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Heterotopia as a Reconstruction of the History of Ideas: Michel Foucault's Archeology and its Appropriation by Ian Hacking

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Abstract:
This paper proposes an analysis of the work *The order of things* by Michel Foucault, based on the notion of *heterotopia,* to demonstrate that the author develops there an original procedure of re-reading the history of ideas, which consists of the rearrangement of elements canonized by historiography, creating new relations between them, as well as in the insertion of unusual or heterodox elements. We then show how Ian Hacking reappropriates this heterotopic procedure in *The emergence of probability and* how it influences the heart of the author's philosophical project, whose unique reading of archaeology brings it back to epistemology, either through the idea of "immature science" or through his notion of "styles of scientific reasoning." Understanding the conditions for the formation of our ideas denaturalizes our current ways of thinking, opening new possibilities for thought and action. The relevance and potential that this heterotopic procedure has for contemporary epistemology are thus evident.

Keywords: Foucault; Hacking; Archaeology; Heterotopia; Epistemology

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Introduction

Although many scholars recognize the importance of the archaeological method for the later development of Foucault's thought, the idea that genealogy is born from the need to correct flaws or gaps in archaeology remains strong and is linked to how the role of *The order of things*[2] is understood in the author's intellectual experience. In general, such a reading is linked to the fact that the archaeological trajectory culminated in this work where discourses are analyzed autonomously, apart from their relations with non-discursive practices.[3] In OT,

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[2] We will use the abbreviation OT to refer to this work.
[3] This idea is mainly due to Dreyfus and Rabinow, who claim that archaeology "failed" due to the "illusion of autonomous discourse": "the project of the Archaeology founders for two reasons. First, the causal power attributed to the rules governing discursive systems is unintelligible and makes the

Foucault studies the isomorphisms between the discourses that came to allow the constitution of our modern human sciences, without relating them to social, political, economic, or cultural institutions and practices, as he had done with medicine in *Birth of the Clinic*, or with psychology and psychiatry in *History of Madness*.

At the time of the work's release, Foucault received heavy criticism from representatives of the humanist currents that he criticized there, focusing on the fact that the *epistémê* (that is, the epistemological configuration of each epoch) functions as a structure and determines, before the subject, the historical possibilities of knowledge, which would make it have a deterministic character concerning human freedom. Moreover, it would allow pointing out ruptures and discontinuities without presenting their causes, which would consist of denial or "murder" of history and, therefore, of the *praxis* and conscious action of man in the world. The consequences of this in the political sphere would be reactionary, favoring the status quo. At the same time, Foucault was greatly criticized by historians who considered illegitimate his heterodox choices regarding the authors and thoughts that support the descriptions of *epistémê*s, as well as the unique temporal cuts and periodizations that he created.[4] The criticisms mentioned, added to the fact that the author himself modified the method and object of his later studies, ended up obscuring the importance and novelty of the epistemological method for analyzing the historical conditions of possibility of discourses that emerged there.[5]

It becomes patent, therefore, to demonstrate how the question of the historical conditions for the existence and functioning of discourses with a claim to truth allows us to modify these conditions and open the way for new types of discourses. This can be demonstrated through the notion of heterotopia, which we take as the guiding thread of OT's archaeological procedure. This notion, which appears only in the preface of the work in allusion to Jorge Luis Borges' Chinese encyclopedia, has the function of highlighting the importance of the space of order for the constitution of knowledge, by disturbing "all the familiarities of thought" and pointing to its limits. According to Foucault, Borges highlights this space of order and does so precisely by ruining it. We believe that Foucault does the same with the history of ideas. The mention of Borges would then be a way of presenting what the work intends to do, functioning as a metaphor for the archeological undertaking carried out in it: it is about analyzing the foundations of thought and what happens when they are shaken.

Second, it is worth investigating possible ways of continuing this archaeological method after Foucault. So far there are few initiatives of this kind, as far as studies with imminent epistemological interest are concerned, one of them being that of Ian Hacking, a

kind of influence the social institutions have (…) incomprehensible. Second, insofar as Foucault takes archaeology to be an end in itself, he forecloses the possibility of bringing his critical analyses to bear on his social concerns" (Dreyfus and Rabinow 1983, xxiv-xxv).

[4] According to Gutting, "of all Foucault's books, OT has been the most severely criticized by historians. Some see it as a free-floating prose fantasy rather than a serious work of historical scholarship. (...) Most historians who have discussed OT have found the more ambitious conjectures of its constructive history not only unsupported but also highly questionable. (...) Specialists in particular periods maintain that Foucault's characterizations of epistemes are gross oversimplifications that not only ignore important differences between individual figures but also contradict major aspects of the periods' thought" (Gutting 1989, 175-177).

[5] According to Philippe Sabot, "the set of debates and polemics that, around the question of structuralism, accompanied the publication of OT, led to (...) a double effect of ignorance. No doubt they contributed to its being thrown into oblivion (...): everything is happening as if the 'archaeology of the human sciences' represented a 'flaw', an unfortunate excrescence within Foucault's work, which the perspectives opened by earlier (on madness or illness) and later (on power, sexuality, the self) texts would have allowed being corrected, even erased" (Sabot 2006, 2-3).

philosopher of science who applied the method to a new object – the concept of probability. In this study, Hacking replicates the main heterotopic procedures we have identified in Foucauldian work, which aim to destabilize the canonical way in which the history of probability had been narrated until then, offering a new version of this history that, like OT, has renewed studies about its object. Hacking also appropriates OT's archeology in other ways, either with his notion of styles of scientific reasoning or in his way of defining the very task of philosophy. The Canadian shows us how Foucauldian archeology can renew epistemology, offering it new objects and original research.

Borges' Encyclopedia: Heterotopias and the Space of Order

The text that, according to Foucault, provoked the birth of OT is entitled *The Analytic Language of John Wilkins*. In it, Borges comments on the attempt of a 17th-century philosopher to create a universal language, which would organize and contain all human thought, based on a table that classifies all things in the world into 40 categories. Borges ironically compares this classification with that of

> a certain Chinese encyclopedia, entitled *Heavenly Emporium of Benevolent Knowledge*. In its remote pages, it says that the animals are divided into (a) belonging to the Emperor, (b) embalmed, (c) trained, (d) piglets, (e) mermaids, (f) fabulous, (g) loose dogs, (h) included in this classification, (i) that flutter about like madmen, (j) innumerable (k) drawn with a fine brush of camel's hair, (l) etcetera, (m) that have just broken the vase, (n) that from afar look like flies (Borges 1999, 94).

