

Cybernetic Epistemology as a New Methodological Paradigm of Comparative Legal Researches

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Abstract

Objectives: This article analyses some ways of using comparative legal research tools according to the latest methodological achievements of cybernetic epistemology. This kind of research is a complex Gnoseo logical process and its success depends on measuring of equipment using modern cognition approaches. **Methods/Statistical analysis:** Favorable results are possible if the researcher has a high level of general theoretical training, knows general methodological principles and is able to use new approaches and methodologies of cognition and estimation. These paradigms enable the creation of a specific complex system picture of researched political and legal phenomena. **Findings:** Today, complexity theory, or cybernetic epistemology, unites ever more the quantity of existing sciences, moving towards the new development known as "the sixth technological mode". Its short formula is Nano-, Bio-, Info- and Cogno- (NBIC) technology convergence. The prime movers of cybernetic epistemology (complexity theory) named it figuratively «mind ecology», «ecology of ideas» or «deep ecology». The subjects of research of this theory are complex systems. They are known to have such attributes as synergism (holism), autopoiesis and recursivity. In general terms, a modern complex social system (civilization itself) may be transformed into new Humanistic Socio-Economic Formation (HSEF). With no alternative it would be organic integration of technologies of Kondratiev's sixth mode (production forces), Galbraith's third motive of human activity (labour relations) and democracy (of efficiency by Pareto), based on meritocracy (superstructure). Consequently, cybernetic epistemology uses all known scientific cognition approaches and becomes even more productive when used in comparative legal researches. **Application/Improvements:** The article insists that the use of the general methodological principles of complexity theory and K. Gödel's incompleteness theory allow fruitful theoretical and practical results to be obtained when events such as the genesis, evolution and modern stage of the development of constitutionalism, different actual problems of law and state, complex social systems and perspectives of the globalizing world order are researched.

Keywords: Cybernetic Epistemology, Comparative Legal Research, Complexity Theory, Complex Social System, Humanistic Socio-Economic Formation

1. Introduction

The existing paradigm of legal researches definitely requires global revision. There is a critical need to generally rethink the methodological basis and old-fashioned approaches of legal researches of the main problems of legal science. It is necessary to comprehensively investigate suggested methodological alternatives, which could enrich the intellectual horizon and methodological arsenal of scientists and specialists in the sphere of law and state. This is customary in those areas of legal science

where legal logic is built into social, political, cultural and civilization contexts. We talk not only about improving existing and used methodologies, but also about attracting and including in the topical area of legal science the achievements of methodologies that are approved in other sciences. Most of them are traditionally underestimated (or simply ignored) by professional jurists, which is why they are now in the possession of other sciences such as philosophy, politology, psychology, sociology, culturology, history, economy etc. Nowadays the importance, value and necessity of comparative legal researches

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arise constantly. R. David in his time emphasized the fruitfulness and significance of comparative legal science for studying the history and philosophical insight of law¹. This approach is especially useful in researching the genesis, evolution and modern stage of the development of constitutionalism, when scientists focused on the cultural and historical aspect. It enables law to be looked at as a phenomenon (aspect, context) of culture. At the same time, the cultural and historical approach itself sometimes becomes a necessary part of legal (foremost comparative) research methodology². According to many scientific works, implementation of a comparative legal approach has become an essential part of researching the current status of state and law thanks to the significant influence of globalization. Sympathizers consider the latter as a finished (or finishing) process, which would end with the formation of a world state and law. Opposes suppose this process has no end in the near= future³. It should also be emphasized that social sciences and, *inter alia*, the science of state and law are now exposed to ever more active penetration of approaches of global evolutionism, which is considered one of the main attractors in the process of accumulating scientific knowledge. The sympathizers look at it as some kind of conceptual core of scientific world view that synthesizes knowledge in relevant areas of scientific research⁴. Finally, it should be mentioned that general methodological principles of cybernetic epistemology (complexity theory), incompleteness theory, and approaches to and methods of synergetics and other sciences penetrate insistently into humanitarian sciences. This process is undoubtedly appropriate⁵.

Today we have to acknowledge that the Russian name for science, «теория сложности», and its English

analogy complexity theory (or cybernetic epistemology) now unite an ever larger quantity of existing sciences, which move to new turn of development named the sixth technological mode⁶. The first theory about complexity theory, which determines the whole article and should be explained to readers, lies in the following fact. Modern civilization reaches such a development level when it has inescapably to go from single-discipline sciences aimed at conquering nature to understanding the environment and the fact that nature essentially cannot be conquered by a scrupulous particle named a human. This developed world view inevitably leads to the combination of terminology, methodology and the subject of single-discipline sciences into one undivided fundamental science – complexity theory. Following the prime movers⁷, this theory may be figuratively named “mind ecology”, “ecology of ideas”⁸ or “deep ecology”⁹.

