The scientificity of quantitative, qualitative and emerging methodologies

María Marcela Castañeda Mota

https://orcid.org/0000-0002-4847-4382, Universidad Veracruzana, México

Abstract

Introduction: It considers the applicability of the scientific mode of knowledge for the resolution of concrete problems of everyday life, individual or collective. **Background:** From the framework of criteria for scientificity, it is proposed to base the traditional methodological emphasis, with theoretical elements and epistemic and logical supports, to justify the empirical applicability oriented to social welfare. **Discussion:** Elements of contraposition and overcoming are considered that derive in proposals with theoretical foundation to fulfill objectives covered in the applicability of disciplinary principles; and with this, to frame traditional or emergent methodologies.
Keywords: epistemology; logical geography; methodologies; applicability.

La cientificidad de metodologías cuantitativa, cualitativa y emergentes

Resumen

Introducción: Se considera la aplicabilidad del modo de conocimiento científico para la resolución de problemas concretos de la vida cotidiana, individual o colectiva. **Antecedentes:** Desde el marco de criterios para la cientificidad se propone fundamentar el énfasis tradicional metodológico, con elementos teóricos y soportes epistémicos y lógicos, para justificar la aplicabilidad empírica orientada al bienestar social. **Discusión:** Se consideran elementos de contraposición y superación que derivan en propuestas con fundamento teórico para cumplir con objetivos cubiertos en la aplicabilidad de principios disciplinares; y con esto enmarcar metodologías tradicionales o emergentes.
Palabras Clave: métodos cuantitativos; métodos cualitativos; métodos emergentes; aplicabilidad.

Introduction

This paper presents topics related to the study of the scientific dimension for the approach, realization, and evaluation of programs to be implemented in the field of applicable psychological research, since, with the existence of the diversity of paths to knowledge in the understanding of the world, appear as statements that permeate the field of human life. The implications of consolidated theoretical assumptions have developed much of the history of culture. Therefore, scientists assume their task of

*Correspondence:
mcastaneda@uv.mx

describing and explaining the regularities of the world governed by natural laws and empirical contributions (Bunge, 1985). However, the applicability of the scientific mode to concrete problems posed for particular or collective cases is in controversy as to its purposes: the question of whether scientific methodology considers objectives for social welfare.

This is the result of several research problems that currently enjoy the planned action of the method with a heuristic character, oriented towards an organized and reflexive action towards society (Dendaluce, 1988). This condition remains in each evolutionary demand that social institutions make to those who generate knowledge, especially to the so-called scientific knowledge (Rorty, 1996). Thus, the purpose of this study is to present arguments for the analysis and possible application of principles derived from research towards methodologies that consider fundamentals to achieve the congruence of the epistemological field, articulated with logical geographies pertinent to the state of questions posed, with derivations and data production that consolidate descriptive or explanatory proposals; considering fundamental criteria for measurement with validation and valuation purposes, taking into consideration its applicability in the disciplinary and transdisciplinary field in a social context. Psychology as a natural science, Ribes says (1982; 2004; 2018), must open new empirical and conceptual domains to formalize its importance in the social context.

Background

Regarding the foundational elements of scientificity, Azcona's text (2013) considers that in the Middle Ages, verbalism and the use of syllogism were established as principles of authority; thus preserving the purpose of ultimate and transcendent truths.

By the 17th Century, according to Kothari (2004), emphasis was placed on proposing rules that led to valid knowledge.

These rules, especially in the works of Descartes and Bacon, already identified coincidences in privileging the development of the method in the research process even though they considered different purposes such as rationalism and empiricism.

Thus, at the beginning of modern knowledge and adhering to the methodological proposals of these great philosophers, it was considered to divide the object of study of the disciplines into independent and measurable components; conditions that could be shared by the natural and social sciences (Aranda, 1997).

In these circumstances, the subject of measurement was considered a permanent process in everyday life and the activity of scientists. The fundamental operations of a measurement unit were incorporated as common terms in the derivation of studies. The refinement of these basic concepts is one of the greatest human achievements that provides the necessary resources of scientificity, technological change, and social transformation. However, it is necessary to include the discussion and implications of measurement in the development of the method (Kerlinger & Lee, 2002).

