

The Genesis and Base Concepts of Competentology

Raven John, Aleksandr A. Korostelev, Oleg N. Yarygin, Rafis H. Mukhutdinov, Andino Maseleno

Abstract: This article presents the basic prerequisites for the development of a new discipline, which the authors called "competenceology". Due to the fact that now a phenomenon of competence is studied mainly within the so called «competence approach in education» (competence based education) and human resource management (HR), an unjustified reduction and distortion of the terminology and the understanding of the subject of research has appeared. The authors propose to consider competence as a phenomenon inherent not only to an individual, but also to an organization and society as a whole. This point of view is based on the historical analysis of scientific disciplines, investigating human activity. Considerable attention is devoted to the reconstruction of the "correct names" of the phenomena under consideration, that is, the terminology base of competence logy. As the main sources of competence logy the authors consider the praxeology (L.Mieses, T.Katorbinsky), the institutional theory of economic behavior (T.Veblen), materialistic philosophy and axiology (E.Fromm), modern psychology (J.Raven, M.Holodnaya), and also System Analysis and Sociocybernetics, based on the System Dynamics. The results of the authors's own research, which are partly presented in this article, allow to make an assumption about the effectivity of the approach under consideration in solving of the problems of the "incompetent society".

Index Terms: competence, activity, competenceology, remit, praxeology / praxiology, "instinct of workmanship", incompetent society, modeling, system dynamics, sociocybernetics, Homo Competentius

I. INTRODUCTION

The current state of the area of pedagogical science which is denoted as a "competence based education" raises concern and even alarm. Despite a rather long period of research and the grate quantity of publications and theses this area of research has insufficient terminological base. Practically all the theses begin with a study of the history of the origin of the basic terms from antiquity to the present day and finish by a conditional agreement about terms that gave the name to the approach itself, that is, about the term "competence"

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and "remit" (this word is translated in Russian as 'kompetentsiya' which means 'the area of activity or responsibility', but not the 'ability' and not the 'competence'). It would seem that it is obvious that the name "competence-based education" comes from the word "competence". However, in the Russian bureaucratic language of functionaries from education there is no this concept. In state educational standards for the designation of abilities and their components, the word 'kompetentsiya' (paronym of "competence") is used.

This word which sounding likely to English word "competence" was included in Russian by hasty translation of the famous book *Aspects of the Theory of Syntax* by N. Chomsky, and was dutifully picked up by most researchers in pedagogical science including numerous teachers-philologists which are called to the protection of the Russian language. We have to state victory (we hope that it is temporary) of a bureaucratic style over the Russian language (so called 'Cancelyarit' or gobbledegook) in such a painful point of our society as the education. It is worth noting that the same unsightly picture has developed in European pedagogy as evidenced by numerous publications, in particular the work of Wim Westera with the biblically catastrophic title "Competence in Education: mixing languages" (Competencies in Education: a confusion of tongues) [1]. But even Confucius in the book "Lun yu" (in English *The Analects of Confucius*) has warned: "If names are not right then speech does not accord with things; if speech is not in accord with things, then affairs cannot be successful;...." (Book XIII,3)[2, p.297].

Indeed, the "competence-based education" now "cannot be successful", because the underlying concept's "names are not right". Ancient wisdom is a serious warning not only to officials from education, but to the whole society.

Discussing the name of "competence" as an object of research, one have to remember a brief conclusion about the need of the correct name of the "thing" in question which was made by A.F. Losev in his "Philosophy of

Name" [3]: 'To know the name of a thing is to be able to move closer to it or move away from it. To know a name means to be able to use a thing in one sense or another. To know the name of a thing is to be able to communicate and bring others into contact with the thing. For the name is the thing itself in the aspect of its



intelligibility for others, in the aspect of its sociability with all the rest' (our emphasis).

However, a productive terminological analysis-synthesis must be aimed to justifying and clarifying of the definitions in question. Otherwise, the discussion go out from discourse. The discussion is replaced by references to authorities, to the most widely spread interpretations, to normative documents without attempting to understand the genesis of the concept. The only consolation can be the fact that "competence-based education" is only a small area (but in terms of pathogenicity it is comparable with the "influenza virus") that comes into contact with such a powerful phenomenon as "competence".

Competence as a phenomenon observed in different types of human activity, at different times, in different manifestations and in various studies was called very diverse, but always associated with purposeful human activity. Thus, competence is a social phenomenon, associated with individual qualities and socially determined values. It is possible to formulate the maximum "Public Being Defines Requirements for Competence" by analogy with K. Marx's famous conclusion ("It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness", "A Contribution to the Critique of Political Economy ", 1859).

