

CONTEMPORANEOUS ORIENTATIONS IN THE SCIENCE PHILOSOPHY AND THE HISTORICAL EDUCATION RESEARCH

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Abstract:

Our study interprets some of the contemporaneous orientations in the science philosophy, asserted and disputed in the second half of the 20-th century and the beginning of this century. The purpose of this approach consists to derive those connotations on the reflection and the epistemological substantiation of the pedagogy, as a field of the socio-human consciousness. This paper assesses and presents four relevant contributions to the science philosophy from the view of their connotations on the theoretical and methodological orientations concerning the importance and the specificity of the historical research in education.

Keywords: *science philosophy, historical education research, paradigm, research program*

1. Introduction

An adequate vision of the scientific research in education based on the integration and updating of some historical research strategies has to become receptive to the debates and controversies of the science philosophy concerning the research theory and methodology. In order to achieve a real understanding platform for the education events, from the view of their temporal configuration and development, the controverted war of the science philosophy offers a complex field of comprehension. In the last years, the science philosophy passed through a continuous process of changes and metamorphosis, marked out by numerous uncertainty moments, by options and opinions labyrinths, by controversies, debates and sense decantation.

A large part of the science philosophy developed in the 20-th century was looking to capture and to describe a logical science structure. Many philosophers consider the scientific theory as an abstract structure, similar to an ensemble of interconnected sentences. They intend to offer a description of the logical connections of the theory sentences and the observational proofs. Unlike to *the Scientifics*, *the philosopher releases himself of the tyranny of the materiality and the pressing of the reality*. The defining note of the philosophy is the disinterestedness, *the „contemplation”, the most pure expression of the theoretical spirit*. [Mircea Florian, 2002, p.50].

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While citing A. Meinong, M. Florian stresses an important aspect for the epistemology of knowledge. The real objects compose a small part of that what an „object” is or could be. It is a long-time unnoticed fact, because there is „a particular strong interest for the real, lying in our nature, favouring the exaggeration to treat the no real as a simple nothing, more exactly as something the conscience finds any or any interesting contact point in.” [A. Meinong, in Mircea Florian, 2002, p.50]. Despite their beginning phase, the contemporaneous research in the reference fields of the nature and society are exploring aspects at the edge between the visible and the invisible, the material and the spiritual. The research methodology cannot and must not remain prisoner of the materialist-positivist canons, over bided during more than two centuries.

Defined as an action aiming to reach a certain purpose, according to the Dictionary for Science and Technology edited by the Academic Press, the science is „the systematic observation of the natural events and their causing conditions in order to discover facts and, based on that, to set rules and principles. The professor Sheldon F. Gottlieb, from the South University Alabama USA, defines the science as „an intellectual activity unfolded by individuals, in order to discover information about the natural world, they live in and to discover the way this information can be organised in significant patterns.” An interesting definition considers that the science consists purely and simply in setting and testing hypothesis based on observational proofs: “the experiments are important where appropriate, but their function is only to simplify the observation through imposing several controlled conditions.” [Dott, Jr. Robert; Roger Batten]. The science aims mostly to find out the truth. Knowledge means seeking for truth and explanative in a real way true theories, considers Karl R. Popper. He specifies also that the science does not offer absolute certitudes: knowledge may be also subject to errors. This philosopher opines that science is not an infallible “body of knowledge”, but rather a system of hypothesis, presuppositions or anticipations we work with as long as they resist the tests.

Likely to any other human act or product, the science started a philosophy, the frames for a mind logical structure were set and science took a decisive role in the social life. Accordingly, there is the *science philosophy*, *the science logic and methodology* and *the science sociology*, composing together *the epistemology*, a general science theory. In this comprehension framework, the general research is defined as an „active and systematic process, aimed to discover, to interpret or to review facts, events, behaviours or theories, or to achieve practical applications with the help of this kind of facts, rules or theories.”[Pisoschi, A., Dobrescu, Emilian M.].

