

# HOW TO EVALUATE SCIENTISM OF REVIEWED PROFESSIONAL TEXTS IN DISCIPLINES RELATED TO POPULATION PROTECTION

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## Abstract

*The requirement for the assessors of a scientific text is to make a statement of scientism. The article introduces the problem of the decomposition in the evaluation of the current state of scientific knowledge based on a semantic analysis. It informs about the historical development of scientific approaches to achieve outcomes and professional judgment in the lawsuit problem in the U.S. The paper also discusses the scientism of scientific texts from the perspective of selected attributes. Further this essay mentions the skills and science relationships in order to be aware of technical, engineering, scientific, and intuitive features which can be considered as a part of the scientific text. The possibility to distinguish these approaches in communication is also presented. There are also recommendations for the reviewers and explanations of the technical texts specifics in the area of population protection.*

## Keywords

*Population protection, science, scientism, theory of science, scientific method, reviews, skills.*

## 1 INTRODUCTION

The effectual problem of reviewers, opponents, evaluators, expert assessors of the articles in journals, research reports, project outlines, books, qualification works such as diploma, dissertation, habilitation papers and also essays presented at conferences is the opinion on scientism. Basically a submitter of the assessment requires that the assessor decides if it is a scientific or expert work if it is the information on the course of a scientific activity (a conference, symposium, seminar, meeting) or just summarizes what others think about the specific issue. The most significant is then the assessment of real, new contribution of an author, therefore, how and by what he or she has merit in the advancement of the knowledge in a specific field.

Such a task is not easy due to the fact that this depends on the approach of an evaluator, always of a specific person to assessed groundwork. These are basically texts, function samples of the technique or technology, art works. The

reality proofed many times that various specialists evaluate one work differently, sometimes even in a completely different way. The cause of these differences is not only the intention or personal ill-will but also a somewhat subjective idea on what is scientific and what is not. What is the attained level of the knowledge of general rules for the objective evaluation of the scientism? What is supposed to be asked for and what answer in the assessed text, sample or work to look for? These are the questions which often, for the reviewers, do not have the exactly and explicitly limited content. In them we will find one of many reasons why the attention is paid just to the issue of scientism.

It became the fact that many people have been discouraged to develop their own scientific methods of work by strict and unfair assessments. The assessor (reviewer) is the person who was appointed by some higher authority to apply higher stress (significance) of his scientific or social opinion. At the same time it pays that the correctness and scientism of a shared opinion is verified by time and not by the assessment. The schizophrenia of the incorrect assessment is at the same time interconnected with the fact that the incorrect procedures should be detachedly revealed, named and taken at the right way. A critical view of the solution of a scientific issue is the basic methodology procedure. The principle of the falsification advances the knowledge forward. Nevertheless how to start the control of the statement if something is scientific or is not? What kind of difficulties in the assessment of scientism in disciplines related to population protection can we expect?

Dealing with this problem together with professionals who have already made the first steps should help develop theoretical knowledge also with the differentiation from what we do well and not well, what need to be improved.

## 2 CURRENT SITUATION OF THE KNOWLEDGE ON SCIENTISM

The term “*scientism*” is derived from the root “*science*” and describes how man gets to “*knowledge*”. The application of the term science is connected with the explication

- of targeted cognitive human activities which create a set of knowledge on regularities and the evolution of the nature, society and thinking,
- of this set of knowledge,
- of a specific discipline (e.g. geology, physics, psychology, civil law, population protection).

The term scientism is used in order that its user could differentiate the scientific knowledge from the knowledge that is not scientific. The above mentioned **scientific knowledge** includes besides the knowledge also the activities of cognizant subjects and their mutual relations which are applied in the course of the new knowledge generation.

The research of the historical evolution and functioning of science and as well the evaluation of the scientism are component parts of the **science theory**. The science theory can assess either a set (system) of knowledge or a special kind of a

human activity, or the science as a specific form of social cognizance. The subject of the science theory as an independent scientific discipline is the science itself. It elaborates its own “language” for the development of theoretical and methodological platforms of this discipline. The research is focused on the process of a scientific activity in comparison with the unscientific activity, the approach is holistic and is dedicated to the content of the science, the subject, classification of scientific disciplines, the relation and the overlapping among disciplines, levels of specialization, and the processes of sequestering of more detailed disciplines. Another direction of the research is a social implication. On one hand, there is the relation to the economy development and economic activities of the society (new products), on the other hand, what these activities cause in the advancement of society (e.g. internet and the change in the societal behavior), and the third dimension is the feedback, i.e. how the processes of the advancement of the science are organized and controlled in order the process of this advancement was not only spontaneous (uncontrolled). Each scientific discipline has an independent insight into the relationship to society according to its specific subject; science theory as a scientific discipline generalizes these insights and formulates responding laws and regularities. An obvious component part of this discipline is the history of science which can be examined by individual disciplines. It can be focused on the issue of the documentation of the implications of the development and the progress of science in relation to cultures, religions, individuals, political systems and the relation to the war and peace. The history of science is, however, only about the past and the theory of science is focused on the present and future which apply historical formulas into new conditions.

