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# Epistemological Obstacles in Organizational Studies: Considerations based on Gaston Bachelard

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## Abstract

Based on the understanding of epistemology as the production of knowledge – that is, as an epistemological act – this essay aims to critically elaborate considerations on epistemological obstacles in organizational studies, drawing on the arguments of Gaston Bachelard. To this end, the obstacles have been organized into three categories of analysis: (a) the descriptive empiricist obstacle, which includes first experiences; (b) the mystical idealist obstacle, which includes general knowledge, verbalism, and unitary and pragmatic knowledge; and (c) the methodological technicist obstacle, which includes substantialism and quantitativism. We will address the question of how epistemological obstacles manifest in organizational studies in view of the growing prevalence of empirical-descriptive studies, studies and models based on idealistic conceptions, and the valuation of methodological technicality, which takes precedence over the reality being investigated. The reflections point to the abundance of studies that: (a) focus on the immediate appearance of phenomena with little depth or criticism; (b) focus on broad, vague, and imprecise concepts; (c) use theoretical references as limiting assumptions for developing scientific knowledge; and (d) promote methodologism, emphasizing the correct application of specific techniques at the expense of the intended content.

**Keywords:** epistemology; methodology; theory; epistemological obstacles; Bachelard.

## Epistemological obstacles and epistemological rupture: initial considerations

Gaston Bachelard, a French philosopher and epistemologist, devoted much of his work to analyzing scientific knowledge. According to Bachelard, scientific progress does not occur in a linear, cumulative manner. Rather, it occurs through ruptures with preconceived ideas and the construction of new references when overcoming epistemological obstacles. The authors' experiences evaluating academic work, corroborated by Macedo (2009), Voirol (2012), and Bispo (2015, 2020, 2023), suggest an increasing tendency in organizational studies toward empirical-descriptive research, studies and models based on idealistic conceptions, and the valorization of methodological technicality, which assumes a more relevant position than the reality being investigated. Thus, this study addresses the following question: How do the epistemological obstacles described by Bachelard manifest in organizational studies?

This essay is based on the understanding that epistemology is the production of knowledge — an epistemological act — and not limited to formalities such as studying, investigating, analyzing, and writing. Rather, it involves the entire process of reflection "supported by the ontological condition of the subject and the object" (Faria, 2022, p. 83). This essay aims to critically elaborate on considerations about epistemological obstacles in organizational studies based on Bachelard's arguments. However, it should be noted that these considerations begin with the concept of epistemological obstacles but extend beyond Bachelard's (1990) rational materialism. They are oriented toward the ontology and critical epistemology of the concrete (Faria, 2022). Notably, Faria's (2022) texts lack a systematic analysis of epistemological obstacles: what they are, what they address, and how they manifest in organizational studies. This essay aims to address this gap.

In The Formation of the Scientific Spirit, Bachelard (1996) provides an in-depth analysis of epistemological obstacles. According to the author, these obstacles are ideas and practices that hinder or prevent the acceptance of new knowledge and the revision of established concepts. This makes it impossible to advance scientific knowledge. These obstacles are common in the process of building scientific knowledge because researchers are often stuck with outdated, dogmatic conceptions formed by experiences that have not been critically reflected upon, and research habits and practices that hinder the evolution of thought. This includes models, paradigms, theories, and concepts, as well as common sense conceptions ingrained in society that can contain prejudices, conditioning the processes of knowledge production.

Epistemological obstacles are fundamental challenges in the process of building scientific knowledge because they represent barriers that prevent the overcoming of preconceived and erroneous ideas. Thus, Bachelard's approach is essential for understanding the difficulties faced in the development of science. By identifying and overcoming these obstacles, scientists can make progress in constructing more solid theories and searching for objective scientific knowledge. In other words, for Bachelard (1996), epistemological obstacles are inherent to the construction of scientific knowledge and central to understanding the epistemological process. However, they are more than mere obstacles; overcoming them contributes to the development of science.

According to Bachelard (1996, p. 17), scientific innovation should be considered in terms of epistemological obstacles because the problem of scientific knowledge must be approached this way. However, these are not "external obstacles, such as the complexity and fleetingness of phenomena," nor are they the "fragility of the senses and the human spirit." It is "at the heart of the very act of knowing that the obstacles appear." Knowledge of reality is "a light that always casts some shadows," so "it is never immediate and complete." Revelations of reality are recurrent, insisting on returning to the state of origin. The real is never what one might find in an initial experience but rather what must be developed. Empirical thought only becomes clear after the set of arguments has been established. The act of knowing takes place against previous knowledge, overcoming what is an obstacle to representation in the scientific act itself.

From Bachelard's perspective (1996, pp. 20-21), knowledge that is perfect and full of certainties is formal, not scientific. Thinking that is considered "well done" is merely a "product of the school" and not of science. The development of thought implies a "total reorganization of the system of knowledge". Scientific research will always entail moving beyond contemplating the same to explore the other, "to dialectize experience." All rigorous sciences must acknowledge "thought is restless" and distrusts "more or less apparent identities and constantly demands greater precision and therefore more opportunities to distinguish." Science that seeks to know does so in order to better question.