2. Paradigms – research programmes and traditions – freedom and creativity in the creating process

„Any person who didn't pass through the philosophy is irremediably incomplete.”J. Piaget

The relation between science and philosophy was in the decades of the 20-th century the object of several large analyses and of some loud and interesting discussions. It is well-known that cause of this situation was the science. Through its resounding in those period successes, the science was imposing a basic review of the world image in the 19-th century. Illustrious philosophers like Nietzsche, Poincaré and Bergson took a strong

sceptical attitude, setting doubts and even categorical denials concerning the value as truth of the scientific theories, by affirming that they were relative, subjective and even false. Philosophy and science concerns are mutually subordinated. Aiming to be objective, the philosophy cannot ignore the science. Although, during the history of the knowledge development, the philosophical thinking anticipated ideas later confirmed by the science, the philosophy always was supported by the science and the science took for investigation and solution numerous problems belonging previously to the proper field of the philosophy.

The very dynamic picture of the scientific changes described by **Th. Kuhn** remarkably modified the science philosophy. A considerable Romanian scientific community supports any speech in the matter, invoking concepts and vision he proposed. His contribution is, for sure, remarkable. The author of the *Structure of the scientific revolutions* assigned the success and the power of the science to a delicate balance between several factors in a complex and fragile mechanism. *The scientific paradigm*, as defined by T. Kuhn, represents an exemplary scientific achievement, succeeding to orient the scientific theory and practice through its content: rules, concepts, preferences, philosophical presuppositions, and a problem source whose solutions are prefigured like in a puzzle game.

In an epistemological view, the paradigm is an explanation pattern, dominating a scientific community, in a certain moment of the historical development of a particular discipline. As an organised body of logically or empirically satisfactory conceptions, it has a heuristic function: to generate operational hypothesis, methodologies and validation criteria. In Kuhn's opinion, the central specificity of a science consist in the fact that fundamental ideas associated to a paradigm are not a controversy subject, because the basic principles are isolated towards the denial. Starting from this point of view, the researchers in a certain scientific field are seeking to theoretically and experimentally extend the paradigm in order to approach new cases. Despite that, Kuhn concedes that theories are sometimes denied by the observation. The paradigm containing the research model will provide the grounding principles for the future adopted decisions concerning the research development and completing. Inside the development of each discipline, there is a certain "orbit", corresponding to each paradigm: it may start in a deterministic way (directly connected to the reality and the experience and having the status of a logic hypothesis sum) and, after the constitution of a theory family associated to a general program, if placed in the abstract "generator" nucleon, it can become a structural paradigm.

According as the theory is evolving, one or more theory families ("nets") appear, leading to the relations with the experience. It will be much more difficult to give up to an entire paradigm. Only the identification of a critical mass of anomalies and the appearance of a new paradigm, rival of the first, can lead to the avoidance of a paradigm. In this context, we admit that a certain paradigm – including an educational recognized paradigm – may accumulate, during the time, some anomalies. The education science is supposed to consider them as *challenges* and to open, in this new space, coherent research programs in order to solve the dysfunctions due to those anomalies in the reality of the studied phenomenon. The accumulation of several anomalies can release the phenomenon of education science crisis, representing a special period of time in the development and the evolution of the scientific field. During this respite, the present paradigm is losing its

capacity to inspire and guide the Scientifics, but no new paradigm is born, in order to revitalise and enlighten the research field.

In Kuhn's opinion, the decline of a paradigm represents not a denial moment of the scientific status of the field itself, but it is a part of the "*adequate functioning of the science*", although, in most of the cases, the implied Scientifics don't feel/perceive things in the same way. The relations of the paradigms with the evolution of the theoretical and applicative investigations represent a distinct layout concerning the role of the paradigms in the knowledge evolution. Thus, the paradigms are not abstractly developed, but indispensable according to the study of some applications in a troublesome space, by using the practice of problem solving.

The author of the *Structure of the scientific revolution* puts in discussion another aspect: the relation between the paradigm and some inconsistent evolutions of the scientific investigations. When the research arrives to experimental findings contradicting the paradigm presumptions (and thus its expectations), the approach has to treat them as problems or difficulties to remove and not as problems trying to invalidate that paradigm (in Kuhn's language – counter examples). According to Kuhn, the conclusion is that the progresses in grounding and implementing the paradigm do not represent confirmations and the anomalies were not invalidations of the paradigm, but solutions to puzzle problems. The research continuation aims to solve these problems and not to test or to not credit the paradigm.