Apparently, the first judgments about competence (which did not yet have such name) in some activity appeared even in ancient times, as the researchers of praxeology say. We will allow ourselves a link to the Wikipedia since only reference information is required here: «Praxeology (Gr. *πρᾶξις* (*praxis*) "action", *λόγος* (*logos*) "talk, speech") is the deductive study of human action, based on the notion that humans engage in purposeful behavior, as opposed to reflexive behavior like sneezing and inanimate behavior. According to its theorists, with the action axiom as the starting point, it is possible to draw conclusions about human behavior that are both objective and universal. For example, the notion that humans engage in acts of choice implies that they have preferences, and this must be true for anyone who exhibits intentional behavior. The most common use of the term is in connection with the Austrian School of economics, as established by economist Ludwig von Mises.

The popular definition of this term firstly was given by Alfred V. Espinas (1844–1922). Previously the word praxiology, with the meaning Espinas gave to it, was used by Tadeusz Kotarbiński (in 1923)»

Here are mentioned the books of Ludwig von Mises (Human Action: A Treatise of Economics, 1949) and the "Treatise on Good Work" (Traktat o dobrej robocie, 1953) by Tadeusz Kotarbinski which were the bridge for praxeology from the XIX century to the XX century.

Ludwig von Mises writes: "It is the science of every kind of human action. Choosing determines all human decisions. In making his choice man chooses not only between various material things and services. All human values are offered for option. All ends and all means, both material and ideal issues, the sublime and the base, the noble and the ignoble, are ranged in a single row and subjected to a decision which picks out one thing and sets aside another.

Nothing that men aim at or want to avoid remains outside of this arrangement into a unique scale of gradation and preference. The modern theory of value widens the scientific horizon and enlarges the field of economic studies. Out of the political economy of the classical school emerges the general theory of human action, praxeology." ("HUMAN ACTION: A Treatise on Economics" Introduction, p.3)[4]

According to T. Kotarbinsky praxeology studies all human activity. So praxeology differs from the organization of labor, which is associated primarily with production activities, and from cybernetics, studying any management processes: in nature, in the organism and in the society. The task of praxeology is "to find the general laws of all human activity and to deduce the most general rules of such activity on this basis. It is quite obvious that such laws exist and rules can be formulated." T. Kotarbinsky's book shows the need for a general knowledge of the rules of all work (i.e. activity). Thus, praxeology studies and reveals the general laws of activity in various fields, operating in different socio-historical conditions. ("Treatise on Good Work")[5].

As one can see above, praxeology is more or less oriented towards studying the general laws and properties of competent activity in various fields of human activity. [17][18] write "about how you can make any of your actions right, skillful, productive, leading to the planned result", that is, about the competent activity in their book "Pedagogical praxeology" [6]. Indeed, the authors of this book write about the social (collective) nature of competence: "A purposeful integration of the efforts of people, each of which owns a unique volume of knowledge, skills, experiences, allows to obtain an integrated professional result. For example, consulting an educational institution increases the level of corporate competence of its staff, which is not equal to the sum of the competencies of each of its employees." [6, p.53]

II. INSTINCT OF WORKMANSHIP

It is important to single out one concept introduced into scientific use by Thorstein Veblen in his sociological works, at the end of the 19th century. In his first book, *The Theory of the Leisure Class*, which was started in 1895, T. Veblen introduces the concept of "the instinct of workmanship". Here are just a few excerpts from this book, first published in Russian in 1984, to understand how this socio-anthropological concept is related to the phenomenon of competence:

"... the inclination or predisposition to effective action can be called "the instinct of workmanship".

...

Where the traditions of social life or circumstances lead to habitual comparing one person with another on the effectiveness of their actions, there in comparison with a rival, in comparison, causing envy, an instinct of workmanship is developed.

...

The instinct of workmanship is presented in all people and makes itself known even under very unfavorable conditions.

...



However, the fact that the instinct of workmanship can degenerate into meaningless under the pressure of circumstances no more denies its existence than the reality of the hen's instinct is refuted by the fact that we can force it to sit out porcelain eggs[12].

...
The hidden norm, to which we are currently appealing, is the instinct of workmanship, the more fundamental instinct, which in older times has become a precept for man, rather than an inclination to predatory rivalry "[7].

The book of T. Veblen, published in 1914, was devoted to a comprehensive analysis of the "instinct of workmanship" and its influence on human activity, so it was called "The Instinct of Workmanship". Since this work is not translated into Russian, we give for reliability the quotation in the original language:

"The instinct of workmanship brought the life of mankind from the brute to the human plane, and in all the later growth of culture it has never ceased to pervade the works of man. But the extensive complication of circumstances and the altered outlook of succeeding generations, brought on by the growth of institutions and the accumulation of knowledge, have led to an extension of its scope and of its canons and logic to activities and conjunctures that have little traceable bearing on the means of subsistence" [8,p.37].

