

HISTORICAL EPISTEMOLOGY AND METAETPISTEMOLOGY, DIFFERENT LABELS, SHARED INTERESTS^{*1}

EPISTEMOLOGÍA Y METAETPISTEMOLOGÍA HISTÓRICA. ETIQUETAS DIFERENTES, INTERESES COMPARTIDOS



MARÍA LAURA MARTÍNEZ
The University of the republic of Montevideo, Uruguay.
marialauramartinez1@gmail.com
<https://orcid.org/0000-0003-0011-0472>

ABSTRACT

Lorraine Daston has pointed out the influence that Ian Hacking's *The emergence of probability* has had on her intellectual trajectory and on her choice of the label historical epistemology to describe her own work. Hacking, for his part, has responded to these remarks that, first, Daston and his colleagues do not do epistemology, but rather study epistemological concepts as evolving and mutating objects; second, that their work on probability is not historical epistemology but, if anything, what he calls historical metaepistemology or, better yet, historical ontology. In the present paper, I analyze how

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Daston and Hacking understand the kind of research they respectively call historical epistemology and metaepistemology and explore their convergences and divergences to establish possible relationships, shared interests, and background. Finally, I argue that Hacking's work can be visualized as the result of research that characterizes historical epistemology, because of his interest, stimulated by his reading of Michel Foucault, in the analysis of the historical conditions of possibility for the emergence of scientific concepts and objects.

Keywords: historical epistemology; historical metaepistemology; historical ontology; Ian Hacking; Lorraine Daston; Michel Foucault.

RESUMEN

Lorraine Daston ha señalado la influencia que *The emergence of probability* de Ian Hacking ha tenido en su trayectoria intelectual y en su elección de la etiqueta *epistemología histórica* para describir su trabajo. Hacking, por su parte, ha respondido a estos señalamientos que, en primer lugar, Daston y sus colegas no hacen epistemología, sino que más bien estudian conceptos epistemológicos como objetos que evolucionan y mutan; en segundo lugar, que su trabajo sobre la probabilidad no es epistemología histórica sino, en todo caso, lo que él llama *metaepistemología histórica* o, mejor aún, *ontología histórica*. En el presente trabajo, analizo en qué forma entienden Daston y Hacking el tipo de investigación que denominan respectivamente *epistemología* y *metaepistemología histórica*, y exploro sus convergencias y divergencias con el fin de establecer posibles relaciones, intereses y antecedentes compartidos. Por último, sostengo que la obra de Hacking puede ser visualizada como resultado de investigaciones que caracterizan a la epistemología histórica, como consecuencia de su interés, estimulado por la lectura de Michel Foucault, en el análisis de las condiciones históricas de posibilidad para la emergencia de conceptos y objetos científicos.

Palabras clave: epistemología histórica; metaepistemología histórica; ontología histórica; Ian Hacking; Lorraine Daston; Michel Foucault.

1. INTRODUCTION

Lorraine Daston has repeatedly noted the influence that the *emergence of probability. A philosophical study of early ideas about probability, induction, and statistical inference* (1975) by Ian Hacking has had on her intellectual trajectory. She has said that reading the book left her "[...] absolutely gripped! Not only because of probability theory, but because of Hacking's way of making history, trying to imagine the conceptual preconditions of what for us is self-evident" (Trevor 2017 178).²

According to Daston, in that text Hacking does:

[...] a new kind of question: What are the conceptual preconditions for the emergence of a concept as apparently simple, as useful, indeed indispensable - but as strangely absent before circa 1650 - as the modern notion of probability? What kind of history is needed to address this kind of question? (2007, 802).

It further highlights the fact that Hacking frames his problem in terms of discontinuity. The book traces a history of novelty, "[...] suddenly, like an erupting volcano, something completely new appeared on the intellectual landscape" (Gross 2020), a concept that was unthinkable until then. The historian says she was intrigued by the title of the book, which does not speak of revolution - a concept that was in vogue in the mid-1970s - but of emergence; but she was even more intrigued by the subtitle, which refers to a philosophical study of "early ideas" rather than to problems about induction and inference, in vogue at the time.

This book, according to Daston, influenced her choice of the label historical epistemology to describe the type of research she develops and which she understands as the study of the historical conditions in which the epistemic categories³

² The translation of quotations is mine.

³ To distance herself from the traditional history of ideas-which is often related to a history of epistemic concepts, which are assumed to be consciously represented in the minds of historical actors-, Daston prefers to speak of epistemic categories, which encompass both concepts and explicit epistemic practices.

and fundamental practices of science emerge, so obvious that they seem to have no history.

Hacking has responded to Daston's remarks that: first, she and her colleagues do not do epistemology, in that they do not propose, defend or reject theories of knowledge, but rather study epistemological concepts as evolving and mutating objects; secondly, that her own work on probability, as a study of the historical and contingent development of an epistemological idea, is not historical epistemology but, at any rate, what he calls historical metaepistemology or, better still, *historical ontology*.

In this paper I propose to analyze how Daston and Hacking understand the type of research they respectively call historical *epistemology* and *metaepistemology*. Below, I explore the convergences and divergences between the two concepts to establish possible relationships, shared interests, and backgrounds. Finally, considering the above and insofar as Hacking's work can be understood from his fundamental interest in the analysis of the historical conditions for the possibility of the emergence of scientific concepts and objects, stimulated by his reading of Michel Foucault, I consider that it can be visualized as the result of research that characterizes historical epistemology. It is in this sense that the work of the Canadian philosopher can be vindicated as a solid and decisive basis from which this epistemological proposal is developed and can even be considered as part of this heterogeneous body of research.

