

# Practices and Normativity: Philosophy of Science, Agency, and Epistemic Normativity<sup>1</sup>

## Prácticas y normatividad: filosofía de la ciencia, agencia y normatividad epistémica

[Artículo misceláneo]

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### Abstract

The work aims to present eidetic agency as a novel account for understanding epistemic normativity based on practices. The eidetic agency is a modality of material agency that, in an scaffolded and extensive manner, delegates epistemic agency to formal artifacts that become evident in the materiality of the signifiers of artificial languages. Such eidetic artifacts constitute an epistemic normativity that, although grounded on implicit practices and norms of scientific practices, overcomes specific problems derived from that reading. The first section of the text presents a definition and general analysis of the project of a normative epistemology based on practices. In the second part, the relationship between practices in science and scientific regulations is deeply analyzed. Finally, a possible solution to the theoretical problems derived from such reading is proposed, with an epistemic normativity approach based on eidetic agents.

**Keywords:** philosophy of science, practices, normativity, epistemic normativity, agency

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## Resumen

El presente trabajo tiene como objetivo presentar la noción de agencia eidética como una postura novedosa para la comprensión de una normatividad epistémica basada en prácticas. La agencia eidética es una modalidad de la agencia material que, andamiada y extensivamente, delega agencia epistémica a artefactos formales que se hacen patentes en la materialidad de los significantes de los lenguajes artificiales. Tales artefactos eidéticos constituyen una normatividad epistémica que, si bien se basa en prácticas y normas implícitas de las prácticas científicas, superan ciertos problemas derivados de dicha lectura. La primera sección del texto presenta una definición y análisis general del proyecto de una epistemología normativa basada en prácticas. En la segunda parte se analiza profundamente la relación entre prácticas en la ciencia y la normatividad científica. Finalmente se propone una posible solución a los problemas teóricos derivados de dicha lectura, con el planteamiento de una normatividad epistémica basada en agentes eidéticos.

**Palabras clave:** filosofía de la ciencia, prácticas, normatividad, normatividad epistémica, agencia, agencia eidética.

*Suppose people ... calculated this way when they wanted to distribute sticks. If nine sticks are to be distributed among three people, they start to distribute four to each. Then one can imagine various things happening. They may be greatly astonished when it doesn't work out. Or they may show no signs of astonishment at all. What should we then say? "We cannot understand them."*

*Wittgenstein [LFM, 203]*

## Introduction

The idea that science is a natural genre, with a strong a priori imprint and the desire for a strong unification, would seem to be the territory that must be abandoned if more fertile paths are sought in the philosophy of science (PS). Science was understood to follow a traditional perspective as a special form of relationship with reality. The demarcation of science would result in a deflation of other human activities. Rorty's (1958) illuminating chapter, "Is natural science a natural kind?" pertinently describes the situation:

One of the principal reasons for the development of a subarea within philosophy called 'philosophy of science' was the belief that 'science' (or, at least, 'natural science') named a natural kind, an area of culture which could be demarcated by one or both of two features: a special method, or a special relation to reality. The further suggestion, implicit in Carnap's work and made explicit by Quine, that 'philosophy of science is philosophy enough', was a natural extension of this belief. For just as Plato was content to leave the world of appearances to the philodoxers, so many of the logical empiricists were, implicitly or explicitly, content to leave the rest of culture to itself. On their view, once the job of demarcation has been

accomplished, once the distinctive nature of science had been accurately described, there was no need to say much about the other activities of human beings. For, since man was a rational animal and science the acme of rationality, science was the PARADIGMATIC human activity. What little there was to say about other areas of culture amounted to a wistful hope that some of them (e.g., philosophy) might themselves become more 'scientific.' (p. 24)

In an interesting interpretation of 'Rorty's position, Esteban and Martínez (2008) call the currents that adhere to such a conception theoreticists. These define science as the set of theories that observe a certain method. Said a priori is correspondingly related to a pre-established agenda of problems, which consists of modeling evidence with theories (Esteban & Martínez, 2008, p. 6).

