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Article

Magic vs. Science in the Historiography of Science: The Social-Historical Construction of Rationality

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Abstract:

The historiography of scientific studies has suffered from a great impact, that is rarely referred to, from anthropological analyses of magic in so-called primitive societies. The emphasis brought by criticism during the 1950/1960's of Evans-Pritchard's 1937 classic, *Witchcraft, Oracles and Magic among the Azande*, brought a fresh look at certainties already consolidated in Western thought, especially those relating to rational human characteristics and science. For the history, these criticisms were interesting because they were presented science as a historically situated activity, in the same way as magic. It favours, therefore, the proximity of historians *tout court* with the history of the sciences that resists its absences even today. This renewal helped to create a scenario that would enable David Bloor to develop the strong program of Sociology of Knowledge in the 1970s. Such a program indicates the analogous process that involves both the social production of beliefs and that of scientific truths. The comparison between magic and science usually presents them in a hierarchy. As if there were an evolutionary process in which magical thinking necessarily preceded scientific thought. The one, more precarious, would belong to the prehistory of the scientific thought, which would be the climax of modern rational action. In this paper I evaluate the proximity of magic-science from the point of view of contemporary studies about scientific activity, questioning the concepts of rationality and logic as if they were exclusive qualities of scientific activity. A kind of metaphysical gift that would show the superiority of individuals over others, as much as of science over magic. I give special emphasis to the exposition of how rationality and logic are socio-historical characteristics acquired throughout history by human subjects in their experiential practices, and which are present both in magic and technical activities; these, an embryo of science.

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Keywords:

Science and Magic; Rationality; Logic; Historiography of Science

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There is no group of people, no matter how primitive, without religion or magic. Just as there are not, by the way, any wild races that have no scientific attitude or science, though this

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fault is often imputed to them. In all primitive societies, studies by competent and trustworthy observers, detected two perfectly distinct domains, the Sacred and the Profane; in other words, the domain of Magic and Religion, and of Science.

(Malinowski 1954, 17)

A Simplified Orthodox Perception: What is the Difference between Magic and Science?

This is a non-issue for classical historiography of the sciences. In this historiography, the distance between science and magic is evident, something trivial to be measured. The distinction between them is flagrant. One is the most illustrious exponent of human rationality, while the other, in the penumbra of reason, shows the irrational in action. One is consistent with logic and walks straight along the paths of truth-seeking, the other follows a tortuous obscure pathway in which contradictions and inconsistencies become the rule. Along this path traced by magic, there is the absence of logical reasonableness, only unjustified credulity materially feeds deceptions and severe errors. In it, one does not know the truth, but it is believed that something, often improbable, is true. In magic, truth is given by either the oracle or by some magician, or in other words, given through subjective expectations in fantastic powers. The objective reality of nature, cultivated in science, receives the complement in magic, of another reality, which is the supernatural. In magic, what is supposed to be true appears complete and finished, as unlikely as it is. In science, the truth of facts stems from empirical research under the compass of reason, and must be proven in practical reality. The scientific propositions obey a logical correspondence with the events of the natural world. This natural world is the recipient of scientific investigations, yet already in magical perceptions, the world expands to the supernatural. In magic, what is beyond the apparent objective reality of nature, is that which is the reason for an empirical reality. There is an unquestionable magic and mystical truth guiding the natural facts. While in science everything can be questioned by new facts that prove the logical or empirical inconsistency of previous truths. In this way, science and magic are shown to be incompatible with each other. They direct two immiscible insights that seek answers and which tend to explain the world in two different ways.

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The Relation between Science and Magic: Impacts on Historiography

In the late 1950s and the early 1960s, both the historiography of science, in particular, and that of human knowledge in general suffered a major shake-up. This is the setting for the appearance of Thomas Kuhn's *The Structure of Scientific Revolutions* in 1962. In these days it became common to reread the classic work of the anthropologist Evans-Pritchard's *Witchcraft, Oracles and Magic among the Azande*, from 1932. This re-reading involved authors of social sciences interested in the issue of knowledge, such as Michael Polanyi and Peter Winch.²

The new emphasis stemming from the new analyses of Evans-Pritchard's text, focused on highlighting the opinions of this author whose aim was to show how the Azande possess

² It is, at the very least, a curiosity still little understood as the history *tout court* has remained distant from these events. That seems to confirm my thesis of the "history of sciences being an enterprise of absent historians" (Maia 2013).



a rational system of beliefs, besides investigating how this system manifests itself in social behaviour.³ Such a system of beliefs would allow the Azande to understand their collective life, their personal destinies, their successes and misfortunes. However, although Evans-Pritchard perceived an internal coherence in such a system, he reports various inconsistencies in the explanatory forms of the Azande. Particularly in that who or what is defined as a witch, is the one capable of producing harm to others. Heredity would be the basic factor of this determination, however it would not within itself be the guarantee of witchcraft. One should consult the oracle to verify if such an individual is, or is not a witch. And even then, the result is not definitive. Determining the condition of witchcraft becomes an imbroglio that is difficult to solve, even generating some contradictions.