2. LORRAINE DASTON: HISTORICAL EPISTEMOLOGY

If we were to imagine science developing on three time scales, says Daston (2020), we could speak of a shorter and faster time scale, the *tempo allegretto* of science that it is the time of empirical discoveries and developments. There is another *tempo*, the *andante*, a little slower than the previous one: the great ruptures in theoretical thinking, the tempo of Newtonian physics, Einsteinian physics or Darwinian biology, ways of thinking that will shape the science that is to be done in the decades or centuries to come. Lastly, there is a *tempo legato*, the slowest of all, in which the fundamental categories of thought and practices underlying all the sciences are de-

veloped, beyond the overcoming of Newtonian physics by Einsteinian physics or of Darwinian biology by modern genetics. This is the tempo in which historical epistemology resides.

Daston has recognized that the label *historical epistemology* is iridescent and shines differently depending on who is looking at it. As she understands and practices it, historical epistemology is the history of the self-evident, a kind of excavation of the deepest and most deeply rooted intuitions to reveal their origins, their transformations, their disappearance. It is a story whose aim is to dissolve the evidence of that which is presented as first and fundamental in science. Part of the attraction of this type of research lies in explaining the emergence of novelty, the moment in which the unthinkable becomes thinkable, but fundamentally in how the unthinkable, in addition to becoming thinkable, becomes evident -understanding evident as that which is neither thought nor questioned.

In her article *Historical epistemology*, Daston characterizes historical epistemology as "the history of the categories that structure our thinking, shape our arguments and evidence, and certify our standards of explanation" (1994 282). While historical epistemology can and should refer to the history of ideas, it poses a different kind of question: it does not ask about particulars but rather about emergence, evolution, change, disappearance, etc. of standards and categories of explanation that seem so necessary to the way we think that we cannot conceive of doing without them. It is in this sense that Daston claims that historical epistemology not only transcends the history of ideas but poses a Kantian question: the question about the preconditions that make it possible to think this or that idea. At the same time, it questions the assumption of similarity between the ideas of thinkers working within different conceptual categories, thus reducing the chronological scope of the history of ideas as traditionally conceived. Although continuity is thought of as possible from the point of view of historical epistemology, it loses much of its *a priori* plausibility as a general premise.

Certain epistemological categories have become so fundamental to knowledge that they have been rewarded, Daston argues, with the dubious philosophical compliment of being eternal. Her intention in the face of this is to show that the funda-

mental categories of science are historical: "The sciences are a factory of innovations, not only inventions and discoveries, but also new ideas, theories, hypotheses, and models. And, ultimately, a factory of new categories of knowledge" (Deffke 2012 88). Daston is interested in reconstructing the historical trajectories of crucial elements of science such as objects, categories, values, virtues, sensibilities, etc. that have remained largely unquestioned and marginalized from historical narratives. In contrast to the conventional view of the history of science, according to which the evolution of theories takes place around stable scientific objects, historical epistemology proposes a discontinuous history, centered on unstable objects and on the epistemological frameworks in which they emerge, develop, and eventually disappear.

A too-quick answer to the question of what historical epistemology is, Daston argues, is that it is a sort of intellectual equivalent of psychoanalysis, which frees epistemic categories and concepts from their past by bringing them into consciousness. However, although historical analysis can show the contingency of subterranean patterns and bring them to the light of conscious scrutiny, historical truth alone will not make us completely free for two reasons: it is not enough to reveal the contingent and accidental character of current conceptual categories to abandon them, but they must be replaced by something better. On the other hand, the mere historical fact that an argument or standard of explanation or ideal of objectivity is of contingent origin does not invalidate it. Historicizing is not identical to relativizing, much less to discrediting (1994 283-284).

As examples of research carried out by Daston in the framework of his historical epistemology project, I will briefly refer first to his analysis of the epistemic categories of *objectivity* and *scientific observation*. Regarding scientific objectivity, one of the most representative works is the book co-authored with Peter Galison, *Objectivity* (2007), in which they intend to show that this category, rarely discussed or questioned, far from being monolithic, immutable, and ahistorical, has a history. Daston and Galison show how the word objectivity in its thick conceptual layering pairs diverse meanings -metaphysical, methodological, moral- each with a different history, intimately related to the history of scientific practices and ideals. This conceptual stratification may give a clue to their intellectual and social history, but also

to their moral history. It is a mesoscopic history in that it deals with scales that reveal the diffusion of techniques that cross disciplinary and geographic lines; it is superficial: it does not seek hidden gears endowed with the privileged ontological status of being immobile prime movers, but rather conceives of philosophical frameworks of analysis as living practices, and it is ethico-epistemic because it fuses the epistemic virtues of objectivity with a certain kind of self, embedding both in a history of specific practices (Daston & Galison 2008 677). Our use of the word objectivity allows us to move easily between the different meanings of objectivity. However, as expressed by Daston,

[...] these multiple meanings do not overlap, neither in theory nor in practice. [...] Objectivity is sometimes seen as a method of comprehension that calls for the elimination of all idiosyncrasies, whether personal, national, historical or related to the species, in order to arrive at a vision of the world that does not privilege any particular point of view. And sometimes objectivity characterizes an attitude, an ethical position praised for its impassive neutrality or reprobated for its coldness. [...] A history of objectivity must explain why certain ideas and certain practices merge while others remain autonomous (2017 72-73).