The a-priori-ism that structures science as a syntactically well-supported set of propositions is then criticized by what can be called the study of scientific practices. This is based on empirical studies on science that reward the historicity of scientific knowledge. The project of a new PS would then consist of affirming the normative structure of science and its incorporation in practices (Esteban & Martínez, 2008, p. 7).

One of the central concepts for the PS that the proposal maintains is that of practice. Coined mainly by the philosophy of the second Wittgenstein (1956), Kuhn (1962), and Hacking (1982), the concept of practice refers mainly to actions related to the context of validation and the historical background of disciplines. Any norm related to science arises from the dynamics of scientific disciplines. The purpose, therefore, is to speak in a general sense of general normative structures of scientific knowledge. Practices are normative. Moreover, "any characterization of scientific practices requires explaining in what sense scientific practices are cultural or social practices" (Esteban & Martínez, 2008, p. 13). Therefore, scientific normativity would not refer to universal typologies; normativity comes from specific historical moments that can subsequently be assimilated and gradually recognized and accepted (Guillaumin, 2008. p. 117). Esteban and Martínez (2008) state in this regard: "Science can be conceived as a set of cultural practices capable of aligning and collaborating to pose and solve problems that arise in life in society" (p. 13).

Normative epistemology based on practices not only refers to a set of beliefs that can be modeled in certain formal semantics but to all the elements or practices that enter into the competition of any rational inquiry (Martínez, 2003, p. 13). The argument about normativism and naturalism

overlooked analyzing a core feature of the historical development of science: that this is a highly regulated enterprise and governed by different mechanisms that it itself integrates or generates over time, and that such mechanisms are not reduced to using methodological rules. (Guillaumin, 2008, p. 115)

Following Laudan (2006), it is all about descriptively finding normative consequences of specific means that are historically successful in achieving certain desirable ends. There would be specific cognitive goals to which certain types of statements with degrees of obligation are attached. These statements capture cognitive relationships that allow these goals to be achieved. Guillaumin (2008) expands the explanation by stating that: “Historical normativism is based on a basic historiographic premise, namely, through the historical analysis of science, we can detect the process by which a merely tentative norm in science comes to possess normative force and become tacit” (p. 126). Such normative statements are necessarily testable due to their historical nature and the impossibility of determining a priori the entire set of practices that surround science as a cultural process.

Next, the paradigmatic proposal of Martínez and Huang (2011) will be specifically analyzed regarding the possibility of an epistemic normativity based on this style of thinking that advocates practices in science as an epistemic hinge for subsequent reflection on epistemic normativity, founded on the notion of eidetic agency.

### **Towards Regulations Focused on Practices**

Martínez and Huang’s (2011) reading begins by affirming the primacy of philosophical problems over practices at the beginning of the so-called philosophy of science. They state, “The philosophy of science emerged as a way of doing philosophy focused on the philosophical problems generated by the production of scientific knowledge, its methods of validating knowledge, and the structure of its theories and models” (p. 1).

In this sense, they link the PS’s genesis to logical empiricism, and the Vienna Circle with its leading philosophical and scientific exponents. They point out that their great project was the construction of a unified encyclopedia of science. Against the metaphysical tradition, a scientific philosophy based on mathematics, logic, and physics is postulated as a disciplinary model. From this follows the possibility of a science unification project based on the language’s logical syntax and the set of verifiable observational propositions.

’According to the authors’ reading, logical empiricists also affirmed a certain structural symmetry between scientific normativity, evidence, and theory. From this entire philosophical vision emerges the reduction of the PS to a structural analysis of normativity, relative only to scientific theories as systematizable belief systems characterized by the use of a privileged language (Martínez & Huang, 2011, p. 1).

For this reason, the complex social framework of institutions and processes inherent to scientific practices would not be relevant when evaluating scientific theories. The distinction between the context of discovery and justification constitutes a firm limit for the PS at this moment in its development. Given this, the authors postulate a new criterion, which I allow myself to quote at length:

When we talk today about a philosophy of scientific practices, we want to suggest that, for the philosophy of science, as Neurath suggested, the normative structure of science cannot be understood by abstracting from this entire complex of actions, activities and beliefs that comprise those practices. In particular, we want to suggest that science cannot be understood as merely theoretical rationality, the type of rationality that is reduced to a list of criteria that allow us to choose the best empirically supported theories. It is necessary to consider a broader rationality, a practical rationality that in particular has to do with the evaluation of our actions as part of behavioral patterns regulated by practices. (Martínez & Huang, 2011, p. 2)

The plausibility of his proposal focuses on three theses that we will analyze below.