The reader must feel that these are only partial aspects of the theory of science. In real conditions, philosophical problems of the development of the science have been searched too. The science from the viewpoint of the logic, mathematics, physics, biology do not bring the objective of the theory of science because it means the understanding of the development of science as a whole. We know that all these partial fragments are important because they were objectively learned and in specific periods interacted and have been interacting also now and will work whenever in the future together, in mutual influencing. Therefore just a comprehensive approach enables to understand the processes which influence the development of science and its effect on the society. Such understanding is not in the possibilities of just one man. It requires coordination in the research and formulation of laws and regularities, in the modeling of mutual implications.

**The theory of science is therefore about mutual functioning of important segments of past and current structures of scientific knowledge and scientific activities in a cultural, societal, political, economic, geographic, ecologic, security and knowledgeable environment which enables to rationally foresee, focus and plan future science.**

What the basic attributes of science or science disciplines are like, can be paraphrased from the work by **Tomas Garrigue Masaryk** (1850 – 1937) called “*Attempt of concrete logic* “ (German original: *Versuch einer concreten Logik* (Wien, 1887)) [22]. They are the following basic attributes (as in § 110): **1<sup>st</sup> the**

**object of research, 2<sup>nd</sup> - methods of research themselves, 3<sup>rd</sup> – research quality, 4<sup>th</sup>- benefit.**

Science as a set of targeted activities and knowledge has always been an interesting part during the existence of the society. **Philosophers** in the entire history or the mankind have been known thanks to the fact that they tried to apply scientific knowledge to the course of events in the nature, society and thinking processes. The history of mankind itself is filled with thresholds which are classified and assessed according to the level of scientific knowledge application to the technique, technology and to results of human thinking of basically extraordinary individuals.

**Quite interesting is the relation of science to philosophy.** In various opinions the subject philosophy and its method is understood differently. **Platón** (427 – 347 BC) distinguishes the term “*philosophos*” – *knowledge* and “*sophos*” – *wisdom*. The wisdom is in his conception placed on a higher level than the knowledge. It comes from the knowledge and moreover it has the added value of the application of the knowledge in response to the conditions of the life. The questionable issue was: How man, living in the world, can determine the sense of his being without knowing what the world really is – the objective reality which is here both for man and at the same time in itself. **Aristoteles** (384 – 322 BC) perceived philosophy as “*the science on principles of being* or as “*the science on last causes of being*”. In his lifetime the terms science and philosophy were not distinguished. Therefore he considered “*first philosophy*” as the science of a special kind and his books on this science were classified beyond his work on the nature and was called “*metaphysics*”. Aristoteles enriched the evolution of the thoughts by the idea on the difference between the science and philosophy. Generally, philosophy is the science which starts at the point where other science disciplines end. **Therefore also the theory of science is a component part of philosophy.**

**Thomas Samuel Kuhn** (1922 – 1996) in his work “*The Structure of Scientific Revolutions*” [21] introduced the term “*paradigma*” and also this publication of his is considered to be paradigmatic in the areas dealing with the authority, history and philosophy of science. This American philosopher, physicist and theorist of science and scientific knowledge as well, introduced the arguments on elementary turnovers – scientific revolutions which make us re-evaluate the achieved level of knowledge about the world. It means that the knowledge is historically conditioned and change with the development of new knowledge. When he, in 1947, studied Aristoteles, he asked a decisive question: *How is it possible that such a great thinker wrote such “nonsense” on physics?* He realized that he reads Aristotle’s old text applying the knowledge of Newton physics. He formulated the principle: “*If you read a great thinker, focus first on seeming nonsenses and ask yourself how he could have written something like this. If you manage to find the answer, and the theses become understandable, to your surprise you will find out that even the theses which you understood before, conceived a new sense.*”

**Karl Raimund Popper** (1902 - 1994) was a philosopher of Austrian origin with Czech ancestors who emigrated for New Zealand (1937) and from 1945 lived in London. He named his thoughts "*critical rationalism*". The issue of scientific knowledge he addressed by the criticism and refusal of "*the theory of verification*", according to it, the scientific hypotheses are acquired by induction i.e. generalization. The publication "*Logik der Forschung*" (1934, in German), "*The Logic of Scientific Discovery*" (1959 in English), "*Logika vědeckého bádání*" (1997, in Czech) [26] encompasses his elementary thoughts. According to Popper, the differentiation between the scientific and unscientific theory or hypothesis consists in its empirical content. It creates the option to examine it, i.e. empirical verification of the correctness. The theory should be "standable", i.e. to stand proof of correctness. The verity of a scientific theory cannot be proved but only empirically tested. The base of scientific knowledge is not therefore the verification but "*falsification*" (*the disproof of verity*). The principle of falsification means that the criterion of the scientism theory is not to find the examples which will prove it but on the contrary to look for such experiment which could disprove the theory. As long as it appears just the only fact which opposes the theory, the theory is supposed to be, by this fact, disproved as invalid. The larger number of experiments for the disproof of the theory resists, the higher value, from the viewpoint of scientism, it has. If the theory does not resist, the possibility to generate a new hypothesis occurs, the possibility of a new theory and its verification by testing for falsification.