Epistemological obstacles can be found in the historical development of scientific thought since much of what has been discovered has hindered the evolution of this thought. According to Bachelard (1996, p. 21), certain knowledge, though correct from certain perspectives, prematurely "interrupts useful research." Therefore, researchers must pay attention to existing knowledge and question it in relation to reality and new scientific discoveries. Only current knowledge can judge whether existing scientific knowledge continues to accurately represent reality. Objective reason is what makes research dynamic because it suggests fruitful experience beyond immediate and seductive common experience. Well-structured, far-reaching theories remain explanatory beyond their time of elaboration; however, this fact should not prevent their refinement. According to Bachelard (1996, p. 22), the concern with objectivity that leads some researchers to "list all the texts" on a subject does not extend to "measuring variations in the interpretation of a given text." At the same time, regarding the same word, "very different concepts coexist. What is misleading is that the same word both designates and explains." Since the designation is the same but the explanations differ, researchers "must capture scientific concepts in effective syntheses," demonstrating how one concept relates to another.

According to Bachelard (1996), epistemological obstacles manifest in various ways, permeating the different levels of scientific thought and practice. These obstacles can be revealed as follows: (a) First experience: the tendency to cling to the superficial beauty of an experiment at the expense of its scientific explanation; (b) General knowledge: the belief that one already knows everything about a subject, preventing the search for new knowledge; (c) Verbal obstacles: the use of words and phrases that mask reality, preventing a clear understanding of phenomena; (d) Unitary and pragmatic knowledge: The search for simple and immediate explanations that ignore the complexity of reality; (e) Substantialism: The belief in the existence of immutable and indivisible substances that prevents understanding of change and transformation; (f) Realism: The belief that the world is exactly as it is perceived by the senses that ignores the role of elaborate thought in

constructing reality; (g) Quantitativism: The belief that greatness is not automatically objective and that its initial determinations are undesirable[1].

According to Bachelard (1996), overcoming epistemological obstacles requires an epistemological break. In other words, it requires a revolution in the way we think and question the world. This break allows us to abandon dogmas and beliefs, opening up space for new ideas and stimulating creativity. It also allows us to construct more objective and reliable scientific knowledge. This rupture manifests through four procedures: (a) methodical doubt, which involves questioning entrenched beliefs to make room for new ideas and interpretations; (b) critical thinking, which involves rigorously analyzing information and theories to build solid and reliable knowledge; (c) rationalism, which involves using reason as a fundamental tool to understand the world by seeking logical and coherent explanations for phenomena; and (d) creativity, which involves imagining new possibilities and solutions by breaking with the limits of common sense to seek new perspectives on problems.

Thus, although epistemological obstacles are an inherent challenge to scientific activity, recognizing and overcoming them through epistemological rupture paves the way for constructing more solid, precise, and transformative knowledge of social relations. Bachelard (1996) emphasizes the importance of overcoming these obstacles by breaking with common sense and adopting a critical and reflective attitude toward established knowledge. Therefore, it is necessary to constantly question previous conceptions and be open to new perspectives and interpretations to promote the advancement and renewal of scientific knowledge.

To address organizational studies, the obstacles were organized into three analytical categories, which are the result of the epistemological obstacles described by Bachelard and will be explained below: (1) the descriptive empiricist obstacle, which includes first experiences (precarious approximations); (2) the mystical idealist obstacle, which includes general knowledge, verbalism, and unitary and pragmatic knowledge; and (3) the methodological technicist obstacle, which includes quantitativism and substantialism. These categories provide an organized, abstract representation of the relationships and causal links that form concrete sets of elements. The aim is to build a conceptual framework that will guide the analysis. These categories are organized results, not presuppositions, of the epistemological obstacles described by Bachelard.

## Descriptive empiricist obstacle

According to Faria (2022), the description of the phenomenon is a constitutive part of the epistemological act. For example, Marx (2013) makes great use of descriptions and examples in "Capital" to present a robust and structured theory. However, description has nothing to say beyond itself without theoretical elaboration. Knowledge production is always faced with the task of representation, which requires investigating the object's multiple determinations and is therefore not exhausted by description alone. According to Bachelard (2004, p. 14), while description can provide elements for a primary explanatory scheme, it does not allow one to establish "the root of abstract notions" in reality. Initial description is part of science; however, when the empiricist descriptive form becomes the form of all scientific knowledge, it becomes "a second-class method," confusing the transmitted knowledge with the produced knowledge and giving the descriptive form of exposition "more importance than the thing signified." "The task of describing is therefore always

imperfect, and sooner or later, it will be necessary to return to the concrete since the initial abstraction has moved away from the phenomena." For Bachelard (2004), empiricist description is exhausted in the first experience.

### *The first experience*

The first experience is conceived as the immediate relationship between the researcher and the object or phenomenon being researched. In other words, it is the subject's precarious approach to the object or phenomenon (Faria, 2022). According to Bachelard (1996), the initial experience stems from immediate perceptions without analysis or reflection. It is influenced by subjectivity and common sense, which can result in biased and inaccurate interpretations of observed phenomena. The author questions the idea that immediate and intuitive experience alone is sufficient for constructing knowledge. He argues that this approach can lead to distorted interpretations of reality and hinder the progress of scientific thought. Therefore, it is necessary to move beyond first-hand experience and adopt a critical and reflective approach to scientific research.

In organizational studies, research that treats the immediate appearance as reality itself presents recurring problems, including: (a) a lack of solid, consistent theory, resulting in a superficial approach with little critical reflection on existing theories and assumptions, which can lead researchers to rely on personal experience or intuition rather than an analytical, objective approach; (b) confirmation bias, where researchers select, interpret, or report data to confirm previous hypotheses or assumptions, which results in biased analysis that ignores contrary evidence or alternative interpretations; (c) resistance to criticism and revision, which indicates a defensive stance toward questioning and suggestions, especially regarding methodological procedures and the analysis of results; and (d) subjectivity in interpreting data, when researchers allow their experiences, opinions, and preconceptions to influence their interpretation of research results, leading to biased and unreliable conclusions.

