

A critical-dialectical epistemological perspective of Scientific Knowledge Management: Bourdeusian praxeology contributions

Uma perspectiva epistemológica crítico-dialética da Gestão do Conhecimento Científico: contribuições da praxeologia Bourdeusiana

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Abstract

Introduction: Epistemological, theoretical and methodological positions have direct implications on how research objects are constructed. Based on the mapping of central epistemological axes, the critical-dialectic axis was chosen to discuss Scientific Knowledge Management (SKM), more specifically, based on the epistemological and theoretical-methodological contributions of Bourdieu's praxeological thought, including his propositions about the scientific field as an expression of the chosen axis. **Method:** The theoretical discussion and literary review of Bourdieu's works and conceptual aspects of SKM were adopted, taking it as an interdisciplinary area whose phenomena can be read by the dynamics of the scientific field, and which is focused on processes of production and dissemination of scientific knowledge that are effected by the meeting of Knowledge Management (KM) and Scientific Communication (SC). **Results:** From the discussion on epistemological principles of the critical-dialectical axis for the understanding of scientific practice, emphasizing Bourdieu's conceptions about the scientific field, the results pointed to contributions to rethink the definition of SKM and offer theoretical-methodological subsidies for the development of research in the scope of the SKM. **Conclusion:** Discussion allowed establishing investigative resources for research on SKM, among which the formulation of guiding questions for the construction of instruments for collecting and analyzing data on the functioning of SKM as a field, identifying actions of agents to obtain scientific and temporal capitals, as well as to transform the field itself, as well as items such as the acquisition of scientific knowledge, its storage and forms of creation and sharing.

Keywords: Scientific Knowledge Management; Epistemology; Critical-Dialectics; Praxeology; Bourdieu.

Resumo

Introdução: Os posicionamentos epistemológicos, teóricos e metodológicos trazem implicações diretas sobre como são construídos os objetos de pesquisa. A partir do mapeamento de eixos epistemológicos centrais, escolheu-se o eixo crítico-dialético para discutir a Gestão do Conhecimento Científico (GCC), mais especificamente a partir das contribuições epistemológicas e teórico-metodológicas do pensamento praxeológico de Bourdieu, compreendendo as suas proposições sobre o campo científico como expressão do eixo escolhido. **Método:** Foi adotada a discussão teórica e a revisão literária de obras de Bourdieu e de aspectos conceituais da GCC, tomando-a como uma área interdisciplinar cujos fenômenos podem ser lidos pela dinâmica do campo científico e que está voltada aos processos de produção e de difusão do conhecimento científico que se efetivam pelo encontro da Gestão do Conhecimento (GC) e da Comunicação Científica (CC). **Resultados:** A partir da discussão sobre princípios epistemológicos do eixo crítico-dialético para a compreensão do fazer científico, enfatizando as concepções de Bourdieu sobre campo científico, os resultados apontaram contribuições para repensar a definição da GCC e oferecer subsídios teórico-metodológicos para o desenvolvimento de pesquisas no âmbito da GCC. **Conclusão:** A discussão permitiu estabelecer recursos investigativos para as pesquisas sobre GCC, dentre os quais a formulação de questões balizadoras à construção de instrumentos de coleta e de análise de dados sobre o funcionamento da GCC como um campo, identificando ações dos agentes para obterem capitais científicos e temporais, bem como para transformarem o próprio campo, além de itens como a aquisição de conhecimentos científicos, seu armazenamento e formas de criação e compartilhamento.

Palavras-chave: Gestão do Conhecimento Científico; Epistemologia Crítico-dialética; Praxeologia de Bourdieu.

INTRODUCTION

The epistemological and theoretical-conceptual positions we take in the course of our research—although often not made explicit or consciously adopted—have direct implications for the ways in which we construct research objects and, as a result, how we conduct the various stages inherent in their development. According to Peruzzo (2017, p. 178), to discuss the theoretical-methodological assumptions of research is to “point to the scope of the epistemology of science, that is, to the critical study of principles, hypotheses, and methods involved in the results of scientific knowledge.” Therefore, we understand epistemological axes as metatheoretical perspectives that reflect on scientific knowledge, considering its procedural conditions of realization and which can be seen as paradigmatic currents of thought about the ways in which science is produced and its resulting methodological choices.