Therefore, in the contemporary state of methodology in science, guidelines are proposed to analyze fundamental routes: a) distinctive characteristics of the object of study, b) logic of the research process, and c) underlying philosophical assumptions. These philosophical assumptions are approached by considering three types: 1) methodological, 2) ontological, and 3) epistemological (Bunge, 1979). In this way, the method is considered the way to answer the problem posed, and depending on an ontological position of reality, it allows the possibility of the appropriate epistemic decision of its development to capture the richness and complexity of the study phenomenon related to the method (Bernal, 2010, pp. 22-32).

In the words of González (2002), epistemology in relation to method is fundamental, and it is defined as the philosophical study of science that is considered the product of two origins: philosophy and particular scientific disciplines; indicating that the philosophical basis derives

from the theory of knowledge, logic, and historical materialism; while the particular disciplines are sociology and the history of science. In the same text by Gonzalez, three periods or stages for the historical development of epistemology are clearly described and exposed. The first period begins in Greek times until the first decades of the 20th Century. During this period, studies on epistemology were carried out by thinkers not specialized in the investigation of science. The second stage is marked from 1927 to the 1960s; the contributions of the Vienna Circle and neopositivism were the most outstanding. In this period, the specialization to study the philosophy of science is identified and 1927 marks the birth of logical empiricism, considered the new epistemology. This is how neopositivism became the dominant philosophy, remaining in force and strong in the 1960s, influencing the scientific method. In the third and last stage, there is a struggle of ideas between neopositivists displaced by post-positivists such as Kuhn (1922-1996), Hanson (1924-1967), Feyerabend (1924-1994), and Toulmin (1922-2009); while in France, Bachelard and Foucault stand out. González (2002) affirms that for Carnap (1891-1970, logical positivist), scientific knowledge is a rational structure that makes it possible to determine whether a hypothesis is logically supported by empirical evidence and calls for distinguishing between true and false; that is, its truth character.

Opposition to this perspective arose in the 1960s with authors such as T. Kuhn, Feyerabend, Hanson, Tulmin. The main points made by these authors with respect to epistemology are a) that epistemology must be based on the study of the history of science and the social determinants of scientific knowledge; b) that scientific activity cannot be reduced to the study of cognition since the social ends and needs to which science responds must be included; and c) that with post-positivism, the importance of the subject and subjective factors in science is emphasized and not only the search for objectivity as proposed by logical empiricism. The case of French, radical, and deliberate non-positivism (represented by Bachelard, Canguilhem, and Foucault) maintains the opposition to positivism by various routes:

Bachelard leans towards the history of sciences as a resource for the analysis of scientific knowledge, while for Foucault it is the relationship between knowledge and power. It is the power that makes discourses and scientific or expert knowledge possible as a product of power relations. The same author cited in this section refers to an epistemological position called the psychology of the creative reflex, based on the contributions of K. Marx (1818-1883). This epistemological proposal considers that the human psyche and scientific knowledge are a reflection of objective reality, but also a subjective creation of the perceived and thought reality and culture.

The Participation of Scientific Work in Psychology

According to the history of the evolutionary process of scientific thought within psychology, the opposition to positivism is manifested by the works of Freud (1856-1939), Piaget (1896-1980), Maslow (1908-1970), and Rogers (1902-1987), among others. In this field, there are some epistemological derivations such as constructivism, constructionism, and qualitative epistemology. For constructivism, knowledge is a construction of the researcher and is not directly determined by empirical data; it denies the criterion of truth that emerges from empirical verification. On the other hand, social constructionism considers conversations as the substance of the social world, defined as a system of joint activities; to accept something as true, it is required that others in society reach the same determination: science results from the negotiation between actors in their interactive discourses; therefore, methodology reaches a great dynamism in search of knowledge (Maletta, 2009).

Regarding Marxist epistemology, González (2002) argues that it is determined as a proposal in the mid-19th Century with Marx's second Thesis on Feuerbach, where he points out as a problem whether human thought can be attributed an objective truth and that it be considered not as a theoretical problem, but as a practical problem. Thus, the discussion revolves around objectivity and subjectivity, between theory and practice, the individual and the collective.