**Frantisek Ochraňa** in the work of 2009 "*Methodology of science. Introduction to the issue*" [25] deals with key theoretical questions of procedures which lead to scientific knowledge. Methodology of science is perceived from the viewpoint of scientific methods, their theory and from the viewpoint of scientific procedures which apply scientific methods. These are the theoretical starting points for the research and development which help build not only scientific theories but also develop following practical applications. In more details he devotes to the generation of scientific theories, normative and not-normative discovery of social reality, roles of "*explanation*" (*logical reconstruction of the explanation or understanding the phenomenon, process*) and "*prediction*" in scientific research and the process of a scientist during the procedure of verifying the hypothesis. Especially he devotes to social sciences and to the turn from the explanation to a "*narrative*" comment on social phenomena. With a comparison method he compares scientific explanations, interpretation comments in social sciences and defines the starting points of an integrative approach for the research of social phenomena.

**The notes to elementary perception of current science** are introduced following the comments to the judgment ([4], 2005) in Pennsylvania (USA), which were referred by Jan Hornik ([2], 2005, [3], 2006). The contradiction of what is scientific and what is not, got to the court and he, as the authority, chose for the elaboration of the judgment the representatives of scientific institutions. The applied argumentation and explanation deserve wider publication and completing. In the following text you will find basic thoughts.

- In a legal dispute they solved if the theory of intelligent design ID was the science. Basically it is a philosophical theory. The law-suit provided useful lessons with regard to a prospective solution to the evolution questions. The court got the information with the current philosophy of the science but the applied argumentation which should have proved the un-scientism of the ID proved such serious insufficiencies that neither the Darwin's evolution theory could have been acknowledged as the current modern science if it had been imposed to the same demands as the theory of ID.
- The court in this case followed the general consensus of experts. Substantial is, what general definition of current science the court applied when assessing the scientism of ID. The following text quite accurately gives a true picture of the basic understanding of the current science: „.....we found out that even if the arguments of ID might be true, the court does not take any stand on them, so ID is not the science.“
  - [...] „The expert standpoint proves that since the scientific revolution in the 16<sup>th</sup> and 17<sup>th</sup> century the science during the explanation of natural phenomena has limited itself to the seeking of natural causes“ in the nature, society and thinking. The proofs have been required in connections with the repeatability of phenomena. They require quantification, measurability, and experimenting. What is not this way provable, it is, in order to simplify the procedures of evaluation (according to the science methodology), considered unscientific. This approach respond to the evolution of the knowledge of natural regularities, some societal regularities and only a little respond to the confirmation of the knowledge in human thinking whose top product is the philosophy.
  - [...] „Since this period the science has been the discipline in which the criterion of the value of a scientific thought is rather the experimentability than the philosophical coherence“, or authority (scientific, political, religious).
  - [...] „Despite the fact that the supra-natural explanation could be important and has the value, it is not assessed as the part of the science.“
  - [...] „This voluntarily accepted rule of science, which limits the research to experimentable natural explanations which are related to the natural world, is labeled as „methodological naturalism“, sometimes it interconnects with the label „scientific method“. Methodological naturalism represents the basic rule of current science which requires the scientists to look around us, in the world, the explanations which are based on something that can be observed, tested, repeated and verified.“
- The experts agreed upon the idea that „the science limits itself to data which are empiric, observable, testable.“
- „**The science** is a specific way of discovering the world. The **explanations** in the science are limited to those which can be deduced from confirmable data – the results obtained from observations and experiments which can be

*confirmed by other scientists. Everything that can be observed or measured can be succumbed to scientific research. Explanations which cannot be based on the empiric proof are not considered the part of science. There is a strict devotion to „natural“ explanations.“*