The fictitious classification of the encyclopedia makes explicit and exacerbates the absurdity of exhaustive classifications that claim to account for reality as a whole, highlighting the arbitrary and imprecise nature of all taxonomies. Borges, therefore, raises a question concerning language, the possibility of describing and organizing reality through it – the problem of the relationship between words and things. But he also raises a properly epistemological question, by stating that "the impossibility of penetrating the divine scheme of the universe cannot, however, dissuade us from planning human schemes, even though we know that they are provisional" (Borges 1999, 95). It is impossible to know reality in itself, but one cannot give up the pretense of knowing. This is why Wilkins' artificial language is not only the target of the author's debauchery but also of his admiration, as he recognizes the limitless possibility offered by language. If these totalizing schemes reveal the smallness of language before the world, don't they also show its greatness and infinite openness? The human capacity to create and recreate orders from different logics, offering us completely different visions of things?

Starting from the first mention of the encyclopedia, Foucault examines where the disturbance caused by Borges comes from. According to him, unusual encounters cause us strangeness, but many of them still take place in a coherent, apprehensible space. "It is there that they all have their commonplace, like, on the worktable, the umbrella and the sewing machine; if the strangeness of their encounter is manifest, it is on the basis of this *and*, this *in*, this *on*, whose solidity and evidence guarantee the possibility of a juxtaposition".[6]

[6] Foucault alludes to a phrase by Isidore Ducasse, the "Count of Lautréamont", which became an icon of Surrealism, as a reference to the processes by which the unconscious manifests itself in artistic creation. The author also stated that the concept of *epistémê* was intended to highlight the unconscious order that governs knowledge. Not in the sense of what escapes the consciousness of scientists, that is, a "negative version" of science - the "implicit philosophies", "unformulated themes", or "invisible obstacles". It is a "positive unconsciousness of knowing: a level that escapes

However, in Borges' classification, "the very common space of encounters is ruined" (Foucault 2007, XI). The rubrics of the encyclopedia have determinable meanings, separating mermaids and fabulous animals from those that are real, like piglets or loose dogs. Their monstrosity does not lie in the unusual encounters, but "in the narrow distance according to which real and fictional animals are juxtaposed": "what transgresses (...) every possible thought, is the alphabetical series (a, b, c, d)" (Foucault 2007, XI). There, the common space is none other than the "non-place of language," an abstract, empty space that offers no solid ground for the coexistence of such disparate beings, although it is possible only there. Borges' procedure is radical because it subtracts "the ground, the soil", the operating table:

> where (…) the umbrella encounters the sewing-machine; and also a table, a *tabula*, that enables thought to operate upon the entities of our world, to put them in order, to divide them into classes, to group them according to names that designate their similarities and their differences – the table upon which, since the beginning of time, language has intersected space. (Foucault 2007, XII)

The metaphor refers to the impalpable space of language and thought, highlighting the underlying order that governs the criteria by which we define similarity and difference. Worse than the uneasiness of the disorder generated by the approximation of disparate things, says Foucault, is that of the realization that there are a great number of possible orders. By ruining the commonplace, Borges generated in Foucault the laughter and uneasiness that gave rise to the work. The author then introduces the concept of heterotopia, defined from its opposition to that of utopia: "utopias console", whereas "heterotopias disquiet" (Foucault 2007, XIII). The former, having no real place, creates an ideal, wonderful space, which cannot, however, be accessed. Therefore, utopia ("non-place") is situated in the dimension of fable. Heterotopias, on the other hand, "secretly undermine language, because they prevent us from naming this and that, (...) they ruin beforehand the 'syntax', and not only that which constructs sentences – that less manifest one, which authorizes 'keeping together' (...) words and things" (Foucault 2007, XIII).

The object of the book would then not be the words or the things, but "that which authorizes keeping them together", this "syntax" that is not the grammatical syntax of the language, but another, previous one, which makes it possible. It is the cognitive, epistemological space that allows us to put language into operation and relate it to the world. Heterotopias contest "every possibility of grammar" (Foucault 2007, XIII).

Foucault analyzed the concept of heterotopia in a 1967 text entitled *Of Other Spaces.*[7] According to Defert, the author's use of this concept would be "totally different" from the one made in OT, in that it turns "no longer to an analysis of discourses, but of spaces" (Foucault 2013, 37). However, it would be fitting to ask whether such uses are indeed discrepant or whether this concept would have implications in both the political and epistemological fields. In the 1967 text, Foucault reaffirms that utopias are "allocations without real place", which "maintain with the real space of society a general relation of direct or inverted analogy. It is society itself perfected, or it is the inverse of society. Heterotopias, on the other hand, would be

the consciousness of the researcher and yet is part of scientific discourse as he contests its validity and seeks to minimize its scientific nature" (Foucault 1994 [2], 9).

[7] This text, although written in 1967, therefore a year after OT and within the archeological phase, was published only in the 1980s and tends to be read under the viewpoint of the later development of Foucault's thought, the genealogy of power, with the resistances and counter-conducts forged by subjected bodies.

> real places, effective places, places that are designed in the very institution of society and that are species of counter-allocations, species of utopias effectively realized, in which (...) all other real allocations that can be found within the culture are simultaneously represented, contested and inverted; species of places that are outside all places, although they are effectively locatable. (Foucault 1994 [4], 755)

The author then describes heterotopias from six principles.[8] The third of them states that they have "the power to juxtapose in a single real place several spaces, several allocations that are in themselves incompatible" (Foucault 1994 [4], 758), such as theater and cinema. In the case of the epistemological space, these would be domains of knowledge that are strange to each other, such as economics, philology, biology, and philosophy. The fourth principle is that they are linked to heterochronies, that is, they also represent cutouts or ruptures with traditional time, such as museums and libraries. Isn't this rupture with the traditional chronology of the history of science precisely what *epistêmês* propose? The sixth principle states that heterotopias have a function in relation to other spaces: they create spaces of illusion that denounce real spaces as even more illusory (as in the case of brothels), or spaces of compensation all the more perfect and organized as real space is disordered (as in the case of the Jesuit colonies in America). Wouldn't the construction of another order for the history of ideas (a kind of absolutely systematic "fiction", as OT is usually viewed) have the effect, after all, of denouncing traditional, continuist history as illusory?

The fifth principle states that "heterotopias always presuppose a system of openness and closure that at the same time isolates them and makes them penetrable" (Foucault 1994 [4], 760), that is, they are places where one cannot enter or leave without restrictions, such as prison. It becomes clear that heterotopias are bound to the current order, neither entirely within nor outside it. They move us between one and the other, and this connection is what produces contestation; after all, it is because utopias exist totally outside the current order that they do not challenge it. The clash between naturalized forms of the order and other possible forms provides "glimpses of the governing principles of order" (Topinka 2010, 60), without abandoning the latter, but rather destabilizing it.