## **Relevance of Practices in the Philosophy of Science**

First, a PS based solely on theories leaves aside many essential elements in constructing scientific knowledge since these practices have an explanatory component. The authors list classic examples that illustrate this characteristic of their proposal for scientific normativity. Theory-centered PS formulates an argument that the authors define as the argument of the irrelevance of practices in the PS, namely:

1. The PS accounts for the normative structure that allows science to be explained as an advance in knowledge guided by rational criteria.
2. Any relationship between evidence and theory can be represented formally and evaluated independently of context.
3. Practices are not formally modellable.
4. Therefore, practices cannot be explanatory resources in the PS.

According to Martínez and Huang, the key to refuting the argument is necessarily given in the second premise, and from now on, they will dedicate themselves to examining various ways of presenting that statement and its main criticisms.

At first, they analyze 'Neurath's (1913) objections to the meaning of the premise. Neurath thinks of scientific language as a sum of forms of representation, that is, ways of integrating various types of scientific languages or jargon. Such jargon cannot be essentially formal, given that our language is natural or ordinary, which can become sophisticated to the point of artificial languages, but without abandoning its nature and normativity that is sometimes diffuse and ambiguous (Neurath, 1913). Therefore, the transparent structure of this system is apparent and should integrate any jargon that can represent scientific work, including scientific practices. Regarding this, Martínez and Huang (2011) note:

The material dimension of science, structured in instruments and apparatus, plays the role of jargon that mediates between different activities and ways of representing them. Standards

here play the role of reference points, indications about the limits of what is possible, based on a design and concerning a specific type of process and result. (p. 8)

From this, we can affirm that sets of implicit rules in developing devices and representation systems are relevant elements for developing and evaluating scientific theories. Thus, continuing their interpretation of 'Neurath's thought, they affirm that contextual norms or auxiliary motives are required for theoretical and practical thinking. Auxiliary motives guide our actions and rational beliefs in contexts where uncertainty is possible (Neurath, 1913). Thus, the set of norms is not exclusively scientific. Although these norms are ethical, legal, etc., they can play epistemic roles in certain particular types of practices. These auxiliary reasons must be anchored to values of high social consensus under high criteria of rationality.

Another thought that questions premise 2) is that of the doctor and microbiologist Ludwig Fleck. He argues that medicine is not pertinently guided only by logical and mathematical normativity; medicine does not want to regulate normal phenomena but, instead, abstract the phenomenon of disease into observations; "the bad the doctor is, the more logical in his therapy" (Fleck, 1927, p. 46). Norms arise and are established in particular case studies. Martínez and Huang (2011) state in this regard:

According to Fleck, scientific research, to the extent that it seeks to understand a specific phenomenon, develops its own thinking styles. We must understand these styles as cognitive and normative instruments in the sense that they guide us regarding which aspects are possible candidates for generating interesting observations and knowledge, or they guide us regarding possible variants of the phenomena that are important to understand them, or they scrutinize possible solutions. (p. 10)

Fleck and Neurath agree that there is no pure objectivity of observation; that is, all observation is tied to the backgrounds where it is the case. The results of this work configure concepts and research styles that researchers do not necessarily use explicitly. This is mainly due to the cooperative nature of scientific work and the social and institutional elements that take part in the achievement of an objective that, over time and after being achieved, seems to be configured in a rectilinear way and by certain privileged actors (Fleck, 1927, p. 153). According to Martínez and Huang (2011), Fleck is perhaps the most significant ancestor of the sociology of science and many of 'Kuhn's (1962, p. 12) theses.