Based on this and on Gamboa (2000) categorization, which reflects an attempt to generically bring together trends of thought through some theoretical similarities, we return to what this author considers to be central epistemological axes, whose powers lie in encompassing, through affiliation to traditions of thought and ways of reading the world, various research configurations. According to this author, these axes are the 'empirical-analytical', positivist-based and focused on causality as a source of explanation; the 'phenomenological-hermeneutic', which seeks to understand phenomena by describing and interpreting them; and the 'critical-dialectic', which values action as a source of explanation and establishes as conditions for reading phenomena the understanding that they are historically constructed through interrelationships between the parts and the whole. Research does not always manifest pure characteristics of each axis, however, it may contain traces of more than one of these that can communicate according to the demands of objectifying the research, generating hybrid, but not necessarily contradictory, research perspectives.

With this categorization as an expression of the classification of the various epistemological currents, therefore, as different possibilities for philosophically understanding the conditions for the realization of scientific knowledge and its characteristics, we have outlined the following proposal for this text: to discuss the Scientific Knowledge Management—henceforth SKM—and the issues related to research on this topic, from the perspective of the critical-dialectical axis, notably, from the epistemological and theoretical-methodological contributions of Bourdieu's praxeological thinking (1983, 2004, 2007, 2017, 2019), taking it as a baseline reference, but establishing dialogues with other authors and perspectives. To this end, our methodological contribution is the theoretical discussion resulting from a literature review of Bourdieu's works, the author and conceptual aspects of SKM, with the aim of outlining theoretical and methodological propositions for research focusing on SKM.

We have chosen SKM as an element for this reflection, taking it from Leite (2006) perspective, which is that it is an interdisciplinary area focused on planning and executing phases and processes related to the production and dissemination of scientific knowledge, which are made effective by the meeting of Knowledge Management (KM) and Scientific Communication (SC), while taking into account the contextual dimension of scientific culture. In addition, we add to this understanding the premise of SKM as an area of knowledge whose phenomena can be read through the conceptual meaning of the scientific field advocated by Bourdieu (2017), that is, as a space of relationships, inscribed in a tensional dynamic, between agents who occupy institutional positions and act to maintain or transform the field by obtaining, accumulating and fighting for recognition and legitimization of scientific and administrative capital through incorporated action dispositions, called by Bourdieu (2017) as habitus.

In the various types of field—defined by Bourdieu (2004, p. 27) as “places of power relations that imply immanent tendencies and objective probabilities”—the “social agents are inserted in the structure and in positions that depend on their capital and develop strategies that themselves largely depend on these positions, within the limits of their dispositions” (Bourdieu, 2004, p. 29). This author states that scientific capital—a symbolic resource that can be accumulated and recognized by peers, which gives credit and projection to agents in a given institutional context—allows researchers to be positioned according to types related to a more 'pure' scientific capital, linked to more strictly scientific contributions and recognized through publications, inventions, patents, and personal 'prestige', and an institutionalized or temporal scientific capital, which is more linked to administrative activities such as organizing events, meetings, creating normative instruments, participating in boards, among others. These forms of capital are not exercised in isolation, but relate to each other in the dynamics of the scientific field (Bourdieu, 2004).

The path we will follow will be as follows: first we will discuss some general epistemological principles of the critical-dialectical axis for understanding scientific practice, taking Bourdieu's conceptions of the scientific field as one of the expressions of this axis; then we will bring some implications of these principles on the definition of SKM, taking it as an interdisciplinary field that encompasses KM and SC, considering the contextual dimension of scientific culture; finally, we will defend potential theoretical and methodological contributions of this discussion within the scope of research on SKM.

EPISTEMOLOGICAL PRINCIPLES OF THE CRITICAL-DIALECTICAL AXIS

One of the central philosophical premises of the critical-dialectical axis refers to its epistemological perspective centered on the idea that social phenomena result from historical processes, the understanding of which merits contextualized analysis. This does not require us to dissect the trajectory of the constitution of dialectics as a philosophical matrix, which would require going back to the Greek philosophy of the pre-Socratics, since Heraclitus, and all its complex development, as Carrasco (2016) does in an introductory work on the subject. However, based on theoretical contributions such as this, we understand that the dialectical and critical nature of the epistemic axis focused on is justified to the extent that

research anchored in historical-dialectical materialism is more likely to grasp the phenomenon in its complexity, depth and dynamism, in other words, in its totality, which pays attention to its origins, its multiple constituent parts, its meanings and the transformations it continually undergoes. In other

words, it seeks to capture the “movement” and in it understand the essence and all the dimensions of the phenomenon. (Peruzzo, 2017, p. 166).

