

O paradigma corporal e o direito como ciência social aplicada

The corporeal paradigm and law as an applied social science

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RESUMO: A teoria do conhecimento constitui a base epistemológica a partir da qual se constroem e se sustentam todos os edifícios do saber humano. Por isso, alguns dos mais argutos espíritos da filosofia ocidental (De Platão a Kant) dedicaram boa parte de suas melhores páginas à discussão sobre o caráter do conhecimento humano. Durante séculos, o debate girou em torno de pressupostos do paradigma mentalista, em que a mente humana, seja ela traduzida pelo *Cogito* cartesiano, quanto pelo paradigma empirista, como *tabula rasa* lockeana, aparecia como *locus* privilegiado da perfeição gnosiológica. A partir da crítica feita pelo paradigma da complexidade (Morin) e pelo paradigma da neurociência (Damasio), no entanto, vimos surgir uma nova teoria do conhecimento baseada em pressupostos "corporais", que permitiram a inclusão de outras dimensões do conhecimento, como o senso prático e a estética. O sentido prático das novas formas de conhecimento nos conduziu à noção da aplicabilidade geral das ciências e, daí, ao papel das ciências sociais aplicadas, entre as quais o Direito, dotadas de instrumentos para intervir na realidade social.

ABSTRACT: The theory of knowledge constitutes the epistemological basis from which all the edifices of human knowledge are constructed and sustained. Therefore, some of the most astute minds in Western philosophy (from Plato to Kant) dedicated a good portion of their best writings to discussing the nature of human knowledge. For centuries, the debate revolved around the assumptions of the mentalist paradigm, in which the human mind, whether translated by the Cartesian *Cogito* or by the empiricist paradigm, as a Lockean *tabula rasa*, appeared as the privileged locus of epistemological perfection. However, from the critique made by the complexity paradigm (Morin) and the neuroscience paradigm (Damasio), we have seen the emergence of a new theory of knowledge based on "bodily" assumptions, which allowed the inclusion of other dimensions of knowledge, such as practical sense and aesthetics. The practical application of new forms of knowledge has led us to the notion of the general applicability of science and, consequently, to the role of applied social sciences, including Law, equipped with tools to intervene in social reality.

INTRODUCTION

The debate surrounding the nature and scope of human knowledge is as old as philosophy itself. Throughout its history, epistemology has given rise to intense debates on the subject (see HAMLIN, 1967, pp. 8-38). From the pre-Socratic period (CORNFORD, 1991, p. 133 ff) to the present day, encompassing the contributions of numerous philosophers (Plato, Aristotle, Descartes, Locke, Hume, Kant, Hegel, Wittgenstein, among others), the debate is still far from being resolved.

Obviously, it is not our intention to intervene, within the limits of this paper, in a discussion of such broad complexity and depth. Our objective is admittedly more modest and involves, first and foremost, to present the debate between the mentalist and corporeal positions in current epistemology and to show how the consolidation of the corporeal paradigm has allowed the concept of knowledge to be extended to other areas of human culture, such as art and practical sense.

Secondly, after considering the opening of the epistemological field to new meanings of the concept of knowledge, our objective will be to reflect, within the scope of scientific knowledge, on the connections between the corporeal paradigm and the role of the so-called applied social sciences (especially Legal Science), whose main task is to intervene in social reality. We will see that moving away from the mentalist conception of knowledge allows us to conceive not only the science of law, but all sciences as fundamentally applied.

1 New Paradigms in the General Epistemology

Knowledge is a word that can take on various meanings. Depending on our theoretical or epistemological affiliations, we will embrace different views of what knowledge really is. In this section of the paper, I will set out the debate between the positions of the mentalist and behavioral *paradigms* in the face of the challenges of neuroscience and move towards a corporeal view of the process of *knowing* that will allow us to expand and specify that crucial notion as a matter of survival.

Paradigms are models that comprise principles, theories, laws, methods, and procedures that present themselves both as a result of scientific practice itself and as norms for scientific work (Kuhn, 1970, p. 10). Hence, paradigms are also called, by

Thomas Kuhn, "normal science," positive science that establishes norms. Norms that are established by the group of people who work in science and who assume the condition of a scientific community.

To begin with, the mentalist conception of knowledge corresponds to the view that internal mental states, such as thoughts, beliefs, and intentions, are real, causal, and constitute the primary focus for understanding human behavior. Mentalism's basic assertions are: a) that there is an internal mental world which is the only responsible for the production of knowledge and that b) this realm is distinct from external physical behavior. In the innatist view of Noam Chomsky, one of its main representatives, human beings are endowed with pre-programmed mental structures, such as the Language Acquisition Device (LAD) (CHOMSKY, 1972, pp. 115 ff. and CHOMSKY, 1988, p. 134), which allows us to learn complex rules that could never be learned simply by imitation or environmental conditioning. The mentalist conception of generative grammar treats the mind as the "privileged locus"—a special place of certainty and logic—that stands out from the confused and mechanical world of the body.

In the behaviorist tradition of Gilbert Ryle and A.J. Ayer, the process of knowledge production does not occur "inside the mind," but is fundamentally driven by external demands, constituting a response to environmental challenges. For Ryle, intelligence does not reside in the inner machine, but in the disposition demonstrated by the knowledge-producing actor in solving problems. When solving problems "intelligently" says Ryle, "i.e., thinking what I am doing, I am doing one thing, not two. My performance has a special procedure or manner, not special antecedents" (RYLE, 1963, p. 32).

For the logical positivism of A.J. Ayer, knowledge is "justified true belief" that satisfies at least three conditions: that the proposition is true (*truth condition*), that the person is safe (*belief condition*) and that the person has the right to be safe (*justification condition*) (1956, p.35). In this last condition (having the right to be safe), the person must adduce at least evidence or justifications as "grounds", but not necessarily certainty. Knowledge, in Ayer's view, comes from sensory experience.

As we can see from this very brief exposition, the contradiction between mentalism and behaviorism overshadows other dichotomies in the field of epistemology throughout history, such as rationalism vs. empiricism or nominalism vs. realism.