In this sense, positivism affirms criteria such as pointing out that knowledge is objective, presenting as a basis the facts given by the senses, and demanding the exclusion of subjective interpretation as a determinant of knowledge. The facts are the sensory experience and its verbal expression, and the theory plays a role in the generalization of the facts. It proposes quantitative research, and the experiment is its most finished form. It expresses a position centered on science and the scientific method (Aranda, 1997). With these arguments, the anti-positivists reject positivist empiricism and consider that knowledge is based on the interpretation of the subject (individual or collective). They deny the declaration of a reflex knowledge or copy of objective reality with existence outside the consciousness. They declare that theoretical elaboration is an interpretation based on the facts. As a difference, anti-positivism is inclined towards qualitative research, but, in some cases, it can be reconciled with quantitative research. This type of anti-positivism is an expression of idealistic humanism, centered on human spiritual and social problems, and thus, for González (2002), scientific humanism considers knowledge as a unity of theory and practice, where theory is a reflection of the observation of facts accompanied by practice as an exercise of empirical verification. Thus, knowledge is considered the objective and reflection of the objective reality that exists outside the consciousness. Scientific humanism incorporates the dialectical unity of quantitative and qualitative research. Hence, a first conclusion is to consider scientific humanism as an integrating and harmonizing element of opposing philosophical thoughts, such as positivism and anti-positivism. The epistemological problems addressed by the explanatory proposals are related to truth criteria and it is maintained that truth lies in empirical verification.

However, for anti-positivism, truth is provided by theoretical interpretation and the facts of practice. Specifically for the Marxist school, the truth criterion is expressed in the creative reflex, explaining that it is considered a reflex because it is based on the facts and confirmed by them. It is considered creative because it requires an interpretation that is not given directly by the facts but elaborated by the subjectivity of scientists. He concludes by saying that the researcher creates the hypothesis and theory, but the facts are in charge of verifying or refuting it. Another related epistemological problem is related to the significance of reality. In this case, positivism and anti-positivism coincide in denying consciousness as the generator of knowledge about reality. On the other hand, for Marx and Martí, science can know the objective reality that exists outside the consciousness (De Gortari, 1969).

Likewise, González (2002), concerning the epistemological problem of reality, describes that the reality for science is the unity of a part of objective reality and, on the other hand, its subjective reflection. Science does not create its object as objective reality, but reflects it, copies it, and creates its object as reality for science. There is a difference between the so-called natural sciences (explanatory) and the social sciences (comprehensive). With comprehension, hypotheses are generated, while in the explanatory sciences they start with hypotheses.

To conclude, González (2002) states that the material object (and the psychic reality of another person) exists outside the individuals and is reflected in them (this defines "knowledge"). The world of things determines consciousness; it is the activity with material objects that determines the psyche. Everything operates in the context of the interaction between the being and the social consciousness (between the base and the superstructure). Neo-Kantianism recognizes that the same empirical reality can be considered as nature (universal, general [generalizing method]) or history (particular, individual [individualizing method]). Positivism clings to the investigation of the general and the quantitative method, both for the social and natural sciences.

The points of confluence and complementarity in scientific research of quantitative and qualitative methodology are presented, maintaining the dialectical unity. The author's final proposal is that one goes from the individual to the general and vice versa, and this is for both natural and social sciences. He emphasizes the

dialectical unity in the epistemological basis of empirical research (quantitative, qualitative, or emergent) in which, in that sense, the field of psychology offers important advances in the achievement of knowledge since discovering the general and particular requires the quantitative. If the purpose is to reveal the essential, individual, or collective nature, then the qualitative and mixed or emergent methodology could be the right one.

Considering the method of the natural and social sciences, they share similarities: the dialectical unity of theoretical interpretation with empirical verification from the individual to the general. However, it should be considered that, in the social sciences, experience, communication, introspection, and self-observation are weighted (Rojas, 1982).

Derivations in Combination or Methodological Integration Routes

As a result of the aforementioned conditions, it can be seen that within the sciences there is consensus on the diverse object that defines knowledge in general and psychology in particular. The presence of these divergences is given in the approaches of how to examine a particular field of the investigated phenomenon, generating methodologies considering, therefore, the quantitative, qualitative, and mixed (Hernández & Mendoza, 2018). Regarding the field of study of psychology as a science of multiple paradigms different from each other, which also transit through independent, parallel, or divergent routes, there is disagreement so far on the specific object of knowledge addressed. The establishment of the object of study has two implications: the ontological definition and the epistemic commitment of the object of study itself and, in the case of psychology, it must be congruent in each research proposal when analyzing phenomena of different nature and, based on this, methods, measures, evidence criteria, and explanations can be used (Ribes, 2000).