As an integrative science of the future, complexity theory swallows all the achievements of the previous epochs, which have an allowable explanatory force and passed many scientific verifications (inductive confirmations) and falsifications (attempts to discover irreconcilable differences) that are briefly stated in incompleteness theorems. The quintessence is that the methodological part of cybernetic epistemology goes beyond artificial limitations assumed willingly by classical science. Cybernetic epistemology is a humanitarian and natural science of

⁶ In The sixth technological mode is characterized by Nano-, Bio-, Info- and Cogno- (NBIC) technology convergence. The «Nano» component is now considered a characteristic of future deep human conceptualization of molecular and, possibly, wave nature of not only a microworld, but a whole material. The «Bio» component supposes qualitative scientific discovery in the researching of the life phenomenon as an integral complex system. The «Info» component characterizes a transit from sending signals in binary code to absolutely new ways of information exchange that are hardly imagined even in futuristic forecasts of production forces development.

⁷ In Several modern outstanding scientists and their apprentices around the world have made and continue making contributions to the creation and development of complexity theory. They are: Fritjof Capra (the University of California, Berkeley), Илью Пригожина Ilya Prigogine (Université Libre de Bruxelles), Humberto Maturana (Universidad de Chile), Francisco Varela (École Polytechnique), Lynn Margulis (the University of Massachusetts Amherst), Benoît Mandelbrot (Yale University), Stuart Kauffman (the Santa Fe Institute) et al.

⁸ In Batson G. Steps towards ecology of the brain. Selected works about theory of evolution and epistemology. Clarke, Irwin and Company Limited: Toronto, 1979

⁹ F. Capra. Life's cobweb. A new approach to the understanding of the life systems. ID Gelios: Moscow, Sofia, 2003.

¹ David R., Jauffret-Spinosi C. Les Grands systèmes de droit contemporains. 11 edition. Norma: Moscow, 2002.

² Muromcev G.I. Culturological aspect of comparative legal research. Materials of Russian conference named by professor Zhidkov. RUDN: Moscow, 2013.

³ This problem is discussed in annually edited materials of International Likhachev's scientific readings on the topic «A Dialog of Cultures in the Context of Globalization». Likov A. The world state as a future of the international community. Moscow, 2013

⁴ Attractor is a stable equilibrium of a complex evolutionary system. Knyazeva E.N., Kurdumov S.P. The baiss of the synergy. Spbgup: Spb, 2002.

⁵ Tolstyakov R.R., Zlobina N.V., Quality Increase of Viral Video Management on the Basis of Synergetic Approach, Indian Journal of Science and Technology, 2015 Dec, 8(10), Doi no: 10.17485/ijst/2015/v8is(10)/84873. Date accessed: 01/05/2016.

the sixth technological mode (according to). Its aim is to consolidate three types of modern world view: non-living sciences (mathematics, physics, chemistry etc.), living sciences and socio-economic sciences.

Complex systems are known to be the subject of research of cybernetic epistemology (complexity theory). A simple system is an integral set of separate elements combined in a whole that eventually enables reception of new synergetic features. A complex system is the only one that has, simultaneously, such attributes as synergism (holism), autopoiesis and recursivity.

Synergetics is a school of thought that researches connections between structure elements (subsystems) formed in open systems thanks to intensive material, data and energy change in an environment of non-equilibrium conditions. In such a system one can observe coordinated behaviour of subsystems, which results in an increased level of the system's order, i.e. lowered entropy¹⁰. Synergism characterizes system attributes that are not just a mechanistic sum of attributes which elements of this system have. Every system differs from a breaking set of elements because it has attributes of its own structure elements and the additional attributes of an integral system.

Autopoiesis is a term used in modern scientific literature to characterize the objective process of abiogenesis and the development of complex systems in a period of time that is infinite in comparison to a human's lifetime. The nearest conversational analogy to the process of autopoiesis is an expression of its own accord. Were both awarded the Nobel Prize for including the term autopoiesis into scientific instrumentarium?

Recursivity describes the process of retrying cycles when previous results are used at every next stage as a new function argument.

