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Post Modernity and Creation of Knowledge

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Abstract: This paper aims at reflecting on the role that we are expected to play as a unit of research in education. Starting from the initial definition of knowledge and the confrontation of rationalist and empiricist positions on how to access to it, the paper seeks to work on the understanding of knowledge originated from the scientific revolution of the sixteenth century, in order to merge in the current context of postmodern paradigm shift and bring out what we are expected to do with. What is the main purpose of research? Is it used to draw the same conclusions previously found out? Is it used for the reproduction, confirmation and dissemination of knowledge already created? Or for the formation of a knowledge that brings something new, that really contributes to the improvement of education?

Key words: knowledge, paradigm of complexity, post modernity

1. Knowledge as A Justified True Belief

The issues related to the nature of knowledge (what is it?) and the ways to access to knowledge (how do we get to it?) are as old as the philosophy itself, leading us naturally to the field of the epistemology. However, we can agree that these issues were first formally addressed by Plato, in one of his Dialogues, the Theaetetus (Bostock, 1991; Waterfield, 1987). Who was Theaetetus? He was a brilliant young man, student of the famous mathematician Theodorus of Cyrene. Plato put Theaetetus dialoguing with Socrates and Theodorus. Faced with the question “What is knowledge?” Theaetetus started listing a series of subjects, such as geometry, astronomy, arithmetic, arts and crafts.

Socrates then refined the question: “But what is knowledge itself?” The issue is much more complex, since in Greek as in English, there is just one word, contrarily to what happens in Portuguese (“saber” and “conhecer”) or in French (“connaître” and “savoir”), for example. In this dialogue, Socrates presented a tripartite division of knowledge:

(1) Knowing an object (a person, a thing): knowing by contact, corresponding to “conhecer” and “connaître”;

(2) Knowing how (knowing how to do things): knowledge of skills;

(3) Knowing that: a propositional knowledge.

The Dialogue went on focusing on this third dimension, referring to “saber” and “savoir”. It is also on this dimension that we are interested to analyse here.

Theaetetus continued to reflect on this type of knowledge making use of the Maieutics, which Socrates refers to as the work of a midwife who helps a woman give birth. Apart from the association of knowledge to perception,

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given the argument that a breath of wind can cause a chill to someone who is more sensitive to cold than to another person, they focus themselves on knowledge as belief: we must believe in what we think we know. And then, he continues to reflect, it is necessary that this belief is true. However quite often, it is proved that what we thought to be true is not after all. We must therefore justify such a supposedly true belief. So the justification is the third condition of knowledge. Deductive, inductive or adductive arguments are necessary to configure the existence of the knowledge we are now writing about. As a belief (1) which is true (2) and justified (3). "The preliminarily standard definition is that knowledge is a justified true belief" (Grayling, 1996, p. 37).

2. Access to Knowledge

Not everything is as easy and straightforward as presented above. Abstractly speaking, and since every belief is based, in chain, on each other, there will be a point where you can no longer go further, because it is not possible to scrutinize any other justification in the end. We say here that these beliefs are self-justified, or self-evident: we are then at the level of the foundational beliefs, that is to say, the origin of everything, namely the myth of the datum, of the pure datum. And then we can question about whether there is or there is not a prior knowledge...

In fact we can only say that we do not know something, if we know something. But has knowledge existence regardless the human being who wants to achieve it? Is knowledge just waiting to be discovered? How do we get to it then? Or is knowledge a reality constructed by the subject?

Throughout the history of the epistemology, we have been confronted with two schools of thought: rationalism and empiricism. For the "rationalists", the objects of knowledge are propositional, that is to say, they are truths that are achieved by rational, logical-mathematical inferences, by the reason. The only sources of knowledge are the ideas of the intrinsic reason, as reflected in the syllogistic reasoning, for example, where the major premise is a "kind of self-evident and undeniable statement regarding a metaphysical truth or a dogma" (Sousa, 2000, p. 19). In this case, mathematics and logics are the core disciplines necessary to achieve this knowledge.