> The ship is a floating piece of space, a place without a place, (…) and that was for our civilization, (...) the greatest reserve of imagination. The ship, that is the heterotopia par excellence. In civilizations without ships, dreams languish, espionage replaces adventure, and the police, corsairs. (Foucault 1994 [4], 762)

Thus, Foucault concludes this brief and beautiful text. The boat or ship is the heterotopia par excellence because it promotes the most radical displacement, the discovery of the unknown, of cultures with ways of ordering the world totally different from our own. In OT, Foucault reminds us that Borges gives the "words and categories without time or place" of the encyclopedia a "precise region": China, a country that represents for us Westerners, a radical otherness. But this strange space is not at all separate from our own: the Chinese encyclopedia classifies objects according to the abecedarian order of our Western alphabet. Its "ordering of extension" reflects that which is familiar to us, while simultaneously destroying it, by highlighting its mode of operation: enumeration, temporal sequence, categorization, totalization.

As a culture that privileges space over time, China exposes this space between words and things, which is why Borges uses it to create his heterotopia. This is also why Foucault uses Borges to explain what he wanted to do in OT: highlight the space of order under which

[8] The first is that heterotopias exist in every culture and civilization, being a constant of every human group, although they assume varied forms. The second is that a society can, over time, give new meanings to the same heterotopia.

our knowledge was constituted, through an experience of estrangement comparable to the anthropological or ethnographic experience.

> I wanted us to be able to consider our own culture as something also alien to us, like the culture, for example, of the Arapesh, the Nambikwara, or the Chinese culture (...) I believe that until now our own knowledge has never been considered as a phenomenon alien to us. (...) It is this ethnological situation of our knowledge that I wanted to reconstitute.[9]

In both OT and the 1967 text, Foucault does not exactly offer a definition of heterotopia, but rather descriptions of what they do. Following Topinka, we believe however, what defines them is their capacity to *make the order visible and legible* by mapping existing spaces (whether the epistemological, discursive space of knowledge or concrete physical spaces), functioning as sites of reordering.[10] By making the naturalized spaces of the prevailing order visible, they allow such order, hitherto implicit, to appear, but also to make its interstices, fissures, and limits[11] appear, announcing other possible forms of ordering.

The order requires a space for its constitution, and our thinking needs both to arrange things in specific places and to operate on them so that they make sense to us. If the objects of knowledge are indistinguishable, they also become unknowable. When we encounter the incongruous, the inconceivable, we need to turn to this space that sustains orderliness, and it becomes evident that our ability to know depends on it. If there is an invisibility to the dominant forms of order (political and epistemological), when we turn to this space and observe it from the outside, as an ethnologist of our own culture, we realize that it, like every space, has a history, as Foucault says in the 1967 text. If the epistemological space is that over which what appears to us as the "truth" is constituted, then the truth also has a history, and "it is upon this operating table that this history sits, waiting to be recovered" (Topinka 2010, 62).

Inspired by Borges, Foucault, with his heterotopia concerning the history of certain human sciences, removes the habitual space that supports our production of knowledge by highlighting the order that underlies it, based on historical continuity, on the idea of progress, and on the universality of the subject; he makes disparate objects coexist, by intersecting areas of knowledge that in principle are independent among themselves and in relation to philosophy; reveals, therefore, such usual order as arbitrary, but does so because it presents another possible order – based on discontinuity and on the historicity of the subject – which, nevertheless, remains linked to the first, since it makes use of procedures with methodological legitimacy, theories, and authors that make up the scientific and philosophical canon.[12]

In addition to affirming the inherent spatiality of our way of knowing, Foucault revealed the ground on which the history of ideas rested, allowing us to inquire more deeply

[9] Interview with Pierre Dumayet in 1966, in the program *Lectures pour tous*, available on the website of the publisher Gallimard. Free translation of the original audio.
[10] See Topinka 2010, 56.
[11] "Order is at the same time that which is offered in things as their inner law, the secret network according to which they look at each other in some way, and that which exists only through the sieve of a look, of an attention, of a language; and it is only in the white houses of this checkerboard that order manifests itself in-depth as already existing, waiting in silence for the moment to be enunciated" (Foucault 2007, XVI).
[12] Sabot analyzed archives of the National Library of France with the preparatory studies for OT, including more than 850 reading sheets, notes from Foucault's "intellectual diary", and handwritten versions of the book. He offers examples "in which archaeologization follows the veins of a constituted history of science and extends over a pre-established corpus", as in analyses of natural history based on the work of historian of science Henri Daudin (Sabot 2016, 755-756).

into "what is unconscious in the very thickness of what we think".[13] Making a critique of knowledge was the task that philosophy seemed to be responsible for, and, according to the author, "this experience of order, in its massive and primary being, always plays a critical role" (Foucault 2007, XVII).

Heterotopic Gestures in *The Order of Things*

Having defined the notion of heterotopia and its central role in OT, we must then illustrate how it functions throughout the work, since it is effectively cited only in the preface. There are numerous cases, which we could call "heterotopic gestures", that is, procedures of displacement or change in the position traditionally occupied by certain elements in the history of ideas, be they authors, currents of thought, or canonized historiographical theses. Since it is not possible to address all cases, we will present examples of the way Foucault describes *epistémês* and creates new relations, by which elements that seemed incompatible find the common space that allowed their coexistence, while others, at first congruent or consonant, are shown to be disparate or irreconcilable. These new relations offer historical explanations for discursive or epistemological phenomena rarely investigated in their simultaneity, such as: the coexistence of magic, science, and exegesis in the Renaissance; the emergence of philosophies of language and thoughts that study representation in the classical *epistémê*; or, in the modern *epistémê*, the emergence of Kantian philosophy alongside biology, economics, and philology.

Regarding the choice of authors, one notices a miscellany between marginal or heterodox authors concerning the historiographical canon and canonical authors who are, however, displaced from the positions they occupy – either by removing their centrality or by identifying it for unusual reasons. This results in a typical and recurrent OT operation: the claim that many of the most well-accepted theses in the history of ideas are nothing but misunderstandings or "surface effects" of more fundamental epistemological events, which only an archaeological analysis of knowledge can highlight by asking about the conditions of possibility.

The epistemological configuration of the Renaissance, marked by the similarity,[14] would be the first great OT heterotopia, for it is defined by ideas and knowledges that did not come to receive scientific status in our Western knowledge. Pierre Grégoire, Giovanni Battista della Porta, Ulisse Aldrovandi, Tommaso Campanella, Philippus Aureolus von Hohenheim (known as Paracelsus), Oswald Croll (Latin, Crollius), Girolamo Cardano, are all authors who, although recognized also for studies in domains of knowledge that came, in Foucauldian terms to become epistemological or scientific – such as anatomy, medicine, pharmacy, biology, botany, optics, physics, chemistry, mathematics, meteorology, law, and grammar, in addition to philosophy – are also linked to knowledges or practices such as alchemy, magic, occultism, natural religion, astrology, and demonology. Foucault identifies in this period an intrinsic relationship between scientific and non-scientific knowledge, which differentiates him from the traditional approach that sees in these authors precursors of future sciences, which would have developed and "purified" themselves, gradually getting rid of the remnants of magical thinking until they reached an objective and rational character.