However, the most recent advances in neuroscience have demonstrated that, more than an essentially intellectual operation or more than a response to environmental demands, the production of knowledge is a process that possesses biosocial dimensions, which could lead to an integration of the three positions: the generative principle/intentionality (Chomsky/Searle), external demands (Ayer /Ryle), and the internal processes of the human brain acting in response to external demands (Damasio).

According to the Neuroscience paradigm, the mind is understood as an emergent property of the brain. The production of knowledge is deeply rooted in internal biological processes – specifically in the mapping of bodily states in the brain. For Damasio, the mind is like a "film in the brain" that depends on the physical signaling of the nervous system.

While mentalists (Chomsky) understand the mind as a "computer program" and behaviorists (Ryle) conceive of it as stemming right from external actions, the embodied paradigm – led by António Damásio – argues that the mind is not merely connected to the body; it is constituted by it. In *Descartes' Error*, Damasio demonstrates that the brain constantly monitors "somatic markers," which are "special instances of feelings generated from secondary emotions (...) [that] have been connected, by learning, to predicted future outcomes of certain scenarios" (1994, pp. 173 ff). Somatic markers are acquired through experience under the control of an internal system of preferences and under the external influence of circumstances (ibid., p. 179).

According to Damasio, "the action of biological drives, body states, and emotions may be an indispensable foundation for rationality (...)" (Damasio, 1994, p. 200). Without the body's heart rate, instincts, and hormonal changes, the "mind" cannot make rational decisions. In the corporeal paradigm, the mind is not a "Ghost in the Machine," nor merely a "Program in the Hardware"; it is a biological process of the entire organism.

DAMÁSIO (1994) explores the process of knowledge from the perspective of cognitive sciences, emphasizing its bodily aspects and the influence of emotions on human cognition. According to the author:

"the planned solution of a scientific problem or the creation of a new artifact are all based on neural events within a brain, provided that brain has been and now is interacting with its body. The soul breathes through the body, and suffering, whether it starts in the skin or in a mental image, happens in the flesh" (1994, p. xxi)

Neuroscience has increasingly demonstrated that knowledge is produced by the very activity of organisms and not solely by the brain. Quoting Damásio one more time:

(...) mental activity, from its simplest aspects to its most sublime, requires both brain and body proper [to] become especially compelling" (*id. Ibidem*). The body provides the mind with more than physical support; it provides "a basic topic for brain representations " (*id. Ibidem*)

Another paradigm shift in the general theory of epistemology is the opening up to the importance of emotions and feelings in the production of knowledge. For at least twenty-five centuries, Western philosophy (despite some noteworthy exceptions like Rousseau and Hume) was mostly concerned with confining emotions to the domain of the "irrational" seeing them as undesirable intruders in the pursuit of "pure" knowledge of objects. Today, Neuroscience sees emotions rather as "carriers of cognitive information" (DAMASIO, 1994, p. xiii) than an obstacle to a true knowledge. Research on the brain has allowed us to recover the role of feelings in the knowledge process. We can say with DAMASIO, that "feelings are as cognitive as other percepts" (*id, ibidem*) and, moreover deeply that: "feelings form the basis for what humans have described for millenia as the human soul or spirit" (*id, p.xx*).

Along the same lines, Edgar Morin (1921-) understands that knowledge is, first and foremost, *an exercise in survival*. To know is to adapt to the world. All beings need to know their environment in order to act and live within it. Morin conceives of knowledge not only as an intellectual tool, but also as a biological one. All living beings, from the simplest to the most complex, need to understand their environment in order to adapt and survive. In order to survive, living beings use knowledge to translate the environment and interpret the world, ensuring the continuity of life (MORIN, E., 1982, pp. 262-266. See also DAMÁSIO, 1994, pp. 114 et ss).

Understanding the environment is not a simple task; on the contrary, it is an extremely complex act. It requires reconnecting knowledge and understanding that the world is interwoven (*complexus*), integrating parts and the whole. In Morin's words:

" il ya complexité lorsque sont inséparables les éléments différent constituant um tout (comme l'économique , le politique, le sociologique, le psychologique, l'affectif, le mythologique) et

qu'il ya tissu interdépendant , interactif inter-réactif entre l'objet de la connaissance et son contexte, les parties et le tout, le tout et les parties, les part entre eux. La complexité, c'est, de ce fait, le lien entre l'unité et la multiplicité (1999, p. 39)

From a more specifically scientific point of view, knowledge as a process might be inscribed in a *continuum* that begins with the intuition of a relationship between at least two phenomena and concludes with the sanction of the work by the scientific community, represented in this case by the Examining Board, legitimately attributing to it the label of "scientific." From the very first moment, the scientist, in search of knowledge, plunges into the ocean, not always clear, of uncertainty, where the demons of doubt dwell. In Morin's beautiful image, "la connaissance est la navigation dans un océan d'incertitudes parmi des archipels de certitudes " (1999, p. 94). Consciously or unconsciously, to face these oceans of uncertainty, the aspiring scientist will start from certain values and principles without which there is no knowledge.

However, given the objectives of this work, we will only seek to establish some conceptual frameworks, always observing clarity and simplicity of discourse. Starting from the themes and authors mentioned above, we'd like to introduce a *reasonable definition*¹ of our object of interest in order to be able to develop the connections of the idea of knowledge as a process with the idea of the applicability of the science.

Knowledge consists of all activity involving the production of representations about the world by a knowing subject, aimed at its survival, as well as the body of valid knowledge resulting from this process over time.

¹According to Morin, « Il nous faut comprendre à la fois l'unité et la diversité de l'humain [...] Une définition trop proche de l'homme l'empêche de reconnaître sa part dans l'animalité et sa part dans une feuille ; une définition ouverte, ou plutôt une définition raisonnable, permet de penser à ces dimensions contradictoires. (1999, p. 124)

2 The workshop of knowledge

Based on the definition above, we can affirm that knowledge is produced by the work (in the sense of the word *craft*) of knowing subjects in mental (internal) and social (external) workshops, aiming at their survival or their optimal insertion into the world. In other words, the knowing subject, through its mental machinery (faculties of perception, memory, imagination, abstraction, and judgment), in response to the stimuli and challenges of their complex environment, processes the information they receive, producing dispositions² for action. These dispositions are composed of sets of principles and rules for action. As the application of these rules to the different situations to which the subject is exposed proves valid, the results of this process will become traditional knowledge and repositories, that is, bases for the validation of new knowledge.