As for the "empiricists", what counts are the natural sciences, with their procedures of observation and experiments. For them, one comes to the truth by experience, by the senses, although they recognize some limitations in this approach: the colour, the taste, the smell, the sound, the texture, etc.., of an object vary according to the condition of the subject who perceives it, or the conditions under which the object is perceived. Depending on the distance a certain object is from the observer, it may look greater or smaller. For a warm hand, warm water will be cold, but for a cold hand, it will be hot. The grass is green during the day but at night it seems predominantly black. To overcome this perceptual relativity, some instruments are created, such as microscopes or telescopes as more refined extensions of the human senses. Over time, these two groups have struggled over about the nature, the origin and the reliability of knowledge.

The Aristotelian and medieval knowledge was used to view everything that was not exclusively based on the reason with despise. The knowledge used for practical resolution of problems of day-to-day had not the status of scientific knowledge. This would be an ordinary or usual knowledge, at the level of common sense: irrelevant, illusionary and false.

3. Modern Scientific Knowledge

The decline of the idea of the Earth as the centre of the universe has shaken the current esoteric conceptions, triggering a revolution in the way of organizing men's way of thinking and reading the reality. Modern science, born with the scientific revolution of the sixteenth century, brought another kind of rationality to access to knowledge

> "... represented by Copernicus's heliocentric theory of planets motion, Kepler's laws about planets orbits, Galileo's laws on the bodies falling, the great synthesis of Newton's cosmic order and finally the philosophical awareness given by Bacon and particularly Descartes" (Sousa Santos, 1987, p. 3).

The Aristotelian deductions started to be refuted. In the Preface to Novum Organum, Francis Bacon (2002) shows the relationship between these two types of approach to knowledge (rationalism and empiricism), emphasizing the primacy of knowledge that enables action.

> "... But if there be any man who, not content to rest in and use the knowledge which has already been discovered, aspires to penetrate further; to overcome, not an adversary in argument, but nature in action; to seek, not pretty and probable conjectures, but certain and demonstrable knowledge — I invite all such to join themselves, as true sons of knowledge, with me, that passing by the outer courts of nature, which numbers have trodden, we may find a way at length into her inner chambers" (Bacon, 2002).

In one of his Aphorisms on the Interpretation of Nature and the Kingdom of Man (Aphorism X), Bacon states as follows: "The subtlety of nature is greater many times over than the subtlety of the senses and understanding; so that all those specious meditations, speculations, and glosses in which men indulge are quite from the purpose, only there is no one by to observe it" (Bacon, 2002). Later in Aphorism LXXI, picking up the prophecy of an Egyptian priest about the Greeks, Bacon compares them to children:

> "they were always boys, without antiquity of knowledge or knowledge of antiquity. Assuredly they have that which is characteristic of boys: they are prompt to prattle, but cannot generate; for their wisdom abounds in words but is barren of works" (Bacon, ibid.).

For this reason an objective and factual knowledge is aimed at, a palpable knowledge with no interference of human values or religious beliefs. And if it is true that modern science raised the man to the place of an epistemic subject, the fact is that the same science expelled him from the scientific area, viewed as an empirical subject, as it did it to God beforehand.

This new scientific rationality aims at isolating the researcher, observer and theorist, from his/her object of research, in favour of a knowledge the most possibly objective, not permeable by human emotions. It is then recommended the "inductive method, which means the use of multiple observations of the phenomena and not religious assumptions or other kind of authority to reach conclusions or generalizations" (Sousa, 2000, p. 19). The observation of natural phenomena should be free, non-committed and systematic, bearing an attitude of permanent distrust of the evidences generated from the immediate experience.

Against the uncertainties of the reason based just on itself, there seems to oppose, as we see, the certainty of the experience, ordered by the following well-defined steps: (1) Problem Identification; (2) Hypothesis formulation; (3) Data Collection; (4) Collected data Interpretation; (5) Drawing of conclusions; (6) Confirmation, rejection or modification of the hypothesis.

In this new type of scientific rationality, the "ideas" are not ignored. They configure the hypothesis, not as an

assumed truth at the departure (the major premise) but as a question to be ascertained by observation and experimentation. Boaventura Sousa Santos gives the example of Descartes, as someone who "goes unequivocally from the ideas towards things rather than from the things to the ideas, giving priority to the metaphysics as the ultimate foundation of science" (Sousa Santos, 1988, p. 4). In his speech at the solemn opening of classes in the University of Coimbra in the academic year 1985/86, entitled "A Discourse on Sciences", this sociologist drew our attention to the mathematization and quantification of the modern scientific knowledge:

> "The ideas that enlighten the observation and experimentation had to be clear and simple; because from them one can ascend to a deeper and rigorous understanding of nature. These ideas are the mathematical ideas. [...]. From this central place of mathematics in the modern science derive two main consequences. Firstly, the quantification: to know means quantifying. The scientific rigor is determined by the rigor of the measurements. The intrinsic qualities of an object are, so to speak, disqualified and replaced by the quantities that could eventually translate them. What is not measurable is scientifically irrelevant. Secondly, the simplification: the scientific method is based on the reduction of the complexity" (Sousa Santos, 1988, pp. 4–5).