[13] Interview with Pierre Dumayet (see note 9).

[14] To say that similarity defined the experience of order in this period means to say that things were ordered by knowledge from it. The condition of possibility for the knowledge of similarities lies in the principle that God marked things with external signs that allowed them to be identified, that is, it lies in the nature of signs themselves similar to what they indicate. This explains why Renaissance knowledge is presented in the form of semiology and hermeneutics, which allow one to know the signs themselves and, the other to make them speak and discover their meaning.

For Foucault, on the contrary, the link between magic, science, and erudition is foundational to the knowledge produced in this period.[15]

The heterotopic gesture of displacement of positions and relations between authors is strongly manifested in the famous refusal of the precursor. In the Renaissance *epistémê*, we find Andrea Cesalpino,[16] a 16th-century author who, unlike most of the others, is not linked to heterodox knowledges or practices. But the archaeologist aims only to show that the studies of this author, recognized as rational and scientific, do not contradict the logic of similarity that then ordered thought. "The old analogy of the plant with the animal (...), Cesalpino neither criticizes it nor puts it aside; he reinforces it, on the contrary, when he discovers that the plant is a standing animal" (Foucault 2007, 29-30). Moreover, by positioning Cesalpino in this *epistémê*, the idea that he is a precursor to Lineu, whose thought will operate on a logic entirely distinct from similarity, is dismantled. The same is done with Pierre Belon, a Frenchman who studied botany and dedicated himself to descriptive and classificatory studies of plants and animals, being also an author not linked to any "magical thinking". Belon is considered to have marked the beginning of modern embryology and comparative anatomy, notable for his analysis of similarities between the skeletal systems of humans and birds. According to Foucault, by comparing the wing to the hand, its extremities to the fingers, and the legs of birds to our heels, Belon was not laying rational foundations of the future comparative anatomy, for such a description "only proceeds from the positivity which, in his time, made it possible. (...) It is neither more rational nor more scientific than a certain observation of Aldrovandi, when he compares the lower parts of man to the infected places of the world, to Hell, to its darkness" (Foucault 2007, 31).

In the rupture that marks the passage from the Renaissance to the classical *epistémê*, appears the critique of similarity and the institution of comparison as the universal method for the construction of true knowledge. The ordering principle of objects becomes that of relations of identity and difference, which leads to a series of changes in the characteristics of knowledge, among them the separation between history and science. While allowing us to identify such changes – notably the removal of language from the world and its new status as an arbitrary and representational system – Foucault explains the emergence of certain domains of knowledge and their coexistence with others with which they seem to have nothing in common. In yet another important heterotopic gesture, he questions canonical views of the supposed rationalism of the classical period, the emergence of science and the abandonment of magical thinking. The approach by which "the seventeenth century marks the disappearance of the old superstitious or magical beliefs and the entry, at last, of nature into the scientific order" cannot restitute, as archaeology does, the modifications that alter knowledge "at the archaic level" of what makes it possible, as well as the mode of being of its objects (Foucault 2007, 75). Although mechanicism and the mathematization of the empirical are present in this period, the most fundamental thing resides in the relationship that all classical knowledge maintains with the *máthêsis*, understood as the universal science of measure and order. It would be wrong to define classical rationalism as the attempt to make nature mechanical and calculable. The relationship with the *máthêsis* "does not mean an absorption of knowledge in mathematics", and the proof of this is that, at this time,

[15] If the world is covered with signs left by God as marks to be deciphered, it is perfectly logical that knowing is synonymous with interpreting and that *divination* (in Latin, *divinatio*) is not a concurrent form of knowledge, but an immanent part of it. Predicting the future from present signs is an inference that goes from the sign to the relation of similarity that it designates. In the same way, the words left in the Scriptures and texts by the wise men of Antiquity (the *eruditio*) are also signs to be deciphered, having a deep relation of similarity with things.

[16] This author did vast work in describing and systematizing plant species, as well as studying the anatomy and physiology of human blood circulation. Historians consider his work *De plantis libri XVI* (1583), cited by Foucault, as the first book on botany, and claim its influence on Lineu, who is at the center of Foucault's classical *epistémê*.

empirical domains arise that did not exist until, in which there is no trace of mechanicism or mathematization, although they are based on a science of order: "their particular instrument was not the algebraic method, but the system of signs. Thus, appeared general grammar, natural history, the analysis of wealth, sciences of order in the domain of words, beings and needs" (Foucault 2007, 78-79).

This heterotopic displacement does not neglect or deny the elements canonized by the history of ideas – on the contrary, it offers an alternative space for it, without entirely abandoning its principles. Here, for example, Foucault claims that it is indeed in this period that science becomes autonomous and properly defines scientific rules and methods. In the same way, he destabilizes the position traditionally granted to Descartes as a precursor of this rationalism, without, however, eliminating the central place of this thinker by systematizing a method to reach truth and a science of order, excluding similarity as the first form of knowledge.

Another important heterotopic gesture consists of offering explanations for disparate phenomena, elucidating the common background that explains their coexistence. If in the Renaissance we saw the coexistence of magic and science, in the classical era we have the conditions of possibility for the emergence of analytical philosophies of language. There is a change in the status of the sign, which is no longer a figure of the world, established by God, and that existed independently and before the cognitive act. The relation of signification now takes place in our spirit, so that the connection of the sign with what it designates can be certain or only probable: "the knowledge that guessed, by chance, absolute signs and older than itself, was replaced by a network of signs built step-by-step by the knowledge of the probable. Hume became possible" (Foucault 2007, 83). In the face of this separation between words and things, arbitrary systems of signs allow for analysis with greater precision. Archaeology then shows that the "approach of all knowledge to language" and the quest to replace languages with artificial symbol systems of a logical nature are not the individual creations of thinkers like Hobbes, Berkeley, Leibniz, Condillac, and the ideologues, as one would think "on the level of a history of opinions." It explains how "a play of apparently contradictory simultaneous opinions" becomes possible (Foucault 2007, 83).