As we will see later, the validation of knowledge occurs through the application of control procedures developed by the community of “wise men”³ to this knowledge. Thus, only those works that have been able to withstand the set of control processes used exclusively by those holding positions of power within the community of wise men can be considered scientific or philosophical.

2.1 The knowing subject

The knowing subject is the one who directs their intelligence towards objects. The knowing entity is doubly constituted by the individual who knows (philosopher, scientist, theologian, artist, or practical professional) and by the culture (the current repository of norms and knowledge of a given community), that provides the necessary instruments for this activity (Searle, 1995). The intelligence of the knowing individual is part of general intelligence, this *General Problem Setting and Solving* (H. Simon) embedded in the Human Spirit as the Self Conscious Totality of Human Work in History (Hegel).

Since culture is “constitué par l'ensemble des savoirs, savoir-faire, règles, norms, interdits, stratégies, croyances, idées, valeurs, mythes qui se transmettent de génération en génération, [et qui] se reproduit en chaque individu” (MORIN, 1999, p.60), it is on this basis

²Ryle, 1963, pp. 112 ff.

³ Here, the expression “wise men” holds for any group of persons socially qualified in a certain body of knowledge (scientists, experienced professionals, theologians, etc)

that all knowledge operates. Culture is the unifying trait of cultures that maintains social identities. We can affirm that cultures give life to Culture, and that Culture does not exist except through cultures. There would be no Aristotelian physics if there had not been Babylonian astronomy, nor would there be the mathematics of Thales and Pythagoras without the Egyptians' measurements of the Nile River floods.

Although the agent of knowledge is ultimately the individual (or a group of them, such as a group of researchers), it is society that grants its members the values, ideas, and norms that give meaning to reality, as Edgar Morin states:

" c'est la culture et la société qui permettent l'accomplissement des individus et ce sont les interactions entre les individus qui permettent la perpétuation de la culture et l'auto organization de la société (1999, p.58).

Knowledge, as highlighted above, is an *activity* that presupposes a *relationship* between a *knowing entity* and an *object*. For "knowledge" to exist, it is necessary that there be a being endowed with subjectivity (*intelligence*) who desires (*intentionality*) and is capable of understanding, for example, the meaning of the word "thunder" (*language*), of using their mental faculties within structures that define the characteristics (*universalia*) of their object of interest, producing, in the workshop of thought, the emergence of concepts⁴ such as *thunder*: the sound caused by the heating and expansion of air after the occurrence of lightning .

For us, the verb "*to apprehend* " generally constitutes the subject's action of "grasping, seizing, capturing, or seizing" a particular object, without considering more specific actions such as perceiving, remembering, idealizing, conceptualizing, and analyzing (through judgment). This action of capturing an object, however, occurs through the use of representations (or mental structures) that guide our thinking. In Jean Piaget's explanation,

"la connaissance vraie constitue une certaine relation entre un sujet (a) et un objet (b). Par exemple, dire qu `une truite est un poisson´ [...] suppose (b) des objets (les truites, les poissons et (a) des activités du sujet: activité de classification [...] et activité plus complexe de mise em relation [...] Mais ces jugements font

⁴"To have a concept of "x" is: a) (...) to know the meaning of the word **x**; b) to be able to recognize a presented **x** (...) when they are not present (...) and c) to know the nature of **x**, to have grasped or apprehended the properties which characterize **x** and make them what they are" (HEATH, 1967, pp.177)

intervenir en outre (c) des structures, et de telles structures sont inhérentes à toutes les relations de connaissance unissant les sujets (quel que soit le niveau de ces connaissances) à des objets (quelle que capazsoit leur variété et cela à partir déjà des objets de la perception" (PIAGET, 1967, p.3)

Among the varied mental operations that a subject can perform in the process of knowledge production, as enumerated above by Jean Piaget, the structures he refers to contain concepts that provide closed definitions of phenomena. The concept of *time*, for example, allows the knowing subject to arrange facts into "now," "before," "after," or, in a more complex way, "before before," "before after," "after after" thus *ordering them by establishing a timeline and, eventually, by creating a complex temporal causal chain*. Thanks to the idea of *space*, we can place objects "behind," "in front of," "to the left," "to the right," or even "to the left of the right", "to the right of the right," or even "in front of the front," arranging them according to a defined characteristic. Without these — and many other — notions transmitted to us by our culture (and within it, our philosophy), it would not be possible to order reality, give it meaning, and, from there, intervene in it.

2.2 The object of knowledge

The second element of the knowledge relationship is the *object*, which is the entity to be captured and constituted by the knowing subject. The object is a "phenomenon" perceived and constructed by the observer in light of certain theories. For Irving Biederman (1995), the recognition of an object is the activation in memory of the representation of a class of stimuli (a chair, a conversation, a lightning bolt, etc.) from an image projected by it onto the retina. These entities, although they are apprehended/captured individually, they take part of a certain topic: so, a chair is a piece of furniture, a conversation is a linguistic interaction and a lightning bolt is an atmospheric electrical discharge.

Once classified, an object is understood according to a concept that is already established or under construction. By identifying certain phenomena according to concepts such as "mass," "acceleration," or "attraction," Isaac Newton was able to transform them into objects of experimentation in light of the theory of universal gravitation.

Objects are not entirely defined entities; on the contrary, they are mobile entities whose recognition is uncertain ⁵ ⁶. From a research perspective, however, objects are entities extracted from reality through the use of concepts or temporal or spatial variables. Thus, a study on "femicide in the State of Rio between 2020 and 2025" would involve theoretical (the concept of femicide), spatial (the State of Rio de Janeiro), and temporal (between 2020 and 2025) delimitations.

2.3 Knowledge as a social product

In John Searle's view, subject and object must be seen as interdependent and mutually constitutive entities, for both are inherently "social products". The knowing subject is in reality a "collective intentionality", whose basis is, according to the author, based on the sense of *common action*:

"if we intend to do something together, then that consists in the fact that I intend to do in the belief that you also intend to do it; and you intend to do it in the belief that I also intend to do it" (1995, p.24).