The meaning of concepts or categories is determined by epistemic practices, by the historical-pragmatic aspect of science, by its link with scientific factuality, and by the interaction with other concepts and with the world.

A crucial period for the emergence of scientific objectivity, and particularly for the fusion of its epistemological and moral components, can be located in the mid-nineteenth century. Scientific objectivity emerges at that time and establishes itself not only as a scientific norm, but also as a set of practices in a matter of decades. However, there is nothing inevitable about this emergence: it is a consequence of the imperative to eliminate the scientific self. In this regard, Daston and Galison (2007) show how the intentions of scientists change with respect to the production of scientific images -which from a certain period onwards are called objective- by analyzing the evolution of the publication of atlases (botanical, anatomical, astronomical)

from the eighteenth century to the present day. In the 18th century the illustration of atlases corresponded to the ideal of fidelity to natural truth (truth-to-nature), according to which researchers select and synthesize observable characteristics that visually represent the general essences of objects. It is the apogee of *ontological objectivity*: the fit between theory and world. It pursues the ultimate structure of reality and is opposed to conscience per se. In the 19th century, under the stimulus of photography, the ideal of objectivity appeared, the reproduction of nature in images without any additions or modifications. It is the suppression of the human propensity to judge and aestheticize. It is opposed to interpretation. It repudiates the idealization of figures. The scientist pretends to be a passive entity who is impressed by the data of reality and tries to represent the individual particularities of the observed objects independently of any preconceptions and usually uses mechanical devices to achieve these representations. This mechanical objectivity that captures individuals in their singularity runs the risk of getting lost in the infinite variety of natural forms. It was replaced at the end of the same century by the ideal of structural objectivity, which dispenses images and aims to reproduce the invariant or structural elements in the objects to be studied. Neither mechanical nor structural objectivity allows, however, a satisfactory identification of certain phenomena, mainly normal versus pathological cases. This is how around 1930 the trained judgment emerged, in which the scientist discerns, by interpreting the images, a pattern in the variety of cases. The notion of objectivity, *stricto sensu*, constitutes a stage in the process of self-understanding of scientific activity in its aspiration to faithfully represent reality, although the term objectivity is used to designate any stage of this process.

In the case of scientific observation, Daston argues that its history is a long, surprising, and significant epistemological story, full of innovations that expanded the possibilities of perception, judgment, and reasoning. It is a story that begins with a practice that surely has no name - in all cultures human beings needed to observe in order to survive, but probably did so without naming the practice, without systematizing and without eliminating errors -, which is later named, taught and learned and finally epistemologized, that is, people begin to think of it as a way of attaining knowledge. It is a story of how experience was shaped and defined for

scientific purposes: how the senses were educated and expanded; how practices for recording, correlating, and displaying data were developed; how the data themselves were refined; and how the private experiences of individuals became collective and turned into evidence.

Around 1750, scientific observation became an epistemic category, that is, an object of reflection that found its way into the philosophical lexicon and methodological treatises. Observation emerges as a key learned practice and as a fundamental form of knowledge that requires the formation of body and mind, material props, description and visualization techniques, communication and transmission networks, canons of evidence and specialized forms of reasoning. Its consolidation as an epistemic category is the result of important innovations in the realization, use and conceptualization of observation. As an epistemic category, observation takes its place among other modern innovations in the field of disciplined experience. The most important of these was the experiment. At the beginning of the 17th century, observation, and experiment, rarely coupled in the Middle Ages, become an inseparable pair, and have been defined and redefined ever since. Difficult synonyms at the beginning of that century, they became complementary and intertwined parts of a single research method throughout much of the eighteenth and early nineteenth centuries, and finally in the mid-nineteenth century they were presented as opposing procedures: passive observation and active experiment.

Scientific observation introduces us to another fundamental theme in Daston's project: *the ontology of scientific objects*. Scientific observation creates and sustains ontologies, discerning and stabilizing scientific objects for a community of researchers. It is both an epistemological question, since it studies how scientific observers acquire knowledge about the objects they choose, and a metaphysical one, because it deals with the ultimate reality of the observed entities. There is, says Daston, something of an ontology forged by observation, which, far from being an absolute metaphysics, the God's eye view, is an ontology for wide-eyed humans (2008 110).

It is *applied metaphysics*, as he calls it in *Biographies of scientific objects* (2000), a book about how entire fields of phenomena emerge and disappear as objects of scientific investigation. Applied metaphysics studies the dynamic world of what

emerges and disappears from the horizon of scientists, of novelty in science. New scientific objects emerge, and old ones fade away; hitherto unknown, ignored, scattered phenomena are transformed into scientific objects that can be observed and manipulated, that are capable of theoretical ramifications and empirical surprises, and that acquire coherence, at least for a period, as ontological entities. In contrast to everyday objects, scientific objects are elusive and hard-won, they may take centuries of theoretical and empirical effort to find, but they are essentially as durable as everyday objects.