Descriptive empiricism, which is becoming more common in organizational studies, values first-hand experience and lacks critical analysis. The initial obstacle to scientific endeavor is the researcher's immediate relationship with their research object (Bachelard, 1996). This is because it is full of assumptions, and when describing it, the researcher may mistakenly believe that they already understand it. After describing the object and its generalities, the researcher fails to observe anything else and does not realize that the scientific process has already been compromised. Therefore, it is necessary to begin the investigation by characterizing this obstacle and demonstrating that the rupture occurs by overcoming the object's phenomenal appearance. The initial observation may be confusing, natural, and easy. Consequently, when the researcher describes it, he may believe that he has understood it. However, the researcher only achieves a monotonous explanation of the elements, treating them as if they were the properties of the phenomenon's substance.

At the moment of the "precarious approach" (Faria, 2022) to the object of investigation, the researcher must consider that primary empirical knowledge is formed through an oscillation full of stumbles and conflicts. This process results in a disarticulation from previous thinking, which was developed through the study of existing theories and research hypotheses. However, according to Bachelard (1996), it is this initial disarticulation that enables useful progress, requiring thought to

abandon immediate empiricism without disregarding it as an important fact. Abandoning immediate empiricism does not mean abandoning the object itself, but rather the primary knowledge about it – what Bachelard (1996) calls "empirical thinking." Empirical thinking assumes a system, a model, and a predetermined way of knowing the object. However, in relation to the object, this initial system is false, despite its utility in detaching thought from sensible knowledge. If it is not overcome, the first system, the first form, and the first way of reaching the object can imobilize thought.

As with scientific activity, it is necessary to consider the phenomenon beyond the initial point of view. Gradually, the researcher is led to convert objections into objects and transform criticisms into concrete representations. According to Bachelard (1978, 1996, 2004), vulgar realism is an unfruitful metaphysics because it hinders research instead of promoting it. The foundations of reason and the primacy of the object must be emphasized, but thought and object should not be placed in opposition or considered separate entities in the production of knowledge. Scientific knowledge production must not correspond to the separation of the object and its representation as if they were phenomenological instances. The object only becomes represented in its substance and essence as a concrete thought.

Bachelard (2004) argues that knowing a scientific object requires successive procedures and research techniques. As knowledge surpasses the moment of precarious approximation (Faria, 2022), each technical procedure becomes outdated and harmful to the epistemological act (Faria, 2022). For Bachelard (1996), the initial approximations and experiences are merely preambles to what can be learned about phenomena.

According to Bachelard (1996, p. 29), "in the formation of the scientific spirit, the first obstacle is first experience, experience placed before and above criticism – criticism which is necessarily an integral element of the scientific spirit." Since criticism does not explicitly intervene in experience or first observation, they cannot serve as a secure basis for producing knowledge. A researcher who claims to receive enlightenment directly from data treated as clear and objective ignores the fragility of this initial, approximate knowledge, which is always accessible and within reach. Science is formed against appearances. Therefore, it is necessary to abandon the immediate sensibility of things and determine them.

It is not enough for the researcher to merely describe or schematically organize phenomena in order to understand and represent them. It is necessary to understand the phenomena as concrete thoughts and grasp their essence. As Bachelard argues:

> (...) [the] immediate apprehension of the real only functions as a confused, provisional, conventional datum, and this phenomenological apprehension needs to be listed and classified. Reflection is what will give meaning to the initial phenomenon, suggesting an organic sequence of research, a rational perspective of experiences. (...) [One cannot] rely a priori on the information that immediate data can provide. (...) Scientific knowledge is always the reform of an illusion. (...) [Therefore, one can only] see in the description, even a detailed one of an immediate world, a working phenomenology in the sense of [a] working hypothesis. (...) The phenomenon primitively considered can only be taken as a particular instant of a method. (Bachelard, 2008, pp. 13-14)

However, appearances and initial observations are promoted in academic circles by methodological and technical approaches that emphasize the linearity of the research process as the epistemological path itself. The basic bibliography, also known as the starting theoretical reference or the pre-defined assumption of the research, is no longer a gateway to knowledge about the state of the art of the topic being researched. Rather, it is the already given, theoretically elaborated reality. Scientific knowledge "presents science as linked to a general theory." Theory asks questions of objects that have not yet been investigated, indicating research problems and guiding investigations. Any researcher who follows the script taught in scientific methodology courses is likely to find "elements for the diagnosis of their own case" in the pre-defined bibliography (Bachelard, 1996, p. 31). These elements are imposed on the case independently.

A bibliography that serves as a presupposition of reality offers an immediate answer when the real problem has not even been formulated yet. This "removes the meaning of the problem from scientific thought," because the presupposed theory is presented as a doctrine applied to the object. For the "intellectually lazy," it's easy to limit oneself to empiricism, "call a fact a fact," and apply a "well-organized theory" to it. It is unnecessary to understand reality; framing it is enough. This is the procedure of "prescientific thinking," which looks for the variety of phenomena and their determinations rather than variations in them. "This is a very specific characteristic: the search for variety leads [the researcher] from one object to another without method, [aiming] only to broaden concepts (Bachelard, 1996, pp. 36-38). In this "scientific construction made of juxtapositions," each researcher can contribute their own case and add their own brick to the pre-molded theoretical building.