The subsequent analyzed refutation of 2) is Michael Polanyi's (1958) account. They state:

Polanyi suggests that a theory of scientific knowledge must be based on the phenomenological and existential relationships that take place between the epistemic subject and that which is known, whose understanding necessarily requires taking into account the personal components that participate in scientific research. (Martínez & Huang, 2011, p. 13)

According to the Hungarian author, explicit rules and observations can account for their rational objectives within a context full of fiduciary budgets (Polanyi, 1958, p. 164). This type of implicit knowledge is a set of fallible or defeasible premises, something like the enthymematic procedure of science. The authors reconstruct Polanyi's proposal in a pertinently clarifying paragraph:

In order to achieve knowledge, a critical mechanism established socially and institutionally is required, which guarantees intersubjective evaluations of personal knowledge. As a scientist's personal and tacit knowledge is built within the tradition to which the scientist belongs, it is important that a scientific institution not only protects and promotes the freedom of research of individual scientists—the freedom that makes possible the exchange between members of different traditions—but also establishes intersubjective criteria to overcome the self-determination of a single tradition. (Martínez & Huang, 2011, p. 17)

The analysis of these three paradigmatic examples allows the authors to establish a new epistemological perspective that goes beyond the task of modeling formal structures on theories susceptible to adaptation to data and measurements. The proposal consists of assimilating the diversity of elements implicit in scientific practices as relevant issues in the process of generating scientific knowledge, given that: "Practices point to a certain dependence on what knowledge is in how we learn from experience, and in particular, how our ways of acting in the world are transformed into knowledge, into patterns of explanation or understanding" (Martínez & Huang, 2011, p. 19).

## **Centrality of Epistemology**

Secondly, a PS focused on practices does not imply, in opposition to certain constructivist theses, the abandonment of epistemology as a module for understanding the nature of science.

Firstly, scientists have redefined objectivity after the contributions of the Vienna Circle and Quine's famous criticism of the difference between synthetic and analytical. The origins of the rules must be tied to studies beyond a priori structures. Neutral observations are always theory-laden and influence our observations of empirical data. What ultimately determines the possibility of sharing information is not a common empirical basis but certain shared assumptions that allow us to understand a theory and its empirical adequacy.

Objectivity, in the classic sense of logical empiricism, has also been criticized throughout the history of science. The milestone reached in the work of Kuhn (1962) derives from the need to rethink the simplistic views on the PS limited to iteratively formulating relationships without background on the links between theory and empirical adequacy. They assert:

Normal science is strictly controlled by a paradigm, which determines an investigation's content, purpose, and method. Investigations in normal science articulate and extend the



paradigm by solving puzzles that use previously established exemplary solutions. These activities typical of normal science do not respond to the Popperian methodology nor an inductivist methodology. The resolution of puzzles depends on how researchers perceive and apply the exemplars, which cannot be specified by a single set of methodological rules universally applicable to all standard science research. (Martínez & Huang, 2011, p. 20)

The recognition of epistemic norms that allow us to opt for a normalized science paradigm and typology emerges within the sociology of science as a source of questioning the traditional vision of objectivity.

On the other hand, the sharp division between the context of discovery and the context of justification also drew a wide gap between the PS and the sociology of science. One would deal with the epistemic conceptual structure of science, and the other with the impact of external factors on said epistemic framework. At the end of the 20th century, a new perspective associated with the so-called sociology of knowledge was proposed.

To the extent that knowledge is considered to be reduced to beliefs accepted as knowledge in a community, the problem is reduced to understanding consensus mechanisms as an interaction between social agents. This requires assuming that social causes explain all types of norms, and therefore, an extreme epistemic relativism seems to follow as a consequence. (Martínez & Huang, 2011, p. 23)

The issue then consists of proposing intermediate views that do not assume the social component as the only structural element of the PS and its normativity but instead add the component of epistemic normativity.

An example of this, among others, is Latour and Callon's proposal. The underlying issue is the distinction between natural and social (Latour, 1987). Given that these ontological limits vary historically at the level of their understanding, explanations must account for all types of actants, that is, agents in the broad sense (Latour, 1987). All these elements work in a network and self-vindicate if there are more relationships, nodes, and stability. Regarding the strong thesis of the sociology of science, they differ in a certain sense, as Martínez and Huang (2011) explain:

Callon and Latour argue that (...) many constituent aspects of scientific knowledge, such as material and technological conditions, the cognitive and technical capacities of scientists, etc., are not explainable exclusively by social causes (...) That is, in addition to the discursive resources, scientists can also appeal to the material, instrumental, and technological resources that are part of the actant network. (p. 25)

However, 'Latour's model has been criticized as insufficient by relevant authors such as Pickering (1995). Accordingly, scientific activity cannot be tied to pre-existing issues. Scientific research is contingent and tied to its temporal development. Over time, it encounters resistance typical of the aforementioned contingency. The scientific consensus is a particular dialectic between resistance and accommodation.