In his analyses of the empirical domains, Foucault shows how the general theory of signs and representation (which replaces similarity) operates in each of them. When speaking of natural history, he lists several canonical theses in order to deconstruct them and show their superficiality in the face of archaeological findings. The main one is that, in the 17th-century, a new "curiosity" for the life sciences emerged, manifested in the form of theoretical conflicts, such as between mechanicism and vitalism, fixism and transformism. Such conflicts, called "points of heresy", would only be "surface effects." The way they are elaborated is anachronistic, by presupposing modern categories that did not exist in the period, such as *life*. Natural history cannot be a biological proto-science because, in the classical period, life itself did not exist, but living beings, which emerged for knowledge through a conception of history different both from the histories of the Renaissance[17] and from the historicity of the living that will appear in modern biology. The historian ceases to be a compiler, but the sense of time here is neither that of a principle of development internal to the living being, seen as an organized system of functions, as it will be in the modern *epistémê*, being impossible to speak of precursors of evolutionism. Contrary to what one would think from the perspective of continuous progress of knowledge, a classical natural historian does not know more than a Renaissance compiler, quite the contrary. The latter described not only the anatomy of the animal but also ways of capturing it, allegorical uses, legends, etc. Hence another reversal concerning canonical theses: "natural history did not

[17] When signs were part of things, making the story of a plant or animal implied gathering everything that was *seen* and *heard* about it, the myths, everything that was *told* by the language of the world, that of nature, and that of men. That is why there were specific *stories* of different species.

become possible because it looked better and more closely. (...) the classical age strove, if not to see as little as possible, at least to voluntarily restrict the field of its experience" (Foucault 2007, 181).

Just as there is no biology in the classical age because the concept of life does not exist, "there is no political economy because, in the order of knowledge, production does not exist" (Foucault 2007, 227). Here Foucault also denounces the error of the "retrospective reading that would only confer on the classical analysis of wealth the ulterior unity of a political economy in the process of constituting itself gropingly" (Foucault 2007, 228). Historians suppose that in the classical period a scientific economy was not yet possible due to extra- and intra-epistemological factors, such as the existence of moral problematics of profit and conceptual confusions that were being undone in the 18th-century, such as the distinction between the theory of exchange price and intrinsic value, which allowed the analysis of the production mechanism. Little by little, economics would have established its theoretical bases, its own object, and its inner coherence. A great misunderstanding, because such concepts "were not thought out from a future that awaited them in the shadows, but rather on the ground of a rigorous and general epistemological disposition" (Foucault 2007, 229).

Again, archaeology offers us an explanation for the coexistence of disparate or inconsistent elements according to traditional explanations. The opposition between Physiocrats and Utilitarians is commonly justified in political or sociological terms, with the Physiocrats being landowners and the Utilitarians being merchants and businessmen. For the former, the value of a good arose from the fact that it was superfluous or surplus and could be put into the circuit of exchange, its primary cause being the fruitfulness of nature and exchange that which confers value, even if, because it is costly, it tends to reduce it. For the latter, value arises from the utility of a good, therefore it pre-exists the exchange and arises rather from lack than from excess, but exchange only increases it, since, whoever desires a good, values it more than whoever possesses it. According to Foucault, this is yet another "point of heresy" in which the same theoretical elements are arranged in reverse order. For both, all wealth is born of the earth, but some see superabundance where others see insufficiency; the value of things is always linked to exchange, but for some, the exchange is both a creator and a reducer of it, while for others, it does not create it, but increases it. For both, money is valued as the representation of the wealth in circulation. The supposed contradictions are sustained on a common backdrop – the role of representation as defining the space of order of classical knowledge.

The beginning of the rupture with this knowledge, from which modern political economy will be born, will only effectively occur when value is no longer linked to the exchange system (and to the necessity or scarcity that produces it) and arises from the productive power of labor, which causes Adam Smith to be considered the founder of this science, by introducing this concept. According to the archaeologist, however, the novelty brought by Smith marks the beginning of the transition but does not put the author in total rupture with the classical analysis of wealth, since, for him, labor is the measure and not the source of value. The latter is still born linked to the representational system of exchange. If Smith in fact innovated, it was not by "introducing" the concept of labor or using it as a measuring instrument, but by thinking of it as an absolute measure, not relative, so that the exchange value is not reduced to the needs or desires of men, "imposes itself on them from the outside: it is their time and effort" (Foucault 2007, 308). Smith's analysis relates work to laborious time, and thus points "to an anthropology that calls into question the essence of man (his finitude, his relation to time, the imminence of death)," opening up the "dimension of a possible history" (Foucault 2007, 309-310). Foucault displaces the central position granted to Smith without denying the relevance of his thought, emblematic of a transitional period in which knowledge will no longer be ordered on the basis of representation and will have temporal succession, that is, History, as its ordering principle. The total rupture with the

analysis of wealth occurs in fact with Ricardo, when he thinks of labor not as a measure, but as the source of value, causing the latter to stop being a sign and become a product. The fundamental figure of production appears, therefore, as the condition of possibility of the economy and introduces in it the dimension of time.[18]

Similarly, in the field of natural history, there is a partial transition with authors such as Jussieu, Lamarck, and Vicq d'Azyr. If, before, beings were classified based on a comparison of their visible structures, which performed representative functions, they will now be classified based on an internal principle, invisible and irreducible to representation: organization. It will be based on the essential functions of the living being, no longer on its description. This points to the emergence of the notion of life, since the relationships between superficial and hidden organs that ensure essential functions will be sought in the depth of the body. The predominant parallel in the age of representation between classification and nomenclature, between distinguishing and naming, is broken. This distinction, which "will render natural history obsolete" is, according to Foucault, due to "the genius of Lamarck," who placed the determination of the name and the classification of species (according to the internal organization) as two distinct tasks of botany. This is why the author "closed the age of natural history and opened that of biology," and not because he spoke of the progressive transformation of species, which leads historians to consider him a precursor of evolutionism. As with Smith or Descartes, Foucault displaces the role attributed to Lamarck, while still recognizing his relevance. The distinction made by Lamarck is brilliant because it modifies the methods of taxonomy without refusing its fundamental conditions of possibility. But it also points to the division between organic and inorganic, between the living being with essential functions and the non-living, the inert, the death that will mark the decisive break with natural history and the beginning of modern biology. This will only happen, however, with Cuvier, the author who frees the organic structure from its taxonomic function and thinks of it from the function performed by the organ. Since the living being is a complex and unified functional system, the notion of life emerges as a fundamental force that resists external threats, aiming to preserve itself in the face of death. Once again Foucault challenges the history of ideas by stating that it was Cuvier, and not Lamarck, who opened the possibility for Darwin's theory of evolution, since it would not be reduced to a continuous transformation of the species. Lamarck thought of such a transformation based on the ontological continuity of natural history, as an uninterrupted improvement of beings forming one from another. Cuvier, although considered a "fixist," banned transformation in order to think about the maintenance of the conditions for the existence of life from its own historicity, given by its relationship with changing environmental conditions.