A complex social system is the only one that has three complex system attributes and is based on four axioms that explain world order. The first is the non-living world obeying rules of entropy increase. The second is a cell that lowers entropy. The third is blind evolution, which created biological diversity on the Earth. The fourth and last is the evolution of consciousness allowed to open up the fourth information space.

Epistemology is the science of epistemes. It represents the whole space of knowledge, the way to hold the order

being, the network of relations between words and things hidden from direct observation, which plays the role of the basis for building perception, practice and knowledge codes and producing ideas and conceptions¹¹ that are peculiar to one or another epoch. Philosophy of science sometimes uses the present-day interpretation of this term as a synonym for paradigm. The combination of cybernetics and epistemology methodological tools provides scientists with a completely new way to research phenomena of the environment.

Metrics (of humanitarian categories) is an epistemological term that means a rule or a formula for defining the «disparity measure» between two notions of researched phenomena space measured in comparable and equitable sizes. In it, distance in humanitarian researches can be ranged not only by parsecs, metres, angstroms etc. The most important for metrics of humanitarian categories is any acceptable comparison of peculiarities of the whole category or a component of their pattern within the chosen metric system. An example of «metric distance» between different creatures may be its ability or inability to hybridize.

Topology (of humanitarian categories) is an epistemological term for studying the attributes of systems and phenomena that do not change their essential qualities in the case of deformation passed without «ripping» and «glueing» of deformation objects. Classical topology is a special mathematical area researching the phenomenon of persistence in the broadest strokes. In humanitarian sciences topology is important for understanding the permanency of essential qualities of different homeomorphous theoretical models whose pattern components stay unchanged in the case of deformation.

Formulated differently, in complex social systems topology must hold changes of production forces, labour relations and superstructure at first, and then record their condition when it is possible to talk of much deformed but still existing old socio-economic formation, e.g., capitalistic, without ripping and glueing. At the point of space under study, when the system of production forces, labour relations and superstructure is being ripped under the influence of immanent deforming of development factors, the researcher of topological attributes of market relations must state the appearance of a qualitatively new type of socio-economic formation.

¹⁰ Entropy is an order function. The greater the disorder, the higher the entropy and vice versa, the greater the order the lower the entropy. The great encyclopedic dictionary. Soviet encyclopedia, Moscow.

¹¹ Modern eastern philosophy, Fuko M. Things and words. Archeology of the human science. Moscow, 1977. Popper K. Assumptions and refutations: the growth of the scientific knowledge. ID AST: Moscow, 2004

The pattern¹² of system organization is the most accurate and shortest insight into the quintessence of a thing, a process or a phenomenon that has comparable metric and topological attributes. This is the nature of any notion, not just a dream of scientists. The pattern could be defined most completely as a set of internal thinking processes that determine the essential qualities of environmental phenomena, appear in the work of subconsciousness and consciousness, and enable the provision of transformation of territory into a map or environmental phenomenon into an image inside a human's mind.

According to complexity theory, system functioning is a practical and concrete activity aimed at adequate or inadequate use of it by subjects of an acceptable theoretical model (structure) of a system in real-life conditions (in the broadest sense) and permanent reproduction of a pattern of system organization. Herein, a dissipative structure (or complex system) in special conditions receives, analyses and collects information while absorbing energy from the environment and gets rid of its own waste. At this time the structure may be in the process of breaking or making a quantum jump towards the preservation or complication of its theoretical model (structure) on a higher equilibrium level. This refers to a bifurcation point – a critical threshold of life stability of a complex dissipative system which achieves boundary parameters of a theoretical model allows ability to a particular pattern of organization. Further it may be destroyed or break through to one of several order conditions, i.e., new acceptable materialization of the current pattern of organization.

In general terms, a modern complex social system (civilization itself) may be transformed into new Humanistic Socio-Economic Formation (HSEF). With no alternative it would be organic integration of technologies of Kondratiev's sixth mode (production forces), Galbraith's third motive of human activity¹³ (labour relations) and democracy (of efficiency by Pareto), based on meritocracy (superstructure). Classical methodology was

¹² This term is widely used in disciplines and technologies of English-speaking countries. In informatics it means an equivalent optimal method for solving common designing tasks and, *inter alia*, computer programs. Psychologists use it to describe stereotypical behavioural reactions. In changes it is used to mark some indicative sectors on price diagrams. The pattern is also used in music and several other areas of human activity.