Evans-Pritchard himself indicates situations in which deceptions and tricks of supposed wizards are used to deceive and thus escape their accusations. The explanatory haze used by the Azande prevents them from restraining themselves to the logical consequences of their definition of witchcraft as something organic and hereditary. There are several socially sanctioned forms that allow the accused to question his wizard status. Evans-Pritchard notes that such logical contradictions in the Azande belief system appear to be inherent in the system itself. And this fact – the logical contradictions – involves the *Witchcraft, Oracles and Magic among the Azande* text, and provides great interest to philosophers and social scientists. The discussion revolves around the kind of rationality that supplies a “primitive” society and the conditions of scientific knowledge. As can be seen from the text, the Azande have a technical knowledge that allows them to produce a society that provides a practice in the social life of its members that meets their material needs. Magic is a component of the social fabric that participates in all forms of life of the Azande, and favours the goals of its actions. The magic and technique developed in practical life are not in opposition. Both belong to that cultural form.

Peter Winch was the reader of these issues that most impacted historiography when writing on the subject in the 1950s and 1960s. Although posterity considers it a fundamental landmark in the theoretical-methodological discussion for the social sciences, some criticisms have emerged regarding aspects of its intercultural analysis.⁴ For Winch, there is a harmony between the ways of thinking and acting in society. Thus, the Azande's understanding of the world and of life is derived from their ways of living, that is, the meanings extracted by the participants of a given culture are inherent in that culture. The Azande's understanding of the world is due to the way of life that sustains them. They are two inseparable things: the way they live and the sense that is drawn from this way of living. A particular action is not understood as something isolated, in itself, but only in the context that gives it meaning, in comparison with the other cultural manifestations.

This proposal had already been stated in Winch's previous essay (1967), *The idea of a social science*, of 1958. Later in his 1964 text, more specifically, *understanding a primitive society*, Winch (1994) details his propositions by bringing into focus his precise criticism of *Witchcraft, Oracles and Magic among the Azande*. In referring to the analyses of the practices of a so-called primitive society, Winch declares:

³ “The Zande mentality is logical and inquisitive, within the premises of its own culture, and insists on the coherence of its own language” (Evans-Pritchard 2005, 47).

⁴ See Robin Horton, “Professor Winch on safari”. in Horton 1993, 138-160. Horton summarizes the main criticisms received by Winch from various authors, (Horton 1993 406, n. 3) The title of Horton's article is an ironic indicator of his assessment by mentioning that Winch's work resembles a safari – the type of expedition in which nothing is learned with rigor about the place and its strange habits (Horton 1993, 409, n.65). For Horton, Winch – despite being a noted social science methodologist – has submitted to proposals of the counterculture that take it to a position of antipathy with the scientific activity. Horton says: “They (his writings) are a crusade, against the allegedly overweening claims of science, and in favor of all those modes of thought whose aims are incommensurable with those of science” (Horton 1993, 159).

when we speak of such practices as “superstitious”, “illusory”, “irrational”, we carry the weight of our culture behind us; and this is not just a matter of being on the fairer side, because these practices and beliefs belong and derive, in the sense they seem to have, from that same culture. (Winch 1994, 42)

In 1958, Winch already clarified that: “ideas cannot thus be wrenched from their context; the relation between idea and context is an internal relation. It’s meaning stems from the role it plays in the system” (Winch 1967, 107). Or, six years later: “Meaning only becomes manifest in terms that are culturally related” (Winch 1994, 42).⁵

In this way, each culture provides an intelligibility of the world, an intelligibility that is shared by the members of that culture. It would be a serious prejudice to suppose that our culture alone favours a certain understanding of life, of ourselves, and of the world. Quoting Collingwood, Winch defends that “some accounts of magical practices in primitive societies offered by ‘scientific’ anthropologists often mask ‘a half-conscious conspiracy to bring into ridicule and contempt civilizations different from our own’” (Winch 1967, 103).

Following this perception, we find no reason to be surprised at the assertion that each culture authorizes and formulates meanings for the world and that such meanings have no reason to be “lesser” or less suited to human life than ours. After all, the historical duty is such that societies and human groups follow each other by transmitting their cultural contours for the future. All societies before ours allowed human life to be realized and gave continuity to the human historical trajectory, independent of its “successes” or “mistakes”. In this sense, the so-called primitive societies were successful, they fulfilled with what is to come, and they favoured the formation of our history.⁶

This understanding of society and the social sciences is supported by Winch in the later Wittgenstein manuscript, *Philosophical Investigations*. For this author, social relations are based on the act of “following a rule”. Human actions in society result from the sharing of rules that are followed collectively.⁷ Everything happens as if society were ordered in games with specific rules, built by itself, to be obeyed. Living in society is based on not breaking the rules of the game, although in a sense, breaking the rule is also a possibility and thus a kind of rule. Everyone must know how to play, that is, understand the meanings and dispositions of the norms that define the social game. Wittgenstein uses the term “language games” that guide and condition “forms of life”. It is in the use of language that the socialization of individuals is promoted while providing the routine meanings for its users. Wittgenstein’s pragmatic perspective of valuing effective practical activity is reinforced by Winch, and removes any rancid intellectualist or even rationalist from the analysis of the social sciences.