In this way, Azcona (2013) indicates that quantitative research is developed following the logic of the hypothetico-deductive method, based on a cycle of induction, deduction, and induction; while qualitative research puts first the methodological purposes to incorporate socio-historical incidences that correspond to the ideologies of the states. The previous condition commits the hypotheses to universality and transcendence. From the methodological perspective, two groups that share an experimental approach can be distinguished: one with the purpose of finding causality and the other focused on correlations (Buendía & Hernández, 1995). The quantitative proposal is based on a realism divided into ontogenetic realism and epistemological realism, ontological realism that poses that what is known exists and is knowable (Bunge, 1999).

While the qualitative method refers, according to Martínez (1998), to a multiplicity of studies whose common factor is the rejection of the quantitative; it emphasizes the study of subjectivity and places constructivism and hermeneutics within the framework of complexity; the privilege it gives to introspection with all its internalist ingredients: understanding, empathy, motivation, purpose, among others, and the qualitative logic is inductive as a recursive (iterative) process. According to Sandoval (1996), the data collected belong to the category of meanings, derived from the interaction with the participants, using non-random sampling. This way, the variables do not undergo experimental manipulation and their cultural patterns are considered, and the relations of significance are reconstructed by means of narratives and not by statistical indexes. Multiple paths to construct knowledge are exposed and the impossibility of establishing rational and universal principles is shown. The objective is to know the meaning of their interpretation (Escudero & Cortez, 2018).

On the other hand, the quantitative—Azcona (2013) points out—is synthetic, holistic, local, and qualifying. The reality in the human sciences is better adjusted to the idea of systems.

Thus, the General Theory of Systems is constituted as a metatheory for transdisciplinarity. The ontological conception of systemism is called complexity where disorder, randomness, uncertainty, recursiveness, and paradox are considered. For these reasons, the mixed approach is not a mixture of quantitative and qualitative; it is proposed as an autonomous approach derived

from, but not dependent on, the quantitative and qualitative. It is based on a methodological figure typical of geometry called triangulation, and it makes the existence of objects depend on concepts. Since concepts are thought by the individual, then the explanation of reality is a construction of individuals (Wartofsky, 1987). To reinforce this perspective, resources and procedures from the quantitative and qualitative fields are integrated (Ragin, 2007).

Due to the current emphasis that considers the Scientific Method as central to the work of science, Bernal (2010, pp. 22-32) proposes to justify the importance of epistemological elements to overcome the question of whether philosophy has a unique method. The author presents a conceptual analysis of the term "epistemology." He begins his argument with the traditional formal context of Aristotelian roots and presents a categorical taxonomy of the types of epistemological exercises that have as a referent the location of the practice of the philosophy of science, its purposes, and consequences; where the descriptive, but not justificatory, character is maintained. For the author, the exercise of current epistemology, which he calls regional, exhibits specific requirements for each discipline. Therefore, he intends to move away from the methodological emphasis to present the importance of the formal. The singularity of the term epistemology, which given the previous justification should be presented as "epistemologies", is adopted again and examined as problems that are specific to the epistemological exercise. For this, he uses a mixture of philosophical vagueness and terms purportedly supported by a constructivist perspective. Thus, he concludes by invoking rationality in the handling of arguments and a "scientific attitude," but does not clarify the term.

In the chapter on the concept of social science, Bernal (2010, pp. 34-47), makes a chronology of society to identify that science has been conceptualized with different approaches and the derivation of a methodological plurality. This is the way he presents his data; however, he does not set out criteria that determine the historical classification made. He proposes hermeneutics

as an option for the search for independence from positivism or to confront it and insert a bias towards the devaluation of the social sciences. Consequently, the approach can be interpreted as the ideology of the so-called neo-positivist movement. The cited author presents an unsubstantiated partial conclusion, and leaves it unclear how welfare becomes the object of study of theory in the social sciences.