Thus, the knowing subject is simultaneously a collective being and an individual being. The crucial element of collective intentionality is the sense of doing something together. For Searle (1995), individual intentionality *derives* from the collective intentionality that individuals share.

The object, in turn, is eminently "social" because it is *constituted* by language, i.e., every fact is a narrated or described fact. It is the gaze of the knowing subject that *constitutes* the object as such, not arbitrarily, but respecting the characteristics and regularities expressed by that same object. In the dialectical view, therefore, there is knowledge only because a knowing subject is capable of imprinting a meaning (among other possible meanings) on an object that is external to it.

⁵According to Biederman, the recognition of an object (as an image) depends on its degree of completeness (object presented partially), its complexity (requiring more time to identify it), its recognizability (if its outlines are not clear), and its insertion into complex contexts (requiring the specification of semantic interactions between objects) (1995, pp. 17-18).

⁶ In the context of quantum physics, Heisenberg's **Uncertainty Principle** states that it is impossible to simultaneously measure, with absolute precision, the position (x) and linear momentum (p, velocity x mass) of a subatomic particle. Uncertainty is an inherent property of matter, not a failure of instruments. At the quantum level, therefore, the determination of objects becomes uncertain.

Finally, equally social or cultural is one of the "highest" products of the knowledge process: the concept. In Heath's lesson (1967, p. 177), having a concept about something begins with knowing the *meaning* of the word that designates the object. Nothing could be more "social" than knowing the meaning of a word in a linguistic system. Hence, the concept is produced in intersubjectivity configured as a social act, as the author clarifies:

"Concepts, in this dispositional sense, are still subjective and peculiar to the individual. It is assumed, however, that exposure to a common environment, plus the habitual processes of education and social attrition, will normally lead to a sharing of concepts and to the eventual acquisition of a standard repertory of concepts held in common by virtually all members of a given cultural or linguistic group" (idem, p.179)

Notwithstanding, there are philosophers that disagree on the possibility of objects existing independently of our subjectivity. Some adopt the *realist position*, according to which things exist in nature independently of thought. Others defend the *nominalist* or *conceptualist position*, according to which reality is nothing more than a general and abstract idea that we construct in our minds. For nominalists, ideas correspond to operations proper to thought and not signs that would apply to different individuals.

Although the theories in vogue in the 1970s and 1980s (authors such as Michel Foucault, Jean-François Lyotard, Richard Rorty, Gilles Deleuze, among others), founded on a certain Nietzschean-inspired nihilism, revived the nominalist tradition by seeking to "deconstruct" the idea of "truth" based on the links between interest and discourse, we can affirm that the *realist tradition* remains majority among philosophers and scientists.

The *realist view* is represented by the thought of John Searle (1995), who introduces a distinction between realities that are socially *constituted* and others that are merely socially *constructed*. In the first case, lie those facts that only exist by virtue of our beliefs (such as the fact that a piece of paper painted green with drawings and numbers is "worth" one hundred reais), which are inconceivable without the language and culture that sustain them. In a word, these facts are essentially "constituted" by our beliefs.

The other facts, called "brute facts", are supposed to exist independently of our mental constructions, as in the following proposition: "the Amazon River flows into the Atlantic Ocean". Although we need language to *state* these facts, they need language to

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exist *for us*. Even in the case of the total extinction of Humanity, the Amazon River will continue to flow into the Atlantic Ocean. Even if no one would be there to certify it.

Language plays a crucial role in the process of acquiring knowledge. It allows us *to symbolize*, that is, it enables us to represent, through *signs*, the objects and states of the world.

“Language – says Edward Sapir – is not merely a systematic inventory of the various items of experience that seem relevant to the individual (...), but also a creative self-determined symbolic organization, which not only refers to experience, but actually defines it for us. (1964, p.128)

Language, therefore, is not merely an inventory of words, but essentially symbolic and creative organization. Without language we could not even think, as Adam Schaff reminds us:

“ L'opposition de la fonction cognitive de la pensée à la fonction communicative du langage est une démarche maladroite car (...) elle suggère qu'il est possible de penser « pour soi » en dehors du langage et que les mots ne deviennent nécessaires que pour la communication intersubjective. Ou bien, d'une part – la fonction cognitive du langage ne s'effectue pas sans pensée, d'autre part – la fonction communicative du langage ne s'effectue pas sans la pensée. ” (1969, p.192)

In fact, it is language that allows us to represent direct experience, "abstracting" from it and communicating impressions, ideas, and concepts. The word "abstract" comes from the Latin "*abstrahere*". (composed of *abs* – to pull, to move away and *trahere* – to separate, to bring). Here, we consider abstraction as the cognitive faculty of isolating facts and, by assigning them to different classes, universalizing them, removing them from direct and sensory experience in order to constitute new knowledge (see BLALOCK, (1969), p.143).

It is language that provides us with the necessary tools – words and their rules of combination and transformation – so that sensory experience can be recorded and communicated. A primordial step, in the double sense of "beginning" and "most important," in all knowledge *is naming*.

Indeed, every “name” given to a common object (*common noun*) is a concept that expresses its essential and distinctive characteristics (HARRISON, 1979, pp. 202-206). Thus, the name “chair” means “object that serves as a seat for a person, equipped with a

backrest and without arms,” which distinguishes it from other similar objects, such as armchair (object that serves as a seat for a person, equipped with a backrest and arms), sofa (object that serves as a seat, equipped with a backrest, arms, and more than one place), and bench (object that serves as a seat for a person, not equipped with a backrest or arms).

Naming, however, is not an individual attribute, but a collective and cultural one. This is why different people, who do not necessarily know each other, are able to make similar use of names in contexts different from those that gave rise to the term. Language is intrinsically linked to a culture, which provides it with the semantic content that gives "meaning" to social discourses, including scientific discourse.

Exploring the relationship between the knowing subject and the object of knowledge through research (by theoretical reflection and observation, experimentation and comparison) should produce a *new Information* about the object. The study of lightning, for example, can give us new information about electricity, the types of clouds that generate lightning, the amount of electricity involved in the discharge, among other information. (HESSEN, 1961, pp. 69/70).