Winch’s view observes the Azande society as a form of life in which the magic of the oracle is a part, as well as the development of the techniques that guarantee the collective subsistence. There is no disharmony, as they are integrated into the practice of social life. And this form of life of the Azande formulates the meanings that are intrinsic to them, they integrate their language games. Perhaps Winch’s most compelling assertion to be based on Wittgenstein is: “It is not reality that gives meaning to language. The real and the unreal are shown in the sense that language has” (Winch 1994, 37).

⁵ “It is only with reference to the criteria that govern this system of ideas or way of life that they have any existence as social or intellectual events” (Winch 1967, 108).

⁶ It is here that the anthropological warning comes before the conflict between “we” and “them”. Any moral or cognitive hierarchy that shows “our” superiority to “their” culture can cause comprehensive misunderstandings. We cannot demand that a society, called “primitive” or not, fulfill our values, ethical or epistemic.

⁷ Only by the “use” – collective – of the language is it possible to share meaningful behaviour. Thus, to understand “is grasping the point or meaning of what is being or said” (Winch 1967, 115). Thus, “all meaningful behavior must be social, since it can be meaningful only if governed by rules, and rules presuppose a social setting” (Winch 1967, 116).

Language here is totally removed from the mentalism that perceives it as the representational agent of the world. It is not the mere representation nor a description, but a constructive agent of the world, a material agent. It is not the world that gives legitimacy to language by “confirming” its idealized representations, but it is the “use of language” in their games that provides meaning for the world and for human life.⁸

Something remarkable that had unfolded in the historiography of the subsequent years was Winch's understanding, which indicated that language moved all the actions in the life of the Azande, and they are oriented to the mystical or practical activities. There is no distinction between them, and the meaning given by language directed any and all social enterprise. Language forged reality.⁹ By emphasizing Evans-Pritchard's words, Winch values this process of constructing meanings irrespective of their destiny, be it magical or technical:

their mystical notions are eminently coherent, they are interrelated by a network of logical nexuses, and are arranged in such a way that they never overly contradict the sensory experience without, on the contrary, that experience which seems to justify them. (Evans-Pritchard, quoted in Winch 1994, 49)

What can be deduced from Winch's analysis is that all significant action, from the most banal and routine in the life of the Azande, to the most striking and influential in the collective, are actions socially conducted by their symbolic and sensory apparatus. They are reactions of form of life to situations that require the interpretive understanding – before its local and historical possibilities – in the scenario where meanings are able to be apprehended.

a primitive system of magic, like that of the Azande, constitutes a universe of coherent discourse as much as that of science, on the basis of which one can discern an intelligible conception of reality, and clear ways of deciding which beliefs agree or disagree with this reality. (Winch 1994, 39)

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By this orientation, Winch conflicts with the tradition already established in the studies of science that separates scientific activity from other human activities, such as the arts or magic-mystical thought. In this tradition, science is supposed to be the most complete expression of the use of reason to face natural reality. This, our scientific and philosophical heritage, has left us with the understanding that concepts such as “reality”, “rationality” and “truth” have an affinity with each other and guide the posture of scientists before the challenge of understanding and explaining the world. These three parameters go hand in hand in a single protocol: scientists seek the truth about the systems that regulate the functioning of the world (*reality*) by subjecting this connection (between *truth and reality*) to rigorous, so-called, *rational* criteria.

Thus, a rigid demarcation was constructed between the ways of examining scientific work. It would be fitting to examine the epistemology of the scientific achievements: the true value of the theories and the adequacy of concepts linked to scientific experiments and facts. Already the circumstantial drama that involves scientific advances and challenges, with their difficulties, errors and correctness, belong to the historical and factual chronicle that

⁸ Winch (1994, 90) criticizes Roger Trig who thinks of language as a description of reality. For Winch, language is not about “describing nothing at all”. “If we really want to speak of a 'relationship between language and reality', this is not a relation between a set of descriptions and what is described”. Language, as a constructive agent of reality, connects with the world through the “trace” of Derrida, see Maia 2015, 118 ff, 134-137.