In light of this, we highlight the epistemic contributions of Bourdieusian thought, paying attention to his considerations on the dialectical movements that result from social practices—and therefore describing as ‘praxeological’ one of the characterizations of his contribution to sociological thought—which seek to understand the concept of habitus as a disposition of actions in the dual dynamic that shows “how social structures are internalized in agents and how agents operate in the social world based on the values and conceptions of the world they incorporate” (Monteiro, 2018, p. 29).

According to Monteiro (2018), in proposing this mode of knowledge, the French sociologist is making a synthesis movement that seeks to overcome the subjectivism of phenomenological approaches and the objectivism of structuralist approaches, present not only in the empirical-analytical axis, but also in the critical-dialectical one; therefore, considering both the practices of the agents and the social conditions of production. Therefore, we understand Bourdieu’s (2004, 2017) theoretical propositions on the scientific field as part of the critical-dialectical axis, which is defined by the relational dynamics between the context—not as an absolute determination—and the praxeological possibilities of the subjects’ actions. At an epistemological level, this means understanding science itself based on dynamics in which contradictions and conflicts of interest manifest themselves, as reflected in the Bourdieusian concept of the scientific field, since it considers the material and symbolic dimensions that make up scientific practice, understanding it through its tensional dynamics.

In the critical-dialectical view of the scientific field, the heterogeneous and conflicting vision of reality is made up, *prima facie*, in the modes of scientific objectification in which subject and object establish a concrete relationship of synthesis in search of discoveries and propositions that make some contribution to transforming, through an emancipatory orientation, a given reality.

Considering the adoption of this perspective, we have identified, in passing, some of its philosophical meanings, at various levels, which have practical implications for research processes in general, based on Creswell (2014) and Gamboa (2000): (i) at the ‘ontological level’, the notion of the subject is not defined as the object of research, but as a participatory entity, with which dialog is established, understanding it not as a supplier of data, but as an agent that acts in a relational and critical way with its context; (ii) at the ‘epistemological level’, scientific practice is imbued with a reflexive posture, therefore, aimed at generating understandings about its role and questioning scientific practice itself; (iii) at the ‘axiological level’, the value is based on the transformative power of social research, in its applied and participatory bias and as a basis for decision-making processes, which for this reason has a political orientation in the sense of promoting changes in reality via the actions of the subjects; (iv) on the ‘heuristic level’, the importance of discovery is defined by the possibility of critically reading the phenomena and their possible practical consequences, not necessarily so that they support the proof of theories; (v) finally, on the ‘methodological level’, the choice of collection and analysis tools is not only involved in describing, understanding and explaining the phenomena, but also in constructing propositions—perhaps interventions. This can include various levels and formats, from participation in planning, to data interpretation and culminating in proposals for the construction of actions with a view to establishing a way of doing research with a transformative intent.

These levels unfold in ethical and political principles associated with the critical-dialectical axis, which are also expressed in Bourdieu’s sociological perspective. We will discuss some of these principles, first highlighting their contributions from an epistemological point of view:

a) Contextuality and reflexivity: dear to the epistemological axis focused on is the idea of context as a unit of analysis. This means maintaining a Bachelardian-oriented meta-scientific view of the role of context, which is not limited to merely composing an introduction or defining the background to the phenomenon under investigation, but in promoting a shift so that the weaving of the context is guided by the basic philosophical expedient that starts from questioning and not just from presuppositions (Bachelard, 1996).

It therefore concerns reading the scenarios in which phenomena manifest themselves through a filter that is not just conjunctural, but structural, going beyond the empirical-analytical search for causal explanations to interpret complex relationships, where social, political, cultural and economic aspects are at play, among other possible dimensions. In the case of research into SKM, for example, it would be pertinent to ask questions such as: what are the relationships between contextual reading and the epistemology chosen to position the reflection on scientific practice; what conceptions of science underlie the research itself and the object under investigation, from the institutional point of view and the practices of the subjects; and how does the historical development of the object under study relate to these conceptions? There are many possible questions that drive research that is predisposed to critical-dialectical reflection.