This information can be obtained through *direct sensory experience*, such as the case of a child who unfortunately "learns" that fire burns when touched or *indirectly knowledge acquisition* through an oral or written warn that brings out the socially accumulated knowledge about that situation, which can be summarized as: "touching fire can cause a 'boo-boo'"

Knowledge is thus transmitted from one place to another and from one generation to the next through records, such as books. Therefore, we can say that knowledge is not only the act of knowing itself, but also its result: the information obtained is accumulated over time. The accumulated knowledge then becomes the basis for new knowledge.

2.4 Human knowledges

The information accumulated and disseminated over time and space tends to be grouped, at different moments in the history of knowledge, according to a meaning given to it by wise people, that is, by those people who, in a given community, are legitimate bearers of social knowledge, such as scientists, philosophers, theologians, or shamans (see note 3).

From a socio-historical point of view, it is through this community of wise men that knowledge is founded, organized, and developed. Physics, for example, has a long history that includes Archimedes, Aristotle, Ptolemy, Galileo, Kepler, Isaac Newton, Maxwell, Albert Einstein, Max Planck, Heisenberg, Stephen Hawking, among others. More than men that excelled individually, there were many "schools" of Physics (Milesians, Atomists, Aristotelian) to constitute the field of Physics.

In Christian theology, the list is equally long, starting with Augustine of Hippo, passing through Abelard, Saint Thomas Aquinas, William of Ockham, Martin Luther, John Calvin, Paul Tillich, Joseph Ratzinger and Leonardo Boff. All of them were builders of knowledge (in the form of paradigms, theories, and concepts) in their respective fields.

We can thus "know" facts, such as the fall of a body, the occurrence of a hurricane, or understand mathematical relationships, such as those depicted in the Pythagorean Theorem; we can "know" God, Justice, a Van Gogh painting, or the best route between home and work. Knowledge is multiple and can therefore be directed towards different objects, generating diverse modes of apprehension by the mind and distinct conclusions. Amidst the multiplicity of knowledge, we can refer to five major types of knowledge. They are:

2.4.1 Practical knowledge

Also known as "common sense," "practical sense," or even "good sense," it is a product of experience, concrete (not abstract), and verifiable. Sociologists often treat it in the category of "practical sense" as a set of principles, norms, and inferences drawn from common people's experience, which also act as organizers of that same experience in a set of norms and rules to guide everyday life.

According to Bourdieu, the objects of practical knowledge are constructed from experience, this "*pre-occupied* and active presence in the world, by which this world imposes its presence, with its urgencies, its things to do or to say..." (1980, p. 87). Practice is the place of the dialectic between what *is* done and the *way* of doing it. Practical knowledge helps us to solve most of our daily dilemmas. The history of practice allows us to incorporate certain solutions tested in the past (ways of doing) that then become norms of action (norms of doing). The practical sense of someone who has lived, for example, through the experience of near-drowning will become much more attentive to

the circumstances that can lead to this outcome and, consequently, will warn him about the best course of action he/she can adopt in the face of the situation.

For Damasio, practical knowledge is essential from the point of view of the corporeal paradigm, insofar as it encompasses the regulatory functions of the body's homeostasis, aimed at survival. In his words:

“dispositional representations constitute our full repository of knowledge, encompassing both innate knowledge and knowledge acquired by experience (...) You can conceptualize it as commands about biological regulation which are required for survival (...) (1994, pp.104-105)

Practical knowledge is made up of visual representations of lived reality. According to Damasio, the arbitrary words and symbols that permeate our minds are based on topographically organized representations that can become images. states that:

“most of the words we use in our inner speech, before speaking or writing a sentence, exist as auditory or visual images in our consciousness. If they did not become images, however fleetingly, they would not be anything we could know” (1994, p.106)

Practical sense is based on what Bourdieu calls *habitus*, a system of durable dispositions that function as organizing principles of this experience, as well as generators of future practices and representations (1980, p. 88). The carpenter knows the types of wood, their characteristics and functionalities for certain uses, just as the bricklayer knows the different types of bricks, mortars, slabs, or a cook not only *knows* how to prepare (*modus faciendi*) certain dishes, but also, thanks to *habitus*, is able to understand the formula (*norma faciendi*) or even invent other dishes.

Practical knowledge is organized along the timeline of the different experiences of individuals. It is concrete, that is, it is inscribed in the bodies of individuals, without the need for mental elaboration: the cook cannot always define the "secret" of that dish. Finally, practical knowledge shares with science the verifiability of both factual and value judgments derived from concrete notions. After all, is it really true that this is actually the *best* way to get from home to work?

2.4.2 Philosophical knowledge

"It is the science which investigates the **first causes** and the **principles** of things" as stated by Aristotle (*see. Metaphysics*, 982a), philosophical knowledge is a type of rational and radically reflective questioning, capable of inquiring into the ultimate questions of life. In the Socratic tradition, philosophy is fundamentally self-questioning and questioning of different forms of knowledge, demanding that good reasons be given to them (hence, it is "rational").

Philosophy goes to the roots (and is therefore "radical") or foundations of the ultimate questions of life, here considered human life in society, in which society, paraphrasing Kant, three major questions fundamentally circulate: what are the limits and possibilities of knowledge? (epistemology), how should I treat my fellow man? (ethics, politics, rhetoric, law) and what can I expect (religion/aesthetics).

More than a reflection, philosophy, even when confronted with the Nietzschean project ⁷, is capable of self-reflection, criticizing its own foundations, its own conditions of possibility based on a concept of truth. If philosophy is rational knowledge, it is not, however, verifiable, since its theories are not susceptible to proof through the traditional methods of science (hence its *metaphysical character*) or even through practical sense, as it deals with first principles (Aristotle), presupposed by all reflection on human life. Philosophy, *improbable* as it is, nevertheless proves the different forms of knowledge, grounding their very possibility of existence.