⁹ This understanding generates the hypothesis of symbolic-material agency for the language, see Maia, 2015. Since its prehistoric formation, language is more than a mere articulation between signs, or a mental representation of the world. It is constituted by any and all meaning: the more-than-literal language, which becomes the central agent of human activities.



portrays the events related to the research. On the one hand is epistemology, examining the truth of the contents of science, on the other, is history describing the socio-cultural form of the scientific endeavour. The social sciences, history, and sociology would only be able to keep up with failures, mistakes, and misunderstandings, whereas epistemology should understand when and how the efforts of scientists were successful.

Winch brought to the scope of sociology of knowledge both the analysis of correctness and its misunderstandings. Both the so-called “misconceptions” and the so-called “truths” would be social productions. Both were due to language games that fuelled social relations, putting an end to the times of the “sociology of error” that still prevailed in the days of Winch and Kuhn. In this way, both truth and error should undergo sociological analysis,¹⁰ after all, Winch did not confer a distinct sociological statute for the magical conceptions differentiating them by techniques, said, rational or scientific.

Undoubtedly, the nature of the Azande life is such that it is of great importance that its crops are good. And it is also clear that they adopt all kinds of practical measures, one could call 'technological', within their capabilities, to ensure that the crops are effectively good. However, this is no reason to view their magical rituals as an additional erroneous measure. (Winch 1994, 73)

It deserves particular attention to follow historically how the technical foundation of this demarcation between the epistemological and the sociological took place.

The Bipolar Understanding of Scientific Activity in Historiography

We received from the 18th century a strong scientific heritage fuelled by the ideology of Enlightenment. This scientism chose scientific activity as the Edenic solution to human becoming. Science thus served as proof that the use of rationality by *homo sapiens* was the best strategy for societal development. Reason guaranteed and engendered material advancement and, perhaps, good fortune and generalized well-being.

This realization favoured the understanding that science was a production driven by its own logic. There was talk of a method that would put a positive gaze on the world and its phenomena. It would be the empirical commanded by reason. Evidently, the myth of human progress in rhythm and under the chords of scientific rationality still survived forcefully. This context favours the imperialist pretension of epistemology and made it unthinkable that scientific knowledge could have some debt with social injunctions: science should be a neutral and objective knowledge, without the marks of the society that produced it, its religiosity or any other political or ideological premise. Thus, in the actual practice of scholars of science, a reasonably tacit agreement exists: the division of powers between epistemology and history or sociology.

The first and most important challenge to this understanding was given by Karl Mannheim, from 1923.¹¹ Mannheim pointed out how social factors actively participated in the

¹⁰ It is recalled that the sociological tradition demarcated the space of action of the sociology of knowledge for the analysis of errors, since the analysis of the truth should be of strictly epistemic ambit. It was thought that the errors were due to the societal action, and the correct ones belonged to the rational scope of the epistemology. See Maia 2015, 61, note 28.

¹¹ “Among the published material during his life, three inaugural articles articulate among themselves in an operatic crescendo: “On the Interpretation of the *Weltanschauung*” (1923), “Historicism” (1924), and “The Problem of Sociology of Knowledge” (1925).” (Maia 2013, 93) In this evolution, Mannheim shifts his explanatory base from the *Weltanschauung* to the concepts that will establish his sociology of knowledge culminating with *Ideology and Utopia* in Bonn, 1929. To assume a sociology to deal with knowledge was a direct affront to radical

production of knowledge through the “style of thought”, *Denkstil*, whose matrix was strongly historical-sociological. “Style” would be the individual-collective way of thinking and formed the grammatical basis from which, and on which, rationality would emit its arguments. The logical structure of reasoning would start from some premises and findings constituted by the “style of thought” of that collective. “Style” provides the conceptual framework that allows rationality – whatever it is – to draw its inferences (Maia 2012; 2013, 94-95).

Mannheim's goal was to “escape the static character of substantialist metaphysics (which encapsulates the natural sciences) and nest in a dynamic ontology that exposes the world of history in its procedural becoming” (Maia: 2013, 93).

But for all his propositions critical of scientific metaphysics, Mannheim gives a differentiated value to the sciences of nature. However, he is insistent against static and absolutized, a-historical understandings, which disregard historical evidence in favour of a relational and dynamic understanding to evolve events. Several times Mannheim speaks generically about knowledge being existentially determined, seeming to encompass all forms of cognition, however there are specific statements to say that this is not the case.¹² Mannheim excludes the exact natural sciences and the mathematics of this conditioning or social determination, naming them as of the type “ $2 \times 2 = 4$ ”.

Immediately after the German edition of *Ideology and Utopia* in 1929, a broad debate ensued in the sociological circles: *Der Streit um die Wissenssoziologie* (the dispute of the sociology of knowledge). This dispute, preceded and accompanied by the strong opposition of the *Wiener Kreis* neo-positivists, the Vienna Circle, to the *Wissenssoziologie*, involved more than 30 articles in response to Mannheim covering a wide range of theoretical positions (Maia 2013, 96-97). In August of 1929 the neo-positivist manifesto was launched, subscribed by Hans Hahn, Otto Neurath and Rudolf Carnap (Maia 2013, 103). However, the most efficient formulation of this group would be *Der logische Aufbau der Welt*, (*The Logical Structure of the World*), by Rudolf Carnap, edited in Berlin, in 1928 (Maia 2013, 105).