The total rupture with the classical *epistémê* finds in philosophy one of its most manifest effects, and Kant's thought is the one that inaugurates the modern *epistémê*. Kantian critique removes thought from the space of representation, by posing the question of how consciousness can form representations, a question that simply had no place in the classical *epistémê*, where representation reigned in its absolute transparency. Kant asks what makes all representation possible, that is, he questions its foundation, its limits and

[18] In this sense, another controversial heterotopic gesture consists in the claim that Marx's thought is based on the same epistemological ground as Ricardo's. For both, time reduces the resources available to man, and man finds himself increasingly threatened by death. On the same basis, the authors present alternative theories of historical becoming, Ricardo with the "pessimistic" view of stabilization in a permanent state of scarcity, with history compensating human finitude by a self-limitation of rarity; Marx with the "optimistic" view by which history leads to the apex of scarcity and inequality but is reversed by the emergence of a new consciousness among men. Labor as an alienated form of finitude then shows itself not as natural but historical, dialectically transformable into a disalienated relation. Two opposite ways of dealing with the same triad history-anthropology-suspension of becoming.

conditions of possibility. The separation between being and representation embodied by Kantian critique has as an important consequence "the simultaneous emergence of a transcendental subject and new empirical fields" (Foucault 2007, 335), which explains the coexistence of Kantian philosophy and the new human sciences that gain positivity from these new empiricities – life, work, and language.

As it is not possible to discuss all the heterotopic dislocations of OT, it is only worth noting that one of the most remarkable of them resides in what would be the counterpart of the famous thesis of man's "death" – that is, his moment of birth, which takes place here, in Modernity. To affirm that it is at this moment that man emerges to knowledge as an epistemological figure is no less controversial a thesis than the one that announces his disappearance. But such a statement is due to the fact, although not always well understood, that Foucault is talking about man as an empirical-transcendental double. That is, the moment in which he emerges properly to knowledge as an object of knowledge (with the new human sciences) is also the moment in which he discovers himself effectively as a subject of this same knowledge, which is when his representations about the world cease to be transparent and are questioned in their foundation.

Heterotopia in Ian Hacking

The emergence of probability,[19] as well as the book that follows it, *The taming of chance*, according to Hacking, were conceived as contributions to what Foucault called the history of the present. After all, we live in a world where everything comes to us through probabilities and statistics: sports, sex, drugs, sleep, cancers, muggings, earthquakes, global warming... Even for physics, we live in a universe whose fundamental particles are waves of probability. But when and how did we come to live in a world governed by probability? How did "chance pass from what Hume called the 'superstition of the vulgar' to become the foundation of the physical world and the cement of the social universe?" (Hacking 2006, 15).

Hacking says he sought an explanation for Foucault's OT diagnosis of the moment when "Hume became possible": "philosophical problems are created when the space of possibilities in which we organize our thoughts has mutated. Following this speculation, I have given my own explanation of 'how Hume became possible'" (Hacking 2009, 26). The work is pioneering on the topic and opened up a whole new field of study on the idea of probability. In it, the author argues that such an idea emerged around 1650 as part of "a certain organization of concepts which persisted. The tensions in that new system of thought arose in part from a submerged residue of the preceding arrangements with which there was a radical break" (Hacking 2006, 12-13). Such a rupture takes place at the moment where Foucault identified the shift from Renaissance to classical *epistémê*, with the transition from one organization in terms of resemblance to another in terms of representation, so that Hacking applies this central OT thesis, as well as its chronology, to a new object.

The emergence of probability is demonstrated by the simultaneous appearance of disparate phenomena that, to the archaeologist, are part of the same formation - at once, statistics appear in law, mathematics, economics, and even theology. This process of emergence conditions the later development of the theory, that is, we can understand the structure of current problems regarding probability by understanding what made this concept possible. This is an important lesson resulting from the archaeological method, which Hacking calls

[19] In the 2006 second edition of the work, Hacking inserted a preface explaining Foucault's influence. "It was the first long piece of writing, in any language, that captured, adapted and applied the new kind of analysis that Michel Foucault called archaeology. (...) I hardly ever acknowledged debts to Foucault, because I wrongly thought they were obvious and did not need to be stated" (Hacking 2006, 10).

> an anti-positivist model which, for all its obscurity, may at this point have some appeal. We should perhaps imagine that concepts are less subject to our decisions than a positivist would think, and that they play out their lives in, as it were, a space of their own. If a concept is introduced by some striking mutation, as is the case with probability, there may be some specific preconditions for the event that determine the possible future courses of development for the concept. All those who subsequently employ the concept use it within this matrix of possibilities. Whatever the overall value of this strange model in the history of ideas, we can at least agree that since 1660 the concept of probability has been curiously autonomous and steadfast to its origins. (...) perhaps an understanding of our space and its preconditions can liberate us from the cycle of probability theories that has trapped us for so long. (Hacking 2006, 39-40)

Like Foucault, Hacking displaces what is most canonical in the history of ideas and begins his book by enumerating different theories about the emergence of probability, to argue that they all lie "on the surface of things". It is considered, for example, that the origins of probability would lie in Bayes in the 18th-century, but "from an archaeological point of view this is incorrect". This author "was a memorable figure on the surface of things. Most of the important new transitions in probability occurred after the Napoleonic era and were caused by events in which probability was never mentioned" (Hacking 2006, 14).

The emergence of probability was a more fundamental change than any revolution: a "new thinking cap".[20] This notion currently carries two dimensions: an objective aspect, linked to facts, to the frequency with which certain types of events occur, and a subjective aspect, linked to the degree to which we trust something we are not completely sure of. This dual aspect, identified since its beginnings, is what allows us to say that it was born in 1660. Before this date, it appears sporadically in the history of ideas, but in other forms. We see here another central similarity with OT: if Foucault claimed that man is a recent figure in our history of ideas, it is because he spoke specifically of this as an epistemological figure marked by the empirical-transcendental double. The man may have been present in our discursive practices under various forms, but the peculiarity of the way we think of him today was born precisely in modernity.

According to Hacking, a current thesis is that, until the 17th-century, an obsession with determinism prevented any thought about randomness, to which he responds by claiming that this is an anachronism. The model of determinism invoked only became dominant in the 17th-century, so that "Europe began to understand concepts of randomness, probability, chance and expectation precisely at that point in its history when theological views of divine foreknowledge were being reinforced by the amazing success of mechanistic models" (Hacking 2006, 29). Paradoxically, the problem of chance and probability emerges as an object for thought while "mechanical" determinism is strengthened, the latter having in fact been necessary for the formation of those concepts. This is a typical heterotopic "inversion": instead of explaining the absence of probability before the 17th-century by the fetish with determinism, it must be explained precisely by the absence of such a fetish.