The secret of a science depends on the remarkable balance it succeeds to preserve between to be too resistant to changes in its fundamental ideas and to be not enough resistant to it. Kuhn concludes that this balance cannot be described in terms of explicit rules. An important observation aimed to ground the messages of our paper derives from Kuhn's emphasis concerning the Scientifics' caution regarding the critical interrogation and the denial of the fundamental science ideas based only on simple observations. Any science history provides conclusive data in this matter. The denial moments of a fundamental idea, treated in an historical view, appear as insignificant, at the scale of the whole science development process, regardless of the waves aroused in a certain moment.

If Kuhn deeply trusts the ordinary standards implied in the paradigms and in science capacity to overcome the crisis beyond the obstacles and the failures, there are opinions that his point of view were less productive if not even dangerous. The perseverant commitment to paradigm fundamental ideas may stagnate the science development. The scientific education appears as a way „to indoctrinate”, leading to the result that Scientifics prove a deep „faith” in their paradigm.

Imre Lakatos, a Hungarian philosopher, popper's contributor, less known in the Romanian epistemology of the education science, is one of the most ardent remonstrators of Kuhn's theories. Kuhn itself made from the beginning a summary inventory of his agreement points with Popper: „we both are more preoccupied by the dynamic process leading to get the scientific knowledge then by the logical structure of the scientific research products. ... We both reject the outlook that the science is cumulatively progressing, we both stress out the revolutionary process leading to reject a theory and to replace it by a new one, incompatible; we both strongly stress out the role in this process of the incapacity of the previous theory to face the difficulties of logic, experiment or observation.” [Imre Lakatos and Alan Musgrave, pp. 1-2].

Beyond this common points, it was clear that the two conceptions are fundamentally different. The main disagreement refers to the image they have about the science and the way to get this image. Kuhn takes into account *the science-as-it-is*, and Popper and his disciples, *the science as-it-has-to-be*. The Kuhn method appeals to the science history and sociology and after that to the current scientific practice. The Popper method relies on the science logic and methodology.

Lakatos was considering that the foundation of Kuhn's theory is an undesirable one and that „it has a destructive effect upon reason and finally is dangerous for the society”. (apud Imre Lakatos in Godfrey-Smith, p. 165). For this purpose, he builds his creation in order to save the science rationality from the appreciate damages it suffered because of the Kuhn perspective. Lakatos wants the entire research approach to be guided by clear methodological rules. The assessment of the scientific changes as a fundamental irrational fundamental process – a matter belonging to the crowd psychology – is for Lakatos a dangerous way to get. Lakatos considers the relation between the science history and philosophy - the epistemology – from the perspective of the support and the assessment of the philosophical/scientific conceptions: through *historical case studies*. He is stressing out the fact that only „rational reconstructions “of historical episodes have to be taken into consideration, where Scientific decisions and work should be presented as rational as possible. These rational reconstructions are in fact intentional distortions of the events - admitted and mentioned in the footnotes of the historical papers – aimed to explain a field evolution. From his point of view, the history is not only a description of events as they took place, but an events interpretation from the view of their potential of becoming and rational importance. In his work *Science philosophy*, Peter Godfrey-Smith was asking why, at the time of its affirmation and even later, this idea was not welcomed „with more philosophical astonishment and criticism.” (p. 166. cit. paper) Lakatos' contribution to the science epistemology is connected to the development of a unitary conception regarding the science organization, very influential under the name methodology of scientific research programs. For Lakatos a research program is a model analogous to the paradigm theorized by Kuhn, in its large sense. The obvious difference results in the fact that, for Lakatos, each field usually has more than one research program at any moment. From his point of view, the science – any science – including the pedagogy (our note) – has actually to integrate a competition between the research programs. It is an essentially appreciated fact for rationality and progress. The idea of concurrent programs represents clearly a useful perspective to base the educational research in Romania!

A research program is an historical entity developing and evolving during the time. The program refers to a corpus of related theories. Later theories are built as an answer to the problems generated by the previous theories. The fundamental theories of a program are not immediately rejected if anomalies of the empirical data can infirm them in a primary form. A research program has two main components: *a hard core*, represented by a set of fundamental ideas, indispensable to the research program and a protection belt ring – conceived as a set of less fundamental ideas capitalized in order to apply the hard core to the real phenomenon.