In the concept of "the instinct of workmanship" was laid the foundation for the study of the competence emerging on its basis as a psychological phenomenon. And here we open the Preface to Russian edition of J.Raven's book "The Tragic Illusion: Educational Testing" (in Russian "Pedagogical Testing: Problems, Misconceptions, Perspectives") [9]. (The reader probably expected that we will open the book of J. Raven "Competence in modern society" [10], published by the publishing house "Kogito-Center" in 2002 or "Competence in the Learning Society" [11], published in 2001, which are devoted to a comprehensive analysis of issues of competence, but in the book we are revealing, we turn to the remarkable preface of the famous Russian psychologist, Dr. of Psychology Marina Aleksandrovna Kholodnaya.) Presenting this book to the Russian researchers, MA. Kholodnaya first of all notes the insufficiently developed conceptual apparatus of modern psychology: "It should be said that many traditional psychological concepts, unfortunately, do not fully correspond to the realities of human life. One cannot seriously believe that definitions like "Personality is a set of psychological features", "Intellect is the ability to solve tests", "creativity is the ability to generate original ideas," etc. have any relation to the psychological mechanisms of real human behavior "[10]. At the same time, in the concept "competence" M.A. Kholodnaya sees "an example of a concept that meets the requirements of an ecological approach in human psychological research." (Continuing these examples, we have to say that it is hardly possible to accept as the scientific definition the following passage of one of the respected authors of the journal 'Higher Education in Russia':

"*Kompetenciya* is the ability to apply knowledge, skills and personal qualities for successful activities in a certain field" (our italics), which is provided with a

characteristic "justified" reference to ... a normative document: "This definition is contained in the *Recommendations to the developers of the new generation of educational standards for higher education*, which are approved by the Department of State Policy and Regulatory Legislation in the field of education (01.09.2008)". Here, in all its glory, the "bureaucratic language" manifested in the education system and administrative obedience of researchers in the adoption of terminology contradicting to the meaning of the words of the modern Russian language is manifested.

But let us return to the analysis of the concept of the competence by M.A. Kholodnaya: "... competence is not reduced only to the accumulation of experience in some narrowly specialized area (otherwise, where the boundary between competence, according to J. Raven, and "professional cretinism", according to K. Marx, when man fatally and irreversibly is closed in one particular kind of activity?). Therefore, competence in the broad sense of the word (namely, about such competence Raven says) involves the overall intellectual development of man and, in particular, the formation of the basic components of the human mental experience: at the level of cognitive experience - mechanisms for effective information processing (including conceptual structures), on the level of metacognitive experience - the mechanisms of involuntary and arbitrary regulation of the work of one's own intellect, at the level of intentional experience - the mechanisms of individual selectivity in the intellectual activity which allows for man to subtly balance the features of his mind with the objective requirements of the surrounding reality" [10]. Thus, modern psychology accepts and confirms the understanding of *competence* as a "system of motivated abilities" based on cognitive, metacognitive and intentional experience.

So, the listed areas of research from political economy and sociology to anthropology and pedagogy are united by the role of education in development (or degradation, depending on the adequacy of the existing system to the tasks of society in its current state) in a single system, not only in a particular country, but also for all *human society* as a whole. [The concept *human society* proposed by Marx in the "Theses on Feuerbach" in place of "civil society".]

From the philosophy of science and the philosophy of education through the psychological and pedagogical principles of the formation of personal qualities and intellectual abilities to cognitive and practical activities in the management of society as a complex nondeterministic system (socio-cybernetics and system dynamics) based on highly competent analysis-synthesis of reality - such is the way of developing approaches to education and social management which allows to combine the components of the system approach, the activity approach, problem-oriented approach and competence approach (competence-based), whose goal is education at all levels of willingness of the researcher or the practitioner to humanist transformation of society and the world. This again puts us before the realization of the classical thought of Marx: "Philosophers explained the



world in different ways, but the thing is to change it."

To achieve such high goals, in the current conditions of transformation of the Russian system of higher education, new methods of forming and evaluating intellectual competence and other types of competence in human activity are necessary.

In this connection, we have to define methods and means not only for the formation of intellectual competence, but also for the activation and development of motivational components of activity, and for developing methods for assessing the degree of formation of integral competence[15].

The answer to this need is *competentology* based on the concept of competence as a purposeful process of implementing learning outcomes and the experience of research and practice motivated by individual and socially significant values. Such a system should include the theoretical foundations and models of both the activity and the competence approach as an educational method. The terminological base of the system and competence approach, methods of modeling educational and other complex systems, and pedagogical and psychological tools that allow to form separate components and integral competence in analytical and professional activity, and diagnostic tools for assessing the structure of competence and the degree of its formation must be a subsystems of competentology.

III. COMPETENTOLOGY

Competentology as a scientific discipline is characterized by:

- the object and subject of scientific research;
- purpose and objectives (functions, basic practical and research tasks);
- the conceptual apparatus;
- priority directions and methods of scientific research.

The object of competentology is human activity in other social conditions. The subject of competentology is the laws and conditions for achieving of competence in human activity.

The purpose of competentology is to search for purposeful methodological knowledge about general principles and methods of competent activity.

The scientific mission of competentology is the identification of general patterns of various human activities which determine its goals, meanings, values, motives.

The practical significance of competentology is that the correct definition of competence requirements in a particular field of activity allows not only to increase the efficiency of activities, but also to improve the viability of society as a whole.

A. Tasks of competentology

The main task of competence is the theoretical substantiation and development of methods of competent activity in various fields in the conditions of modern society.