The absence of original research poses an obstacle to understanding a new phenomenon. Empiricist descriptivism and cases based on previous theories place the researcher's initial experience with the object in evidence, "without the rational equation of experience determined by the formulation of a problem and without constant recourse to an explicit rational construction." This can result in "a kind of unconscious of the scientific spirit" that will require a difficult analysis "to be exorcised" (Bachelard, 1996, p. 51).

> It is then necessary to revive criticism and put knowledge in touch with the conditions that gave rise to it, to continually return to this 'nascent state,' which is (...) the moment when the answer emerged from the problem. In order to be able to talk about the rationalization of experience, it is not enough to find a reason for a fact (...). In order to be rationalized, experience needs to be inserted into a game of multiple reasons (Bachelard, 1996, p. 51).

Primary reason has against it "the need for immediate certainty, the need to start from certainty, and the sweet belief in the reciprocal, which assumes that the knowledge from which one started was certain" (Bachelard, 1996, p. 51). The paradox of this process is that scientific knowledge is always evolving. By unraveling the structure of an object, scientific knowledge raises new questions and enigmas, as each answer contains a new problem. Premature reasons, expressed in descriptivism and analyses starting from theoretical and conceptual presuppositions, are "the expression of the will to be right outside of any explicit proof to escape discussion," referring to a fact to which the researcher attributes "primordial declarative value." By giving reason to the initial

experience, the researcher distances himself from any criticism that could invalidate primitive affirmations and presupposed theories. He acts "as if the initial observation could provide something other than an opportunity for research" (Bachelard, 1996, p. 52).

It is necessary to reject subjective, a priori values that are mistakenly considered objective. In these investigations, where "the answer is much clearer than the question," what happens is that "the answer is given before the question is clarified." Empiricism and simplistic rationalism "imply the immobilization of knowledge produced by an immediate adherence to particular observations" (Bachelard, 1996, p. 55). The procedure of facts implied in reasons, in which immediate perception is sufficient, is typical of vulgar knowledge. Without analysis and interpretation, the fact itself is all that remains. Empirical knowledge does not transcend the assertive level; it is limited to what is immediately visible. "The power to establish relationships does not originate on the surface, on the very ground of observation; it springs from more intimate relationships." What "exists most immediately in the first experience" are the subjects themselves and their subjectivities. In studies based on presupposed theories "it is not things and substances that are put to the test," but rather, the conceptions that are supposed to correspond to them (Bachelard, 1996, pp. 59-60). From an epistemological standpoint, finding the object means finding the subject that represents it as a thought object.

Academic articles, dissertations, and theses in organizational studies that exhaust themselves describing observations, interviews, narratives, documents, and ethnographies; that start with theories and access the empirical field without deeply engaging with reality itself; that operate a bricolage between data and excerpts from theories; and that describe statistical results insisting on the evaluative importance of indicators, filled with formal correlations and lacking analytical depth, are worrying indications of the prevalence of epistemological obstacles and the difficulty of achieving an epistemological rupture.

## Mystical idealist obstacle

Moving beyond the descriptive empiricist obstacle, we encounter its counterpart: the mystical idealist obstacle. This obstacle is comprised of general knowledge, verbalism, and unitary and pragmatic knowledge. As Bachelard (1996, p. 69) puts it, "the science of the general is always a suspension of experience, a failure of inventive empiricism. Knowing the general phenomenon, using it to understand everything, isn't that like another decadence?" Idealism invites hasty and easy generalizations because it subordinates reality to ideas and makes ideas a stage for disputes. Thus, scientific knowledge can be damaged by an emphasis on either the particular or the universal. In both cases, the scientific process disappears.

The classical division that separates theory from its application ignores the necessity of incorporating the conditions of application into the essence of the theory itself. Since application is subject to successive approximations, the scientific concept that corresponds to a particular phenomenon is a "grouping of well-ordered successive approximations" (Bachelard, 2006, p. 140). According to Bachelard (2006, p. 153), "with scientific thought, a perspective of depth emerges in the object," whereby objective commitment strengthens the scale of precision in a succession of increasingly dedicated approaches to the same object, each with a different level of objective knowledge. When a researcher approaches a subject believing that they clearly understand it (since

they have already studied all the relevant theory), this certainty can overshadow what they should actually know. Existing theory can present itself to the researcher as a preconception, preventing them from contradicting existing knowledge. Useful knowledge can hinder research due to the tendency for concepts to be adapted to the problems they most often solve. Over time, these concepts become unduly valued, opposing the circulation of others and constituting a factor of inertia for the researcher. Thus, researchers may prefer to confirm their knowledge rather than face what contradicts it, seeking answers to questions.

### *General knowledge*

According to Bachelard (1996), the process by which thought, based on a few particular facts, arrives at a general law can result in the formulation of a banality – a conception without expression that seems indispensable to ensuring its "scientific character." For example, stating that all formal organizations have a hierarchical structure or a decision-making process reveals nothing about either concept. Claiming that contemporary organizations adopt strategic decision-making processes is merely the rectification of a generality – an "extended generality" – which does not constitute scientific thinking. "If the epistemological value of these great truths is measured against the flawed knowledge that they replaced," it can be seen that they may have had some effectiveness in the moment. Strictly speaking, they only provided an answer without a well-formulated research question. In other words, these truths may be nothing more than obvious empirical findings with no analytical depth because "general laws define words, not things," feeding the "inertia of thought that is satisfied with verbal agreement on definitions" (Bachelard, 1996, p. 70).