Other explanations for the emergence of probability that Hacking refuses are those strictly external or internal to the theories of the time, as Foucault does in his analyses of the political economy. An external explanation, for example, says that the stimulus for the development of probability theories came from economic needs. However, problems related to probability already existed before the 17th-century but could not yet be solved. There is also an inside story: mathematics would not be rich enough to generate the probabilistic

[20] When talking about revolution, Hacking is dialoguing with Kuhn, to argue that Kuhn's concept of "scientific revolution" cannot account for such an event, which, however, can be better explained by the Foucauldian archaeological model.

calculus. But, says Hacking, the concept of probability requires only simple arithmetic: why didn't it develop in the Western world before Pascal? The answers usually resort to these elements: a deterministic view of the world, belief in the gods, the lack of a local numbering system, and economic incentive. But such explanations are mistaken because they try to find what was missing in the pre-Pascalian period for the concept of probability to be thought of, taking for granted the very existence of such a concept as an intellectual object. This would only make sense if the "conceptual scheme" of the time contained a concept of probability. "No one denies that arithmetic and nascent capitalism were lacking, nor that one or the other may be essential for the development of probability theory, once probability is a possible object of thought" (Hacking 2006, 34). But the question to be asked is not why people did not study these objects, but rather how they came about, how they became possible.

Hacking takes one of the main legacies of OT seriously, which analyzed the emergence of certain objects of knowledge – life, work, and language – based on the search for their epistemological conditions of possibility, showing that it is wrong to retrospectively narrate the history of ideas based on the patterns of our current rationality, that is, to think of the previous periods based on what was missing or insufficient in their configurations of knowledge. Hacking does not speak of *epistémê* as Foucault does, but rather of a conceptual schema, a choice relevant to thinking about the usefulness of archaeology for epistemology. In the same way, instead of talking about archeology, Hacking talks about "prehistory", another interesting way of interpreting Foucault's choice of terminology: it is about investigating what happened before a certain object of knowledge emerged and began to have a history. The importance of such a study lies in the fact that the way an object emerges for knowledge determines the space within which it can be thought from then on, so that understanding such an emergence can radically modify the way we think today – hence the political dimension of this epistemological gesture.

> The preconditions for the emergence of probability determined the space of possible theories about probability. That means that they determined, in part, the space of possible interpretations of quantum mechanics, of statistical inference, and of inductive logic. (...) It makes the prehistory of probability more important than the history (Hacking 2006, 35).

It is also worth noting how the Canadian philosopher, like Foucault, repositions certain widely accepted landmarks in the history of ideas. He states, for example, that Blaise Pascal is indeed a determining author for the emergence of probability, as is widely recognized, but not because of his correspondence with Pierre Fermat, considered an emblem of this emergence because it contains the resolution of two problems through the use of the arithmetic triangle. On the contrary, such correspondence would be "a minor incident in the history of mathematics" (Hacking 2006, 13). Pascal's importance lies in having identified the structure of decision theory, which comes about when he discusses the choice of the atheist in a Christian world. We have seen how Foucault does something similar with some memorable names in the history of ideas, such as Lamarck, Descartes, and Adam Smith.

Since it is not possible to address all Hacking's procedures that could be called "heterotopic", it is also important to point out that the archaeological influence in *The emergence of probability* goes beyond what is analyzed in this text. We seek only to point out that one of the central aspects of this method, linked to the notion of "heterotopia", is strongly present in this appropriation that the Canadian philosopher makes of Foucault's work.[21] Finally, we would like to emphasize the centrality of such appropriation for Hacking's

[21] In this sense, we must also note that Foucault's influence on Hacking goes beyond the 1975 book, and is also evident in other works by the Canadian philosopher, which also incorporate the archeology of knowledge (as in *Why Does Language Matter to Philosophy*?, 1975), as well as the genealogy of power

philosophical project as a whole. From it springs his own conception of philosophy: "a way of analyzing and coming to an understanding about the conditions of possibility of ideas" (Hacking 2009, 92). The fundamental contribution of archaeology would lie in creating a method for thinking about something that epistemologists had not yet dealt with, "immature science." That is, it is about "investigating the preliminary workings of bodies of knowledge" (Hacking 2009, 104). Rather than a body of theses, one seeks *systems of possibilities*, which define what is possible to say in an epoch, allowing one to find order in "rudimentary domains": "what counts as a reason or evidence may be part of a system of thought, such that modalities of 'rationality' are topical and dated" (Hacking 2009, 105).

When it comes to reflective discourse, there is always a process of object constitution that takes place in – and by – discourse itself, and the one who teaches us this is immature science. But "what if no science counts as mature?" (Hacking 2009, 103). There is something "immature" about all knowledge, so that "trying to understand how objects constitute themselves in discourse" is one of the tasks of Hacking's philosophical project, which he titles, using a Foucauldian expression, as a "historical ontology"[22] (Hacking 2009, 114). Foucault used this expression to refer to a study that concerned the "truth by which we constitute ourselves as objects of knowledge," the "power by which we constitute ourselves as subjects who act upon others", and the "ethics by which we constitute ourselves as moral agents" (Hacking 2009, 14). According to Hacking, his historical ontology would be close to what has been called "historical epistemology", or, more specifically, to what he calls "historical metaepistemology", since it is not about seeking foundations for knowledge (which the term "epistemology" often suggests, especially in English-speaking analytical philosophy), nor is it about proposing or refuting theories of knowledge, as Bachelard would have done, using this label to qualify his studies. Historical metaepistemology, as done by authors such as Lorraine Daston, takes as its object the epistemological concepts themselves, that is, the organizing ideas of the field of knowledge and science (that is, notions such as "truth", "knowledge", "objectivity", "reason", "fact", etc.), considering them as historical objects, which change over time.

> Where Bachelard insisted that historical considerations are essential to the practice of epistemology, the historical metaepistemologist examines the trajectories of objects that play certain roles in thinking about knowledge and belief. (...) Historical metaepistemology, thus understood, fits into the generalized concept of historical ontology that I am now developing (Hacking 2009, 22).

The main differences between the two, however, or what singularizes Hacking's philosophical project is, first, the fact that historical metaepistemology investigates the coming into existence of objects *as objects of scientific inquiry*, whereas his historical ontology "concerns objects, or their effects, which do not exist in any recognizable form until they are objects of scientific study" (Hacking 2009, 23). If Daston is interested in how certain phenomena and objects (such as atoms, tuberculosis bacilli, and centers of gravity, for example) come into existence and disappear as objects of scientific investigation, many of them certainly existed in the world long before they became objects for science. Hacking, on the other hand, is interested in the very emergence of previously non-existent objects and phenomena, that is, not in the "coming into existence of objects of study, but in the coming into existence of objects, period" (Hacking 2009, 23-24). Moreover, and above all, his historical ontology must maintain a close connection with the three Foucauldian axes of

and ethics, which is evident in works such as *The Taming of Chance* (1990), *Rewriting the Soul* (1995), and *Mad Travelers* (1998).