Applied metaphysics assumes that reality is a matter of degree and that indisputably real phenomena, in the colloquial sense that they exist, may become intensely real depending on the density with which they are interwoven into scientific thought and practice (Daston 2014 9).⁴ Reality for scientific objects unfolds in a continuum. Scientific objects have a history. They may not be invented, but they become more profusely real to the extent that they are woven into the webs of cultural relevance, material practices and theoretical derivations. In contrast to everyday objects, scientific objects expand and deepen; more and more layers of hidden structures are interconnected. Applied metaphysics stands orthogonally to the plane of debate between realists and constructivists, between real versus constructed, natural versus cultural. It posits that scientific objects can be simultaneously real and historical. The expression *coming into being* captures the characteristically generative and procedural sense of the reality of scientific objects as opposed to everyday objects that simply are. However, what can be ontologically enriched can also be impoverished; as has been said, scientific objects emerge, but they also die. The history of science, according to Daston, is a history of ontology. Generally, the historicity of scientific entities is analyzed by focusing on the evolution of beliefs about them and associated human practices. What changes over time are the representations about

⁴ Daston refers here to a "sublunar metaphysics of change" -in the Aristotelian sense- that recognizes degrees of reality and, consequently, blurs the duality between existence and nonexistence. I believe that this idea that reality is a matter of degree from the ontological point of view merits a deeper and more detailed explanation by Daston.

these entities, but not them. For Daston, this interpretation does not do justice to the evolutionary ontology of the sciences. She then proposes the history of science as the history of an ontology in motion, accounting for how entire domains of phenomena come into and cease to exist as objects of scientific investigation. The ontogenesis of scientific objects is decisive for clarifying the gnoseological and metaphysical status of science and for elucidating the historical conditions of possibility of knowledge and scientific entities. It is the story of a dynamic of scientific entities that repositions novelty as an essential aspect of scientific activity, without relapsing into the polarization between discovery and invention (Fragio 2007 32-33). How do scientific objects emerge and how, at a certain point, do they vanish? On what ontological, epistemological, methodological, functional, symbolic, or aesthetic criteria does it depend whether projectile trajectories, dreams, the valence of electrons and the rise and fall of gross domestic product become scientific objects? Why, when, and how does it happen that science directs its attention to certain objects and not to others? Why, how, and when do objects previously considered heterogeneous become agglutinated into a single category? Are these classifications inherent to nature? Are these objects real? These are some of the questions raised by Daston (2012).

For historical epistemology, only some of the objects that populate the world become objects of scientific investigation.⁵ They must be scientifically salient, i.e., they must become part of the domain of scientific research, which occurs when they combine the following characteristics: prominence, emergence, productivity, and rootedness. Although there are phenomena that possess an undeniable reality before and after their birth as scientific objects, scientific scrutiny alters them in significant ways: phenomena that had hitherto remained scattered are amalgamated into a coherent category; criteria of inclusion and exclusion become sharper; new forms of representation stabilize regularities; intense research makes evanescent phenomena

⁵ In this regard, Daston (2010 218) considers that in a world overflowing with things and events, and in which only a few of them become objects of investigation, Hacking's styles of scientific reasoning establish which are the objects and how to study them, in ways that cannot be challenged by recourse to some higher epistemological authority.

more visible and richer in applications. In a word, they become prominent. This notion of *prominence*, whether cultural, economic or epistemological, outlines already existing objects, i.e., scientific research intensifies their reality, but does not create them. *ex nihilo*. Emergence, however, postulates a more radical form of novelty. It challenges the conception of scientific objects as stable and immutable and therefore real. As for *productivity*, it should be noted that scientific objects are never inert. They acquire their sharpened ontological status through the production of results, implications, surprises, connections, manipulations, explanations, and applications. Finally, the persistence of scientific objects depends on the institutionalization of practices and an impressive array of apparatuses. Reality becomes a relative property, dependent on the degree to which it is rooted in such organized systems of techniques and instruments (Daston 2014 16-25).

3. IAN HACKING: HISTORICAL ONTOLOGY AND METAEPISTEMOLOGY

For Hacking (1999), the expression *historical epistemology* refers to the work of Gaston Bachelard. According to Dominique Lecourt (1969), Bachelard reveals that epistemology *is* historical, its essence is to be historical. The discipline that takes scientific knowledge as its object of study must consider the historicity of this; it must account for the real conditions of the production of scientific knowledge. Science is itself, in its practice, the producer of its own norms and of the criteria of its existence.

Given Bachelard's use of the notion of historical epistemology, Hacking argues that it is better to call dastonian studies *historical metaepistemology*. The objects of study to which Bachelard refers are the sciences with their historical development, their obstacles, and their ruptures, that is to say, scientific knowledge. Instead, the object of study of what Hacking calls *historical metaepistemology* - and Daston, *historical epistemology* - are ideas about knowledge. It is not a theory of knowledge, but a study of ideas about knowledge or its uses. One thing is to historicize scientific knowledge, its production and validation processes, and another is to historicize

epistemological categories. Where Bachelard insisted that historical considerations were essential to the practice of epistemology, historical metaepistemology examines the trajectories of objects that play certain roles in thinking about knowledge and beliefs. Someone who is interested in historical metaepistemology is not necessarily excluded from drawing epistemic conclusions, but that does not mean that his analysis is epistemological. An analysis of the latter type would be, according to Hacking, understood in one of the following three ways: 1) a theory of knowledge and its related ideas, which works concepts and practices associated with the idea that in science some things are known, others are believed, reasons are given, evidence is presented, proved, disproved, etc.; 2) theories that state the grounds or justifications for knowledge in general, establish the standards of correct reasoning or provide arguments as to why knowledge does not meet those criteria; 3) theories about how to do research. Historical meta-epistemology, through its analyses, can draw on and integrate the results of the analyses, but even so, it will not be doing epistemology.

Historical metaepistemology is, according to Hacking, a way of doing history and philosophy of, among other things, the sciences. Some mixture of history and philosophy can show how certain possibilities emerge. Historical metaepistemology, in that sense, falls under the generalized concept of historical ontology (Hacking 2002 9).

