (legal characterization), and regulation of own or the other one's behaviour through the system of motives, values and legal attitudes. Obviously, these processes are nothing but an indication of self-organization.

The processes of individual and public legal awareness formation take place in close interconnection, as different sides of the same process. It could be argued that individual legal awareness determines in a sense public legal awareness³. However, the converse is also true. Social human nature, the fear of loneliness usually compels people to concur with the majority opinion, in particular,

³ Here we mean common legal awareness such as popular opinions, emotion and attitudes of people with respect to the law.

with public legal awareness which is based on the dominant legal ideology in society at present.

The changes in public legal awareness occur according to the laws of synergetics which require separate detailed analysis. It could be briefly noted that the change of every individual position in public legal awareness (which eventually and inevitably influences individual legal awareness) occurs in two stages.

At the first stage, because of certain social factors (economic downturn, impossibility to exercise declared rights or achieve group interests, strengthening authoritarian rule, terrorist attacks etc) people lose trust in the rule of law or in the active legal norms. From the positions of synergetics, this process should be treated as destructuring of the system of public legal awareness in regard of a certain position (for example, as to the existing taxation system) followed by its destabilization. As a result, the system moves to an unstable equilibrium state. It is well known that a minor fluctuation is enough for transition of an unstable system to a new state. The actions of even a small group of people interested in changing legal norms and proposing new approaches to solving the urgent social problem (representatives of political parties, public organizations, academic lawyers, members of the parliament, dissidents etc) can become such a fluctuation.

At the second stage, the newly announced approaches start to fulfil the role of the parameter of order, overcoming people's minds. This process has an avalanche-like nature. Thus, new structuring of public consciousness with regard to the problem takes place. The system comes to the state of equilibrium again: new public opinion with regard to the specific legal problem is formed.

The consequences of such processes might be the following: either introduction of corresponding changes to the laws (through transformation of public opinion into political will), or persistent increase of social tension if prevailing law remains such which does not satisfy public legal awareness. In the latter case, the social system has positive feed-back which makes it unstable.

Concerning legal science as a component of legal ideology, the laws of synergetics can be observed in its development too. These laws are universal and applicable to development of any scientific knowledge, and were first described by T. Kun in 1962 (see [5]). Later

H. Haken gave them a synergetic interpretation [7, p. 269–280]. The principal statement is the one saying that a new scientific idea which unites earlier separate facts is nothing but the parameter of order. This parameter of order is able to «subdue» the other elements of the system, that is, to channel the research of other scientists into the new scientific direction, to carry it out in the spirit of the new idea. Owing to the works of these scientists, the new idea spreads widely around which ensures its further existence as the parameter of order. Such a view on the development of science, including legal science, allows us to determine the value of a specific scientific idea: the more followers it has, the more valuable it appears to science.

A particular quality of science is that it not only develops according to the laws of synergetics but also can apply them to studying its own subject. Therefore, it seems appropriate to raise the issue of the most promising directions for application of the synergetic method of cognition in legal science.

In our opinion, the process of applying synergetics to the study of legal phenomena will be developing in two directions. The first direction implies applying the new method of cognition in general legal sciences first (the theory of state and law, philosophy of law) with its gradual expansion into branch and special legal sciences. It can be explained by the logic of scientific research: before having understood general issues, it is impossible to comprehend specific ones. The second direction consists in the gradual promotion of the synergetic method from the cognition of social phenomena to the cognition of socio-legal ones, and ultimately to «purely» legal phenomena. Such a prediction of the use of synergetics in law is the result of extrapolation of the process of broadening its subject domain: from describing physical and chemical processes, through cognition of biological systems, to comprehension of the processes taking place in society. The legal system is engendered by the social system, and thus is a matter of a higher order. Accordingly, its behaviour is a display of more complex mechanisms of self-organization. Naturally enough, the research of legal phenomena should be based on application of the laws of synergetics in social processes.

The specified above directions for applying synergetics in legal science are already being formed. It is well known that the representatives of those sciences that mainly use dogmatic

approaches to studying law treat the synergetic method of cognition quite guardedly. This matter concerns first of all the theories of branch substantive and procedural law (constitutional, civil, administrative, and criminal law). At the same time, scientific works in the theory of state and law in which researchers attempt to comprehend and apply synergetics as a new method of legal science are appearing today [4]. Moreover, certain attempts have been made to apply synergetics in «socio-legal» sciences: criminology, the sociology of law, state management theory [5].

Applying the achievements of synergetics in legal science would allow to study legal phenomena from a non-traditional standpoint, namely as complex systems, stability of which depends on the degree of their accordance with public needs, while development occurs according to certain laws which can be used for solving forecasting and optimization problems.

REFERENCES

1. Венгеров А. Б. Синергетика, юридическая наука, право / А. Б. Венгеров // Советское государство и право. – 1986. – № 10. – С. 36–45.
2. Ветютнев Ю. Ю. Синергетика в праве / Ю. Ю. Ветютнев // Государство и право. – 2002. – № 4. – С. 64–69.
3. Шундилов К. В. Синергетический подход в правовой науке: проблемы адаптации / К. В. Шундилов // Правоведение. – 2008. – № 1. – С. 145–156.
4. Теория государства и права : [курс лекций] / под ред. Н. И. Матузова, А. В. Малько. – М. : Юрист, 1997. – 672 с.
5. Noelle-Neumann E. Die Schweigespirale / E. Noelle-Neumann. – Munchen : R. Piper & Co, 1980.
6. Хакен Г. Тайны природы. Синергетика: учение о взаимодействии / Г. Хакен ; [пер. с нем.]. – М. – Ижевск : Ин-т компьютер. исслед., 2003. – 320 с.
7. Кун Т. Структура научных революций / Т. Кун ; сост. В. Ю. Кузнецов ; [пер. с англ.]. – М. : ООО «Изд-во АСТ», 2003. – 605 с.
8. Демидов А. И. О методологической ситуации в правоведении / А. М. Демидов // Правоведение. – 2001. – № 4. – С. 14–22.

9. Кононов А. А. Синергетическая концепция системы права / А. А. Кононов // Синергетика и право: материалы теорет. семинара юрид. ф-та СПбИВЭСЭП / науч. ред. И. Л. Честнов. – 2001. – Вып. 5. – С. 4–11.

10. Сорокин В. В. Феномен самоорганизации правовой системы / В. В. Сорокин // Современное право. – 2005. – № 7. – С. 45–51.

11. Бачинин В. А. Синергетическая методология и социология права / В. А. Бачинин // Методология гуманитарного знания в перспективе XXI века. К 80-летию проф. М. С. Кагана: материалы Международ. науч. конф. (Санкт-Петербург, 18 мая 2001 г.). – СПб., 2001. – Вып. 12. – С. 18.

12. Нижник Н. Синергетичні основи оптимізації державного управління / Н. Нижник, А. Черленяк, В. Олуйко // Вісник державної служби України. – 2003. – № 4. – С. 62–70.

13. Симашенков П. Д. Перспективы реализации синергетических идей в криминологии / П. Д. Симашенков // Правовая политика и правовая жизнь. – 2005. – № 4.