Lakatos's perspective is an important one for the development of the educational research programs. The necessity to identify the hard core of these research programs – the fundamental ideas of the educational sciences – in order to validate the message of the empirical data bring to our attention the studies for historical research, the content analysis,

the hermeneutics, the comparative approaches etc, needed to validate the scientificity of the pedagogical knowledge and to crystallize the axiomatic set of defining scientific ideas. The detailed and specific versions of a scientific testable educational theory include ideas from the hard core combined with ideas from the protection ring! The research program is a progressive one (influenced by Popper), constantly expanding his applicability to a more and more bigger set of cases, capable to enhance its predictive capacity. A research program is degenerating if the changes acting on cover only the existent problems and have not the necessary opening capable to include new cases/situations.

Despite that, a research program seeming to degenerate has to be a while protected in order as well to decant the significations of the primary conclusions as to reflect on the applied methodology and the entire research approach. Estimated as Achilles heel of his theory (Feyerabend, 1975), or „high risk situation” (Lakatos, 1971), this perspective allows us to retain as important the meta-rational detachment in the process of the education research, aimed to see beyond the denials/validations of the empiric data.

In 1977, **Larry Laudan** was publishing his paperwork *Progress and Its Problems* and was developing a conception similarly to Lakatos’s conception, admitting although the power of Kuhns discussion concerning the social structure of the science and the historical examples. Likely to Lakatos, Laudan wanted to develop a conception about entities similar to paradigms capable to coexist and to compete in a scientific field. His phrase is not „research program”, but „*research traditions*”. The difference is not only a terminological one. If for Lakatos, the hard core of a research program never changes, for Laudan the theories representatives for the research traditions are not too closely related. The hard core allows ideas mobility, their declination according to the evolutions noticed in a socio-historical and scientific perspective. The theories sustained at a certain moment may leave a research tradition and be absorbed by others. Another new element in Laudan’s theory refers to researcher’s attitude towards the scientific theories and implicitly towards the science. If Kuhn and others before Laudan were admitting and describing researcher’s attitudes in terms of faith and adhesion, Laudan distinguishes clearly between the theory acceptance and practice. If the acceptance supposes and implies a certain degree of faith, the practice means a new attitude. It implies the decision to work with a certain idea and to explore it for some reasons, practically or theoretically, for other reasons than the confidence in its value as truth. Laudan considers that the theory or idea acceptability is measured by the general level of its capacity for problem solving and not for the rate of changes in other theories.

Paul Feyerabend, an Austrian philosopher, is one of the most controverted and adventurous personalities in the post-kuhnian debates. In his paperwork *Against Method*, edited in 1975, he is arguing and sustaining the so called „epistemological anarchism”. In his view, an epistemological anarchist is opposing to all rule systems and constraints in the science, for reasons regarding the assessment and the valorisation of the science researchers’ creativity. Setting up methodological rule in science will limit their creativity. From an historical research view, his perspective gains in sustainability. To discover the truth, to ground the science axiomatic core was achieved in very unusual ways. The contemporaneous expression freedom imposes the opening of some novel perspectives in the knowledge process, precisely in order to win and not to waste the time on beaten track paths, not always fertile. One of the strongest convictions Feyerabend had is that „*science is representing un aspect of human creativity*”! In this ideate universe, he is criticising

Kuhn for his appeal to the Scientifics to be organized, ordered, mechanistic; these aspects will encourage the worse tendencies in the 20-th century science: the professionalization, the horizon restriction and the exclusion of neo-orthodox ideas! [Godfrey-Smith, p.179]. Although sometime presented as “science enemy”, Feyerabend wanted to transmit an important message to the science: Scientifics have to present themselves as defenders of the freedom and creativity. At the end of his book, he states strongly that “the present society must be set free from the stifling authority of an scientific dominating establishment, in the same way as yesteryear it had to be set free from the authority of the True and Unique Religion” [Godfrey - Smith, p. 180].

3. What is important to be recorded from the contemporaneous orientations of the science philosophy for the epistemological grounding of the pedagogy through the appeal to the historical research?