The result of expanded generality is a useful statement, but it is an epistemological obstacle because, although it is a well-constructed general form, it can "hinder thought." The reified concept seems so clear and complex that the researcher "feels no need to study the phenomenon more closely (...). With the satisfaction of generalizing thought, experience has lost its meaning" (Bachelard, 1996, pp. 71-72).

According to Bachelard (1996, p. 72), general knowledge, generalization, and universal concepts, which explain everything on an abstract, metaphysical level, demonstrate that "elements of analysis are lacking" because "with very general knowledge, the zone of ignorance cannot be resolved into precise problems." "Genius immobilizes thought" because general elements overshadow essential elements. Generic notions, such as input-output, processing, negative entropy, dynamic homeostasis, chaos, and adaptation, hide the movements and contradictions that caused the phenomena these notions purport to represent. They hide the relationships that constituted the phenomena, as well as the objectives and interests that the phenomena may reveal. These generalities, which seem to give meaning to observations from perceived reality, form the basis of "static knowledge that hinders scientific research."

Bachelard (1996) argues that, despite its resistance, it is necessary to complicate the concept so that it can represent what reality cannot achieve on its own. As science develops, it produces objects of study that are never ready in their immediate appearance or first, pseudo-elaborated form. Scientific knowledge is not merely a description of reality or a confrontation between a presupposed theory and an empirical case. Rather, it is an active production between reality and thought, mediated by methodology, research tools, and techniques. In other words, a concept

becomes scientific to the extent that it is realized as an objectified representation of a phenomenon. However, no concept is immune to criticism because it can "represent an obstacle by offering thought a premature or unfinished general form" (Bachelard, 1996, p. 82). Even a well-defined phenomenon can hide variations, relationships, and constitutive elements in relation to the theoretically and conceptually represented phenomenon.

Pre-scientific knowledge, which is guided by the general knowledge it aims to reproduce and reaffirm, remains limited to its immediate object because it places observed phenomena as equivalent to universal phenomena. Pre-scientific thought generalizes its cases to all domains based on previous definitions and theoretical assumptions. This leads to arbitrary conclusions and forms a circle with previous thought. As Bachelard (1996, p. 84) wrote, "the general aspect, considered initially, remained the only attribute of the immovable concept." Thus,

> the whole scheme for explaining phenomena [remains] always on the level of the immediate data of intuition. What is the outstanding quality (...) becomes the generality that suffices to explain everything. It is this that is applied and it is by this that it is explained, following the endless circle of primitive empiricism. And this naïve explanation is content with little (Bachelard, 1996, p. 85).

In organizational studies, it is not uncommon to see academic work in which various observations, data surveys, and documentary studies provide exact and precise information that could solve real and false problems, yet "only succeed in displacing false ideas." Failing to distinguish between concepts and words can group together "experiences in a truly etymological context, simply by bringing together words of the same family" (Bachelard, 1996, p. 86), often with the help of data analysis software. This is how "pre-scientific thinking is satisfied, which believes that classifying phenomena is the same as knowing them." This condition is reinforced by "a curious trait of the pre-scientific spirit, that of not being able to criticize itself" (Bachelard, 1996, p. 87). Knowledge that lacks precision, "knowledge that is not presented together with the conditions of its precise prior determination is not scientific knowledge. General knowledge is almost fatally vague knowledge" (Bachelard, 1996, p. 90). General and universal knowledge is limited in validity: the more general and universal the knowledge and concept, the more distant they are from real objects, as Hegel (2014) taught.

### *Verbalism*

Researchers can be carried away by undue generalizations and by the idea that a single image or word constitutes an entire explanation. This is verbalism, a verbal obstacle. According to Bachelard (1996, pp. 91-93), this is "a verbal explanation with reference to a noun loaded with adjectives, a substitute for a substance with rich powers", in which a single word "makes it possible to express the most varied phenomena." In this case, the phenomena seem to have already been explained and recognized. The word seems to contain all phenomena because it performs an "enlightening function," a "*denkmittel* of naive empiricism," a means by which researchers deal with facts simply by thinking about them and making assumptions about reality.

Consider the word "leadership" in organizational studies. It seems to encapsulate the phenomenon being studied, to which adjectives are added to give the noun specific qualities, such as autocratic, democratic, transformational, situational, charismatic, motivational, transformative, technical, and positive or negative. As previously explained, the root word is understood, and it is up to the adjectives to provide the typological marking that acts as a "metaphorical apparatus." This type of verbal habit is theoretically supported by (a) the idea that human thought constructs a kind of mental map through which it interprets reality (Buzan, 2009), drawing up diagrams that unfold into various ramifications; and (b) the idea that there is a way of thinking that indicates how a subject sees the world and their beliefs, values, experiences, relationships, etc. This accumulation of words and images "evidently harms reason, in which the concrete side, presented without prudence, impedes the abstract and clear vision of real problems" (Bachelard, 1996, p. 93). Even when researchers try to eliminate the root word or reference image, its function persists in the analysis.