First of all, on the basis of the above, we will clarify the view of "competence", preceding our own attempt to define it. In J. Raven's work "Competence in Modern Society" interpretation of competence [10] is given as a phenomenon

consisting of "a large number of components, many of which are relatively independent of each other ... some components refer to the cognitive sphere, and others to emotional ... these components can replace each other as components of effective behavior "[10]. Summarizing, J. Raven points out that competencies are "motivated abilities".

In the work "Our incompetent society" [12, 13] J. Raven clarifies the concept of competence described in previous works: " I use the word competencies to refer to emotional predispositions to engage in fairly specific, but complex, activities having cognitive, affective, and conative components in effective ways in a variety of situations. As such they involve much more than cognitive knowledge and mental or sensory-motor skills. Note that even the requisite "knowledge" is largely tacit, consisting of knowledge located in people's hearts and hands rather than their heads. Such knowledge includes emotionally-based predispositions to react to non-verbal feedback from motor and other actions and from other people's non-verbal communications. The crucial thing is that components of this feedback are sub-consciously selected and intensively engaged to produce effective action, mental or physical. "[12].

writes about incompetence as a social phenomenon in the same work: " Personal incompetence rarely arises from a lack of formal knowledge or skills but rather from a failure, usually stemming from a lack of appropriate motivation, to bring to bear such knowledge and skills as are possessed. Other, and much more common, varieties of incompetence can be viewed as failures to display *professional* competence.

People are widely deterred from appropriate professional behaviour by legal constraints, limitations in their job descriptions, peer pressure, and the institutional context in which they work. Tackling these constraints calls for levels of competence and commitment going well beyond what most people would regard as the call of duty. Yet, unless they tackle them, they cannot be said to be behaving as professionals. In reality, tackling them often calls for emergent climates of enterprise, otherwise describable as levels of collective intelligence."[12].

To formalize the concept of competence in competentology will be used a great experience of the researchers in the competence-based education and other disciplines. For example, one of the first step to the dynamic model of competence, we adopt the model of J.

Winterton et al. that was proposed in the work "Typology of Knowledge, Skills and Competencies: Clarifying the Concept and the Prototype" [14]. The authors present the scheme of the integrated model of individual learning (Fig.1), which clearly shows the difference between competence training and traditional learning, focused on the acquisition of knowledge.



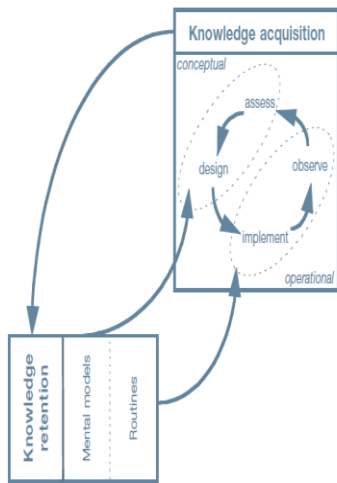


Fig. 1 Integrated model of individual learning

Such a model shows the transition from individual to organizational learning, that is, to (Conceptual) and (Operational) learning instead of cognitive and behavioral learning. Conceptual learning occurs through assessments and design, followed by the implementation and supervision of the operational learning.

The conceptual-operational learning cycle describes the process of acquiring knowledge. The model reflects not a linear cause-effect relationship, but a system-dynamic interaction between the two types of learning.

Indeed, in some cases, conceptual learning may precede operational instruction, while in others it may be contrary. The preservation of knowledge and the role of active memory are equally important, since they determine the individual and organizational results of the learning process. Active memory is understood as "active structures that affect the thinking process and the performed actions. They include what is defined as mental models in other sources [14].

Individual models of thinking act as filters in shaping our understanding of reality, they develop when conceptual learning occurs. Another aspect of active memory is the development of procedures based on operational learning. Figure 1 illustrates this learning process, emphasizing the interaction between conceptual and operational learning and demonstrating how they influence the formation of mental models and procedures on the one hand, and are exposed to their effects on the other.

The presented system-dynamic model of learning reveals the process of formation and development of competence as a dynamic object whose properties are changed by interacting with the environment, which is the remit of the learning process.

In our previous works, we presented a model for the interdependence of the components of the competence-remit-activity system, reflecting the dynamics of the formation and development of competence in some kind of activity within the framework of a given remit (Figure 2).