- *„During the modern period, the science has gradually limited itself to the discoveries only, which are empirically available and empirically verifiable. Therefore **the current science does not encompass the philosophy** that used to be the other days considered the queen of its. Only due to the fact that it is of a non-empiric character.“*
- *Scientism criteria could not meet also other theories and disciplines because the existence of a supra-natural factor cannot be proved empirically in order that such proof responded to the criteria of „methodological naturalism“.*
- *„Despite the reality that the court does take any stand on the fact if the unverifiable forces and phenomena exist, they are not verifiable by scientific means and therefore they cannot be qualified as a part of a scientific procedure or scientific theory.“*
- *„The question is, **whether now, the stable definition of the science is wisely sustainable**. Is it not a theoretical nonsense? Does the voluntarily accepted rule of science meet the scientific criteria which limit the research to testable natural explanations related to the natural world? Is this rule empiric enough in order the modern science could and might take it seriously? Is not the definition of science itself absolutely unobservable, untestable, unrepeatabe, unverifiable etc., and therefore absolutely unscientific?“*
- *Why should the methodological naturalism represent „the basic rule“ of the science, when this rule is „methodologically un-naturalistic? Where did this rule come from? Did anybody observe it? Or has anybody even empirically verified it and proved? How some scientists know that their empiric definition of the science is correct and therefore binding?“*

## **The Discussion on the Scientism of Professional Texts**

How terminate this discussion if confirmed by a trial? No court is able to decide what is and what is not science. It is the matter of scientists, however, under the pressure of moral responsibility for the objective evolution of human discovery. The scientists are people who are engaged in a special way of the world discovery, who know what is the object of their interest, who know what is the object of their interest in deeper understanding, who are able to choose specific methods for the development and confirmation of the correctness of their discovery in order to achieve the feeling of satisfaction of its quality and consequently its profit. They strive to identify their cognizance with the knowledge and formulate the laws and regularities of processes and phenomena in the nature, society and thinking. Not all people are scientists and therefore empirically in the evolution of mankind there have been the procedures which, of the range of all people, select the authorities. Scientific authorities proved through their work and professional control of their results that they enriched a repository of knowledge. The one that is most evaluated

by all scientists is the **contribution of new** thoughts, new patents of things and technologies, new solutions to errors, diseases, failures, unclearness, new attempts, experiments and organized knowledge which allow other people to recognize them for other people.

The science exists independently on legal proceedings and the scientists who are devoted to it can see some discrepancies in the presented discussion. Where do they lie in? Especially in the fact that we should be more interested in „**scientific novelty**“ in the knowledge than in the quantification. The knowledge pushes the thinking forward. We know that without a thought no huge amount of measured values will not extend the knowledge. This will only increase the frequency of repeatable performances.

I cannot resist mentioning the story by Ivan Vyskocil in which he describes a man who liked jumping and he found out that he was very good at it until he was searched by sport theorists who explained to him that he does it wrong. The conclusion was the destruction: the loss of joy of movement, the loss of enthusiasm and free hand, loss of previous skills and finally below-average results.

When applying analogy this feeling comes to mind to many scientists when they see that due to quantitative indicators themselves, the **elementary mission of science** (which is to generate knowledge, new thoughts, show new coherences, reveal the mystery of life and organize responding activities) has been omitted. Criteria of the objective control of results of thinking, correctness of procedures, tenability do not lie only in quantifiable dimension of human needs. Many times, intuitively, we do not feel it but we know that the thought that we have just read, brought a missing stone into an imaginary machine of cognizance and practice. Separation of philosophy from science, therefore intellectual science which interconnects applied utilization of knowledge of other scientific disciplines is a mockery of science itself. Such approach and enforcement of such opinions represent steps leading to grave and they should not have many followers. We may perceive them as one of procedure tools in order to simplify the approach to the assessment of scientism of submitted pieces of work, as a mechanical tool which, especially in technical and experimental science is justified and fully operable.

It is interesting that the thoughts of Tomas Garrique Masaryk ([22], 1887) written 125 years ago have been still valid.

In §128: „*Philosophy is together with special sciences also general science, it is the entire knowledge of the mankind. Philosophy is general scientific education. Philosophy is a unified worldview. Philosophy is not elevated above special sciences; because any exact cognizance is specialized knowledge, philosophy is encompassed in all sciences, all sciences are philosophical.*

*A scientific philosopher is a specialist in one or more sciences, in other sciences he is subordinate to a scientific spirit of the authority which is always and globally subordinate to scientific criticism. Each philosophy is therefore influenced by a personal expert standpoint. The history clearly shows that*



*outstanding experts have been great philosophers“ Aristotle was, thanks to his great knowledge, for thousands of years a lecturer of philosophers and great modern philosophers until how have been outstanding experts.“*

In § 15: *„Science can serve the science itself either materially or methodically; other involvement than usefulness does not interest us.“*

It is really remarkable to look for the answer to the question: Where and with whom do the discrepancies on scientism occur? The answer is quite clear: **Different approaches project themselves especially into the activity of scientific authorities.** They are reflected in the fact whether the author of new thoughts will be by *„previously upheld authorities“* recognized as a member of a selective club of authorities. At the same time joining the club should be a formal procedure if new knowledge which would influence both the theory and practice was discovered. It depends therefore on the assessors – previously upheld authorities – on their professional erudition and capability to recognize scientism in both approaches, and results.