The perspectives treated in an accentuated comparative way, in the opposition Kuhn – Lakatos – Laudan – Feyerabend, become, from our point of view, beneficent in the educational research space, in an historical methodological vision. In his paperwork *The Logic of the scientific research*, K. Popper was valuing the fact that the experimental verification confirms nothing about a theory *truth*. A theory means a sum of daring „conjectures” and hypothesis with an infinite number of *consequences*. Even if someone takes a theory as being true, no one could prove it in an experimental way, precisely because the infinite number of its consequences. In order to refill this methodological gap and to surpass the deadlock, Popper considers that it would be better to emphasis the falsehood of a theory. In other words, he sustains that it is easier to find reasons in order to demonstrate the falsehood of a theory that reasons to demonstrate that generalization are true. Such reasoning leads him to his famous *falsifiability or contradiction criterion*. Popper concluded that the scientist and science role is to permanently formulate daring “conjectures” and to find, after that, the criterion in order to emphasis and eliminate errors this research priority implies necessarily an historical methodological approach.

In Einstein’s revolutionary opinion about the universe, „for the ideas and cultures history, it is obvious that phenomena appearing in a temporal random sequence belong to another reality (...); in its own dimension, this reality composes a whole (...) and the historian’s purpose is to perceive it like a whole.” In other words, the ideas history will perceive the link between ideas as a *synchronic* one, for instance, as a result of their belongingness to the same *system* which can be represented according to some rules. The results of the mental processes are the processes of thinking: systems deriving from the same premises and existing in their own (logical) dimension, a dimension non identifiable with the history of humanity. They interact in each moment with the history and the chronological sequence they compose is a sort of sequential *puzzle*. The ideas historian has to propose the study of the systems of thinking in their own dimension and a system of thinking has to be admitted as such: „an object coming from *outside*, traversing our space in an apparently discontinuous way, having a hidden logic we can discover only if we succeed to get out from *our space*. In other words, the history is the sequential result, incredible complex, of the interaction on a large scale of several systems of non-sequential thinking.”

- The educational research programs have to interrogate, in a temporal perspective, in an accentuated critical way, the recognized paradigm/paradigms in order to identify the

fundamental ideas, their hard axiomatic core and the protection ring enough flexible, able to open new approach possibilities for the problems/puzzles generated by the studied phenomena. A cautious attitude towards the paradigm organising the scientific activity represents a necessary condition for the rationalization of the research in its whole and for the enhancement of the conclusions objectivity.

- The educational paradigm synergic subordinates various models and methods and opens to the pedagogy the possibility to be considered as a modelled science/thinking as well from a theoretical as from an applicative point of view. In this way, the models permit to identify and understand the relations between the action logic and the ideas logic. For instance, the attempt to crystallise a real educational community and several axiological and pragmatic solutions regarding the education brought face to face theorists and practitioners, concerned about the education fate “today and tomorrow” and the crisis generated by the multiple theoretical and practical educational options, defining the movement *New Education* and all its waves. The *New Education* can be considered as an historical socio-historical phenomenon, aiming to achieve a breach in the educational field, subordinate to the conviction that human are perfectible and generating a possible reform in the organization of the social life, of the specific educational theories and practices. The *New Education* doesn't appear as a linear or unitary movement. It doesn't represent a doctrine body: it has a centre and peripheries. Thus, it is possible to define it as a system of socio-educational values divided and disputed in identifiable thinking and practicing groups, having established, in the time, the representative characteristics of the *New Education*. From this perspective, the New Education can be considered as a socio-cultural production, varying in time and space. For this reason, we appreciated and supported *the interrogation in a localized manner of the existent ideas filiations* in the space of the movement *New Education*, the more or less anti-establishment convergences and actions aimed to achieve an educational renewal manifested during the 20-th century. [Csorba, pp.42-44] Each educational paradigm bounds an exclusivist scientific practice, enough resistant to the novelty. All these restrictions, sometimes considered as defects, prove to be necessary to the science development; “by concentrating the attention on a restraint problem area relatively esoteric, the paradigm constraints Scientifics (researchers in education) to investigate a part of the nature in details and deepness hardly to be reached in other conditions” [Kuhn, pp.67-68].