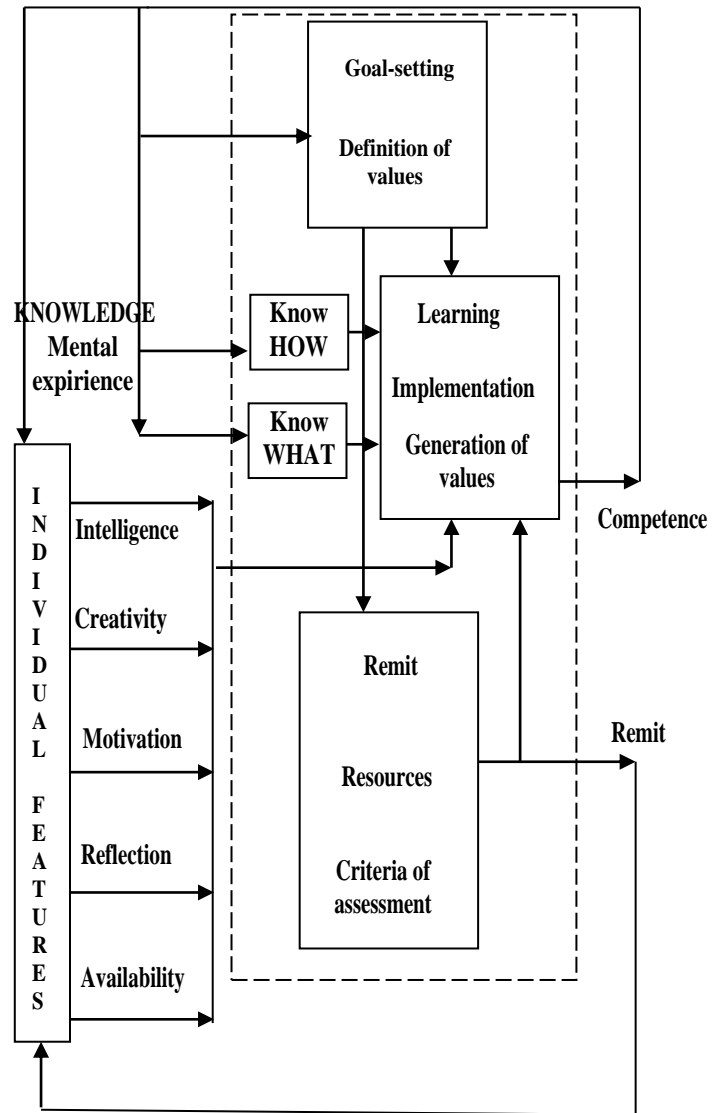


Fig. 2 - Model showing the interaction and dynamics of the components of the competence-based education.

Elements of the model that make up the individual features as a subject of activity reflect the following entities:

Mental experience: declarative and procedural knowledge, mental models, heuristics, etc.

Intelligence: the ability to solve problems, transform knowledge.

Creativity: divergent thinking, induction, intuition

Reflection: criticality, responsibility, self-analysis, self-esteem

Availability: confidence in their knowledge and abilities, readiness for overcoming difficulties.

Motivation: motivation for achievement, motivation to avoid failure.

Special mention is made about the following difference between competence and traditional knowledge-skills:



competence necessarily includes the ability and

motivation to improve in the given subject area both through the assimilation of new knowledge and methods from the outside of remit, and from the discovery of new knowledge and methods from experience that are relevant to the competence in cooperation with other competences, and after the completion of the learning process [15], [16],[17]. Competence is a process of purposeful interaction of knowledge, abilities and individual features to achieve goals within a given remit [16]. Evolution and metamorphosis of the concepts of competence in their implementation in the Russian-language discourse are discussed in detail in our works [18, 19].

Modern science cannot consider the role of the educational system in the development of society in isolation from all the diversity of socio-economic phenomena occurring in human society as in a whole system. Therefore, the actual are the models including the educational system as a subsystem of the state, as a system that forms a new generation of society, and hence the future, as a separate world, and all planets from one hand, and forming each "individual" person from other hand.

Before moving on to the main instrument for researching the competence of society as a whole, presented in the socio-cybernetic works of J. Raven and his colleagues in the RC51 Research Committee, let us consider philosophical work that clarifies the sociological foundations of competence. Here are some excerpts from the book "To have or to be?" by [20], relating to the relationship between the management of society and its competence.

"Rational power is based on *competence*: such power promotes the growth of the person who relies on it. Irrational power is based on the force and serves to exploit the one who obeys it.

...

In the most primitive societies, where the main source of livelihood is hunting or gathering, the authority is realised by a person who is universally recognized as *competent* to perform this task.

...

During the formation of hierarchically organized societies, much larger and more complex than societies where people are engaged in hunting and gathering, power based on competence gives way to power based on public status. This does not mean that the existing power is necessarily incompetent; this means that competence is not an integral part of power. Whether it is the power of a monarch whose competence is determined by features due to an accidental combination of genes, or an unscrupulous criminal who come to power through murder or treachery, or, as is often the case in modern democratic societies, the power of people owed their election to a photogenic appearance or the amount of money that they are able to invest in a pre-election company - in all these cases there can be almost no connection between competence and authority.

...