According to the authors, 'Guillaumin's analysis can resolve differences in interpreting the character of a PS that is not centered on theories. Its analysis shows that, traditionally, epistemic normativity is directed towards a theoretical product. His proposal better addresses a science that demonstrates the epistemic virtues of scientific processes (Guillaumin, 2008).

For all this, an alternative interpretation of Kuhn may be a good proposal for the problem being faced: "Rouse argues that Kuhn can be interpreted in another way: Instead of considering scientific investigations as revolving around the representation and observation of the world, it is better to take them as revolving around manipulation and intervention" (Martínez & Huang, 2011, p. 30).

Although one cannot bet so surely on a correspondence between theory and reality, one can coherently observe the existence of certain entities through manipulation and intervention.

## **Practices as an Explanatory Resource in the Philosophy of Science**

Finally, the authors refer to some conceptual issues around the concept of scientific practice and, above all, the explanatory power of scientific practices. The problem consists of integrating the elements described into a PS. The demands on a theory of science of this type are made explicit by Turner (1999) and explained by Martínez and Huang (2011):

(...) the plausibility of a theory of science that takes the concept of practice as a basic explanatory resource depends minimally on two lines of argument. First, he has to argue that the concept of practice is necessary for that theory to be adequate. Second, it has to show that the concept of practice is not a trivial explanatory variable; that is, it is not reducible to other concepts that explain with the same efficiency everything that the concept of practice can explain (p. 33).

The authors, therefore, begin their argument in favor of the underdetermination of the rules by the observed regularities as follows:

A1. The implicit character of certain practice concepts is necessary to explain the origin of normativity since explicit norms alone are insufficient to do so.

The following argument states that:

A2. The concept of practice is indispensable for the epistemology of science since it allows us to understand the nature of epistemic normativity adequately.

Finally, they structure their argument in defense of the concept of practice with A3:

A3. The concept of practice is indispensable for the epistemology of science since it offers us a better way to model scientific rationality.

The first argument is not extensively explained and relies on the authority of Wittgenstein (1956) and Brandom (2005), who have used it to explain rule-following and normativity.

The second, A2, begins its defense by analyzing the foundation of epistemic normativity that appears in divided schools. One is the traditional explanation of individuals' cognitive and axiological structure. Its counterpart is radical social epistemology, according to which social norms justify human actions and, therefore, epistemic normativity would be a derived concept. Such a dichotomy seems harmful, and to overcome it, a naturalized social epistemology is proposed (Martínez & Huang, 2011, p. 35).

In this naturalized social epistemology, the concept of practice is an indispensable explanatory variable since only through this concept of practice can we detect the social character of cognition. The concept of practice allows social epistemology to take seriously how cognitive elements play a crucial role in the construction of knowledge. It also allows us to adequately explain the situated nature of cognition (Martínez & Huang, 2011, p. 36).

A3 is then realized through two main premises: "The first is that scientific rationality goes beyond the choice of theories. The second is that establishing and applying means/end norms require a series of contextual factors explainable only by certain concepts of practice" (Martínez & Huang, 2011, p. 38).

The first concerns the possibility of explanatory compatibility between two apparently divergent theories. This is the case, for example, of classical mechanics and quantum mechanics, which seem incompatible. They can be thought of not as universal and complete representations but as part of technological systems that subsume models and forms of prediction and explanation of phenomena.

The second relates to the possibility of understanding rationality to decide between theories without appealing to universal rules. A philosophy of scientific practices thus has a contextual character that understands that knowledge does not come from universally applicable rules but:

It has to do with how types of activities, in particular interactions with other agents, are codified, individualized, and classified, and what is recognized as material resources, which implicitly consider the limitations of time and information processing capacity in a given situation. (Martínez & Huang, 2011, p. 40)

Thus, the last stage consists of showing why the concept of practice is not reducible and, therefore, is essential for a PS. The concept of practice must have an explanatory nature.