The application of the word **scientism is always connected with the evaluation of** results which represent specific cognizance. If we evaluate responsibly, then we compare a current state with a model or expected state. Someone is a person who assigns the evaluation and someone is an evaluator. The author is not the one who is evaluated but his applied methods and achieved, presented, and interpreted results related to a general level of cognizance in a specific professional field.

Science is sometimes considered to be human demonstration that is without emotions, without feelings, that is rational and logical. Therefore only **logic** represents the characteristics of a scientific text, it is the demonstration of scientific thinking. Logic is a tool for a scientist during the explanation of the approach of his to other readers so that they might be able to walk the same way and understand what a scientist actually got to know. A reviewer should evaluate scientific logic in a text, mastering both of its basic forms“ inductive and deductive. Inductive logic deduces from a large number of observations new knowledge, this means, among others, that it results in hypotheses. A deductive one, on the contrary, proceeds from general to specific.

### 3 QUALIFICATION AND SCIENTISM

In a previous chapter I summarized basic information and discussed questions on current knowledge and approaches to scientism of assessed pieces of work. Its basic objective was to enable potential reviewers to have a look into historical evolution of the knowledge on scientific cognizance of objective reality, to direct the attention to questions that are related to the assessment and outline a system-oriented approach. The attention was focused especially on the idea that we already have a processed text in front of us where, regardless an author (thereinafter also a collective of authors) we look for scientism. The question of qualification was not regarded neither the kind of pieces of work with which we

can meet during the assessment. Therefore, if the reviewer is asked to “separate the chaff from the wheat”, it is appropriate to point out to characters of pieces of work which might be submitted to the assessment. This part is focused on the relation of the qualification of an author to scientism.

No reviewer obviously and without thinking supposes that a pupil from basic school would submit a piece of work with noticeable scientism because he only started to read, write and express his thoughts. Systemic scientific work cannot be achieved before fulfilling a number of control points. It is inevitable for him to meet required suppositions which are on one hand in the form of studying and on the other hand in the form of proved skills. The scientists not only in control points but actually in the course of their whole scientific practice subject their results to control for scientism. This way **they always transparently prove and accomplish their** qualification. Real value of scientific contributions is confirmed through practice. For example general theory of relativity by Albert Einstein was subjected to many tests and even if we talk now about string theory, in its defined field it has been still valid.

Generally, an employer hires a high school graduate to his laboratory because he expects from him to fulfill just selected tasks and unscientific activities. A bachelor’s study program graduate is neither appropriate for the solution of scientific issues. The employer chooses from the master’s study program graduates who have specific assumptions for scientific work but only in doctoral study program can be assessed the capability to master basic methodological tools of science and independently apply the approaches for development of knowledge, development of science and human cognizance. This means that only the second degree of university qualification provides assumptions that the results with the hallmark of scientism might be accomplished. **Dissertation thesis** is the main scientific work of doctoral study which makes demands for “workmanlike” mastering of the profession of a scientific worker. Therefore it is entirely appropriate to assess which way and where to the author “advanced scientific knowledge”, the acquisition for the development of a branch and practice. The emphasis on methodologically acquired scientific procedures is the main criterion of thesis scientism. Even if the thesis develops on various levels, one thing has in common” it meets the scientism criterion.

A reviewer can meet with various characteristic of theses and he himself will need artistic abilities to differentiate the approaches to the solution of a conveyed issue. The approaches in assessed text can be technical, engineering, scientific, intuitive (Janosec, [19], 2011). Table 1 shows approaches, their characteristics, necessary qualification and the kind of knowledge.

*Table 1*  
*Optional approaches to solution of issues in the system of knowledge*  
*(taken from [19], 2011)*

<i>Approach</i>	<i>Characteristics</i>	<i>Qualification</i>	<i>Knowledge</i>
technical	understanding of functioning of details	workmanlike and high school	discursive
engineering	applied use of known details and theories	university (bachelor's and master's degree)	
scientific	research of unknown details and new theories	university (master's degree) and doctoral study	
intuitive	based on empathizing with the subject of a system	along with the subject of a system	instinctive

**A higher level of qualification does not exclude practical application of lower level approaches, whereas a lower level of qualification does not generate appropriate conditions for successful accomplishment of more demanding approaches.** Reviewed text is generally the output which uses the combination of available approaches for the clarification of knowledge. Usually it is not only the utterance of one approach, therefore it is not mono-approach oriented. When we think of cognitive processes, then it is appropriate to realize that they include: perception, imagination, memory, learning, thinking, concluding, and also speech. Cognition which is supposed to be reflected in the paper as a distinctive form of scientific conveying of an author and at the same time the reflection of his qualification, exists in the following forms:

- sensory – perception,
- intellectual (logical, rational) – cognition + intellectual operations,
- intuitive – emotion.