2.4.3 Aesthetic knowledge

In epistemological treatises, it is not usual to find mention of art or aesthetics as forms of knowledge. This is due, in our view, to the mentalist bias of *mainstream* epistemology. As discussed above, knowledge is an eminently bodily process, fully compatible with the expression of the senses, which resides in the essence of the Greek word *ἄσθησις* (*aisthēsis*), meaning "sensation" or "perception through the senses." As we saw above, Neuroscience understands emotions as "carriers of cognitive information"

⁷For Nietzsche, philosophy is not a disinterested search for objective truth, but an unconscious confession of the will to power (*Wille zur Macht*) of the philosopher himself. In **Beyond Good and Evil**, he wrote: "I gradually discovered what until now has been all great philosophy: a self-confession of the author, a kind of involuntary and unnoticed *memoirs*" (1978, 6, p. 15)

(Damasio, 1994), promoting aesthetics to a unique type of knowledge that allows us to understand the human condition through feeling.

Antonio Damásio argues that knowledge and emotion go hand in hand ("I view emotion as delivering cognitive information", 1994, p.xiii) and, complementarily, explains: "feelings are just as cognitive as others percepts" (id. p.xix). In his work on aesthetics, Morin emphasizes the role of art as a vehicle for knowledge: "les grands oeuvres d'art ne sont pas que divertissements: ils nous donnent la compréhension de la condition humaine" (2016, p.112).

Aesthetically, a unique work situated in a specific time, space, and culture (here we think of Dostoevsky and Shakespeare) can be universally appreciated and allow us to understand the human condition in an intuitive and direct way.

2.4.4 Religious knowledge

Religious knowledge is that of the Immeasurable and Untouchable Greatness. Its assumptions are "unverifiable," as they present themselves as "sacred." In religious knowledge, to paraphrase Saint Augustine, belief precedes understanding, so that any religious act is essentially an act of bare faith. It is not comprehension (through reason) of the world that makes me understand God, but on the contrary, it is through faith in God that I will be able to understand the world.

Religion is a term that encompasses several definitions. For James Martineau, religion is "the belief in an ever-living God, that is, in a Divine Mind and Will ruling the Universe and holding moral relations to mankind." In Herbert Spencer's conception, "religion is the recognition that all things are manifestations of a Power that transcends our knowledge" (see ALSTON, "Religion" 1967, pp. 140-141).

According to William Alston (1967, Vol. 7, pp. 140-141), the essential characteristics of religion are as follows: 1) belief in the existence of supernatural beings; 2) the distinction between sacred and profane objects; 3) rituals focused on the sacred; 4) a moral code sanctioned by the gods; 5) religious feelings that are aroused by sacred objects or rituals; 6) prayer as a form of communication with the gods; 7) a worldview in which individuals are embedded; 8) a more or less total organization of individuals' lives based on this belief.

These eight characteristics can be condensed into the following definition: **religion is the belief that absolute beings are masters of a Power whose superior reason transcends our rational knowledge and who maintain a moral relationship with Humanity.** Every religion contains mysteries (*miracles*), which allow us to glimpse (through the *mystós – mist*) a hidden and superior rationality acting upon the world and social life through forms of sacred communication.

As we discussed above, the assumptions of religious knowledge depend on an act of *faith*, not being the result of rational arguments. The essence of religious life is *feeling*. The faithful feel the presence of the divine. For Friedrich Schleiermacher, "the essence of religion consists in the feeling of an absolute dependence" (*apud ALSTON, 1967, id. Ibidem*). In this sense, the corporeal paradigm and religious knowledge converge, recovering the role of feelings in the knowledge process as cognitively relevant, as we pointed out above.

Religion, according to Émile Durkheim's sociological definition, is "a unified system of beliefs and practices concerning sacred things, that is, things set apart and forbidden, beliefs and practices that unite all those who adhere to it in a single moral community called the Church" (1978, p. 65). Therefore, knowledge of the sacred is an experience of communion that, more often than not, assumes an introspective character, and is thus unverifiable. One could even say that religion is the claim, alongside the scientific point of view, of the point of view of feeling. Religion, which is an inseparable set of beliefs and ritual practices, has developed a type of knowledge whose object is the *sacred absolute*.

2.4.5 Scientific knowledge

Science corresponds to a type of knowledge in which a rational and systematic cognitive activity, oriented towards facts according to established theories and using specific methods, results in valid (therefore falsifiable) and communicable knowledge.

This is basically factual (fact-oriented), rational, and verifiable knowledge. Based on the use or combination of logical-deductive or experimental methods, scientists

produce theories⁸ that provide us with forms (or "structures," cf. Piaget, 1967, p. 10) to understand natural or social phenomena. Starting from certain foundational concepts (such as "Fermentation" and "Gravity" for the natural sciences, or "Norm" and "Unconscious" to the social sciences) related to specific paradigms, the knowing subject, using the instruments of Reason, apprehends sensory experience in a coherent way and establishes regularities.⁹

Facts become scientific, as Bachelard (1949, p. 55) reminds us, through the formulation of *problems*. It is theories that confer scientific status upon facts, without which they would lack any interest. As we saw above, it is paradigms that give scientificity to theories. The scientific community tends to establish its own standards of relevance and adequacy and, based on them, judge and attribute "scientificity" to the different works that proclaim themselves "scientific." In the words of Jean Piaget:

"le caractere propre de la connaissance scientifique est de parvenir à une certaine objectivité, em ce sens que, moyennant l'emploi de certaines méthodes (...) il y a finalement accord entre tous les sujets sur um secteur donné de la connaissance" (PIAGET, 1967, p.14),

The different stages of a scientist's training (undergraduate, master's, doctorate) are rites of passage through which the established scientific community controls the access of new members and seeks to ensure that they will share the same standards and guiding rules of scientific practice. This system greatly reduces the possibility of dissent among scientists regarding the fundamentals of the discipline, although it leaves ample room for controversy about the conditions for applying the models.

Thus, when we speak of the Euclidean paradigm in Geometry, the Newtonian paradigm in Physics, or the positivist paradigm in Law, we mean that all work presented as scientific in these three areas must conform to the rules imposed by the paradigms, created, managed, and approved by the scientific community.

⁸ Theory will be reputable here as: "lawlike propositions that interrelate the concepts or variables two or more at a time" (BLALOCK, 1969, p.2)

⁹ Regularities such as: "under specific temperature and pressure conditions, if water is subjected to a temperature of 100° C, it will boil".