The first element is the importance of scientific discovery. Various factors, , such as sociological and technical factors, show necessity and intended irreducibility. On the other hand, knowing how and what is an irreducible dichotomy according to the authors. The irreducibility of pragmatics to semantics is affirmed since many implicit skills are built in specific material means and with different senses of practice (Hutchins, 1995).

Perhaps this aspect is vital since the concept of practice does not seem to have an ordinary meaning but appears as a plural concept with blurred contours.

## **Agency and Epistemic Normativity**

According to Martínez and Huang (2011), practice is usually understood as “a certain type of embodied knowledge, for example, in skills, ingrained dispositions, linguistic competencies, etc.” (p. 43). However, according to Turner (1999) it is impossible to infer that practices are mental entities with causal properties with the mere observation of manifest behaviors. The collective nature of the practice opposes the possible perspicuity of a conception of this type. The problem spills over into the uniformity of collective practice and the coordination of mental states. Apparently, there are no objective standards that all practices share.

’According to Martínez and Huang (2011, p. 44), Turner’s solution is to consider them individual habits. The social does not explain the practice but should explain what the social is. They then propose another solution.

If we understand practice in other ways, as an articulation of heuristic structures, for example, or more generally, if a practice is characterized by both explicit and implicit norms established in specific contexts of actions, a theory of practices characterized by this form will be based on empirical studies of how different contextual factors configure these norms (Martínez & Huang, 2011, p. 45).

Practices should not be seen as transmissions but as constructions based on specific available resources (Martínez, 2003). That is, practices are not understood only by their semantic dimension but by non-representational norms that arise after sharing situations with a consistent history (Martínez & Huang, 2011, p. 49).

The problem, as can be seen, is closely related to the different theories that reveal the nature of agency as inherently a dichotomous matter. On the one hand, we can think that acting is a matter linked to intentionality, and the second has to do with acting being linked to acting for a reason or a desire (Davidson, 1963). Without any commitment to them, they all affirm the coherence that should exist between the disposition and the causality that occurs between said mental state and the subsequent configuration of events. A being can then exercise agency if it constitutes intentional actions and possibly derived non-intentional actions due to a capacity generally tied to the constitution of

mental states (Schlosser, 2015). As can be inferred, this type of agency is related to the typical conception of practices in the PS that the authors want to reevaluate.

One view of agency, which emerges from but distances itself from the standard theory of action, is the event-causal approach to agency. Actions are events if the causal history of such an event can be established. The agent is like an actor in the historical causal chain of events (Schlosser, 2015). From this conception emerges a naturalistic style regarding the nature of agency; one cannot think of teleology or causal substantialism. This type of reading may be closer to the style of a normativity based on practices such as the account of Martínez and Huang (2011).

However, the problem shifts to the normativity of knowledge and the type of knowledge that takes part in our actions. We cannot maintain, if agency is conceived according to the naturalism described above, that the knowledge of a particular or collective agent does not participate in any way in actions of any kind, particularly in scientific activity. The sense of agency, as a self-perception that we know our actions (Anscombe, 1957) or of interpretations after the action that tends to show my relationship with it (Wegner, 2002), allows us to understand, however, that certain reasons about awareness of our intention make a difference in knowing how we act and how we should act.

Epistemic agency, at a level of normativity, should account for how we should think about our actions, that is, to propose models of possible modes of scientific practice. This is because the PS, and philosophy in general, should not consider the simple idea of describing and naturalizing problems as the only route to follow. The same naturalist project is based on a metaphysics of the causality of events above actions, which has nothing of naturalism.