Ways of cognition are narrowly connected to the data which are determined as qualitative and quantitative. Data are always generated through some form of measurement, therefore through comparing objects and phenomena with an accepted etalon for measurement. This ensures repeatability and feedback control. For scientific approaches is typical to determine hypothesis, experimental verifying, formulation of theories, laws and regularities.

Scientism of the text is supposed to manifest itself as **discursive cognition** which has the characteristic of rational cognition. It results from the judgment, it indirectly and logically demonstrates the way of cognition. Opposite of discursive cognition is **instinctive cognition** which is manifested through the intuitive approach. Discursive cognition is the way of intellectual process where a person realizes all links of a continuous process of logically-deductive inference of contexts. Instinctive cognition – intuition – is designated as inspiration, idea, direct

insight, flash understanding without rationality. It is the cognition which is not of a sensual character. It is a specific kind of sympathy by which we transfer inside an object (Janosec, [12], 2004, p. 63).

**Empiric knowledge** is based on experience and generates from repeating or repeated observation, it enables man to recognize what is in things and processes the same and what is special, what creates its general theory and where the differences appear. In some parts of a text we can find **intuitive knowledge** which is not of a scientific character, it is not supported by repeatable measurements, however, the practice proved many times that it might lead to a correct solution. There is a specific unproven causal relationship; if a person having the intuition and capable to empathize is a scientist, then this causal relationship means that a person is able to empathize only if he has some knowledge of an objective issue. These persons are aware of the frame of potential solutions. A prepared scientist has trained capabilities to recognize the core of things a phenomena, basically in a professional approach he does everything in the way to maintain respect for his mind. He should know how far the borders of his wisdom are pushed, it means what he understands and where he has to consult with other specialists. He should know what the general truth (theory) is and what the practical application requires. Nothing is ever ideal therefore not necessarily everything must be perfect in an assessed text. The situations when the results are not of a scientific character but they pretend to be, might occur. A reviewer should recognize these insufficiencies and help find the truth on the quality of an assessed text. Generally there is the possibility to revise the text or to defend it.

**A reviewer and the knowledge of the author's qualification.** This relation is significant because it can influence the approach to the assessment of the piece of work in a short proceeding. It is an uneven (asymmetric) relation where the reviewer always prevails, he can be psychologically tied due to the knowledge. There are only three basic options from the viewpoint of the reviewer knowledge on the author's qualification: **he knows, he does not know, he anticipates**. If he knows or anticipates, then he also knows what he can expect, regarding scientism, from the authors:

- who only prepare for scientific qualification (a report, essay, thesis, dissertation, article in a professional journal),
- who have basic presumptions (an article in a professional journal, research report, publication, speech at a conference),
- who have basic scientific qualification (an article in a professional journal, speech at a conference, publication, patent, credential),
- who are scientific authorities (everything).

The result is the compared with the expectations. If a reviewer does not know, then he should focus on the content of a reviewed piece of work and according to it evaluate its scientism.

To conclude the considerations of the qualification and scientism it is appropriate to mention a **specific task of a human and its brain**. The author of an assessed text transformed the degree of his knowledge into a report. An assessor applies his processed and generated knowledge in order to critically evaluate this

report. The objective reality was through the complex biological and physical ways of the man's evolution individually recorded into a fine structure of an author's and assessor's brain. An assessor pursuant to the information transformation about this report looks in his brain for the way of reporting which is to be assessed, i.e. how well the scientific method of a searched issue was performed and to which extent the submitted report is scientific. This means that not only the knowledge and mastery but also the activity of the brain are compared. It is absurd that historical evolution of the science of the brain knowledge as the main guiding organ of a human body and also the center of the science evolution has had a lot of paradigm phases and up to now it belongs to the objects of cognition with a lot of the unknown which is documented e.g. by Orel and Facova in the publication *Man, his Brain and World* ([24], 2009, pp. 9 – 15).

#### 4 RECOMMENDATIONS FOR REVIEWERS

Anticipation that we all are prepared for everything pays only in specific societal situations when our reactions in limited time is indispensable. Then there are only two main options" we react correctly or incorrectly. It means for example that a plane "with an emergency pilot" will either land or all on board will die. Processing of a review does not belong among such societal situations though there is, perhaps, some stressing connotation as well. Therefore it is necessary to mention not only the recommendations for the reviewers but also something more from the vicinity which is for the selection of reviewers and their characteristics pertinent.