The scientist's conclusions must, under any circumstances, be fully verifiable¹⁰; that is, it must be possible for anyone to repeat their steps and verify the result for themselves. This requirement, in turn, implies the necessary *communicability* of the results. The most brilliant theory or the most important discovery is nothing if it is kept to oneself. Science only accepts what is communicated to the world, especially to other scientists, who can thus verify (or refute) the results of scientific activity. Ideally, research results should reach the largest possible number of people, including scientists and the general public, so that they can be justified.

In information science, the impact of produced knowledge is measured by the so-called "impact factor" of scientific production, which takes into account citations of the text by other scientists and the relative importance of the institution disseminating the knowledge (national or international journal, regional, national or international publisher, scientific prestige of the publication, among other factors). Scientific monographs (undergraduate theses, master's dissertations, doctoral theses, and papers) are, in this context, the standardized way of presenting the results of scientific research and submitting them to the scrutiny of other scientists.

3 Science as practice and as Applied Social Science

Among the Human Sciences, there is a distinction that is usually made between **social sciences**, which encompasses Anthropology, Sociology, Political Science, Psychology, etc.) and **applied social sciences**, which include Law, Administration, Economics, Accounting, Communication, and Social Work. The first ones are meant to study and comprehend the social relations that are established within societies. The second ones, however, share a concern with "applying knowledge to practical situations", such as conflict resolution, personnel management, inflation calculation, or the production of journalistic information. This academic classification is the result of a long debate in philosophy about the role of science as pure or applied knowledge.

Since the mid-19th century, thinkers such as Auguste Comte and Karl Marx have reflected on the applicability of science to the dynamics of society and the production

¹⁰In Karl Popper's lesson: "a theory which is not refutable by conceivable event is non-scientific. Irrefutability is not a virtue of a theory (as people often think) but a vice (...) "the criterion of the scientific status of a theory is its falsifiability, or refutability or testability" (1963, p.36-37)

process. For Auguste Comte (1798-1857), founder of the Philosophical Positivism and creator of the term "sociology," this discipline should be understood as a rational instrument of social engineering. For him, all knowledge must be essentially applied¹¹, and the tasks of sociology would be: diagnostic, prognostic, and prescriptive¹².

Specifically, it was Lester F. Ward (1841-1913) who first used the expression "applied sociology" in his work **Applied Sociology** (1906), in which he defended the idea that the purpose of a true science of society is to be placed at the service of humankind. For him, an applied sociology must rest upon a "pure" sociology, whose relationship he defines as follows:

"Pure sociology is simply a scientific inquiry into the actual condition of society. It alone can yield true social self-consciousness. It answers the questions What, Why and How, by furnishing the facts, the causes, and the principles of sociology (1906, p.21)

"Just as pure sociology aims to answer the questions What, Why and How, so applied sociology aims to answer the question What for. The former deals with facts, causes, and principles, the latter with the object, end, or purpose" (1906, p.23)

In reality, Ward understands applied sociology as a possible extension of pure sociology. The pure science would uncover the mechanisms of society whereas the applied one would make use of this in order to "improve" society¹³. This view could be submitted to extensive criticism, particularly on two points: first, applied knowledge does not derive from pure knowledge for (as we are going to see later), there is no such thing as pure knowledge and, second, try to improve society is an idea that supposes an unattainable degree of consensus in multiple and complex societies.

Knowledge corresponds to a condition of practice or "sensible human activity," as Marx expresses in the 1st of the **Theses on Feuerbach**. For him, knowledge does not possess the autonomy that would assure it the attribute of "purity," free from the influence

¹¹ "All knowledge that does not aim at action is vain and sterile knowledge." (COMTE, Auguste, **Système de Politique Positive**, vol. I, p. 133)

¹² Tasks condensed in the famous phrase contained in the **Cours de Philosophie Positive: *Savoir pour Prévoir***, related to *pourvoir* – literally : "to know in order to foresee, in order to provide"

¹³ As he emphasizes: "the subject-matter of pure sociology is achievement, that of applied sociology is improvement. The former relates to the past and the present, the latter to the future. Achievement is individual, improvement is social" (1906, p25)

of social, cultural, and political conditioning ¹⁴. In the famous **Preface to A Contribution to the Critique of Political Economy** (1859), Marx states that "it is not the consciousness of men that determines their existence, but, on the contrary, their social existence that determines their consciousness." More categorically, in the 11th of the **Thesis on Feuerbach** ¹⁵, Marx states his vision of the role of knowledge in reforming society: "philosophers have only interpreted the world in various ways; the point is to change it."

In fact, both approaches (Comte-Ward and Marx-Engels) deserve revision from the perspective of a full understanding of the applied character of Law as an applied social science. The first approach presupposes the idea that application is an instrument of social reform aimed at achieving a supposedly better place in social evolution. The Marxist perspective, however, considers that this applicability is constitutive of knowledge as produced within a class-divided society ¹⁶. In this view, all knowledge, transformed into ideology, is determined by its "material conditions of existence" and "contaminated" by the exploitation of man by man.

3.1 The general applicability of the sciences

We can affirm that all sciences are applied in the general sense that they all have a commitment to society. In reality, one cannot imagine Medicine without the search for better diagnoses, efficient vaccines, treatments, medications, and surgical techniques to combat the main diseases of human beings; or conceive of Chemistry without the array of therapeutic drugs, reagents, disinfectants, antiseptics, fertilizers, and other products that improve the health of the human body; or imagine Physics without electrical power generation systems, X-rays, computed tomography, radiotherapy, lasers, and GPS. It holds for every science we could list at length.