- Kuhn proposes and argues for a stage approach of the interrogation in every knowledge field. In his opinion, the knowledge interrogation should include a pre-paradigmatic and a paradigmatic phase. The interpretations we assign to the human capacity to process information make possible a more nuanced analysis. In the pre-paradigmatic phase, the epistemological analysis (and not only) are passing from *empirical to philosophical interrogations* and later to scientific interrogations; the interpretations produced in the scientific ways of interrogation make possible to contour the first paradigm and lead to the entrance in the paradigmatic phase. The historical research can clarify the image of those stages, by permitting to differentiate the fundamental ideas from the less relevant ideas, from a temporal perspective, proper to an authentic scientific approach. The signification of recourse to the history of the pedagogy derives from the necessity to understand the educational characteristics of our times, in order to develop, restore and reanimate the educational reflections, to

recover and revalue the rediscovered pedagogical thinking and culture. “An historic-hermeneutic analysis of the educational contexts, historically defined, may determine the derivation of some important aspects of a problematic ... The historical analysis of the educational reality offers support to solve the big pedagogical problems, by updating the origins of these questions in the context of the present problems”. [Wulf, pp. 26-27]

- Recomposing historically contextualized „ages”, crystallized in paradigmatic sentences, with a metaphoric echo, means to appeal to an expanded documentary field. The revaluation of the numerous written or iconographic documents, even records, requires, certainly, much erudition. Each specific history can be object of a relativity accusation. However, the history relativity is itself historically determined. In fact, the requirements concerning the internal coherence of a historical speech relay essentially on the way the proofs and documents are treated, in a verticality effort placed at the border separating science and fiction. The use of a history research instrument, scientifically validated, may reduce the hazard and arbitrary part in collecting, inventorying, exploring and valuing documents. Documents interrogation has to avoid, also, the „distance excess” of P. Bourdieu [Bourdieu, p.11] and to cultivate a proximity relationship – to sit face to face with the educational facts, in an historical perspective – in order to increase the objectivity of our conclusions.

- Being philosophy, the epistemology of pedagogy is always returned to its own past. That’s why, taking in consideration that „the best introduction in a discipline is, always its history” [Mircea Flonta, p.3] we shall admit that, for the epistemology as for other cases, in order to understand the present issues, the solutions proposed by the big epistemological currents for the development of the pedagogy as a scientific field, it is indispensable to know the manner it was established. We are not interested in details and nor in the ensemble of the historical development of the epistemology – viewed in his whole continuous extension. We want to know only its „focal” points: the decisive moments, the acquisitions of the past having a present value.

- A surprising aspect for a coherent epistemological analysis of each paradigm its hat facts and phenomena included by the educational theorists can be satisfactorily explained only through the appeal to theoretical constructs and to methodologies belonging to other fields also (psychology, sociology, philosophy, neurophysiology etc.). This perspective is a result of the relative new orientation in the field of the scientific research; the integrity and interdisciplinary of the approaches, of ideas discovery and justification. It is also useful to mention that, in the science philosophy; two other important objections were derivate and are furnishing to the educational scientist a new reflection, doubt bur also certitude space: „the individual paradigms rarely present the influence type Kuhn is describing and major changes can happen without crisis.” [Godfrey-Smith, p. 158]. Kuhn’s remarkable attempt to achieve a new approach for the science philosophy by discussing the social structure of sciences and the basic mechanisms of science change and becoming continue to represent for the pedagogical research a fertile even flowering road.

- The research traditions, recognized as well worldwide as at the national level, by the currents of pedagogical thinking include in the *tradition* syntagm the temporality pattern: the historical research in education science appears thus as having priority and being relevant, by offering rational-objective grounding perspectives to the on-going

research programs. Obviously, for each pedagogical research school the moment to objectively identify, admit and notice the research tradition is one having priority. The circulated theories between specific research traditions, paradigmatically recognized or not, have to be, in time, noticed and dated; it is an aspect the historical research has mostly to take in consideration.