Bourdieu (2017), very much in line with Bachelard (1996) propositions, defends a generalized reflexivity in order to “provide instruments of knowledge that can turn against the subject of knowledge, not to destroy or discredit (scientific) knowledge, but, on the contrary, to control and reinforce it” (Bourdieu, 2017, p. 15). We return to

these statements in order to place contextualization itself as an effect of reflexivity, since SKM has to consider itself in its context of development, its strengths and shortcomings.

b) Transversality and interdisciplinarity: these principles are seen from the contributions of the transversalist and praxeological sociology of science, to which Bourdieu (2004, 2017) belongs, aimed at thinking about the definition of science in the midst of various fields of knowledge in order to reflect on its processes of production and dissemination of knowledge. Situating the investigation of any processes involving SKM therefore requires thinking/acting in a multidisciplinary way and positioning oneself in the terms pointed out by Shinn and Ragouet (2008) in a transversalist perspective of science that is not linked to instrumental practices, but to communication processes that take into account three empirical realities: (i) the relative autonomy of the scientific field and its interdependent relations with other fields; (ii) the existence of migratory flows across disciplinary spaces and not just the disappearance of their borders; and (iii) the movements of intellectual convergence and cognitive capitalization, beyond disciplinary fields and stabilization of subfields (Shinn & Ragouet, 2008).

This transversal and interdisciplinary stance, which is characteristic of understanding the dynamics that move the scientific field, adds complexity to the reading of the SKM and favors its understanding—just as we defend in relation to its constitution as a disciplinary encounter. It also brings us closer to Bachelard (1996, p. 24) important recommendation to “place scientific culture in a state of permanent mobilization, to replace closed and static knowledge with open and dynamic knowledge, to dialect all experimental variables, to offer reasons to evolve”.

c) Criticism and ideation: the notions of criticism and ideation find their synthesis in the notion of ‘praxis’ as an explanation of a thought oriented towards a planned end based on the negation of a given fact of reality. It is an eminently human activity invested with intentionality in relation to an end, therefore teleologically constructed and, in this sense, different from actions carried out in an unplanned way (Vázquez, 1997). According to Nobre (2004), it’s about saying what isn’t yet, but could be, understanding the potential for realizing the unfulfilled promises of modern capitalism—freedom and equality—analyzing the elements that prevent their realization and reflecting on possible paths for the emancipation of subjects.

A fruitful example of these principles can be found in Freire (2020), who helps us to think of dialogue and participation as premises of emancipatory processes of collectively organized subjects through collaborative cultural synthesis, therefore, as resulting from the criticality and materiality of ideational processes. In discussing the interplay of forces and conflicts surrounding the production of knowledge, Freire (2020) ratifies the epistemological guidelines of the critical-dialectical axis, which denies the present reality in order to affirm the possibility of an idealized and achievable future through concrete principles and actions that allow us to discuss the SKM with a view to improving it through democratizing forms of participation. By discussing the social aspects of science and its processes of collectivization and consensus, and defining science as a public activity shaped and determined by social relations, Ziman (1979) also contributes, along with the aforementioned authors, to our conception of the SKM in participatory and public forms of science, thus from an ideational perspective, but not a utopian one. With these principles of the critical-dialectical axis in mind, we will address some developments in this discussion on the concept of SKM, considering its various perspectives, which cannot be exhausted here.

IMPLICATIONS OF THE PRINCIPLES OF THE CRITICAL-DIALECTICAL AXIS FOR THE SKM

As we have said, one of the epistemological legacies of Bourdieusian praxeology, which is part of the critical-dialectical axis, concerns the increase in contextuality and reflexivity in the analysis of social phenomena, including SKM. For this reason, we return to the theoretical point of view of Velho (2011), who materializes these premises by presenting associations between social, political and economic contexts and the development of Science, Technology and Innovation Policies (ST&I). The author states that “the instruments and forms of management that define the Science, Technology and Innovation Policy (ST&IP) at a given time are closely related to the dominant concept of science” (Velho, 2011, p. 128).