And this happens in a context of stability and constancy, in the presupposition of an absolute order that rules over all things in the universe, a context in which it would be possible to predict future situations based on the explanation of present situations, or provide for situations there, on the basis of situations here. As Sousa says,

> "Basically, we were witnessing the affirmation of the nomothetic sciences able to explain and foresee general laws: faced with similar conditions, the same results would occur whether here or there, whether they were yesterday, today or tomorrow. This universal and timeless determinism made everything seem extremely simple and transparent" (Sousa, 2000, p. 21).

Modern scientific knowledge thus assumes a functional and utilitarian dimension aiming not so much at understanding the essence of nature, but at knowing it in order to dominate and transform it.

It is then understandable why all hopes for the resolution of natural and social problems that plagued the world were laid on this scientific knowledge. There is an absolute belief that we will reach the final and ideal stage of the evolution of the humanity. We have some examples to be reflected on. The theories of Auguste Comte (1798–1857) on the **positive social state** is one example of this general belief, as the stage reached after having already overpassed the previous theological and metaphysical states; also the theories of Herbert Spencer (1820–1903) on the **industrial society**, overpassed the simple, double and triple composite societies and those mainly military ones, with the understanding of the industrial society as the most civilized and evolved one, based not only on its form of organization and division work, as also on the decentralization policy and the idea of State serving the citizen, the representative government and free initiative, religious freedom and monogamy, among other things. We can also mention the theories of Émile Durkheim (1858–1917) on **organic solidarity** through the division of work, which in his view, would make the individuals become interdependent, cohesive and supportive, not by family, religion, customs or traditions, as in the type of mechanical solidarity characteristic of pre-capitalist societies, but because, like a biological organism, where each organ has a function and depends on others, in society too, each individual would have a specific function, needing others for other functions. That is what, in his view, would generate solidarity among men.

And why not to mention the theories of Karl Marx (1818–1883) on the class struggle as a way of destroying capitalism and replacing it with **socialism**, as a trend towards a more humanistic social and historical development?

These theories are good examples of the optimism modernity started to congregate in his break with the dark medieval past, in which everything was due to one single and supernatural cause. It is this modernity that, imbued with a desire of transparency and simplification, as reflected in the decomposition of the whole into parts, or in the Cartesian separation between subject and object (*egocogitans* and *res extensa*), denying subjective emotions, seeks to formulate general laws at the light of observed regularities. This modernity is characterized by A. Hargreaves as

> "a social condition that is both guided and sustained by enlightened beliefs in rational scientific progress, the triumph of technology over Nature and the ability to control and improve the human condition by applying all this scientific knowledge and technological expertise to the field of social reforms" (Hargreaves, 1998, p. 9).

4. Scientific Knowledge in the Context of Post-Modernity

The "black and white" thought organization to achieve scientific knowledge, in the line of a cause-effect or stimulus-response mechanistic and deterministic logic starts, however, being undermined by the recognition of the complexity of the phenomena to be studied, in a trend curiously initiated at the level of the hard sciences.

If Sir Isaac Newton (1642–1727) had dared to go beyond the distinction between Heaven and Earth, seeking to show that the laws that governed the celestial sphere were the same kind of those causing the fall of an apple, was not able, however, to abandon the static cosmic vision of the galaxy — The Milky Way as the entire universe — which remained rooted in the minds of scientists until the twentieth century. One had to wait until Edwin Hubble (1889–1953) demonstrated in 1929 that, after all, the universe is constantly expanding: the conclusion was drawn from the finding of nebulae in other galaxies moving away from us at tremendous speeds. This discovery raised the question about the origin of the universe, giving bases to the Big Bang theory formulated by Georgy Gamow (1904–1968), a Russian-born American physicist.