The root word, presented immediately as a concept word, seems to have a magical, mystical quality in the process of expressing reality. This quality seduces reason and elevates the root word from representing particular phenomena to representing general schemes. This process of transforming a root word into a concept word may suffice in certain explanations, where generalizations are made from clear and simple concepts. However, this is a Cartesian process of explaining complicated phenomena by breaking them down into simple ideas. This reveals the "impossibility of placing doubt at the level of the details of objective knowledge or developing a discursive doubt that dismantles all connections to reality" (Bachelard, 1996, p. 98). If the word-concept can explain everything, then there are no doubts to investigate. Without doubts, there is no real research problem. Verbalism in research elevates words to a position of "autonomy" in relation to their meanings and intended representations. These words then become "obstacle words" (Bachelard, 1996, p. 102).

### *Unitary and pragmatic knowledge*

Bachelard (1996, p. 107) argues that unity is a principle that is both desired and effortlessly achieved by pre-scientific thought. According to this principle, different phenomena present themselves as different manifestations of the same unique nature. In other words, what is true for one case is also true for other, seemingly similar cases. However, the need for pragmatic unitary knowledge contains a number of errors. "Unity is (...) realized very quickly, duality suppressed in an instant," making what is materially inconceivable theoretically conceivable.

Knowledge based on analogies seems "so convincing that some people trust them." Instead of advancing research, analogies "provoke a flight of ideas; they prevent the homogeneous curiosity that makes patience follow a well-defined sequence of facts" (Bachelard, 1996, p. 109). For example, organizational studies use analogies based on (a) systems theory to explain how organizations function and relate to their environment as open systems, using the biological functioning of living organisms as a model; (b) theories that compare organizations to machines with interconnected components, such as scientific organization of work; (c) theories that treat management as a strategic game with rules, competitors, and objectives; and (d) theories that treat organizations as cultural phenomena, like a mosaic of myths and rituals. Not only can analogies reduce the breadth and depth of research, but they can also distract from what is essential. This does not mean that

analogies are useless or inadequate. An epistemological obstacle is constituted not by the use of analogies as illustrations or didactic resources but by using them as a starting point for research, as a foundation, or as a guiding concept from which explanations are inferred and phenomena are overdetermined.

As Bachelard (1996, pp. 110-112) states, "Thousands of examples can be presented in which incredible overdetermination intervenes as the guiding thought. This tendency is so prevalent that one could argue all non-scientific thought is overdetermined." When everything is simply the cause and effect of everything else, as the holistic conception of organizational studies propagates (Capra, 2006), there is almost nothing left to investigate. As Bachelard (1996, p. 112) observes, "what is vague imposes itself on what is clear."

According to Bachelard (1996, pp. 114-115), the usefulness of knowledge about an object or phenomenon imposes a "utilitarian induction," leading research to exaggerated generalizations. Like all pragmatism, the "utilitarian impulse" ends up exaggerating because it is a mutilated thought. Because there is no objective way to limit what is useful, utilitarian knowledge is overvalued and exploited. Searching for "human usefulness" in all phenomena, either for the advantages that can be obtained or as a principle of explanation, is an attempt to "find a reason" that is convincing. However, who would define the usefulness of a worker's knowledge in carrying out their work? Who would define the usefulness of control mechanisms? The answer has been known since Taylor (1911). What is useful is what interests capital. Taylor's scientific management, strictly speaking, is pre-scientific. As Braverman (1977) and Tragtenberg (1977) explain, it seeks to attribute utilities characteristic of work under capital to the minutiae of work organization in terms of the worker's time and movements. "If a utility does not characterize a particular trait, it seems that this aspect is not explained. For pragmatic rationalism, an aspect without utility is irrational" (Bachelard, 1996, p. 115).

According to Bachelard (1996, pp. 115-119), "entire systems were founded on utilitarian considerations. Only utility is clear. Only utility explains." "Therefore, the true must be accompanied by the useful. The true without a [utilitarian] function is a mutilated truth. And when the usefulness is discovered, the real function of the true is found." The dangers of these finalist explanations are so obvious that "it is not worth insisting on the weight of this obstacle to arriving at an objective culture of fact." For pre-scientific thinking, finding a unifying explanation based on a single characteristic is akin to finding the philosopher's stone that explains the world. Unitary and pragmatic knowledge promised a system of thought, but "only offered a pile of facts that were poorly related, and therefore poorly observed," hindering scientific endeavor.

## Methodological technicist obstacle

This obstacle is based on two principles: substantialism, which emphasizes the object as a substance that contains all explanations, and quantitativism, which believes that the quantitative formulation expresses the researched object with neutrality and objective accuracy.

### *Substantialism*

For Bachelard (1996, p. 121), the substantialist obstacle is based on the pre-scientific mind's "natural tendency" to condense "in an object all the knowledge in which that object plays a role, without worrying about the hierarchy of empirical roles." Thus, it "attributes to the substance diverse qualities" that are vague. Every designation of the known phenomenon by a certain name makes "the lazy mind satisfied." However, when subtleties refer to experience or the examination of concrete cases and touch on empirical details, the designation and its link to a substance or noun cannot determine scientific thinking. This is the case with the general, abstract concept of "organization," which presents itself with structures, performances, relationships, and qualities. Substantialism is concealed under the artifice of language; all it takes is one word for virtue to appear.

When the researcher follows the thought that seeks the object, he triggers the fantasy of achieving intimacy with that object. Thus, the naive realist allows himself to be seduced by the idea that merely referring to an object is enough to grasp its essence. Similarly, a reference to the "organization" is enough to access its contents. Every shell is less precious and substantial than the matter it encloses. Although form is indispensable to the object, its only function is protection. These wrappings are necessary but do not contain all of the object's content. The substantialist idea is almost always illustrated by continence; that is, something must contain the deep quality contained within the object. For the pre-scientific mind, substance has an interior; substance is the interior. The pre-scientific mind believes it can determine the object's content by analyzing it inside out. This is as if the inside of the object did not also contain the same multiple determinations as its shell: "something must contain, the profound quality must be contained" (Bachelard, 1996, p. 123).