[22] The expression is taken from the text *Qu'est-ce que les Lumières?* [*What is Enlightenment?*] (In: Foucault 1994 [4], 562).

knowledge, power, and ethics. This being so, within the realm of science, there are many objects and phenomena that did not exist in the world in any form until they were forged by human knowledge and *praxis*. Nonetheless, not all of them will be objects for historical ontology insofar as they do not fit these three axes, giving sight to some process of constituting ourselves – either as objects or subjects of knowledge, or as moral agents.

The Canadian philosopher gives an epistemological focus to the Foucauldian expression "historical ontology" by saying that he wants to reflect on "how our naming practices interact with the things we name", which could define him as a "dynamic nominalist", or even "on the interactions between what exists (and what comes into existence) and our conceptions of it", also being a "dialectical realist" (Hacking 2009, 14).[23] At the heart of this ontology is the thesis of the existence of what the author calls "deep-level knowledge," Foucault's *savoir*":

> a framework within which surface assumptions acquired their meaning. *Savoir* is not knowledge in the sense of a handful of solid propositions (...) [but] a postulated set of rules that determines what kinds of assertions will count as true or false in some domain (Hacking 2009, 93).

Given this, it is evident how the notion of "styles of scientific reasoning" is tied to this Foucauldian legacy. According to Hacking, "whether or not a proposition is available as a candidate for being true-or-false depends on whether we have modes of reasoning about it" (Hacking 2009, 180). These "modes of reasoning", which have much in common with Foucault's "epistemological configurations", emerge historically, which makes for different styles of scientific reasoning. "Each of them came to the fore and came to maturity in its own time, in its own way" (Hacking 2009, 180), and an important part of the Canadian philosopher's project is to understand these various types of reasoning used in the sciences. Hacking lists six styles, following the historian of science Alistair Crombie:[24] (1) the simple postulation established in the mathematical sciences; (2) the use of experiments, observation and measurement of observable relationships, or what he calls "laboratory-style"; (3) the hypothetical construction of analogical models; (4) the ordering of variety by comparison and taxonomy; (5) the statistical analysis of regularities and the calculation of probabilities; and, (6) the historical derivation of genetic development. It is worth noting that among them are the statistical style studied in *The emergence of probability* and the classificatory/taxonomic style studied by Foucault in OT.

[23] Some of these objects whose "coming to be of their own possibility" interested Hacking, and which resulted in some of his books, are the concept of "psychic trauma", whose emergence modifies our constitution of selves, the notion of "child development", which organizes our thinking about children, as well as the very idea of "probability" already discussed, which "has totally modified our experience of the world" (Hacking 2001, 2). In explaining the use of the term "ontology", the author says he is interested in "everything we individuate and allow ourselves to talk about. This includes not only 'material' objects, but also classes, types of people, and, indeed, ideas" (Hacking 2009, 14). "Historical ontology is about the ways in which possibilities of choice, and of being, arise in history. It is not to be put in terms of grand abstractions, but in terms of the explicit formations in which we can constitute ourselves, formations whose trajectories can be plotted as clearly as those of trauma or child development, or, to a second degree, which can be followed more obscurely by larger organizing concepts such as objectivity or even facts themselves. Historical ontology is not so much about character formation as it is about the space of possibilities for character formation that surrounds a person and creates the potentials for 'individual experience'" (Hacking 2009, 36).

[24] Hacking claims to have taken the term "style" from Alistair Crombie and adapted it to metaphysics and epistemology, changing the idea of "style of scientific thinking", used by the historian, to that of reasoning. "The reason is that thinking is very much in the head. Reasoning is done in public as well as privately: thinking, yes, but also talking, arguing, and showing" (Hacking 2009, 202).

A style of reasoning introduces new ways of finding the truth, insofar as it defines its own criteria of proof and demonstration. "A style of reasoning is more than a set of techniques designed to bring out new kinds of facts, to integrate them into this universe in which we live, think, and act together. I argue that a style creates its truth criteria, it self-justifies itself" (Hacking 2001, 3). To say that the way a proposition points to truth or falsity depends on the style of reasoning appropriate to it is to say that, if there is no certain "configuration" of thought that allows us to elaborate a certain proposition and, above all, that offers us an appropriate way to verify it, it does not become possible. What matters for epistemology would then not be bivalence (determination of truth or falsity), but the fact that a proposition is available as *a candidate* for truth or falsity, that is, its condition of possibility.

According to Hacking, one is not denying the objectivity of scientific propositions by claiming that each style introduces the criteria that determine the truth conditions proper to the domains to which they apply, in other words, that the very thing that counts as objectivity is defined by the styles of reasoning we employ. But there is a germ of relativism there: "although which propositions are true may depend on the data, the fact that they are candidates to be true is a consequence of a historical event" (Hacking 2009, 187), namely, the emergence of a certain style of reasoning corresponding to them.

Conclusion

The notion of "style of scientific reasoning", although influenced by several other authors, is strongly indebted to the central thesis of *The order of things*, according to which it is necessary to understand the conditions of possibility that allow certain objects to emerge for knowledge and for statements to be made about them, insofar as this process of formation also allows us to understand the epistemological configuration within which our thinking operates at the present moment – and thus also to modify it.[25]

In this text, we seek to show how this thesis is built in the Foucauldian work linked to a central aspect of the archaeological method, which resides in the notion of "heterotopia," forged by Foucault to express the inherent spatiality of the knowledge process, as well as the need to create other possible orders to structure the history of our Western knowledge. By denaturalizing the epistemological order space that is familiar to us, the heterotopic procedure reveals what is unconscious and arbitrary in this space, allowing us to understand the common background between objects and phenomena that seemed extrinsic to each other, as well as to highlight the difference and historical novelty where we saw only similarities and continuities.

By appropriating this archaeological method, Hacking not only demonstrates that it can be developed and applied to new objects, but also systematizes some of its main theses, demonstrating its relevance and potential for contemporary epistemology – such as the claim that it is the only method so far developed to deal with "immature science", or the way his notion of "style of scientific reasoning" is indebted to the idea of "historical condition of possibility" of statements.

The Canadian philosopher's historical ontology is distinguished in that it concerns objects that do not exist until they are objects of scientific study. These "entities that come to be (...) as objects of knowledge reveal new possibilities for human choice and action"

[25] In this sense, Hacking claims that the notion of "style of scientific reasoning" certainly leads to the inference that "there are other categories of possibilities beyond those that have emerged in our tradition" (Hacking 2009, 196) and that "to compel people to reason in approved ways is to limit us and our potential for novelty" (Hacking 2009, 183). "Our general interest in truth and reason may well benefit from allowing other styles of reasoning to evolve in their own ways, freed by a more magnanimous kind of rationalism" (Hacking 2009, 198).

(Hacking 2009, 16-17). If our discursive practices constitute the objects and rules of operation of our knowledge, the things and phenomena that exist or may come to exist depend on the possibilities we create to say and produce them, which allows us to state that it is, as in Foucault, not only a historical epistemology, but also a political one.

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