Nevertheless it will be Albert Einstein (1879–1955), who initially resisted to the idea of a cosmic origin, to question Newton's independent concepts of space and time, presenting the idea of space-time as one geometric entity, with his theory of relativity (special relativity in 1905 and general relativity, in 1915, this latter adding the effects of gravity to the former).

Gaston Bachelard (1884–1964), when referring to the era of new scientific spirit in contrast to the pre-scientific and scientificones, clearly says:

> "Nous fixerions très exactement l'ère du nouvel esprit scientifique en 1905, au moment où la Relativité einsteinienne vient déformer des concepts primordiaux que l'on croyait à jamais immobiles. À partir de cette date, la raison multiplie ses objections, elle dissocie et réapparente les notions fondamentales, elle essaie les abstractions les plus audacieuses. Des pensées dont une seule suffirait à illustrer un siècle, apparaissent en vingt-cinq ans, signes d'une maturité spirituelle étonnante" (Bachelard, 1993, p. 7).

They are for instance the quantum mechanics of Max Planck (1858–1947) and the probabilistic theories, the wave mechanics of Louis de Broglie (1892–1987), the correspondence and complementarity theories of Niels Bohr (1885–1962) and the uncertainty principle of Werner Heisenberg (1901–1976) and many others who have brought a new conception of physics which already contemplates the irregularities, disruptions and disintegrations, and acknowledges the inevitable interference of the subject in the observation, striking down the absolute vision of what is "reality".

Thus science itself is re-signified, the same way as the access to knowledge, in a rupture with the prevailing paradigm, understanding it as "... what the members of a scientific community have in common" and meaning scientific community as "... people who share the same paradigm" (Kuhn, 1983, p. 240). Incidentally, Thomas Samuel Kuhn (1922–1996) brings a new vision onto the development of science, by arguing that it does not evolve gradually and cumulatively, but through abrupt changes of paradigms.

This position makes us look at science differently and raise questions on scientific theories: Are they descriptions of the "reality'? Or are they just instruments that allow us to better understand the "reality" until other better explanations emerge? According to Karl Popper (1902–1994) "all science is based on quicksand". His principle of falsifiability underlines the idea that a theory is scientific only if it can be rejected. "Je les conçois les théories scientifiques comme autant d'inventions humaines, comme des filets créés par nous et destinés à capturer le monde" (Popper, 1984, p. 36).

The philosophy of mathematics itself, from the incompleteness theorem (also called theorem of un-decidability) of Kurt Gödel (1906–1978), recognizes that the measurement accuracy of mathematics, like any other form of accuracy, is always based on a selectivity criterion. Someone has always to "subjectively" select the "objective" criterion.

There arises a new relative and complex order, which spreads from the physical and natural world to the human and social world.

> "It's a new order, where it will be very difficult to accept simplistic and dichotomous divisions, I would say a Cartesian order divided into reason on the one hand, and emotion on the other, into right on the one hand and left, on the other, into man on the one hand, and woman, on the other, into black, on the one hand, and white on the other. Rather, we are now experiencing the time of ethical, philosophical, political and ideological mestizage" (Sousa, 2009, p. 3).

In this context, the book by Jean-Francois Lyotard, "La condition postmoderne", is published in 1979, laying the foundations for thinking about (scientific) knowledge in the new era we now live. "Our working hypothesis is that the status of knowledge is altered as societies enter what is known as the postindustrial age and cultures enter what is known as the postmodern age" (Lyotard, 1984, p. 5). Being a pioneer in the use of this term and featuring the "knowledge" as a kind of scientific discourse, Lyotard faces postmodernism as the end of meta-narratives. What does he mean with this? For him, meta-narratives are the major explanatory schemes of the world we can find whether in ideology or totalitarian systems of knowledge as it is the case of science in fact. And he blames science for this reason. The absolute truths and the idea of science as the "source of truth" are now refuted.

Even if we do not discuss the difference between the concepts of postmodernism and postmodernity, we would like to think about the meaning of postmodernity in the following terms: rupture or evolution of modernity?

For A. Hargreaves (1998), post-modernity is "a social condition that includes particular standards of social, economic, political and cultural relationships", while postmodernism is an "aesthetic cultural and intellectual phenomenon, embracing a particular set of styles, practices and cultural forms evident in art, literature, music, architecture, philosophy and in a more global intellectual discourse" (p. 43).