According to Velho (2011), various aspects linked to the conceptual basis of ST&IP, in addition to the organizational structure, funding instruments and forms of evaluation, have conditioned the definition of explicit policies for the production and use of scientific and technological knowledge in various countries. From the point of view of knowledge creation, these policies have supported the argumentative basis and actions that have underpinned production models with developmentalist economic and social objectives along the lines of capital. This knowledge was fundamental in building a public image of science, which had to adapt to a context whose heavily industrial base was progressively based on knowledge as its main ‘asset’.

In order to think from this context, we will look at some conceptualizations of KM that reflect this process of valuing knowledge, especially in the productive context of companies. Seaton and Bresó (2001) point out that, generally speaking, the definitions of KM are grouped into two approaches: its importance in terms of its potential for generating economic resources; and its contribution to learning processes and organizational development.

Various definitions of KM reasonably express the approaches described by Seaton and Bresó. For Davenport and Prusak (1998) it is the collection of processes that govern the creation, dissemination and use of knowledge to achieve the organization's objectives. For Nonaka and Takeuchi (2008), it refers to a system that facilitates the search, codification, systematization, and dissemination of the individual and collective experiences of the organization's human talent, in order to convert them into globalized knowledge that is commonly understood and useful in carrying out activities, to the extent that it enables sustainable and competitive advantages to be generated in a dynamic environment.

In the same direction as what we could say about the contextuality and reflexivity of Velho (2011) thinking, Kuhlen (2004) exercises the principles of interdisciplinarity, criticality and ideation by understanding that the definitions of KM show that they can be complemented by what he calls the 'communicational paradigm of KM'. Based on Kuhlen (2004), the premises of this paradigm are the criticism of the information society, which thinks of knowledge in specific circumstances and not in its broad context; the reaffirmation of the collectivity of knowledge; the progressive dismissal of hierarchical institutions, which structure and control the production of knowledge; and the political component, which values communication as a right and shows that the limitations to knowledge are no longer centered on the absence of technological support, but on the fragility of the forms of participation of the subjects.

Ratifying this communication component of KM and considering the principles of transversality and interdisciplinarity, Leite (2007) reaffirms the complementary relationship between communication and KM by stating that the latter systematizes and makes communication processes more effective and, on the other hand, "communication allows knowledge management to be made possible, since it enables, among other processes, interaction between individuals and, consequently, the creation, exchange, and sharing of knowledge" (Leite, 2007, p. 141). These elements directly influence the flow of information and knowledge, since the social and cultural characteristics of the environment are at play. Therefore, the conceptual interactions between KM and SC take into account the patterns and habits of agents within organizations as instances in which the communication-knowledge synthesis takes place.

Therefore, these statements, which explain the complexity of SKM processes, corroborate the view of SKM as an interdisciplinary meeting place for the fields of KM and SC, considering scientific culture. Although the latter is often not seen as an area from a disciplinary point of view, but rather as a fundamental element to be considered in any studies from an institutional perspective, it is cross-cutting in that it refers to the "set of processes related to science and technology (S&T) that encompasses everything from the production of knowledge to scientific dissemination" (Vogt & Morales, 2016, p. 1).

When discussing the characteristics of scientific culture, Nunes (2004) emphasizes the need for an interdisciplinary approach in order to understand the various issues that are at stake when we consider the relevance of the cultural component in the scientific field. According to this author, rethinking

the promotion of scientific culture in knowledge-based societies presupposes the inclusion in its initiatives of a broad and diverse set of disciplines, knowledges, and areas of expertise (including the natural sciences, health sciences, social sciences and humanities, engineering and the arts), a detailed and rigorous knowledge of the different audiences for sciences and technologies and the conditions for their production, appropriation and social use, and, finally, the definition of forms of intervention that take these conditions into account and that are guided by the aforementioned objective of "putting science into culture". (Nunes, 2004, p. 3).

This author therefore includes scientific culture in the KM process by understanding it in all its complexities related to the acquisition, integration and distribution of knowledge, while taking into account individual and collective experiential aspects. The conditions that the author mentions related to the appropriation and social uses of scientific knowledge permeate a SC thought of from its interlocution with these various aspects that dialog with KM.