Carnap understands that scientific activity can be observed from two different angles. It supposes the partition between the “rational reconstruction” of theories and concepts, and the historical description of events. Thus, it seeks to separate questions of validity, that are rationally justified, and questions regarding the origin of ideas of psychosocial motivation, which tend to be overlapped and confused (Maia 2013, 106-107).

This rupture between epistemology and history is further accentuated by Reichenbach's dichotomy for the analysis of science: “I shall introduce the terms context of discovery and context of justification to mark this distinction [...] between the thinker's way of finding his theorem and his way of presenting it before a public” (Reichenbach quoted in Maia 2013, 109). This division of contexts became quite influential in the destinies of historiography until the 1980s. In a way, it was fatal to the development of a sociology of knowledge. History and sociology were banished to the context of the discovery that described the genetic processes by which a scientific event occurred. Already the validity of knowledge was restricted to its rational justification and belonged to epistemology. It was said that knowing the origin of a particular piece of knowledge, does not imply its validity.

rationalist premises that demarcated the exclusivity of the field of epistemology, without considering the historicity of the concepts involved (Maia 2012; 2013).

¹² In the article “Historicism”, 1924, Mannheim already mentions: “the exact sciences can make statements in the matter of that which does not enter the historical and local position of the knowing subject”. In *Ideology and Utopia*, Mannheim deals with similar issues: “It is true, as to this type of knowledge, [referred to as the type $2 \times 2 = 4$] that its genesis does not interfere with the results of thought” (Maia 2012, 57, note 13). In Mannheim's own words: “a modern theory of knowledge that considers the relational character (...) must start from the suspicion that there are spheres of thought in which it is impossible to conceive an absolute truth, independent of the subject's values and position, and without relation to the social context. Not even a god could formulate a proposition on historical questions similar to $2 \times 2 = 4$.” (Mannheim, *Ideology and Utopia*, quoted in Maia 2012, 56)

In short, Mannheim's sociological initiative was abandoned. His sociology of knowledge was replaced by Merton's sociology of science, moving in a direction quite different from that of Mannheim (Maia 2013, 202). In Merton we proceeded to analyse the institutional character of science, its norms and collective routines of work, and not to venture to evaluate conceptual contents. The territory in dispute between the epistemology and the sociology was pacified, the territories themselves were demarcated. Henceforth, the social sciences only have historical descriptions of the origins of knowledge, the context of discovery, or the "sociology of error" – when scientific inquiry fails. Besides these alternatives, the institutional and corporate analysis carried out by the Mertonian sociology still remains. It never goes into the context of justification, in a "sociology of truth" that belongs exclusively to epistemology. Only with *The Structure of Scientific Revolution* of Kuhn, 1962, will we have the first scratches on this partition and also, of course, with Winch pointing out an "Achilles heel" at the epistemological pretensions.

The next Step: Bloor, the Symmetry and Relativism of Reason

Winch did not consider the premises of epistemology that preached the hierarchy of rationalistic values for objects that could, or could not be analysed by sociology. And this will be the innovative historiographical accomplishment made by Barry Barnes and David Bloor's insight in proposing the *strong program of the sociology of knowledge*.

Bloor, in *Knowledge and Social Imagery*, 1976, presents a new and revolutionary orientation contained in his "principle of symmetry" in which errors and epistemological correctness deserve the same sociological treatment. There is no distinction between truth and falsity from the point of view of sociology. Both are social productions (Bloor 1991, 7; Maia: 2015, 61). And so, once again, the Enlightenment rationalism that fed the understanding of science, suffered an intense setback.

Winch provided Bloor with the basis of his relativism by valuing social action as a meaningful action to "follow a rule". Restricting itself to the "use of language", the user acquires the understanding of the meaning of what he is following, and thus participates in the societal game. Reality is constituted as part of that game. Different societies would present alternatives to various social games.

This perception of games already has serious relativistic consequences. In his analogy with sports games, Winch compares the comprehensive conflict between two different cultures – one analysing the other, in this case the Europeans and the Azande – as if they were two sports modalities. The rules of a game are not contradictory to each other. Each game is consistent in itself. There is no one "correct" game, nor one "incorrect".¹³

With this, Winch responds to critics of the Azande's social logic, including Evans-Pritchard himself, that the Azande commit contradictions in their beliefs and customs. Which, when compared to ours, the Azande culture would have traces of irrationality (Winch 1994, 48-49, 53-54, 56, 63, 98). Would the Azande have "other" logic as the foundation of their reasoning?