Anthony Giddens, for example, believes that the transitions that have occurred "should rather be seen as resulting from the self-clarification of modern thought, as far as the remains of tradition and providential views are being removed" (Giddens, 2000, p. 35). He says "We have not come beyond modernity, we are living precisely a phase of its radicalization" (ibid.) When Gilles Lipovetski (2004) prefers to use the term hypermodernity instead postmodernity, he wants to convey the idea that there was not a break with modernity yet,

as the prefix “post” implies, but an accentuation of typical characteristics of modernity, such as the individualism, the consumerism, the hedonism, etc.

But either you call it post-modernity (Lyotard, 1984), or radicalized modernity or late modernity (Giddens, 2000), liquid modernity (Bauman, 2006) or hypermodernity (Lipovetsky, 2004), among other designations, what is true is that we are living in a time marked by dizzying acceleration of change at all levels under the umbrella of information technology and communication, which have brought a new meaning to globalization. We are living an era marked by the collapse of the components that shaped modernity. Stability, permanence, security and certainty are hardly words that fit into our everyday lexicon nowadays.

And if we consider the relationship between language and thought, we would say that the postmodern mental organization is based on the so-called “absolute relativism”, on the systematic doubt against “universalizing presumptions” (Lyotard, 1984), in a permanent questioning of the neutrality and the universality of the reason, because “the postmodern world is fast, compressed, complex and uncertain” (Hargreaves, 1998, p. 10).

In this environment of uncertainty, complexity and chaos, Sousa Santos (1988) presents the emerging paradigm through a set of presumptions followed by a justification to characterize the knowledge. Let us reflect on these sentences which are titles of sub-chapters notably developed:

(1) All natural-scientific knowledge is social-scientific;

(2) All knowledge is local and total;

(3) All knowledge is self-knowledge;

(4) All scientific knowledge aims to become common sense.

How far are we then from the knowledge as “a justified true belief” referred at the beginning of this article? How much do we believe in knowledge? How much this empowers the belief? What is the truth in this context? And where are the fundamentals that ground the truth?

Paul Feyerabend (1924–1994), with his famous “Against Method”, brings the anarchist vision of science, rejecting the existence of universal methodological rules for considering them elitist and even racist. It is interesting to know that this book was born from a project initially conceived by himself and Lakatos, to be entitled “For and Against Method”, where each one would have the responsibility to defend his position: a position in favour of a rationalist view of science, by Lakatos, and a position against it, by Feyerabend. However, the premature Lakatos’s death in 1974 prevented them to successfully complete this plan, only remaining Feyerabend’s “methodological anarchy”.

He asks the reason why the effectiveness of the rain dance or the astrology is denied because they are not supported by scientific research. In his view, science is becoming as much repressive as an ideology, face to other alternative routes (traditional or not). And if science was liberating, in the beginning, it must not imprison us now in a supposedly scientific dictatorship.

We see that this is the trend that pervades our times. We see that in this new context of paradigm shift, knowledge comes to us somehow fluid, discontinuous, ephemeral, unpredictable and chaotic! Boundaries between what is scientific knowledge and common sense are not clear the same way as the boundaries between the physical and natural sciences and the humanities and social sciences. There are not clear boundaries between different disciplines, and even less boundaries between the subject who investigates and the subject/object to be researched...

5. What About Scientific Knowledge in Education in This Scenario?

For a R&D Unit, as is the Centre for Research in Education of the University of Madeira, the issue of scientific knowledge is of utmost importance, particularly in such a sensitive area as the education, which had to struggle against all in the past for its affirmation at the scientific level, firstly in the debate with the natural and exact sciences, and later with other social and human sciences. It is not possible to ignore all the signs of our contemporary times.

When analyzing our object of knowledge, that is to say, the educational phenomenon, Sousa (2000) places it in the paradigm of complexity (Morin, 1990), with all those signs of the paradigm shift mentioned above. She characterises our object of study this way:

(1) It is global and systemic;

(2) It is unique and specific;

(3) It is procedural and dynamic;

(4) It is uncertain and unstable;

(5) It is personal and subjective.

That is, the post-modern scientific knowledge in education is total: It is not possible to parcel it in separate subjects. Any analysis of an educational act needs a multitude of references from diverse fields ranging from history to philosophy, from psychology to sociology, from economics to policy, from methodologies to practice: any scientific analysis in education needs a multi-referential vision (Ardoino, 1993). Taking into account the overall dynamics of a system, any intervention in one subsystem echoes in all the others. A system is characterised by the existence of networks of relationships with “qualities of wholeness, interdependence, hierarchy, self-regulation, environmental exchange, balance, adaptability and equi-finality” (Littlejohn, 1982, p. 33) that configure a system. Knowledge in education is therefore global and systemic.