When Bernal (2010, pp. 48-55) addresses the issue of complexity and science, he mentions that complexity is organized as a method (or complex thinking), worldview, or science. Derived from the complexity paradigm, changes are present in science and there is a discussion regarding multidisciplinary, interdisciplinary, and transdisciplinary. Implying that complexity interprets reality as multidimensional, complex, paradoxical, changing, with order and disorder, with achievements and frustrations. Participating in the paradigmatic commitment of complexity has as a derivation adopting an interdisciplinary approach in the construction of scientific knowledge, as well as integrating scientific knowledge with other types of knowledge, to approach reality, accepting that this approach is not definitive of reality. This way of interpreting complexity shares arguments associated with skepticism, arguments that extend its effects to everything that emanates as a substitute for complexity, or with the emergence of new categories. The author concludes by proposing a return to order, unity, integration, and exchange; elements that have always characterized the epistemologies that sustain the diverse ways of knowing.

Aranda (1997) argues that the so-called postmodern thinking, by proposing to transcend in new methodological routes, criticizes modern epistemology from historicism and the philosophy of science, from angles related to the subject who knows and what is constituted as the object of knowledge; the critique extends to the semantics of essential terms and global narratives. In this postmodern thought, Gaston Bachelard (1884-1962) is recognized as the founder of structural analysis and methodology. The structural analysis emphasizes the importance

of epistemology in the practice of science and determines rationalism and realism as the metaphysical bases of science. Another proposal is to consider the evolutionary characteristic in the history of science by pointing out the discontinuous character in relation to previous explanations; from here derives the concept of *rupture of the epistemological horizon*. Pointing out that science makes interpretations of relationships and not in substantive terms: describing facts in the simplest form. With these arguments, the term suprarealism is proposed as an enrichment of rationalism by means of a referential relationship with the material world. Another contribution of Bachelard, pointed out by Kumar (2010), has to do with the negation of the emphasis on perception as the starting point of postmodern epistemology. Instead, he proposes *creative imagination* as an activity of the subject's will. This creative imagination is distinguished from concepts, which are a translation of the external world into concepts. Back to Aranda, he indicates that another author located in postmodern thought is Michel Foucault (1926-1984), who discusses the method of history and considers avoiding the projection of meanings in the articulation of history. He also points out that Foucault treats historical causality as suspect: for him, there are only effects and material acts. Consequently, there is no essential meaning in history, no theme behind the action, just as there is no essential order in history; the order results from the very act of writing history. He further describes that Foucault concludes by mentioning that practices become modes of thinking; each with its logic, strategy, evidence, and reason. For this author, history is written from the perspective of the present,

it accepts that the present is always in the process of transformation. With this conviction, the past acquires new meanings in the light of recent acts. History is always a history of the present. The history of theoretical frameworks of knowledge and modes of understanding are in perpetual change. It is epistemology that studies these changes, which for Foucault is the grammar of the production of knowledge expressed by the practice of science, philosophy,

art, and literature. With epistemology, material acts are associated with thought and ideas.

George Canguilhem (1904-1995) is also cited by Aranda (1997) as another contributor to French postmodern thought. This author rebels against modern epistemology since he considers that the established science is the one determined by the positivist school. Therefore, he confronts the phenomenological and essentialist elements that give foundation to positivism and moves towards a new form of explanation that considers knowledge as the result of relations and differences. Thus, for Canguilhem, the history of science is no longer the manifestation of a mind but is based on epistemological configurations to construct its intellectual framework, which is what he calls *structuralist historiography*. Canguilhem refers that the history of science had been considered as a retrospective illusion (the past leads to the present), where the present is conceptualized as static and immutable, then the written history of science will remain valid in the future. However, Canguilhem and Bachelard argue that science is dynamically open and discontinuous, not closed and continuous. For that reason, a minor finding in the present becomes important in the face of a new problem. Science is a structure that makes and remakes its history at every instant: knowledge depends closely on the surrounding environment; truth and error are only valid within a particular historical context, which changes according to the point of view (Sierra, 2013).

Consequently, Aranda positions Michel Serres (1930-2019) as a philosopher of invention, including transformations such as translation, communication, and metaphor.

He describes that, for Serres, the nature of knowledge constitutes a challenge to homogeneity. Sciences are interrelated including art and Serres takes the model of communication to make an analogy with knowledge and proposes a component he considers important: noise. Since formal theories exclude noise, noise is consubstantial both in language and in communication devices. Serres proposes structural analysis as a comparative method to navigate between different domains and realities.

In this sense, science can maintain its viability to the extent that it incorporates art in its different expressions since art gives opportunity to the inspiration of the unpredictable.