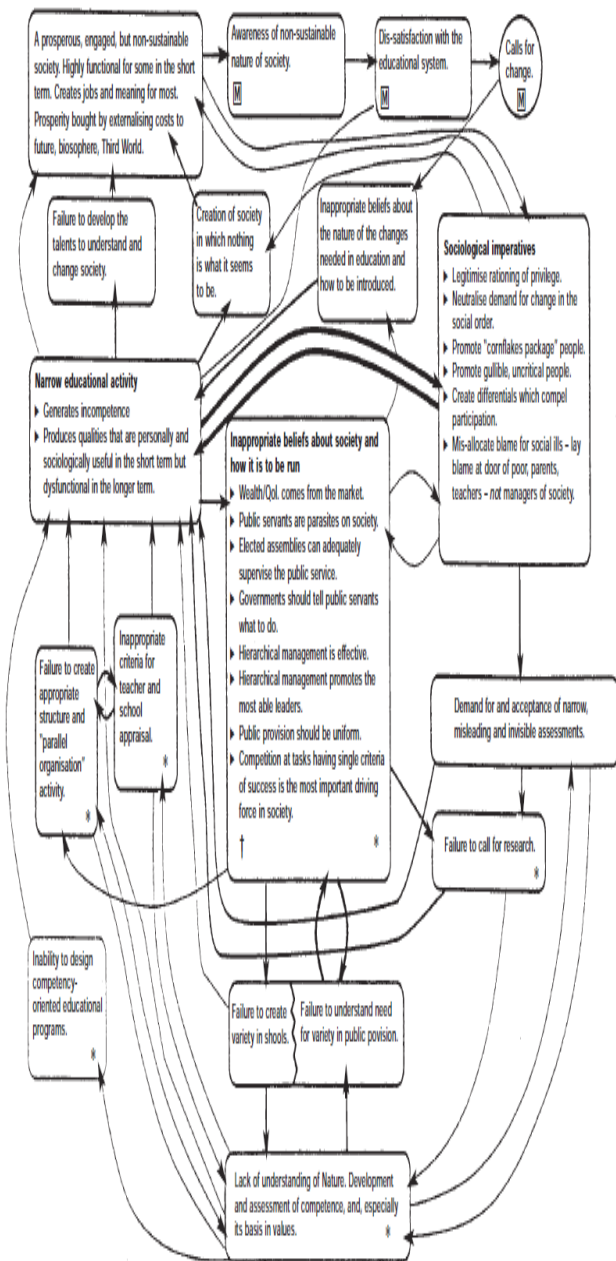
Whatever the reasons for the loss of the qualities that make up competence, in most large and hierarchically organized societies there is a process of alienation of power. The

original real or imaginary competence of the authorities is transferred to the uniform or title, which embodies it. If a person in authority wears a uniform or has a corresponding title, these external attributes of competence replace the actual competence and the qualities that determine it. A king can be a stupid, vicious, evil person, that is, highly incompetent in order to be a power; nevertheless, he has power. While he has a royal title, it is believed that he has qualities that make him competent. Even if the king is naked, everyone believes that he has luxurious clothes on him." [20]

(This is exactly equal to words by which A. Pushkin wrote about this phenomenon, describing the phenomenon of "professional idiocy" long before K. Marx in one of the early versions of the "Eugen Onegin - encyclopedia of Russian life": "He is spared from the mind by high rank").

A vivid representative of the first approach to modeling of the educational systems, which received the name of sociocybernetics, is J. Raven. Last years he has increasingly turned to ideas of sociocybernetics, which are the application of system dynamics to the study of social processes.

Following J. Forrester and S. Beer J. Raven's and his co-workers consider social systems with the help of conceptual and system-dynamic models. And research in this direction has been conducted since the last decades of the 20th century, but their relevance increases in recent years due to the fact that unfavorable forecasts of the development of society, made by system-dynamic and sociocybernetic models are being realized nowadays. In his report "Research Committee 51 on Sociocybernetics" (Scientific Committee 51 on Sociocybernetics) in 2009, J. Raven writes: " Many years ago, as a result of 40 years' research into the workings of the educational system, we found ourselves trying to map the social forces which lead to the continuous growth and elaboration of an "educational" system which, to all intents and purposes, does the opposite of what most people ... including most philosophers ... think it should be doing. The result is shown in Figure 1 "[21], [22] (in our article this is Fig. 3).



* Intervention in these cells would help change the nature of the qualities nurtured and rewarded in the system. Motives which could be harnessed to do this are marked M. †These need to be replaced by acceptance of the need to make managed economies work – to find way of giving effect to information concerning the public long-term interest, the need to explicitly create variety and information on the personal and social consequences of the options, and to find ways of holding public servants accountable for, and getting them to at in, the longterm public interest. This means systematic, broadly based, evaluation and participative democracy.

Fig.3 Conceptual model called by J.Raven “Feedback loops driving down quality of education”

J. Raven describes the conceptual model of the system dynamics of the educational system:

“ This network of mutually reinforcing forces has many components (subnetworks) which are typically overlooked. Two may be singled out for attention here:

1. A network which stems from the fact that what happens in the “educational” system is not mainly determined by the *educational* aspirations of parents, teachers, pupils, employers, ministers of education or anyone else but by the *sociological* functions which the system performs for society.