In fact, all the sciences are human in the sense that they have been conceived as tools to solve the problems of Mankind. From Astronomy to Zoology, all the sciences, to

¹⁴ "Morality, religion, metaphysics, and any other ideology, as well as the forms of consciousness that correspond to them, thus lose the appearance of autonomy. [...] It is not consciousness that determines life, but life that determines consciousness." (MARX, Karl and ENGELS, Friedrich. **A Ideologia Alemã. Lisbon: Editorial Presença, 1980, p. 26**)

¹⁵ Theses on Feuerbach In: **Marx / Engels. Études Philosophiques** . Paris: Editions Sociales, 1977, p.51

¹⁶In his critique of Proudhon, Marx writes: " Just as economists are the scientific representatives of the bourgeois class, socialists and communists are the theorists of the proletarian class." (**La Miséria de la Filosofia**, p. 102)

be justified, take on the task of facing questions that are relevant to human societies. That's why we can talk of a general applicability of sciences.

3.2 Applied Social Sciences

In the absence of an official definition, we decided to review the literature about applied social sciences, what led us to find out a lot of quite different definitions. To conduct a good discussion of it, we brought to light two concepts:

An applied social science is above all concerned with the prediction and production of social and cultural change. As Thelen has suggested, an applied social science is a technology and, as such, requires "a set of principles useful to bring about change toward desired ends" (GOULDNER, 1956, p.28)

Applied social science research, driven more by practicality, is outcome focused rather than theory focused. Basic research answers questions relating to the "whys" and "hows" of human behavior, and does not typically result in a product or technology. Applied research, on the other hand, is directed toward producing an improved product, or toward finding ways of making the use and delivery of the product better and easier. In short, basic research tends to improve our understanding of the world, and applied research tends to improve our ability to function and interact with it. (GREER, 2005, p.121)

In his seminal work **Explorations in Applied Social Science**, Gouldner stresses the nature of technology of applied social sciences and insists on the effect of "production of social and cultural change". This stance was typical of that rather optimistic moment in the XXth century when the American Sociology believed that it was possible to foster change towards a better (US-led) world. In current world, there is no consensus on neither what this change could be nor its direction or depth.

In the view of Greer (2005), is focused in outcome, directed toward producing an improved product, find ways for better use of that product. Summing up the argument, applied social sciences in the XXIst century have abandoned the ideal of change in favor of a pragmatic aid to better people's and government's life.

Amid so many definitions of applied social science, we would like to outline another definition that could better grasp the current practice of those sciences:

The so-called applied social sciences, according to the administrative topography of the scientific community, are those

sciences that possess, in their very constitution, the necessary tools for intervention in social reality.

The difference between an applied science and a "non-applied" science is that applied social science is *constituted* by its interventionist task. An applied social science is born and develops *to be applied*. In fact, instead of postulating an ideal "change" or a betterment of a product, the applied social sciences task is their capability to intervene in social reality. For those sciences, applicability is not an option, but an obligation. There is no pure science of Law or Economics.

3.3 Law as an Applied Social Science

In this section of the paper, we are going to specifically address law as an applied social science, in the following terms:

Law is a social science focused on the study and understanding of the legal production process, in which social actions and discourses, referring to positive norms, produce the legal order within the framework of legal institutions. It is also an applied science because it possesses, inherently, the instruments to intervene in social reality.

Law, in its entirety, is a social phenomenon, both as "normalized social action," externally observable, and as "discourse about law" and also as a "social institution". The decisive characteristic of *social action related to positive norms* is the fact that individuals and social groups belonging to a given community act with reference to the positive norms of that legal order. Even if many people do not know the exact content of legal definitions, they tend to act according to a certain degree of legal consciousness (*Legal Consciousness*, cf. PODGORECKI, 1977). *Legal discourse* consists of the set of verbal productions, endowed with meaning and making use of signs of legal value (to which normative force is given, based on notions of rights and obligations) (see MONTEIRO, 2003, p. 44). Finally, *legal institutions* correspond to the consolidation – in time and space – of regular social practices that become, in its turn, organizing norms and rules of conduct ¹⁷. For Giddens, institutions are the most enduring characteristics of social life (GIDDENS, 1984, p. 24). Considering, however, that

¹⁷This definition is inspired by Giddens: "Institutions [are] chronically reproduced rules and resources" (1994, p.375). In addition, the author highlights the duality of the rules contained in the institutions: "rules report on the one hand to the constitution of *meaning* and on the other to the *sanctioning* of modes of social conduct" (id, p.18)

institutions are in fact processes of undergoing institutionalization, it is up to the knowing subject to understand them as bearers of different degrees of consolidation.

A science that studies these phenomena is, first and foremost, a social science. However, law is not a social science that is only interested in *understanding* phenomena, but fundamentally in *solving* problems arising from social practice. Law is therefore said to be an *applied social science* insofar as practical intervention is, for it, constitutive of its very reason for being. If it were not to regulate conduct and to provide solutions to the concrete problems of human beings, there would be no reason for law to exist.

The "applied" nature of law, as we anticipated above, consists of the availability of means (binding legal norms and institutions) and resources (public policies) to legitimately intervene in the social reality in which it is inscribed. Law is the main instrument of social regulation, "processus par lequel le comportement d'un système perçu complexe est maintenu ou ajusté en conformité à quelques règles ou normes" (COMMAILLE In: ARNAUD, 1993, p.521). Law is a legitimate instrument of political regulation in establishing order, in the political management of that same order, and in resolving conflicts.

4 Conclusions

In this article, we set ourselves two guiding objectives. The first was to reflect more extensively on the role of the new paradigms of complexity and neuroscience in reshaping current epistemology towards a new paradigm that conceives the production of knowledge not as a purely mental operation, but as a corporeal survival strategy. Thus, it was possible not only to deepen the main concepts of the epistemology from new perspectives, but also to extend the concept of knowledge towards new areas, such as practical sense and aesthetics.

The second objective of this work was to contribute to bring this new epistemological perspective to the analysis of the role of the so-called applied social sciences, among which is law. In this process, we realized that the various definitions emphasized interdisciplinarity as a distinctive characteristic of these sciences, which proves to be mistaken.

In reality, after this journey, it was possible to demonstrate that the process of obtaining knowledge is not restricted to human minds and high-tech laboratories, but corresponds to survival strategies, therefore connected to the corporeal dimension or, in

other words, to the practical dimension. Developing from this point of view, we realize that, broadly speaking, all sciences are applied because they are geared towards solving practical problems of human beings. In this context, applied social sciences are basically those that are constituted to be applied. Law, for example, is not applied by choice, but by constitution.

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