The author referenced by Aranda (1997) as representative of postmodernity is Jean-François Lyotard (1924-1998). This author focuses attention on the concept of metanarrative, which consists of granting a credible purpose to the actions of science or society. The postwar period makes the great narratives of science (knowing for knowledge's sake and knowledge as emancipation from obscurantism) less possible. Technologies shift science towards a means-to-action purpose. For Lyotard, the meaning of science is a language game—the rules of science are immanent to its game. Despite this, Lyotard points out that technology follows the principle of optimal performance (performativity): maximum outputs from minimum inputs, richness, efficiency, and truth.

As Calero (2000) argues, in the field of social sciences, there are epistemic and methodological conditions that are not explicitly covered. The author identifies two possibilities of scientificity for the humanities, one located as continuity and emulation of the objectives of the natural sciences, and the other claiming autonomy and its criteria to define itself as a science. As an antecedent in the scientific historiography of the social sciences, qualitative origins are mentioned, and it was the quantitative that had to justify itself. The quantitative approach evolved and became so strong that it came to dominate the scene of the natural and social sciences.

Currently, as Azcona (2013) points out, the qualitative is reborn from its isolation and becomes an opposition to which justification is demanded. In addition to the confrontation regarding object and method, the struggle incorporates the problem of knowledge creation as a social practice determined and mediated by language. Attempts to mix the qualitative with the quantitative are not openly determined as mixed methodology, moving further away from the criterion of considering a theoretical framework. Concerning the mixed position, within sociology, we identify the purists (who oppose the mixture), the eclectics (both approaches are valid), and the pragmatists (who articulate the methods, depending on the subject studied). Another way of integrating the quantitative with the qualitative is defined by the objective of the study. If the objective is theoretical, the traditional route is followed; if it is not, then the option would be a Marxist analysis. Thus, theory and practice in the social sciences constitute two moments of a single process called scientific research. In addition, there is an ethical problem for each type of method: the quantitative uses the participants while the qualitative proposes communication with the subjects of the study. An important issue is the external validity or generalization—very high in the quantitative and low in the qualitative (Hernández, 2007). This seems to refer to distinguishing between generalization and reliability; based on that generalization works on the theoretical plane regarding the design, while reliability is focused on the data, in the context of a statistical method. Hence the importance of returning to the empirical in everyday life. A similar proposal is made from a Marxist perspective when suggesting the same type of verification in quantitative research. Within the human sciences (whether it requires following the route of the natural sciences or a specific definition with its theories and methods), the use of one or the other procedure depends on the moment that the researcher is interested in privileging and the topic chosen to investigate with a true transdisciplinarity (Roca, 1993).

Consequently, science must maintain a perspective of applicability in its method; it must consider the individual as part of a society, as a representative of the interactions that are established in certain circumstances, time, and space within this social system. In this sense, Wolff (1976) indicates that for the appropriateness in the application, in terms of psychology, the following should be considered: the social significance of the goals established in what is intended to be applied, the social justification of the procedures used, and the social importance of the effects obtained. Thus, the method that establishes the appropriateness of the social actions being used

will be based on the empirical determination of the social validation criteria. That is to say, the social validation of applied psychology should be given through the explanation and critical analysis of the social determinants that frame the situation where the behavior occurs, considering the criteria in the context of their actual social use value. To recognize social valuation as a decisive indicator within the discipline, it is indispensable to identify the existence of a double dimension in human behavior. One is related to individual practices, which are conditioned to circumstances (historical, cultural, social, etc.) that originate in such practice and are maintained as social interaction. The other is the existence of the social relation only as individual practices linked by common conditions in time and space.

This is how human beings behave within a society through interactions with subjects and objects that are around them, which is why human behavior cannot be understood as something isolated and independent, but as part of a system, where their behavior makes sense within a society based on a system of interactions. Consequently, the social and the individual do not constitute, in the case of human behavior, contrary dimensions because they express different levels of the same complex set of relations and it is important to point out that the problems generated within this scientific discipline transcend the purely technical aspect of it. That is to say that it is defined as a problem with social validity, which legitimizes the characteristics and circumstances of the subject's behavior. From this analysis of the problem defined in social and ideological terms, it will consequently emerge an applied analysis that will make contact with social problems to provide solutions in the individual aspect considering that both theory and method must be subject to the collective context in which it is found (Ribes, 2000).