2. A network of widely held beliefs about the processes and procedures – the forms of democracy and bureaucracy – the nature of the *governance* process – the sociocybernetic system – that it is appropriate to adopt when seeking to manage public provision. (It may be useful to remind readers that *cybernetics* is the study of the guidance and control processes that regulate the behaviour of animals and machines ... and the design of better ones. It follows that *socio cybernetics* must be understood as having centrally to do with studying and mapping the invisible social forces which contribute to the reproduction and, more importantly, continuous development, production, extension, and elaboration of these autopoietic governance systems ... and the design of better ones.) [22]

Although the presented conceptual model of the interaction of social forces in the education system reflects the view of British researchers, but on closer examination largely reflects the situation in modern Russian society, especially since the reforms of the national education system are not ahead of the European system.

Two blocks of the conceptual model of J. Raven, including "competence" in the social system, are "negative": "Lack of understanding of Nature, Development and assessment of competence, and, especially it basis in values" and " Inability to design competencyoriented educational programs". Moreover, both are marked with an asterisk, meaning that " Intervention in these cells would help change the nature of the qualities nurtured and rewarded in the system. Motives which could be harnessed to do this are marked M". What are these motives? First, awareness of the instability of society, secondly, dissatisfaction with the education system, and third, the desire for change.

To understand the nature of competence, the ways of its development and assessment, it's necessary to model this phenomenon on base of the system approach (the general theory of systems, system dynamics, sociocybernetics), which will allow us to understand what competence is not only at the level of verbal description , but also at the level of the interaction of its components, that is, the understanding of competence as a dynamic system with feedbacks and, consequently, emergent properties [15].

B. Sociocybernetics and Competentology

The basis work for modern competentology is J. Raven's article "Competence, Education, Professional Development, Psychology and Sociocybernetics", which deals with issues related to the competence and professional



development of people working with human resources in

such areas as education, organizational management and public governance. The author critically considered the attempt to introduce competence as a certified technical quality of individuals. He emphasizes the need to investigate social forces that primarily control human behavior, which should be the basis of a science dedicated to understanding and predicting people's behavior [23, 24]. Putting the problem of research on the competence of society, J. Raven writes: "our technico-rational knowledge of such things as human development, the nature of competence, assessment, and management is so thin, and so heavily based on such inadequate and misleading – indeed damaging – models and procedures, that it would be a mistake to require people working in these areas to engage in "professional development" activities conceived of as involving such things as taking further courses."

Let us quote a rather lengthy quotation that expresses the essence of the sociocybernetic approach in the study of competence. "The need is for a better design for a socio-cybernetic system for the management of society. To clarify. Cybernetics is concerned with the study of guidance and control systems in animals and machines. One has to say animals, otherwise people think only of man-made systems, like missiles. But as soon as one says animals it is clear that one is concerned with understanding guidance systems which depend on multiple, non hierarchical, feedback loops. So socio-cybernetics is concerned both with understanding the social forces which control the behaviour of people in society (and regularly undermine well intentioned social action) and designing better sociocybernetic guidance systems for the management of society. Since psychology is centrally concerned with understanding the causes of human behaviour, it is clear that they should be playing a major role in developing an understanding of these processes and helping to design a better management systems for society. Turning now to the last issue mentioned when summarising the problems which need attention if we are to create an effective educational system (and it is directly related to those just mentioned), namely the need to create a ferment of innovation, experimentation and learning. There are so many things to be done that they could not be centrally decreed. No blueprint is possible. The question then is to how to create a *learning society* – a society which will innovate and learn *without* central direction"[23].

The need to develop and study sociocybernetic models of human society management is considered in [21-27], in which researchers, including authors of this article, propose methods of system dynamics and computer modeling, for the mapping of networks of social forces that govern society at times regardless of the declared goals of management (governments) and the "good intentions" of participants in social processes.

IV. CONCLUSION

The existing education system, oriented to the development of knowledge accumulated by mankind, thereby establishes a natural limit for the development of

science, technology, understanding of the laws of development of society and cognition in general. Reflecting on the future of science, Eugene Wigner, one of the founders of quantum mechanics and a Nobel laureate, warned that mastering of the already created will take so much time, energy and resources that people will simply not be able to reach the front edge of science for their lives. Modern science, education and management of society become such a place where as Lewis Carroll has written it's necessary to run hard to stay in place, and to achieve the goal you must run twice faster. And now it becomes clear that only a "competent society" can ensure the continuation of the development of mankind, but not accelerated by the modern "incompetent society" (according to J. Raven) the movement of mankind to self-destruction along with our planet.

The motto of competentology are the words - from *Homo Educandus* and *Homo Studiosum* to *Homo Competentius!*

And the main appeal is "*To Be Competent!*":

- master new knowledge, different from mine,
- overcome my false heuristics,
- knowing my values, find and create your own,
- do not limit yourself to choosing the optimal alternative, but create new alternatives for the solution.

The Teaching person (*Homo Educandus*) and the Studying person (*Homo Studiosum*) are connected in the Competent person. There is a hope that such people will constitute the future competent society.