In this part I will not describe the facts which had been processed by other authors. It is just appropriate to mention the work *How to Write and Make Lectures on Science*, where the author **Zdenek Sestak** is focused on the writing of reviews and book critiques ([29], 2002, pp. 132 – 136) in the way that everything is related to previous formulation how the original conveyance should have been reproduced. He outlines this way an ideal picture with which a reviewer can compare an assessed piece of work. Another publication which deals with potential models is *How to Read and Write Professional Text in Social Sciences* ([28], 2005), where the author **Jadwiga Sanderova** helps the reviewers due to the fact that she is methodically focused first on the study of professional texts, she points out to the importance of abstracts, annotations, reviews and subsequently on the issue of writing professional texts. Since we focus our attention on the evaluation of the scientism of an assessed piece of work, for the reviewers it is appropriate to be familiar with the research. For this purpose I recommend either *Successful Research Proposal* ([27], 2008), where prof. **Keith F. Punch** from Graduate School of Education University of Western Australia deals with qualitative and quantitative approach to empiric research in social sciences. If a reviewer fixes the idea how a successful research proposal is to look like, then he will recognize which steps are not fulfilled. Also OECD materials are helpful. The **handbook Frascati** ([33], 2002) informs a reader on questions related to measurability of

science, research, development and on pursued criteria. The issue of differentiation of science, research and development I made a statement in other papers (Janosec, [5], [6], [7], [8], [9], [10], 1995 – 1997).

### **Selection of Reviewer**

A **review** can be open or anonymous. **Open review** is applied where a result is linked with the defense of qualification or research papers and in case of book reviews. Nonconforming opinions of a reviewer and author are directly confronted in a scientific debate (public or closed). This approach brings the possibility of subjective influencing and generating negative interpersonal relations. **Anonymous review** is applied when a direct defense is not anticipated. The redaction is a communication mediator in a review proceeding. The debate is confidential and generally a subjective approach is suppressed despite the fact that in conditions of the Czech Republic the authors know each regarding their writing style. This procedure is generally chosen by the editorial staff of a journal for more objective assessment of scientism of a submitted issue.

**Editorial board of a journal** or any person who is interested in or obliged to professionally assess the result of work comes out of elementary knowledge during the first step. Editorial staff generally, in a long term period, forms the list of specialists who are involved in a specific issue or have verified capabilities to express their opinion on the issue. Their role is dual: they might be reviewers, or might recommend a specialist for an assessed topic. The list is open and is supposed to be regularly updated. From the viewpoint of scientific disciplines it is usually quite broad. The activity of a review submitter is the selection of a reviewer (assessor) as an actor knowing the topic. The issue might be multidisciplinary and so is solved also a question of more assessors from various professional aspects. If we assess scientism, then we look for an assessor with scientific qualification or a renowned expert from practice.

A **submitter** (the editor in chief, head of a research workplace, author of a book, submitter of a scientific task) needs briefly express the core of an assessed piece of work. For this purpose it is appropriate to use the text in the annotation. Usually the willingness to process the review is discussed personally. In case of a failure the submitter should know other professionals according to their profile, usually from the results of their own publication and according to personal information.

The result is the agreement on the way of handing over the reviewed piece of work and determination of a term for processing the reviews. This might be a problem especially for busy specialists.

### **Reviewer (assessor, opponent)**

**Reviewer is a person** who voluntarily agreed upon processing his own critical assessment of a scientific, professional piece of work or artwork in favor of

a submitter. A reviewer knows how to ask questions to himself and to authors. He is also a person making mistakes but unintentionally.

**Review activities** lie in objective criticism of a piece of work, in searching for insufficiencies, discrepancies, ambiguities regarding both the assignment, and general knowledge with the application of methods, procedures, calculations, literary citations and references, with form arrangement, graphic design etc. The reality that a reviewer already was and again will be included in the process of reviewing by someone else brings upon a general requirement for the ethic. Even if a reviewer finds an obvious “nonsense” in the assessed text, he should avoid categorical judgments and sharp formulations. In this activity definitely pays “*what you do not like to be done to you, do not do it to the other one.*”

**A reviewer must** be prepared to evaluate and formulate the statement. The preparation lies in professional qualification and permanent self-education, it means maintaining the knowledge on appropriate level. Justified and constructive critic is always based on specific and documentable justifications and facts, not on feelings. A successful and objective reviewer during his activity proceeds appropriately and applies specific technology in order to practically exerts his evaluation process.

**A positive review** is “a stamp of a judge advocate” who recommends the follow-up use of a piece of work. It reflects the understanding of a reviewer and the cognizance of potential public control of the correctness of an assessment.

**A negative review** is justified evaluation of insufficient scientism of an assessed piece of work. It means the rejection of a piece of work, financial, material, information, social and moral losses and consequences. It is subjected also to professional control.

### **Process of Evaluation of Scientism of a Professional Text by a Reviewer**

**Initial orientation** depends on the title of an assessed piece of work. It evokes the initial idea of contents and a reviewer in the course of reading it constantly verifies if an author chose the correct title. Other steps of initial orientation are aimed at key words, annotation, résumé, introduction and conclusion.