Historical ontology studies objects in general, not only things but classes, types of people, ideas and institutions that emerge in history from certain possibilities and conditions. It has to do with the possibility of the emergence of some objects and concepts. It is concerned with objects, or their effects, that do not exist in any recognizable form before they become objects of scientific study.

Hacking examines diverse forms of constitution: how probability, objectivity, child abuse, mental illness, ideas of personhood, memory, consciousness, multiple personality disorder, trauma, etc., emerged, and how these varied concepts, practices, ideas, and institutions, which we can treat as objects of knowledge, at the same time reveal new possibilities for human choice and action. Historical ontology helps us to think of such diverse investigations as being part of the same family (Hacking 2002 4).

Historical ontology is an expression Michel Foucault used in 1982. According to Hacking, his ontology was as creative as it was historical. The Canadian philosopher elaborates his notion of historical ontology based on the three axes mentioned by the French philosopher: knowledge, power, and ethics: an ontology of ourselves in our relations with truth, with respect to the power realm, and with morality.

Within historical ontology, historical metaepistemology corresponds to the analysis of the most general concepts used in epistemology. It deals with the organizing concepts related to knowledge, belief, opinion, objectivity, impartiality, proof, probability, argument, reason, rationality, evidence, facts, truth. These are the words used by what Quine called semantic ascent and what Hacking calls in some of his works ascending words (2001 48). They are words that are used to say something about what we say or think about the world. They are at a higher level. They and their adjectivations have undergone substantial mutations of their meaning and value, although they are often thought of as independent objects, without history, with stable, transparent, and eternal meanings. Es un análisis de los conceptos, no de manera intemporal sino en sus *sitios* históricos. It is an analysis of concepts, not in a timeless way but in their historical sites. The logical relationships between them are formed in time and cannot be correctly perceived unless their temporal dimensions and their uses are considered.

These organizing concepts, without which we could not think about our thinking, seem to satisfy the following criteria, according to Hacking (1999):

1. *They structure our thinking about the world and organize a whole collection of sub concepts, practices, and values. They are categories of thought, although Hacking prefers to call them organizing concepts. They are cousins of Kant's understanding but, although they play a similar role to pure Kantian concepts, since they enable us to make judgments, unlike them, they are not permanent, but historical.*
2. *They are historical and situated. They are constituted by tradition and use. They do not exist as a timeless resource. They change, evolve, undergo mutations, emerge in the light of new practices or because of radical transformations of previous ones.*

3. They are inevitable. They are, possibly, essential to the very functioning of our society, our laws, our sciences. They are attached to us, which does not mean that we cannot change them or that they do not change.

Their structure is formed over time and is preserved and modified through time, so it can only be explained by examining the ways in which they have been forged and used. Concepts have memory. A correct analysis requires giving an account of their previous trajectories. It is in this sense that Hacking claims that concepts are situated words. From his writing of *the emergence of probability*, Hacking thinks that philosophical problems are created when the historical space of possibilities in which our thoughts are organized mutates. In "Five parables" (1984) he argues that some of the philosophical problems about concepts are the result of ignorance of their history. A concept becomes possible at a given moment and under conditions defined by an ordering of ideas that at another given time collapses, disappears. The problem arises from the lack of coherence between the previous state and the new one, between the concept and that previous order of ideas that made it possible. Hacking, in addition to considering that many philosophical problems are essentially historically constituted, sees in them a question not only of grounds but also of analysis and genesis in the manner of what he calls the *Lockean imperative*: understanding our thoughts and beliefs by accounting for how they originate. Understanding the prehistory of problematic concepts and what makes them possible allows us to grasp the nature and explain the problem, although it certainly will not make them go away.

The emergence of probability gives an account of an inevitable concept that has come to structure our experience of the world in many ways, that shapes the ways in which we know and from which a space of possibilities opens in which so many other concepts -variability, population, distribution, average, etc.- are constituted. It is a concept without which, as Hacking himself says, we cannot conceive the world. In this text Hacking analyzes the historical conditions that make the emergence of probability possible. He begins with what he calls the prehistory of chance, starting with the first games of randomness such as the *talus*, the predecessor of dice. Despite

the antiquity of this pastime, ideas about probability and a mathematics of chance were not known until the Renaissance. At that time, probability essentially meant probability of an opinion. It was not until around 1650-1660 that many of the necessary ingredients merged to form the space in which probability as we know it today emerged. Around this date a significant number of people independently arrived at the basic ideas of probability. Although there had been some anticipations the time was not ready to give birth to a concept of probability, "our" concept of probability. That lack of maturity resulted, among other things, from the lack of a relevant concept of factual evidence, the formation of which is one of the preconditions of probability. By the relevant concept of evidence is meant the evidence of things or internal evidence, as distinguished from the evidence of witnesses and authority. In the Renaissance a new kind of testimony was accepted: the testimony of nature. Nature was able to provide factual evidence, in the modern sense of the atomic, isolated, independent fact that can serve as an indicator and even as positive proof of another isolated, independent fact. But, since it was based on natural signs, it could only sometimes be trusted. Probability was communicated by what are now called law-like regularities and frequencies. Thus, the connection of probability with stable law-like frequencies is a result of the way in which the new concept of internal evidence came into existence. Thus, once the sign is transformed into evidence, the space of possibilities is given for the emergence of a dual concept of probability, our concept of probability.⁶

Hacking has repeatedly insisted that his project is not historical but philosophical. However, his work not only reveals a sensitivity to history that is not typical of most philosophers trained in the analytic tradition - as is his case - but it is possible to argue that several of his works are truly historical in nature. They are the result, on the one hand of his reliance on Foucault's history of the present - since he is interested in understanding the present state of science based on reflections on the

⁶ An interesting critical analysis of Hacking's text, and especially of the problem of evidence, from the point of view of historical epistemology can be found in Guillaumin (2005).

past - and, on the other hand, his idea of *the style of scientific reasoning* based on the notion of *the style of thought* of the historian Alistair Crombie.