The post-modern scientific knowledge in education has to do with a certain situation, certain place and certain players, *hic et nunc*, without pretensions to generalization. Instead of large groups it is interested in the study of small communities, a school, a class, a group of teachers, or a single teacher. The case study is so privileged, understanding the experience as unique and unrepeatable. It is not possible to extrapolate the results of a certain research to other contexts. The sample therefore loses its raison d'être. Knowledge in education is therefore unique and specific.

The post-modern scientific knowledge in education is no less demanding in the understanding of its object, since it requires a historical overview of the ecological context, from the past, because any situation, the most concrete it may be, is shaped by its historical and anthropological roots. It is no longer possible to delineate with rigor the precise temporal boundaries of a particular event, or to cut the dynamics of educational phenomena in well-defined slices. You must know the life stories to get to the meaning of an educational phenomenon, because this is a procedural and dynamic object of knowledge.

The post-modern scientific knowledge in education does not give us absolute certainty or securities that previously the impersonal, anonymous and superior determinism did. It is not through the data quantification and the measurement accuracy and its statistical analysis, that we conclude on the truth of the facts observed. The permanent falsification of conclusions in the research findings is what opposes science to beliefs and religious or ideological dogma. Therefore we say that knowledge in education is uncertain and unstable.

Finally (last but not least), we argue that post-modern scientific knowledge in education takes the subjectivity of the researcher as a tool for research, emphasizing the perceptions, conceptions and representations not only of himself, but those of the subjects of research, trying to catch the meanings given by them to the observed situations, opening the way for methodologies of ethnographic approach and action research in education. We say, therefore, that knowledge in education demands personal and subjective implication of the researcher.

To this extent, we come to the point that concerns us as a Centre for Research in Education: what is the ultimate goal of research? Does it serve to reach the same conclusions already discovered? Is it for the reproduction, confirmation and dissemination of knowledge already created? Or for the generation of a knowledge that brings something new in order to effectively contribute to the improvement of education?

It is not by chance that the Portuguese Foundation for Science and Technology (FCT), that supports this Centre, states as its mission the following:

> "The mission of FCT consists in continuously promoting the advancement of scientific and technological knowledge in Portugal, exploring opportunities that become available in any scientific or technological domain to attain the highest international standards in the creation of knowledge, and to stimulate their diffusion and contribution to improve education, health, environment, and the quality of life and well-being of the general public."

The question is whether the ultimate goal of creating knowledge for the improvement of Education may or may not abdicate of methodological rules, as Teresa Estrela warns us, when she says:

> "[...] The weakening or abolition of the validity criteria not only reinforces the trend to ideological discourse and the politicization of science as it gives sciences of education a dubious negative legitimacy. [...] Moreover sciences accused of lack of rigor, may now be tempted or legitimated to any kind of impressionism and abandon any sort of accuracy, since without rules there are no transgressions.
>
> And this is, in my opinion, one of the biggest traps in which sciences of education can fall. Not having behind the scientific status and social recognition that psychology, sociology and other social sciences have gained, we cannot afford to fall into an undifferentiated understanding, in a field that belongs to everyone and no one and where everything is equally valid, since it represents the unique experience of an individual builder of reality and knowledge" (Estrela, 2008, p. 26).

But that is not what we want! We do not want lack of rigor, or undifferentiated knowledge which merges with impressionism and common sense, making education a "no man's land" where everyone, regardless of their training, has the right to say their opinion from the cathedra and their niches of power, without any need of foundation. When Sousa Santos (1988), to underscore the precariousness of science in the Popperian sense, states that "all scientific knowledge is intended to become common sense", he is not claiming that common sense becomes a scientific knowledge.

The rigor we all desire in the creation of scientific knowledge in our area will rise, in my view, from the awareness that scientific knowledge in postmodern education is no longer an absolute and simple, aseptic and decontaminated knowledge. Only this way the researcher will resist being a mere plaything of external forces in the definition of education. That's what we want: a clarifying, instead of sticking our heads in the sand, as if no winds of change were blowing.

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