A reviewer evaluates if the introduction mentions the integration of solved issue into a wider context and outlines what the core of work will be, if the conclusion summarizes what the focus of solution was and what main results the author came to. The conclusion should not contain new knowledge because it is the object of the main part of the conveyance, research or solution. It is to point out to it only.

**Detailed reading** is an active process of a reviewer. The experience leads to recommendation to record initial reactions to unclear parts or formulation using notes. The answers to these notes are subsequently sought after in the text or in logical context.

**Criterion evaluation of scientism** consists in looking for the answers to some of the following questions which identify the presence of science:

- Is the object of conveyance targeted scientific cognition activity? Is it not a technical, engineering or intuitive activity?
- Are the procedures and methods of research described? Is the applied method logical and enabling to achieve defendable and repeatable results?
- Is the generation of knowledge on regularities and evolution of the nature, society or thinking presented here?
- Does a piece of work clearly define the topic? Is the topic evident from its title, structure, hypotheses, from the listing of results of a research? Are the solutions original and imaginative?
- Does the work bring new knowledge in the topic of research or already known facts and realities only subjects to another view and analyses?
- What benefit does it have? Does it contribute to the extension of scientific knowledge through new knowledge, discoveries, research results? Is it not plagiarism ?
- Are the facts supported by experiments or verifiable sources? Does the text include the data and information which enable to repeat the procedure of an author?
- Is scientific logic applied for the explanation of a topic?
- Are the principles of formal procedures followed together with accurate and true citations, references to literature? Is scientific ethic observed?

If at least one positive answer for the criteria of evaluation is found, then it is a scientific conveyance. A reviewer should specifically know why he assesses a reviewed piece of work as a scientific one.

### **Specifics of Professional Texts in Disciplines Related to Population Protection**

The reason for considerations which are focused on the specifics of a professional text in disciplines related to population protection is the multi-disciplinary character. The topic of the conveyance could be scientific knowledge from various disciplines. Some issues have social science character, some might be devoted to technical sciences, some have philosophical core and of course everything which is related to a human is also connected with medicine, psychology, sociology and also with juristic sciences in specific physical, chemical, biological and information environment. With regard to the fact that population protection issue represents a political matter of state responsibility to secure population protection against serious threats; professional standpoints might be also expressed in politology, international relations, military sciences, securitology, public administration, management. Social sciences are multi-paradigmatical and able to result in different interpretations from various viewpoints.

What are the recommendations for a reviewer?

1. Verification if an essay explains the relation of targeted issue to population protection;



2. The approaches of an author might be multi-disciplinary, therefore it is appropriate to evaluate scientism in an assessed text “gradually in layers”. It means to evaluate gradually separate parts of an essay and apply criterial evaluation of scientism;
3. In texts combining more disciplines it is appropriate to come up attentively to conclusions on scientism in order to differentiate technical, engineering, scientific and intuitive approaches of an author before passing a judgment over scientism.

### **Résumé**

*The attention of this paper is devoted to the evaluation of scientism in professional texts. A current requirement of editorial offices of journals and also persons who order the assessment of the results of research activities is the requirement for a reviewer’s statement about scientism. In the introductory part I focused on a current situation regarding the knowledge on scientism. Here I started with a semantic analysis of the term in connection with the approaches to the perception of science in historical coherences. It summarizes selected information on contemporary characteristics and documents the opinions which were in the year 2005 submitted in the USA during a lawsuit concerning whether the theory of intelligent design is science. Contemporary approaches forced out philosophy as an unscientific discipline and therefore the discussion on the scientism of professional texts focusing on elementary indicators of scientific approaches took place.*

*In the second part the attention was paid to the relation between the qualification and scientism. It was deduced that scientific approaches depend on qualification and are responding to higher qualification which is proved by the evaluation of the scientism of information, knowledge and results of the activity of a specific research worker. I pointed out to technical, engineering, scientific and intuitive approaches which could occur in the assessed professional conveyance. Characteristic indicators of these approaches are described in new coherences towards the reviewer and his awareness on the author’s qualification.*

*The third part is aimed at synthetic elaboration of a recommendation for reviewers. In connection with professional literature which is focused on the recommendations for the elaboration of expert opinions there is, a newly and originally elaborated text which is devoted to the selection of a reviewer, reviewer’s characteristic and subsequently to the process of the evaluation of a professional text by a reviewer.*

*The conclusion explains where it is inevitable to see the specifics of professional texts in disciplines related to population protection including the recommendation for reviewers.*

*The evaluation of scientism is a responsible process during the advancement of the qualification of research workers and the quality of scientific activities. It has an irreplaceable control, critical, psychological and motivation role. It is a scientific activity which requires a bird’s eye view above an assessed*

*professional area. A knowledgeable reviewer who abounds with more extensive knowledge on a decomposing process of the evaluation of scientism is a co-author of a quality-like scientific journal, publication, research project. This paper was elaborated for the preparation of scientists and reviewers.*

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