And from there, Bloor goes on. He suggests that logic itself with its "laws" and rules of inference may be subject to relativism by letting himself be led by Wittgenstein's argument: "Let us therefore consider a society with very different laws from ours and see if its members are indeed persuaded to reason differently" (Bloor 1991, 138).

It is through Winch that Bloor advances even more: "there must be more than one logical process: Azande logic and Western logic" (Bloor 1991, 139). This issue is resolved by Bloor in the context of the concept of "negotiation", which is necessary when a logical

¹³ Winch compares the game of *cricket* with baseball to indicate that there is no contradiction between them and their rules. This serves to soften the criticism that the Azande received for showing logical contradictions in their culture, evidently detected when analyzed by Europeans (Winch 1994, 98-99).

contradiction emerges in some dispute. “Negotiation” is a key concept in Bloor (1991, 146-156) to resolve conflicts and occupy wide analytical space in the “strong program”. Bloor himself presents what would be a contradiction in our society that punishes the murder of a person, but to safeguard the bombings and damages of war. After all, is killing a crime? Is there a logical contradiction between the two attitudes? Negotiated interpretive arguments solve the contradiction (Bloor 1991, 142-143).

The idea of a logical relativism, as it could be interpreted in its most radical form in Bloor, does not flourish serenely. It is a controversial thesis as opposed to its “symmetry”, which has acquired reasonable consensus.

However, these considerations of Winch and Bloor continue the uneasiness of thought. They oppose an absolutist and a-historical perception of human nature. In this understanding of things – with timeless validity – there seems to be a substance, perhaps even organic, that would produce the humanity of man: reason. And this would be a classical precondition for the emergence of scientific thought.

What Would the Rationality Be from the Point of View of History?

My main goal is to understand what generates the rules of logic that characterize the reasoning considered correct in each society. How is the human ability of logical inference possible? Is it innate or acquired? Do logical structures vary in each culture, as Bloor suggested? Or would they be more universal, but dependent on the historical learning of the human collective living in nature?

I will attach Bronislaw Malinowski to my network of support authors. His book: *Magic, science and religion*, remains on the path to further investigation, despite its longevity.¹⁴

There are indications that there are several procedures by which a compelling conclusion that is generalized can be obtained. As is the case with the metonymic use that appease human discomfort with the feeling of death. The cyclical succession of climatic seasons seems to induce a metonymy for human “eternal” life. It is suggested that after the decline of winter, life returns in spring with a new vitality. It seems reasonable to me that this primal perception is used as a “proof” of a mystical existence in the eternity of the human soul. This would be the “vitalist hypothesis” of the origin of religion.¹⁵ The existence of the soul or of an immaterial spirit also seems to be displaced from the fact that deceased persons “appear” in dreams. It would be the revelation of the active presence of the spirit of the dead.¹⁶

There is thus a transference of meaning from something of the natural world to serve as the mystical understanding of human nature. The meaning of, and for, human life are elaborations developed from the contact with the environment, in routine experiences. Precisely through this structure that involves and is commanded by the meanings taken from

¹⁴ The actuality of Malinowski's work is remarkable, being valued by such contemporary expert authors as Keith Thomas, when analyzing magic and religion. “However unfashionable Malinowski's theories are today, they have been one of the few direct attacks against the difficult question of why magical beliefs decline.” (Thomas 1991, 527) See also: the historiographical work of Tambiah (1990) on magic, religion and science.

¹⁵ “for the primitive man death has meaning mainly as a step to resurrection, decay as a stage of rebirth, the plenty of autumn and the decline of winter as preludes to the revival of spring”. [...] “faith and cult spring from the crises of human existence, ‘the great events of life, birth, adolescence, marriage, death [...] it is about these events that religions largely focuses’” (Malinowski 1954, 22).

¹⁶ “the savage philosopher or theologian was led to distinguish the human soul from the body. Now the soul obviously continues to lead an existence after death, for it appears in dreams, haunts the survivors in memories and in visions and apparently influences human destinies. Thus, originated the belief in ghosts and the spirits of the dead, in immortality and in a nether world. But man, in general, and primitive man in particular, has a tendency to imagine the outer world in his own image. And since animals, plants, and objects move, act, behave, help man or hinder him, they must also be endowed with souls or spirits” (Malinowski 1954, 18).

the world, is that we will have the invention of language. It is a language conceived as one that establish meaning – language as something more than literal –, in opposition to language as a mere producer and transmitter of signs (Maia 2015).

The reasonableness of this argument lies in its empirical aspect. The productive ways of thinking as the result of a practical activity in the world. Thought is not created from nothingness. It stems from the possibilities that life offers. Souls and spirits, beliefs in eternal life and the other mystical elements that fuel religions are born of existential conflicts, and the consciousness of death is the most potent of these feelings. They are born of these conflicts and present calming solutions extracted from the practice of life. I find nothing illogical in these conclusive procedures. On the contrary, they are insightful. Metaphors and metonymy are indicators of abstract and rational reasoning. Or, after all, what is rationality? A mana served by the gods? Does the concept of causality stem from an element of the genetic code? Or is it the result of an understanding of the functioning of the world that allows human survival in nature, and before its existential fragilities?