Agency and its epistemic normativity, it seems, must stop looking for the epistemic noble savage who has a vernacular formula of thought that the neurosciences will one day manage to describe. Human beings and other agents think and act through artifacts, among which language and its variations are the main ones. The different logical and semantic systems can be counted as the best routes of human thought and guides of agency over time. If it wants to be based on a history of practices, epistemology normativity could ask how certain semantic artifacts have organized our episteme and our daily action for centuries and how its analysis concerning normativity is found in specific formal methods and not in a social history of scientific practices. Society itself, it seems, is a beautiful artifice of our models of how we should act and is not simply a description of how certain types of beings have movements, behaviors, customs, or actions. Perhaps language is the route to manifest the thought structure of the noble epistemic savage and its evolution.

## Eidetic Agency, Practices, and Epistemic Regulations

The initial approach to an eidetic agency appears in the chapter entitled “Eidetic Agency: Material Agency, Artifacts, and Eidetic Agents” (Fonseca, 2020). The notion can be preliminarily understood as a scaffolded extension of the mind in language:

Certain artifacts, often called abstract or ideal objects, are called eidetic objects. They can be thought of as scaffolded extensions of the mind that, in turn, enable the formation of new forms of epistemic agency and normativity. In this sense, signifiers, also understood as the material aspect of particular abstract, formal, or ideal objects, are the material element that generates agency and epistemic normativity. (Fonseca, 2020, p. 54)

The idea arises from the possibility of ascribing genuine agency to beings lacking intentionality (Schlosser, 2015). The epistemic foundation is linked to the causal coherence derived from material objects, from the causal coherence of mental states. (Mele, 1992). Given this, a causal coherence can be analogously established between a goal, the means, and the fulfillment of epistemic agendas, following the pioneering postulates of Aristotle (Aristóteles, 1957) about extensions of consciousness.

We can then speak of a non-intentional agency or agency without mental dispositions. We can attribute agency to beings who do not know or control their dispositions as doxastic beings who neither desire nor reflect on their desire but can assume vicarious agency, like most artificial intelligence artifacts.

From these premises, it can be understood that non-intentional agencies are integrated into causal relationships of online action that surpass, permeate, and determine human action (Fonseca, 2020, p. 45).

Material agency is then the launching pad for an eidetic agency. This affirms, under the previous arguments, a genuine agency to the artifacts (Latour, 2008). The proposal appears as a response to the debate about whether “(...) material entities have agency and in what sense this condition impacts the human/non-human dualism as a basis for understanding action, intentionality and production” (Parente, 2016, p. 140). The authenticity of a scaffolded material agentic process thus depends on the capacity for affectation and possible modification of a state of affairs beyond the level of intentional control or a specific representational content (Latour, 2008, p. 106).

Eidetic agency, therefore, contains a vital component of delegation and agential scaffolding based on certain postulates of the proposal of a material agency. Eidetic agency makes evident a system of anchoring causal relationships of meaning that do not require mental forms of representation or are contingent. Following Parente (2016), the eidetic agency shows that: “Artifacts, with their physical properties, are as essential for the exercise of the mind as mental states” (p. 145).

The eidetic agency is a modality of material agency that, in a scaffolded and extensive manner, delegates epistemic agency to formal artifacts that become evident in the materiality of the signifiers of artificial languages. Frege's (1879) concept of *Begriffsschrift* is the direct precursor of this artificial, formal, and abstract artifact that models thought. Eidetic artifacts foster an agency hooked to our epistemic system or other types of doxastic beings, delimiting models of thought and action (Fonseca, 2020, p. 52).

Therefore, the eidetic agency is related to what Brandom (2005) calls "inferential semantics" (p. 125). This becomes a normative conception of pragmatic meaning. We act according to the set of semantic rules that are embodied in the artificial language. Representation and designation are semantic models that should be overcome to move to pragmatist semantics that advocate the proposition as the minimum unit of meaning.

The eidetic agency is thus committed to a deflationism of the modern epistemic representation model. The pretension of representation achieved in the human doxastic subject is an effect. What is important is the expression of sense.

Propositions can, therefore, refer to an intensional dimension (Searle, 1983). The propositional references of such semantic systems are counterfactuals or variables that can be saturated using the jargon of Frege (1984), a direct precursor of this conception of pragmatic semantics. Propositional judgment, following the Fregean foundation, is an unsaturated function. A name must be part of a meaningful semantic structure or artifact to express content. Propositions are a move within the framework of grammar or structure; that is, they are susceptible to use: "Statements in general, just like equations or inequalities or expressions in analysis, can be imagined to be split up into two parts; one complete in itself, and others in need of supplementation, or unsaturated" (Frege, 1984, p. 146).