The conceptual dimension of SC is quite generic and encompasses various processes that are differentiated by criteria linked to the types of audiences and specific ways of socializing information—which tends to be expressed in the variety of nomenclature of its correlated terms: 'scientific diffusion', 'scientific dissemination', 'popularization of science', 'scientific dissemination', etc. Without pretending to differentiate between them, in general we can say that they relate to "activities developed by different people and institutions, with the aim of bringing scientific information to a certain social group" (Caribé, 2015, p. 90). According to the author, the term 'Scientific Communication' was coined by John Desmond Bernal (1939) in his work 'The Social Function of Science' to refer to activities related to the production, dissemination, and use of information, from the conception of ideas by scientists to their recognition as part of a stock of knowledge recognized and legitimized as scientific by peers. This aspect points to a series of variables in the construction of scientific knowledge, which goes beyond the field of communication to show that science is immersed in a complex context of relationships motivated by the dynamics of forming minimum consensus and recognitions inherent to the legitimacies of scientific and temporal capital, in line with Bourdieu's concept of the scientific field (2004, 2017) and which is

directly related to scientific culture.

CONTRIBUTIONS OF BOURDEUSIAN PRAXEOLOGY TO THE SKM

We will highlight theoretical and methodological aspects of Bourdieusian praxeology that can contribute to research on the SKM insofar as we can build on these questions to guide collection and analysis instruments, as well as propositions, materializing the critical-dialectical character of this author's thinking. According to Grenfell (2018), the recommendations for a field study methodology along Bourdieusian lines include: a) the construction of the object; b) the analysis of the field; and c) participant observation. We don't necessarily understand these items as sequential steps, but as qualitative attributions from which we will abstract analytical aspects.

In relation to the first step, Bourdieu et al. (2007) take up Bachelard's premises to defend the idea that the object of research depends on three epistemological acts: 'conquered', by breaking with the methods of traditional sociology; 'constructed', since it takes place in a process; and 'verified', by emerging from reality. According to Grenfell (2018), in this sociology "the objects of research can never be seen as objects in themselves—a position that underpins substantialist science—and must be understood in relation; that is, they are always established in their socio-historical environment." (Grenfell, 2018, p. 200). With this in mind, our first analytical move should be to contextualize the object, but not just as an exercise in characterizing it, but by understanding it as a construction from a historical and dialectical perspective that allows us to verify the SKM within its institutional spaces, based on the operating premises of a scientific field.

The step of analyzing the scientific field includes thinking about its processes through the concepts of field, capital, and habitus. When approaching scientific information from the perspective of the culture of the field, Carvalho (2017) summarizes the various elements that we must observe when considering this theoretical lens. According to this author, we should see this information

As that produced in a social space where communicative interactions, relationships, reciprocity, collaboration, competition, intersubjectivity, learning, innovation and all forms of material and symbolic exchange influence the textual forms and language of interaction of the field and the communities that dialog with each other. The scientific field is made up of social processes such as the transfer of information, communicative actions and the paths of information flows. The symbolic dimension of the scientific field carries with it a set of rules established in the scientific habitus expressed in materialized forms, fundamentally scientific writing.

The scientific field also considers the social conditions of knowledge production, the rules, and norms that unite actors through the slow acquisition of scientific capital. The scientific field wants scientific authority, the indicators, the succession scheme, it wants to syncretistically seize empirical individuals and transform them into epistemic individuals. The concept of domains of knowledge is complementary to the concept of scientific field, in the sense that both express epistemological, social, economic, and cultural influences (Carvalho, 2017, p. 204).

The author's methodological review of the items to be observed is in line with the three-level analysis recommended by Grenfell (2018), who recommends observing the field in the context of power relations, in relation to itself and based on the social dispositions incorporated by the agents, i.e., the habitus, through dynamics involving forms of authority, recognition, autonomization, ways of accumulating capital, admission, and permanence. From a practical point of view, in relation to the agents that make up the scientific field, this context involves various other actors who traditionally take part in the process of producing science, such as "researchers, students, scholarship holders, funders, research institutions (public and private), the university, the set of rules in science and technology, the government [...]" (Jorge & Albagli, 2017, p. 209).