Bachelard (1996, p. 127) argues that "substantializing an immediate quality perceived in direct intuition can hinder the future progress of scientific thought as much as affirming a hidden or intimate quality." However, "it lacks the theoretical path that obligates the scientific spirit to critique sensation." Therefore, "the scientific mind cannot be satisfied with merely linking the descriptive elements of a phenomenon to its substance, without any effort at hierarchy, without precise and detailed determination of the relationships with other objects." The pre-scientific mind treats the immediate as an absolute means of explaining the phenomenon. It takes the immediate as only the sign of a substantial property, so any scientific search is interrupted immediately. The immediate answer stifles all questions when what appears to be the thing is internalized as the represented reality. Strictly speaking, this reality cannot be affirmed because it is merely a means of translating and dispersing the phenomenon. The pre-scientific researcher thinks in terms of what he sees and considers what he sees to be what it is.

When faced with an inability to verify, the researcher begins to believe that whatever has been disguised or hidden from him, or whatever has not presented itself, is not a quality of the object or should not appear from it. If the researcher continues in this manner, their formulation gradually becomes impervious to the object's data. According to Bachelard (1996), the researcher's substantive conviction becomes so strong that he is satisfied with little. This is also proof that the substantialist conviction is definitive and makes the concrete variations of the studied phenomenon impossible.

The problems caused by directly attributing an elaborate content provided by immediate data to the substance of production are real and irreversible. This serves only to affirm the alleged

quality of the object. Understanding the underlying cause of an observed phenomenon does not entail investigating the underlying circumstances beyond the surface level. The response to the substantialist conception must stop the scientific questions that arise when researchers accept the substantial character of a phenomenon because, in doing so, they lose the ability to investigate what lies beyond what is visible. Even if the study of a particular case is accurate, the substantialist conception does not address the various constitutive conditions of different phenomena.

For Bachelard (1996, p. 140), the substantialist seduction is "the accumulation of adjectives for the same nouns." This type of research, which only expands by increasing the number of elements that constitute concrete proof, does not provoke new knowledge. The initial formulations determine subsequent formulations, so essential elements of phenomena remain hidden and are "an obstacle to faithful empirical thinking."

The idea of substance occupies the researcher's imagination, where his indestructible preferences are formed regardless of the object's concrete nature. These preferences also lead the researcher to define the object to be researched and cut it out in a way that is compatible with their previous choices. The idea of substance seems so clear and simple, yet so rarely discussed, that researchers have no doubt about relying on it, even when confronted with evidence that questions it. Substantialist convictions are so obvious to researchers that they rely on them as if they had a clear advantage over the object.

### *Quantitativism*

The use of research techniques is fundamental to producing scientific knowledge. From an epistemological standpoint, the issue to watch out for is not the use of techniques, but rather, the rigidity of methodological approaches that value the correct application of techniques over the insights they can provide. Consequently, evaluations of scientific production tend to focus more on the appropriateness of applying research techniques than on their contribution to representing the researched object. Methodology is a fundamental element of all scientific production. Adherence to a methodological procedure implies the use of research techniques, which are objectively determined by the specific condition of the researched object. However, when research techniques are defined independently of the object's condition and become more important than the research itself, the object or phenomenon assumes a secondary, illustrative role. This procedure is pseudoscientific. The issue is not the use of correct techniques, but rather considering techniques that are appropriate for the object's requirements, whether they are quantitative, qualitative, or both (Faria, 2023).

According to Bachelard (1996), the notion that quantitative research techniques are objective and neutral is false. Assuming a starting theory indicates subjectivity in the research process. From the outset, researchers arbitrarily define the elements they want to study. They also define the variables, assumed relationships, and correlations, as well as the measurement procedures subjectively. By defining what they want to investigate, researchers subject their subjectivity to objectification in an attempt to make the subjective objective under the guise of quantitative objectivity. Thus, researchers define variables, relationships, and possible statistical correlations and present them in questionnaires as alternatives to participants. Regardless of the type of question or alternative answers, participants must choose based on their subjective

perception; in other words, they respond subjectively to the proposed questions. Ultimately, the researcher will have found the statistical measure of subjectivity and will assign statistical formulas that appear to constitute objectivity. The result is inevitably a meta-subjectivity: the subjectivation of the researcher's and participants' subjectivities. Although this procedure is accepted as proper for scientific work, it is actually an obstacle to scientific knowledge.

Immediate knowledge stamps the object with subjective impressions. Immediate knowledge can only offer premature certainties about the object, hindering knowledge instead of helping it. This limitation is sometimes attributed to qualitative analysis, but it is also present in quantitative techniques since magnitude is not automatically objective, especially in the human and social sciences. Even when considering objective data, such as the age of workers in a given industry, classifying this data by age group is arbitrary. Using these ranges to explain work quality indices, beyond a simple observation, only increases the arbitrariness. Since the scientific object is always, in certain respects, new or original, as Bachelard (1996) states, the initial determinations are inadequate. In-depth investigation is necessary for a phenomenon to be known objectively. Quantitative instruments for collecting and processing data only enter the scientific investigation process once the object has been scrutinized to a certain extent.