I am referring this article to a hypothesis centred on human material and social coexistence. It is in the human interaction with its environment, an interaction that has always occurred in a collective and in cooperation, that advances in the understanding of the world and its things. It advances in interactive learning and shared solutions that are discovered/invented and socially transmitted. In other words, it is in historical experience that this human gift of “right reasoning” is perceived and shared. Proper reasoning in the struggle for survival is a quality guaranteed by reciprocal interaction in the world. I am excluding a special gift given by some substance, organic or magical, called “reason”.¹⁷ “That criteria of logic are not a direct gift of God, but arise out of, and are only intelligible in the context of, ways of living or modes of social life” (Winch 1967, 100).

Winch had already opposed the “rationalistic” concept of the nature of human intelligence and rationality.

According to this misconception the rationality of human behaviour comes to it from without: from intellectual functions which operate according to laws of their own and are, in principle, quite independent of the particular forms of activity to which they may nevertheless be applied. (Winch 1967, 54)

The existence and use of human “rational quality” are not independent of the activities carried out: “a cook is not a man who first has a vision of a pie and then tries to make it; he is a man skilled in cookery, and both his projects and his achievements spring from that skill.” (Winch 1967, 55) Rationality is not a gift that appears ready and finished. It is built slowly through human interactions with each other, and with their environment. Every decision taken by the “primitive” before a practical problem was solved, was a step towards the construction of his rationality.

So, after all, what is causal reason? How do humans learn it? How do you get to the rules of logic? What criteria define something as rational? Were primitive populations in a pre-logical phase? Immersed in irrational superstition?

Malinowski, in discussing what would be the “rational mastery by man of his surroundings” (Malinowski 1954, 25-36) weaves considerations based on his rich field work, and generalizations that prove useful for our understanding of what is poorly understood in primitive populations. According to him, it was Lévy-Bruhl who was responsible for generating several myths that characterized such a “pre-logical stage” of primitive humans, plunged into seemingly meaningless superstitions (Malinowski, 1954, 25). He reveals how so-called “pre-logical” societies captured in their daily readings the suitable ways of interacting

¹⁷ The “human intelligence was much overrated as a real influence on social events” (Winch 1967, 105).

with their environment, and guaranteed collective survival. It is evident that for this, some kind of intellection is necessary. Speaking of his personal experience with the people of New Guinea, he comments: “These natives [...] are expert fishermen, industrious manufactures and traders, but they rely mainly on gardening for their subsistence” (Malinowski, 1954, 27). With rudimentary tools, they can produce enough crops to maintain the dense population, and still store surpluses. “The success in their agriculture depends – besides the excellent natural conditions with which they are favored – upon their extensive knowledge of the classes of the soil, of the various cultivated plants” (Malinowski, 1954, 27). Certainly this routine task can only be achieved with a proper understanding of the environment in which they live, and a knowledge extracted from their interaction with the world. They acquire a knowledge for which I see no other evidence than that of a rationality.¹⁸

Alongside practical reasoning, the native is also subject to magical thinking, “if the fences are broken down, if the seed is destroyed or has been dried or washed away, he will have recourse not to magic, but to work, guided by knowledge and reason” (Malinowski 1954, 28). They separate well what is of the technical area, and what is of magic.¹⁹ If in one year the harvest is bad, but in the same material conditions of the previous year that was excellent, the appeal to magic is made. There is no such lack of rationality as suggested by Lévy-Bruhl’s stereotype of “pre-logic”, the natives know these two functions: magic and technique, very well (Malinowski, 1954, 29). These functions are never confused. Thus, in the construction of canoes, “empirical knowledge of material, of technology, and of certain principles of stability and hydrodynamics, function in company and close association with magic, each yet uncontaminated by the other” (Malinowski, 1954, 30).²⁰

However, in moments of real danger during navigation, magic is again used in a situation absolutely analogous to any fisherman of the present day (Malinowski 1954, 30). The same alternation occurs when fishing is carried out in the calm of the lagoons, where confidence in practical knowledge prevails. In the opposite case, when fishing is on the open sea and being subject to imponderable factors, including by the appearance of shoals and storms, it is in this case that magic is triggered (Malinowski 1954, 31).

He knows that a plant cannot grow by magic alone, or a canoe sail or float without being properly constructed and managed, or a fight be won without skill and daring. He never relies on magic alone, while, on the contrary, he sometimes dispenses with it completely, as in fire-making and in a number of crafts and

¹⁸ “They have to select the soil and the seedlings, they have appropriately to fix the times for clearing and burning the scrub, for planting and weeding, for training the vines of the yam plants. In all this they are guided by a clear knowledge of weather and seasons, plants and pests, soil and tubers, and by a conviction that this is true and reliable, that it can be counted upon and must be scrupulously obeyed” (Malinowski 1954, 27-28).