¹³ J. K. Galbraith invented a classification of motives for human activity. The first is a physical assault. The second is economical duress. The third is solidarism. The fourth is creative devotion.

developed in the framework of cybernetic epistemology thanks to theorem for which he was nominated for the Nobel Prize in 2014. This theorem is enunciated quite clearly. There are no isolated systems. Each separate particle is instantaneously constrained by other ones. The instantaneous constraint means interaction with light speed; it is possibly maintained in resonant mode. All components of a super system, even divided by infinitely long distances, function as one undivided organism. This fundamental theorem is proved and accepted despite its contradiction with the special theory of relativity. It is significant that nowadays scientists around the world find more and more empirical confirmations of its verity.

The subject of research of complexity theory is complex systems. Complex social systems are narrower clusters of systems, which certainly includes individuals as bearers of individual and collective consciousness.

Large systems or systems with many components should not be defined as complex systems. The latter are not just a large set of pieces or parts despite the opinion of the majority of scientists who use the fashionable term complex system. Complexity does not mean quantitative diversity of system elements; it is the qualitative autopoietic and recursive behaviour of a complex system.

In this context a scientific problem of transition of complexity attributes in hierarchy from «actor» to «class» is very interesting. For example, a living cell is a typical complex system that has all three attributes. A human as an integral system of many cells and has the attributes of synergism and recursivity. However, he does not have the attribute of autopoiesis. A cell can divide endlessly and from this point of view it is immortal. A multicellular human has lost such a skill and represents a complicated and well-organized but relatively simple system that cannot develop autopoietically. Human society takes on all the attributes of a complex system again because it is able to save reproductively its own attributes for longer than the lifetime of an individual. That is to say, a cell and a society have complexity while an individual does not.

Consequently, cybernetic epistemology uses all known scientific cognition approaches. Yet taking into account the factor of the fundamental uncertainty of the future rang up an addition to classical approaches. It is called the method of multiple comparisons and means that research results are built according to classical approaches into a dynamic recursive sequence and the statics of «photography» transform into sequenced pictures.

Karl Popper wrote while speaking about basic postulates of cybernetic epistemology and critically analyzed Hume's ideas (more accurately, his inductive method of cognition process): We can then say that, like other habits, *our habit of believing in laws is the product of frequent repetition* – of the repeated observation that things of a certain kind are constantly conjoined with things of another kind. Hereafter he concretized his thought. If we obtain our knowledge by repetition and induction, and therefore by a logically invalid and rationally unjustifiable procedure, so that all apparent knowledge is merely a kind of belief – belief based on habit. While criticizing an inductive method, hypertrophied by scientists, K. Popper emphasized: scientific theories were not the digest of observations, but they were inventions – conjectures boldly put forward for trial, to be eliminated if they clashed with observations¹⁴.

Another famous scientist, Gregory Bateson, pointed out: Science sometimes improves hypotheses and sometimes disproves them. But proof would be another matter and perhaps never occurs except in the realms of totally abstract tautology. We can sometimes say that if such and such abstract suppositions or postulates are given, then such and such must follow absolutely. But the truth about what can be perceived or arrived at by induction from perception is something else again. As a true scientist, at first he doubts the possibility of finding the truth inductively. Then he shows a spectacular example of complete nonsense to create some supposition or theoretical model based on statistics or, if wider, past experience, i.e., by an inductive approach. Using a simple and evident illustration draws the only one possible conclusion. Unfortunately (or perhaps fortunately), it is so that the next fact is never available. All you have is the hope of simplicity, and the next fact may always drive you to the next level of complexity.¹⁵ In doing so, he called for denial of the wholesale hypertrophy of induction in isolation from deduction (or scientific brightening) and suggested observing the development of complex systems as autopoietic and recursive processes instead of their mechanistic research with linear and even non-linear extrapolation and diverse simplistic «razors».

¹⁴ Popper K.R. Conjectures and Refutations. The Growth of Scientific Knowledge. Basic Books: New York, London, 1963.

¹⁵ Bateson G. Mind and Nature. A Necessary Unity. Clarke, Irwin and Company Limited: Toronto and Vancouver, 1979.

2. Conclusion

Formulated differently, complexity theory is aimed at bringing together the problem of accuracy and measuring peculiar to natural sciences and non-living sciences and the explanatory problem of verity, which is a basis for the humanitarian sciences cognition process. The great Albert Einstein claimed reasonably that one can decide theoretical problems at the level of functioning processes only at a higher level of scientific generalization in the format of a theoretical model of a system, which would be the result of movement from concreteness to abstractness, while he comes to the highest view of reality to environmental phenomena¹⁶. The task of a complexity theory thesaurus is not to deny using terms but to give them scientific compatibility and comparability in metric meaning and form precision in topological meaning.

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