It is in this sense that Hacking has historicized ways of reasoning and doing, ways of truth-telling, standards of evidence, etc. In this regard some critics have pointed out that Hacking's analysis of scientific reasoning styles, for example, would be part of the project of historical epistemology.

In this paper my consideration of whether Hacking's analysis can be included within the proposition of historical epistemology, or how it can be related to it, will not focus on a particular aspect of his work, but rather on the interests that I believe underlie the totality of this. However, it is important to note that, for example, according to Martin Kusch (2010 and 2011), Hacking's historical-philosophical proposal, which accounts for the emergence and development of styles, but also raises important implications for what is understood by rationality, reason, reasoning, propositions, and scientific objects, can be considered within the project of historical epistemology. Insofar as "[...] Hacking's analysis historicizes reason, historicizes what counts as a scientific proposition, historicizes what is accepted as a scientific entity" (2010 159), according to Kusch there are "[...] sufficient reasons to speak of his theory of reasoning styles as Hacking's historical epistemology" (159).⁷

For his part Luca Sciortino (2017) argues that the methods and results of the hackinian reasoning styles project are part of the methodological and conceptual apparatus of historical epistemology. The scope of the theory of styles is identical to one

⁷ Nevertheless, Kusch proposes three desiderata for such a project to fully become one of historical epistemology. The first has to do with the nomination of style, taken from Alistair Crombie, which would not, according to Kusch, be an appropriate starting point. The second has to do with the epistemic relativism suggested in Hacking's early works but which in the later works has been denied and, even with them, an anti-relativist stance is invited. The third desiderata refer to Hacking's failure to provide adequate answers to the criteria for the individualization of styles, in the same way that the relationship established between these, and the social order is not clear (Kusch 2011).

For his part, Castro (2018), while agreeing with Kusch that the hackinian proposal of styles seems to be part of a project of historical epistemology, argues that it is necessary to complement it with other aspects related to scientific practices and their historical dimension.

of the objectives of this movement: to understand an organizing concept, objectivity, which mutates and evolves along with changes in practices. Hacking's notion of reasoning style can be better understood, Sciortino argues, when put in relation to the notion of the organizing concept, the core of historical epistemology. Hacking's project would be one among the projects of historical epistemology that historicize Kant.

4. THE INTEREST IN THE CONDITIONS OF POSSIBILITY OF EPISTEMIC EMERGENCE

In the framework of epistemic categories that shape and structure our thinking about the world, the work of Daston and Galison on objectivity was outlined as an example of a concept that organizes the experience of the world, that establishes principles by which experiments are planned, which instruments are used, which senses are trained to make decisions, which details are omitted from phenomena, etc. I believe that it is in this same sense that Hacking's analysis of probability can be understood. It is that for Hacking as well as for Daston and other representatives of historical epistemology, epistemic concepts and the standards and ideals to which they are connected emerge in the framework of specific practices and contexts, over time they are transferred to new domains of application, and sometimes they become so general that they are thought of as having no history. By emphasizing that scientific practices often arise prior to any explicit concept of them, these authors also simultaneously underscore their rejection of a traditional history of ideas.

A convergence can also be noted in the idea of the historicity not of organizing concepts, but of scientific objects. It is the historical ontology of which Hacking speaks in his homonymous text and the applied metaphysics to which Daston refers in *Biographies of scientific objects*. It is a dynamic ontology that accounts for how entire domains of phenomena come into and cease to exist as objects of investigation; an ontology that, according to Hacking, helps to think of phenomena as diverse as the emergence of probability, the modeling of child abuse or the shaking produced by transitory mental illnesses as integrating the same family and that, ac-

cording to Daston, brings together objects previously considered heterogeneous in a single category; ontology that allows us to move away from the debate about real objects versus historical objects, real objects versus constructed objects; an ontology in motion that, in Hacking's case, is part of a set of notions he proposes for analyzing the human sciences: dynamic nominalism, loop effect, person construction, etc. Hacking understands dynamic nominalism as nominalism in action aimed at new or changing classifications.⁸ It is concerned with the various ways in which classifications interact with the individuals to whom they are applied. It illustrates how the category and the categorized fit together and argues that certain kinds of human beings and actions arise along with the invention of the categories that label them. It is the only type of nominalism in which history plays an essential role in the constitution of objects. The effect of this *feedback* process that human classes undergo due to the interaction between their members (people and their behaviors) and the ways in which they are classified is what Hacking calls the *loop effect* and which makes the phenomena studied by the human sciences not stable, like the natural ones, but rather mobile objectives. The result of this loop effect is the *construction of people*, individuals who construct their historical ontology by interacting with the classification to which they are subjected by experts.

However, it is necessary to mark some differences between the dastonian and hackinian proposals with respect to this dynamic ontology. In *Historical ontology* Hacking points out:

My historical ontology is concerned with objects or their effects that do not exist in any recognizable form until they become objects of scientific study.