Based on Bourdieu (2019), we can outline the questions about SKM through categories and indicators that characterize it as an area of knowledge whose phenomena can be read from the dynamics of a scientific field. We have identified some of these in the form of 'blocks of questions' that establish initial analytical parameters and can guide various information-gathering techniques, providing guidance for the construction of interview scripts, focus groups, questionnaires, etc. The proposition of questions and the theoretical aspects they translate into are shown in the following table:

<p>Who are the agents working in the SKM and how do they participate in it? What are the social and institutional trajectories of the agents and how do they relate to the SKM? What institutional positions can be identified in the SKM?</p>	<p>The questions in 'block a' seek general information about the agents, considering the need to verify how we place ourselves "in the field of knowledge in terms of connections with the field of power, connections, and relationships with the field, and our individual personal relationships in terms of habitus and their position and proximity to others" (Grenfell, 2018, p. 210).</p>
<p>b) What are the 'rules of the game' of the SKM? What are the criteria that define its functioning from the perspective of its formal standardization and the practices of the agents?</p>	<p>The questions in 'block b' are interested in approaching an understanding of the general functioning of the SKM, based on the concepts of field theory, but not only field theory, if we activate the methodological potential of concepts present in other theoretical models that should overlap and dialogue with the idea of the field, materializing the notion of interdisciplinarity and transversality.</p>
<p>c) What products and processes characterize the strictly scientific and temporal or administrative capital specific to the scientific field in which the actions of the SKM take place? What are the ways in which agents appropriate these types of scientific capital? How do they attribute value to these capitals? How do the agents perceive the distribution of these capitals in the ways in which the SKM is carried out along their paths?</p>	<p>The questions in 'block c' refer to the game in which the agents and capitals that are recognized as conferring institutional prestige according to the values of the scientific field are related.</p>
<p>d) How does an agent enter and remain in the institutional bodies that make up the SKM? What are the recognizable criteria for agents to occupy these positions and how are they evaluated?</p>	<p>The questions in 'block d' are very similar to the previous one, but emphasize the status of institutional positions in the relations between agents and capitals.</p>
<p>e) What actions do the agents take to maintain or change the field in which the SKM takes place? What aspects of the SKM do the agents recognize as needing to be maintained or changed? What challenges do they recognize in the SKM based on the institutional position each agent occupies? What are the agents' motivations in the SKM? Which of these motivations do the agents believe can be converted into concrete actions based on their own actions in the SKM?</p>	<p>The questions in 'block e' seek to add complexity to these relationships by valuing the habitus of the agents in the game of relational tensions, in order to try to understand aspects associated with the incorporated dispositions of action aimed at transforming or maintaining aspects of the field.</p>
<p>f) How do the agents perceive the relationships they weave among themselves? How do the agents relate to spheres related to the greater or lesser autonomy of the scientific field, such as development agencies, the government and society in general? How do the agents assess the functioning and general forms of subsidy from the point of view of the institutional management of the SKM?</p>	<p>The questions in 'block f' seek to emphasize how the agents of each institutional body perceive and orient their habitus, in view of the construction and perception of the notion of autonomy of the scientific field.</p>

Table 1. Proposing analytical parameters for SKM according to the 'scientific field'.

In general, the meanings expressed by the questions in 'blocks c and d' can be seen when we point out that, according to the dynamics of the scientific field

The man of science engages in the acquisition of scientific habitus, in order to be "recognized", he incorporates a set of dispositions, including specialized language, rites—such as peer review—in search of recognition and scientific authority, granted to him (man of science) for his technical competence. As he capitalizes scientifically, he can convert scientific capital into social capital, especially by

establishing contacts with other actors. Funding agencies start financing him, students choose him as their doctoral thesis supervisor, he receives invitations to take part in research and projects, etc. (Carvalho, 2017, p. 203).

We emphasize that, although divided into blocks and appearing to be somewhat schematic, the aspects reflected in these questions occur in an integrated way and are crossed by strategies of recognition, power relations and the construction of relative autonomy in the field.

Scartezini (2011) states that in view of the reflexivity proposed by Bourdieu, as a watchful eye on the role of the scientist as a producer of knowledge in their own scientific field, attention should be paid to the various nuances of an issue investigated in a thorough piece of work, which should not reject any theoretical or methodological construction that may serve to understand its object (Scartezini, 2011). Based on this recommendation, we take up some contributions from Leite (2006).