Finally, there is a general object of knowledge and divergences in the approaches on how to examine a particular field of the phenomenon under investigation. Under this perspective, the specific field of psychology is a science that postulates several "psychologies," different from each other, which follow independent, parallel, or divergent routes. This condition resides in the existing disagreement on the specific object of knowledge addressed. The establishment of the object of study has two implications as mentioned above: the ontological definition and the epistemic commitment of the object of study. When discussing the case of psychology, it should be considered that each proposal analyzes phenomena of a different nature, and based on this, the methods, measures, criteria of evidence, and explanations should converge harmoniously (Ribes, 2000).

Despite this, psychology, as a creator of validated knowledge in specific conditions, has been consolidated as a mode of scientific knowledge in several of its contributions, with a pragmatic sense forming part of social problems since it is evident that technologies have a considerable social weight. In this sense, it is important to start from the individual practice to identify the social conception, recognizing society as a system of relations with a level of existence of the individual (Ribes, 2018).

The Potential Applicability of Psychological Research

In relation to the applicability of principles derived from scientific research, especially functional analysis of behavior, Ribes (2009) identifies five follow-up stages in this process. First, a journey is made through the world of ordinary knowledge, socially shared by all individuals. Subsequently, it is exposed as a natural history where regularities are sought in the forms of daily interaction. In the third stage, based on technical language, the forms of the different regularities observed are described and the visibility of new regularities is promoted. These descriptions are made in an abstract language that does not refer to particulars. Finally, it goes back from the theory to the everyday world. In other words, categories from one theoretical body are used to interpret a set of observations from another disciplinary field (multidisciplinary).

With this background, it can be affirmed that all applicability of psychological principles has a valuational character, where the psychological is found in the individual dimension of the

social relation to which it belongs. That is, the individual is the representation of such social practices, thus the psychological dimension is immersed in all social problems, which does not exist per se, but resides in an act of valuation. In this sense, Ribes (2009) ratifies that every act of behavior has meaning only in terms of the social context in which it takes place. That is to say that such act is an act of valuation of and in the context in which it occurs. The valuational character of such a problem refers to the fact of appreciating an act as problematic—meaning it is qualified depending on who it affects and who values it. It is not a fact that is a palpable object in reality or as something determined by its existence. The specification of the problem must be "reconstructed" between the psychologist and the user to satisfy two requirements: 1) on the one hand, to be able to describe the functional nature of the problem, analyzing the individual and the practices in which they are immersed in certain circumstances; and 2) to identify the relation of the circumstances where the problem occurs in similar conditions (Ribes & López, 1985).

Discussion

Considering the link between scientific work and its application to specific problems of everyday life, the philosophy of science and psychology are proposed as joint elements to observe the exercise oriented to the application of the method. It is proposed that this task starts from within the scientific disciplines as metatheoretical reflection, without forgetting the legitimizing role of power relations (Castorina, 2016). This author also suggests the independence of psychological practice to constitute itself as a discipline and explains the influence of representational models together with other factors, especially those related to the exercise of the research methods used. The cited author points out that psychologists and/ or psycho-pedagogues do not study a "natural" child. Independently of what educators and medical systems do with them, pedagogical and medical practices are considered exercises that start from a normativization device assigned to childhood. There are justifications and examples of the expressions of the exercise of methodology that are found in the scientific activity and the epistemological reflections. This means, from the epistemological point of view, that psychological theories originated outside the social world have been applied without considering the specificity of this field (representational), the processes studied are separated from the world and culture to the person in situation or individuals active towards their culture.

As an alternative, Castorina (2016) proposes the questioning of social conditions in the legitimization of the exercise of this power of society, in addition to the participation of the scientist and the professional who applies. The framework of this proposal for the analysis of social conditions is the figure of Epistemic Framework (EM) as a conception of the world that is assumed silently, and that intervenes on the different levels of practices and research processes. It is a series of philosophical beliefs marked by culture and power relations in a historical society.

The epistemic framework is framed within the dialectical methodology as an empirical and non-ideological logic. In this way, it is proposed to overcome the dualistic dissociation by an articulatory model of the diverse components of the facts. That is, it is accepted to overcome the perspective of isolated objects that make up the facts to emphasize the relations established among them. With this perspective, the processes observed both in the generation of knowledge and in the application of methodologies are analyzed.

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