REFERENCES

1. Westera W. Competences in Education: a confusion of tongues. // Journal of Curriculum Studies. - 2001. - No. 33 (1). - P. 75–88.
2. S. Martynov. Confucianism. "Lun yu". Translated by A. Martynov. - In 2 volumes. - SPb.: Petersburg Orientalism, 2001. - Volume 2. - 384 p.
3. Losev A.F. Philosophy of Name. - Academic project. 2009. - 300 p.
4. Mises L. Human activity: A Treatise on Economic Theory. 2nd rev. ed. - Chelyabinsk: Socium, 2005. - 878 p.
5. Kotarbinsky T. Treatise on good work. -M.: "Economics", 1975. - 271 s
6. Kolesnikova, I. A., Titova, E. V. Pedagogical Praxeology, Moscow: Publishing Center Academy, 2005. - 256 p.
7. Veblen T. "The Theory of the Idle Class": Progress; Moscow; 1984 - 367 s.
8. The Instinct Of Workmanship. Published March. 1914. New edition published by B. W. Huebsch. July. 1918.-356 p.
9. Raven J. Pedagogical testing: problems, errors, perspectives. - M.: Kogito-Center, 1999. - 144 p.
10. Raven J. Competence in modern society: identification, development and implementation. M.: Kogito-Center, 2002. - 396 p.
11. Raven J., Stephenson J., Competence in the Learning Society. Peter Lang Publishing, N.Y. 2001, 538 p.
12. Raven J. Our incompetent society: Part I (with a discussion of some of the competencies necessary for its transformation); trans. from English O.N. Yarygin / Baltic Humanitarian Journal. 2016. V. 5. No. 4 (17) SS. 274-293
13. Raven J., Our Incompetent Society: Part II (with a discussion of some of the competencies needed to transform it); from English ON Yarygin / Azimuth of scientific research: pedagogy and psychology. 2016. V. 5. No. 4 (17) -SS.198-205.
14. Winterton, J., F. Delamare-Le Deist, E. Stringfellow. Typology of knowledge, skills and competencies: clarification of the concept and prototype. - Luxembourg: Office for Official Publications of the European Communities, 2006. - 140 p.



15. Yarygin O. "Competence" and "competency" as the emergent properties of human activity / Vector of science of Togliatti State University. 2011. No. 1. P. 345-348.
16. Yarygin O. The system of formation of competence in the analytical activities of the researcher. Monograph - Togliatti: Kassandra, 2013.- 466 p. - ISBN 978-5-91687-113-5
17. Korostelev, A.A., Yarygin, O.N. Competence approach: terminology problems / Science vector of Togliatti State University. Series: Pedagogy, Psychology. 2011. No. 2. P. 212-220.
18. Yarygin O. Metamorphosis of the concepts of "competence" and "competency" in the Russian terminology of the competence approach. / Pedagogical science: history, theory, practice, trends development. 2010. No. 4. / http://intellect-invest.org.ua/rus/pedagog_editions_e-magazine_pedagogical_science_vypuski_n4_2010_st_3
19. Yarygin O. From "competence" to "competence": the evolution of the basic terms of the competence approach / Conceptual apparatus of pedagogy and education: Sat. scientific tr. / resp. ed. E.V.Tkachenko, M.A. Galaguzova. - Vol.7.- Ekaterinburg: SV-96, 2012.-456 pp.- pp. 96-108
20. Fromm E. To have or to be? - M.: Progress, 1990.-372 p.
21. Raven, J. How to Workshop of the International Sociological Association, Urbino, Italy, 29 June - 5 July 2009. / [Electronic resource] / http://eyeonsociety.co.uk/resources/rc51_2009_full_paper.pdf.
22. Raven J. How should we understand and reflect the network of social forces behind autopoiesis processes, the emergence of which leads our species to extinction, drawing the Planet as we know it, together with us - and how we should develop a more effective sociociberning system by society? Trans. from English Yarygin O. / Vector science TSU. Series: Pedagogy, Psychology. 2014. № 1 (16).- SS.172-179
23. Raven J. Competence, education, professional development, psychology and social cybernetics. Trans. from English Yarygin O. / Vector science TSU. Series: Pedagogy, Psychology. 2014. № 2 (17) - SS.170-204
24. Yarygin O.N, Ryabova V.M. Sociocybernetics as a new approach to the study of the development of social and economic systems / Vector of science at TSU. Series: Pedagogy, Psychology. 2014. № 2 (17) - SS.235-238
25. Yarygin ON, Roganov E.S. Mental models: the basis and obstacle for analytical work / Science vector of Togliatti State University. Series: Economics and Management. 2012. № 3. S. 64-68.
26. Yarygin O.N, Ryabova V.M. Implicit knowledge as a component of analytical competence / Baltic Journal of Humanities. 2013. No. 4. P. 131-134.
27. Korostelev, A. A., & Poltoretsky, D. A. (2012). AUTOMATED ANALYTICAL SYSTEMS IN ANALYTICAL MANAGEMENT ACTIVITIES. Azimuth of Scientific Research: pedagogy and psychology, (1).