The concept of SKM proposed by Leite (2006) is very useful from a methodological point of view precisely because of its multi-referential nature, which integrates the conceptual dimensions of KM, SC and scientific culture, taking into account the actions of scientific and academic communities, as well as agents in the scientific field. The author's description of the processes that make up SKM helps us to establish a general categorization that can contextualize and characterize SKM, since it refers to the parts of a process that can be read as empirically verifiable attributes and interpreted from the perspective of the scientific field.

These parts refer to: a) **identification**: mapping the knowledge of the scientific community in its tacit and explicit aspects. This includes sources of information, scientific production and scientific skills and abilities both internal and external to the institution. These elements are part of the objectification carried out in the institutional contextualization of its instances linked to the production and dissemination of scientific knowledge and their respective agents; b) **acquisition**: refers to the processes of acquisition of scientific knowledge by the agents; c) **storage/organization**: refers to the forms of institutional organization and storage used, such as repositories, archives, websites and others; d) **sharing**: refers to the forms of communication used by the bodies investigated to disseminate the scientific knowledge produced; e) **creation**: an item that addresses the modalities used to enable the production of scientific knowledge, through the institutionalization of research, for example, and which is directly related to the dynamics of the distribution of scientific capital in the field that constitutes the SKM.

Finally, in addition to these aspects that provide us with analytical resources on SKM, we must highlight the principles of criticality and ideation, considering that Bourdieu's praxeological content leads to an articulation of practice with theory, materializing his critical-dialectical proposal by working with the concept of Realpolitik "which would be a political action on structures in order to achieve the specific social obstacles of rational communication and enlightened discussion" (Scartezini, 2011, p. 35). According to this author, it is a political use of scientific practice and the strategic use of specific knowledge, including the accumulation of skills that can intervene in public matters related to a community, with a view to the common good. It is in this sense that "Bourdieuian language (concepts) is therefore epistemologically charged and can offer the possibility of understanding (empirical) practice as practice in practice so that it can ultimately be lived in (emancipatory) practice" (Grenfell, 2018, p. 205). Therefore, in order to achieve this understanding of practices, we need to consider the aspects relating to the functioning of the field of SKM, through the parameters described above and translated into the questions presented, seeking to find ways of reading, but above all propositions.

CONCLUSION

The path taken in the text shows that thinking about SKM from a critical-dialectical perspective involves a complexity whose understanding implies resorting to epistemological and theoretical contributions that define a specific way of reading and analyzing phenomena. In this sense, the contributions of Bourdieuian praxeology, as an expression of the chosen epistemological axis, led us to understand that this position requires implementing a research practice capable of materializing the principles of contextuality, reflexivity, transversality and interdisciplinarity with a view to exercising criticality and ideation. Thus, in order to propose possible ways of understanding SKM, we sought theoretical and methodological contributions from Bourdieu's work, in order to discuss the achievement of analytical resources to understand aspects of SKM as an interdisciplinary area, whose functioning can be interpreted from the meaning of scientific field.

From a methodological point of view, we can exercise the construction of questions that refer to the theoretical aspects that view SKM through the spectrum of the scientific field, understanding that, like any theory, it is not enough to interpret all the dimensions of a given phenomenon. For this reason, in order to broaden the analytical possibilities of the aspects that refer to KM and SC, which make up the SKM, we have turned to other theoretical contributions in order to better understand the dynamics of acquiring, storing, sharing and creating scientific knowledge within the theoretical construction discussed.

To conclude, because we understand the relevance of the ideational component of the critical-dialectical perspective, we say that these discussions can be converted into various proposals within the SKM. These propositions can materialize through participatory strategies that mobilize the agents involved in SKM actions to collectively undertake activities such as reviewing indicators; composing institutional diagnoses; building policies, guidelines and plans; developing inclusive SKM methodologies based on dialogical modalities, etc. In the light of theories committed not only to reading reality, but to transforming it through the emancipation of agents, all these actions require more detail, which can be done at another time, in order to plan their practical developments, since given the scope of this text they are, for now, only mentioned as a primary ideational exercise.

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