From this point of view, concepts are a particular species of functions that map authentic objects that fall under certain limits of the grammatical structure, or in our terms, of the eidetic artifact; for example,  $(x) \geq 2$  (being greater than or equal to 2). The concept is not a mental representation but a meaningful semantic structure. Objects are possible truth values, that is, modalities.

In the same way, eidetic artifacts or agents constitute semantic structures, that is, grammars and, therefore, sets of epistemic normativity that promote a specific epistemic use.

Synoptically, many examples indicate the characteristics of the eidetic artifacts postulated here. We can go from the simple scaffolding of arithmetic quantities in Roman numerals, Euclidean geometries, the Guidonian hand, and the thin red line—a precursor of modern musical notation systems and modern musical notation systems themselves—to milestone systems such as Boolean algebras, Frege's conceptography, set theory, predicate

calculus, truth tables, natural deduction systems, semantic trees, modal logic systems, axioms of probability theory, networks Bayesian, the argumentative schemes of informal logic, causal models, ranking theory, rational decision theory, among many others (Fonseca, 2020, p. 54).

All these eidetic artifacts are explicit forms of implicit practices that historically sediment in artificial languages that are objectified, i.e., scaffolded in signs. Subsequently, they can normatively model the epistemic processes of particular agents, from implicit practice to eidetic artifact and then from eidetic artifact to epistemic practice.

Eidetic artifacts modeled correct uses of the epistemic moves of certain doxastic subjects and are, therefore, a fundamental normative element relevant to the debate we promoted throughout the text. The notion of eidetic agency shows that practices can be formally modeled and that, therefore, they are relevant as an explanatory element in the sciences.

Moderately following Neurath, the formalized jargon of scientific languages, understood under the implications of this notion, show that they are equally relevant in the historical normalization of disciplines, just as they appear as means-end elements for the practices of scientific discovery and for idiosyncratic applications of disciplinary systems that do not disappear due to transformations in scientific paradigms. Eidetic agents are artifacts of intervention and experimentation, not mere abstract formulations.

The development of scientific knowledge comes from the integration of epistemic artifacts during the historical development of disciplines (Guillaumin, 2008). However, although cultural and social practices promote the emergence of scientific practices, in a necessarily historical development, the normative consequences and their assimilation are inevitable. The degree of assimilation to the grammar of the discipline allows a second moment of the disciplinary normalization process in which the normalized elements become objective epistemic artifacts that bring together various components of scientific disciplines.

Thus, specific cognitive agendas produce specific grammars that scaffold specific epistemic artifacts, namely, eidetic agents specific to equally specific disciplinary fields. The normative force of such artifacts depends on the degree of normalization and assimilation, which is evident in the degree of objectivity incorporated in the eidetic object.

In opposition to Guillaumin (2008), the normative force is not tacit but fully explicit in the eidetic artifact that operates in the disciplinary field. Eidetic agency fosters a normativity based on practice, but its normative force is based on the explicit nature of the normative content.



Theoretical rationality is thus not a different and antithetical dimension of the notion of practice; rather, it is a very idiosyncratic agential modality. This idiosyncratic character consists precisely in the material configuration of instruments or artifacts that, beyond the jargon, make up the grammatical limits of scientific disciplines.

The formal normative elements scaffolded in the eidetic agents structure models for constructing the grammar of the disciplines and their practices. In turn, these eidetic elements are causally linked to the material artifacts from practices, closing the epistemic circle (Fonseca, 2023).

A strong eidetic agency allows the formulation of objective standards (*ceteris paribus*) for action in different disciplinary fields (Fonseca, 2021, p. 228). In this sense, epistemic normativity does not subscribe only to the prescriptive level of the norm as a procedural guide to epistemic practice but, in turn, determines a set of norms comprising the structure of the discipline, that is, its grammar. Eidetic agency constitutes, therefore, the foundations of the disciplinary system. The transformation of practice into knowledge necessarily requires the filter of eidetic artifacts.

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