Two opposing issues mark quantitativism as an epistemological obstacle. First, quantitative research techniques exploit what are called negligible or insignificant data. This raises the question of whether what is considered negligible and insignificant is actually meaningful but dismissed arbitrarily. Second, in addition to considering that measurements are relative to the techniques used to obtain and treat them, it is important to acknowledge that precision in organizational studies is practically unattainable. Even in the field of minutiae, quantitative precision does not correspond to scientific objectivity in organizational studies. As Bachelard (1996, p. 161) states, "one of the primary requirements of science is that the precision of a measurement constantly refers to the sensitivity of the measurement method and that it takes into account the conditions of permanence of the object measured." Accurately measuring fleeting or indeterminate objects, such as interviewees' perceptions, preferences, and evaluations, is impossible and useless, as it adds little to knowledge. Every measurement requires an analysis of what to measure, how to measure it, and the purpose of the measurement. A pre-scientific researcher takes a particular object, describes it, and measures it, trying to exhaust the measurement down to the smallest detail. In contrast, the

> scientist approaches the primitively ill-defined object. First of all, he prepares to measure. He considers the conditions of his study; he determines the sensitivity and range of his instruments (...) The object measured is nothing more than a particular degree of approximation of the method of measurement (...) To intend to exhaust quantitative determination in one go is to miss the relationships of the object (...) The precision of a result, when it goes beyond the required precision, means exactly the determination of nothingness. (Bachelard, 1996, pp. 161-162)

For example, when we talk about the number of inhabitants in a given locality, this number is presented as fixed or fluctuating. Its validity may not last a day. Nevertheless, this number, along with others, will be used for years to define certain public policies. Quantitativism is an epistemological obstacle in organizational studies. This is true not only when quantitativism claims

to be precise and exact, but also when it claims to be neutral, objective, and free of subjectivity in its formulation and application. This produces knowledge that claims to be more than just approximate.

## Conclusion

The aim of this essay was to critically examine epistemological obstacles in organizational studies, drawing on Gaston Bachelard's arguments. These reflections are justified in view of empirical-descriptive studies and models based on idealistic conceptions, as well as the overvaluation of methodological technicality, which assumes a more relevant position than the reality being investigated. Inspired by Bachelard's conception of epistemological obstacles, these considerations are based on the ontology and critical epistemology of the concrete (Faria, 2022). This is because it is necessary to recover the object as a fundamental element of theoretical development. Not the object in its immediate appearance and description, but rather, the object in its phenomenological condition: multidetermined and contradictory. The object is not determined by a presupposed theory that imposes itself as something external and superior, subordinating the object. Rather, the object is the source from which the theory is produced. Theory enters the representation of the object not as a presupposition but as a constitutive element of that representation.

Throughout the history of science, countless examples have demonstrated the supremacy of appearance over essence (Thompson, 1981; Reale & Antiseri, 1991). This is not only because objective scientific knowledge is not absolute and definitive, but also because the imperatives of both empiricism and idealism have become the rules of science. Added to this is the methodological technicality in which the research technique becomes more important than the phenomenon being researched (Adorno, 2001). The three categories of epistemological obstacles drawn from Bachelard's propositions are the descriptive empiricist obstacle, the mystical idealist obstacle, and the methodological technicist obstacle.

The scientific researcher must pursue the production of objective knowledge against sensible knowledge and previous ideas that fit the object into a conception before it manifests. Sensible knowledge only progresses toward scientific knowledge when the object it intends to represent questions it, demanding an in-depth epistemological act from the subject by not allowing itself to be ontologically captured as an immediate object in itself.

Regarding Bachelard's propositions, it is important to note that ideas are not facts (beyond being ideas), and facts are not ideas (beyond being ideas about facts). Ideas only become facts when they are objectified and enunciated. Facts can be interpreted in different ways depending on the reference system. Complicating matters further, ideas manifest themselves in words, which can be misleading and act as traps for knowledge. For this reason, one cannot rely on a single interpretation or statement. Science is expressed through theories and concepts in a specific language. In this sense, one concept can originate another, but it does not necessarily give rise to it. A concept that draws on another can only be a new or renewed concept if it has reality as its reference—the reality that the concept is intended to represent. A concept that gives rise to another concept, or a concept that changes based on another, is a speculative movement. However, these considerations do not

overcome the obstacle of the absence of the multiple historical and social determinations of objects and phenomena in their representation, a topic that Bachelard does not discuss.

In fact, Bachelard does not address social-historical processes in his epistemological reflections on the production of knowledge. This is understandable, given that his initial areas of study were chemistry and physics. He taught these subjects in secondary schools before being invited to teach at the University of Dijon in 1930 and, later, at the Sorbonne in 1940. The obstacles and ruptures that Bachelard refers to in scientific production consider the object in its given condition. The historical character does not refer to the object itself, but rather to knowledge about it: the history of concepts and theories in a temporal perspective. This knowledge constitutes models or paradigms that are ultimately obstacles to be overcome. Nevertheless, this limitation does not prevent us from reflecting on his conception of obstacles and epistemological ruptures in the production of scientific knowledge, particularly in organizational studies.

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## Notes

1. For the purposes of these considerations, the obstacles of the myths of digestion, animism, and libido, with which Bachelard specifically dialogues with psychoanalysis, will not be addressed. These three obstacles do not directly relate to Organizational Studies, though they can be considered in certain approaches.

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The authors use inclusive language that acknowledges diversity, conveys respect for all people, is sensitive to differences, and promotes equal opportunities.

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