⁸ Hacking (2002 2) considers himself a dynamic nominalist but thinks he could equally well be called a dialectical realist, concerned with the interactions between what is there and the conceptions about it. The classes of individuals that are created are real, even if they result from a dialectic between classification and who is classified. Epistemic practices configure and transform scientific objects, but reality also alters the conceptions of it. Therefore, the objects of the human sciences are not just a sociolinguistic construct, but neither are they given once and for all.

Daston describes his applied metaphysics as being about the emergence of objects of study, rather than the emergence of objects per se (2002 11).

Daston is careful, says Hacking, to argue that objects emerge and disappear as objects of scientific investigation. There is no radicalism in that claim; naturally objects are objects of study at one time and not at another.

However, Hacking claims to have another, more direct reason for distinguishing his proposed historical ontology from Daston's applied metaphysics. The historical objects generally referred by Daston and other authors working under the current aegis of historical epistemology come from both the human and natural sciences. That is, in this case, the objects that present a historical dynamic are not restricted to the field of human sciences as in Hacking's proposal. Let us recall that this restriction is related to Foucault's three axes, whose presence, according to Hacking (2002 11-16), allows the historical ontology of the objects of the human sciences and whose absence prevents it for the objects of the natural sciences. In "Five parables" (1984 40) Hacking had already connected this difference, on the one hand, with the question of nominalism, insofar as in the human sciences, in contrast to the natural sciences, the invention of new classifications generates new classes of objects (people and their behaviors). On the other hand, it is related to history because while the objects of the human sciences are constituted by a historical process, those of the natural sciences, although they are created in time, in micro-social conditions, once created they are independent of history and, in this sense, they are not historically constituted.⁹

As we have already pointed out, the focus of this paper is not the identification and analysis of specific aspects of convergence, some of which have been

⁹ Hacking performs this analysis in "Five parables" seeking to establish a novel distinction between natural and human sciences based on the use of different types of classifications in each of these fields of science, namely, indifferent, and interactive classes, respectively. However, such a distinction was certainly problematic, so he ended up abandoning it. In this regard, see Martínez (2021 109-114).

discussed, but to show a more basic and fundamental confluence: the interest that Daston (and, why not, contemporary historical epistemology in general?) and Hacking share in the analysis of the historical conditions of possibility for the emergence of certain objects and concepts,¹⁰ an interest that, in both cases, to a greater or lesser degree, has been stimulated by the thought of Michel Foucault.

Regarding the French philosopher, Daston points out:

But the shock waves triggered by Foucault's systematic attempts to write the history of the ahistorical - sexuality, the self, truth itself - reached far beyond the human and life sciences. Topics such as proof, experience, and objectivity, which historians had previously assigned to the timeless contemplations of philosophers, suddenly seemed enabled to historicize. Moreover, the Foucauldian mode of historical investigation of these ethereal abstractions was painstakingly concrete and fitted the new disciplinary consciousness of historians of science. It was close reading, archival research, and close inquiry into specific practices, not philosophical argument, or sociological analysis, that would produce the invisible history of objects that had become inevitable, providing the evidence for the history of the self-evident (2009 810).

As for Hacking, even though the conditions of possibility to which he refers are not strictly Foucauldian conditions of possibility, he has pointed out on numerous occasions the influence that the French philosopher's work has had on his own thinking in this regard, and has said that Foucault exemplifies what philosophy is for

¹⁰ This convergence of interests can be extended, for example, to other representatives of historical epistemology, such as Hans-Jörg Rheinberger, who uses the term *epistemology* to reflect the historical conditions under which and how things become objects of knowledge. His notion of epistemic things, in the sense of intrinsically historical objects, *coming into existence* (1997 4) in local experimental situations and situated in space and time, under certain technical conditions, and eventually disappearing, presents a close connection with Hacking's idea of historical ontology, but also with his notion of scientific reasoning style and his emphasis on the importance of experimentation and manipulation in science.

him: "[...] a way of analyzing and coming to understand the conditions of possibility for ideas" (Hacking 1988 38).

Although the text in which Hacking's interest can be seen earliest and most clearly is *the emergence of probability* (1975), it is also present in the taming of chance (1990), which shows under what conditions the emergence and construction of individuals is possible. Likewise, his books *rewriting the soul* (1995) and *mad travelers* (1998) study the conditions of emergence of the concept of multiple personality disorder and its relationship with memory and child abuse and the historical conditions of possibility for the emergence of the so-called compulsive travelers or run-aways, respectively. Finally, Hacking presents the *styles of scientific thought and action* as providing the conditions that make possible the emergence of concepts, objects, and classes proper to each style (Martínez 2021).

In Hacking's case we must speak of not only historical but also situated conditions. This raises an important contrast between Hacking, Foucault, and Kant. Although Foucault has repeatedly pointed out the Kantian heritage of his philosophical work, in speaking of the *historical a priori* he wanted to mark an important difference between his notion and the Kantian *a priori*. Foucault historicized Kant; he did not think of the constitution of moral agents as universalizable, but as constituted in a time and place, using materials that have a distinctively and historically formed organization. While the Kantian *a priori* refers to universally applicable conditions of possibility of knowledge, to constraints necessary for all possible experience, fixed in time, Foucault does not refer to any transcendental instance. The historical adjective of the Foucauldian expression intends to dissociate itself from this search for transcendental conditions of possibility of knowledge and to stick to its regular, but contingent, historical forms. The *historical a priori* seeks to establish the historical conditions of the statements, their conditions of emergence, their specific form of being, etc., as part of an already given history. Foucault argues with Kant that our thoughts and experiences occur within fixed categorical boundaries, but adds that these boundaries are contingent, the result of our history, and changeable from one epoch and one domain of knowledge to another. The historical *a priori* points to conditions on the possibilities of knowledge within a discursive formation,

conditions whose dominance is as inexorable, there, and then, as Kant's *synthetic a priori*. However, they are at the same time conditioned and shaped in history, and can be uprooted by a subsequent, radical, historical transformation.