- Laudan's recommendation to practice the research tradition having the highest progress rate in solving the problems the school of a certain epoch has to face proposes, for the history of the pedagogical institutions and doctrines, new research and development areas. We consider the tradition of the Romanian and universal pedagogical research, in an analysis comparative context. The acceptability of a theory or of an idea, measured through the general capacity level to solve education problems reminds us the perspective of the pragmatic instrumental philosophy, promoted by Dewey at the beginning of the 20-th century which influenced worldwide, in the last 100 years, more or less obvious the philosophy schools.
- The assessment of the science and the importance of the historical research in the education field from the perspective of Feyerabend's conception – according to which the science is a defining aspect of the human creativity – allow us to appreciate the reopening of several education research areas from new points of view. We consider an fundamental historical research approach capable to reveal and enlighten, according to new interpretation and explanation principles, several areas insufficiently explored and theoretically valued, due to the absence of systematic concerns in the matter, or to the perpetuation of paradigms by value declaratively affirmed and reaffirmed without chances for new research roads in the innovation of the education practices.
- Feyerabend offers an important observation to the understanding of the development process for each science by demonstrating that in most of the cases „the science is a matter that belongs more to the manner of discussing it than to the adoption of the observation lessons.” The author disputes the empirical exaggerations and the grounding of the scientific theories on elementary observational descriptions. Obvious, observational things are mentioned, things Galileo had to face at the beginning of the 17-th century, in order to demonstrate Earth's movement. Our daily experiences related to the movement are suggesting that Earth is stationary. But, how many of the lecturers of this article doubt that the Earth is moving? Of course, willing „to reconcile” Feyerabend with Laudan, we could follow the evolution of some research programs, based on research traditions and rules capable to enhance the rate of the problem solving capacity.
- When Feyerabend is proposing and supporting the idea that the science is taking benefit from the existence of alternative ideas and perspectives, he is launching another interesting idea aimed to support open research programs and to harness the history methodologies. The interpretation of the phenomena in a historical perspective has to take in consideration the multiple points of view for the understanding and explanation, in an ideate and action dimension. It is important to find out if the sources/documents we base our study were noticed by „defeated” or „victorious” individuals! To accept and to value alternative explanations is not damaging, on the contrary it allows large openings to the knowledge understanding, to the identification as well of the depth and clarity areas as of the still cloudy areas, by proposing new research areas in the future.

- The competences specific for the researcher are interrogated in a new perspective: the opening to ideas proliferation and to the diversity of the life and existence styles. Feyerabend suggest that it is the only way we can perceive the limits of our present perspective, by stepping outside it, even if only for the moment. Things we consider established, observational facts, are in many cases loaded with old fashioned prejudices and experiential taboos. Despite that, there is a strong need for prudence and for an evaluation or rejection or acceptance mechanism on the “ideas market”, capable to enhance the science and to innovate the practices. Feyerabend’s perspective brings to the science a piece of the arts savour. It is a fact to be taken in consideration, if we see in the scientific creation process the artistic consuming fire capable to resurrect human enthusiasm, freedom and creativity in its sublime and gifted part! Imagination and creativity are, for sure, one science part, but not the only one.

Conclusions:

An important characteristic of the science concerns its *multidisciplinary character*. *The scientific knowledge is more and more rapidly applied* in the practice and in many cases the fundamental research is interpenetrating the applicative one. The scientific research activity *interferes with education and instruction activities*. The research itself has to be considered as an active learning process. The lessons of the past are important if integrated in coherent research and learning programs. The education science needs of course important material, financial and human resources and the scientific information becomes more and more expensive. On the other hand, the globalization imposes international cooperation in educational science, materialized in information exchanges and the creation of strong scientific communities, capable to offer auxiliary opportunities in the knowledge process and the results valuing. The historical and comparative perspective, philosophically grounded, can provide added rigour and coherence to any investigative observational-experimental approach. The science philosophy is capable to offer, in an integrated vision, the needed epistemological support in order to ground some education research methodologies able to open new research areas in the education field, from the perspective of their evolution and maturation in an epistemological and social dimension. The conscience of the fact that pedagogy – the base for all education sciences – has to be involved in a defining and redefining process of the specific object and methodology according to a normative background, mostly controversial and unsure, appears in the epistemological dimension as a pressing priority. The poverty of the historical-theoretical and meta-theoretical synthesis in the education field stresses out the fact that pedagogy is still looking for concepts decantation and explanations, in order to facilitate the rigorous and valuable epistemological reflexion. For the pedagogy, such an epistemological reflection is a very important necessity, the more obvious that the scientific communities appreciate the need for clarification and delimitation of the explicative extension for some theories and recognized educational paradigms.

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