Unlike Kant, for Foucault and Hacking the task is not to fix a primitive ontology, but to trace the mobile systems of relations and syntheses that provide the conditions of possibility for the formation of certain orders and levels of objects and forms of knowledge of such objects. It is to analyze a multiplicity of political, social, institutional, technical, and theoretical conditions of possibility, and to reconstruct a heterogeneous system of relations and effects. What he thus realizes is a form of historical intelligibility whose concreteness and materiality lies in the true irreducibility of the different orders of events whose relations he traces (Foucault 1980 243). That is to say, "[...] this historical ontology [...] must move away from all those projects that claim to be global and radical" (Foucault 2003 92).

It is in the same sense that Hacking's ontology is also not concerned with being in general lines. This is a constant in his work. The ontology proposed by Hacking is concerned with trajectories of being rather than with grand abstractions; It leaves aside the global theoretical debate to deal with some entities in a particular way. It also has the particularity of being a story that does not remain within the limits of an era but goes beyond them. That is why he speaks, for example, of the prehistory of concepts, of seeking clarity and understanding of these concepts by explaining how they originated. For Hacking, concepts have history, the objects of the human sciences have history, the forms of truth-telling have history, the forms of research have history. The conditions of possibility have history.

Hacking also goes beyond the epochal conditions in the sense conferred by Foucault as shared by all the knowledge of an epoch. The history of concepts and objects in Hacking are trajectories, despite their emergence in each context or style. In this sense, they are situated conditions. It is a history that does not so much attend to regularity in the Foucauldian sense, but rather to what each history (of a concept or an object) has of specificity.

Organizing concepts share these characteristics. They are also situated words, and this includes the actual utterances in which they are uttered or written, who

utters them and with what authority, what enables them to be transmitted, shared, repeated, abused, rejected, where they are uttered and for what purposes. A concept becomes feasible at a given moment; it is made possible by an ordering of ideas.

To make the history of a concept is not merely to discover its elements, but mainly to investigate the principles that make it useful or, eventually, problematic. Asserting that the ways in which the conditions for the emergence and changes in the use of a word determine the conditions in which it can be used can result in a complex methodology. However, that is what Hacking sets out to do in *the emergence of probability* about the concept of probability and what he theorizes in the third part of his article "Five parables. This is what he also does in *the taming of chance* by analyzing the historical and situated conditions of possibility of the emergence of current conceptions of chance, determinism, information, and control, how these conceptions were shaped and how the conditions of their construction limit our present ways of thinking.

5. CONCLUSIONS

In Objectivity, according to Hacking (2015 19), Daston and Galison analyze the sites in which the concept of objectivity and related words were used in the past three centuries, the practices within which they developed, who had authority when they used them, and the actual modes of inscription. Now, isn't this form of research that Hacking observes in the book by Daston and Galison (2007) the type of analysis that he himself carries out in the emergence of probability (1975) when studying, as we said, the conditions of possibility for the emergence of probability as an organizing concept? Isn't *the emergence of probability* like *Objectivity a third level research*, that is, the study of an organizing concept that organizes other concepts of a discourse that in turn speaks of other discourses that refer to the world (and does so taking into account the places in which that organizing concept develops and how it changes)? Is not the following double affirmation of historical epistemology present there? 1) at each stage of history there is a set of organizing concepts that play

a role like Kant's pure concepts in enabling us to make judgments and 2) they are not permanent. Is not this historicization of Kant along the lines of Foucault shared by both Hacking and Daston and other representatives of historical epistemology?

Historical epistemology, according to Fragio (2007), proposes the dissolution of the transcendental subject and the substitution of categories by the historical genesis of scientific concepts and objects with the consequent gnoseological, metaphysical and methodological consequences. The formation of the latter highlights the variability of the epistemic frameworks in which they make their appearance. Entities are no longer transcendental and the conditions of possibility of knowledge have ceased to be the combination in a necessary synthesis of the a priori forms of space and time with the empirical or phenomenal world. The conditions of possibility are immanent to the factual-representational, singular, and historical configurations in which science takes place. Scientific cognition is plural and is not determined once and for all.

In short, Hacking calls the analyses he carries out *historical metaepistemology* to distinguish them from reflections of the type proposed by Bachelard, and even historical ontology, an expression he considers more accurate for what he meant. He claims that, as he understands it, *historical epistemology* is not the right label for his works and that the very expression, which others use, has acquired a life of its own, but has only a tangential connection to his own intellectual life (Vagelli 2014 264-265). Nevertheless, I consider that the type of analysis Hacking carries out, not only in the emergence of probability, but in a good part of his work, interested in the historical conditions of possibility of the emergence of certain scientific objects and concepts, shares antecedents, features, and fundamental interests not only with dastonian analyses but, in general terms, with the so-called contemporary historical epistemology. These shared traits and interests provide, in my opinion, grounds to consider that his project not only provides a solid and decisive basis from which to develop such an epistemological proposal but may even form part of that heterogeneous set of research.

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