¹⁹ Keith Thomas also values this aspect detected by Malinowski, citing him in that magic “must be expected and generally found whenever man reaches an insurmountable gap, a gap in his knowledge or in his powers of practical control”. Thomas continues: “As an alternative to impotence without solution, the savage resorts to the substitutive activity of magical ritual, such as when vegetables are carefully planted and watered, but also encouraged by the recitation of spells” (Thomas 1991, 527).

²⁰ “For example, they understand perfectly well that the wider the span of the outrigger the greater the stability yet the smaller the resistance against strain. They can clearly explain why they have to give this span a certain traditional width, measured in fraction of the length of the dugout. They can also explain, in rudimentary but clearly mechanical terms, how they have to behave in a sudden gale, why the outrigger must be always on the weather side, why the one type of canoe can and the other cannot beat. They have, in fact, a whole system of principles of sailing, embodied in a complex and rich terminology, traditionally handed on and obeyed as rationally and consistently as is modern science by modern sailors. How could they sail otherwise under dangerous conditions in their frail primitive craft?” (Malinowski 1954, 30)

pursuit. But he clings to it, whenever he has to recognize the impotence of his knowledge and of his rational technique. (Malinowski 1954, 32)

The native has to know how. And this only occurs with the numerous attempts to solve the problems of their survival. Each learning, whether in fishing, or in plantations and crops, forge a logic of interaction with the environment. I repeat, logic is not a gift, it is an achievement that comes from successful interactions. Logic comes with learning. How to navigate, how to grow food, how to prune, how to make fire, how to cook some food, and how not to cook others, how to produce utensils and tools, how to produce pottery: all this stems from long attempts to understand the correct and simple way to achieve the goals. And the most important: to know how to distinguish between magic and technique.

The misconceptions that classical anthropology bequeathed us, as in the case of Lévy-Bruhl, served to mask the evidence of the use of rationality that was in the process of being constructed. It is not innate, it stems from a long historical process of human culture. Once again, we are faced with the danger of the hierarchy of “we” and “them”, who saw the savage delivered to superstitions and magic, in a “pre-logical” state. A particular “form of life” has an intrinsic logic that can only be evaluated and perceived from within said form of life. It is not possible to accurately assess an element of a cultural system from outside the system to which that element belongs. The analysis, to be comprehensive, must use the concepts and instruments of that culture. This is Malinowski's achievement.

With the Enlightenment came the certainty of our differential grandeur. We look at the primitive as if it were an “other”. But rationality is not an exclusive attribute of modern science. Nor did logic begin with Aristotle. With his *Organon* he began, yes, the study of logic.²¹ But are the rules of logic, of “good” reasoning, correct and efficient to interact with the world, no longer being tested and learned for millennia?

But the most forceful identification of the active human rational action is the one that allowed the conquest of its symbolic condition. Man has become a symbolic animal since archaic ages. His actions did not occur only in the physical or material register by sensory motivations. He also acted, moved by the sense he extracted from the world, sharing the meanings. He has become a symbolic-material agent since the Palaeolithic era for at least thirty thousand years. Alongside concrete and specific material tools, the human adventure provided the most remarkable tool that gave power for achievements, and took him to places unimaginable even for the Neolithic: language. After all, today, a terrestrial probe has already reached Jupiter.

I already dealt with this in another article (Maia 2015, 111-118), but here I simply follow the indication of an explanatory gap made by Malinowski.²² I have examined the hypothesis

²¹ Curiously, it was not only the idea of logic that was not created by Aristotle, the very term “logic” was yet to be invented. After all, logic is a historical production. It was up to Aristotle to make the first treatise on the subject. “In *Organon*, the substantive logic is absent. The use of rational deduction is analytic, best expressed in the verbal form used by Aristotle, the epistemic. Substantive logic noun is an adjectival form that refers to the symbolism itself, the logical discourse, but it is a late form, due more to the Alexandrian and Roman eclecticism than to the teaching of magisterium.” (Gomes 1985, 10)

²² “I have chosen to face the question of primitive man’s rational knowledge directly: watching him at his principal occupations, seeing him pass from work to magic and back again, entering into his mind, listening to his opinions. The whole problem might have been approached through the avenue of language, but this would have led us too far into questions of logic, semasiology, and theory of primitive languages. Words which serve to express general ideas such as existence, substance, and attribute, cause and effect, the fundamental and the secondary; words and expressions used in complicate pursuits like sailing, construction, measuring and checking; numerals and quantitative descriptions, correct and detailed classifications of natural phenomena, plants and animals – all this would lead us exactly to the same conclusion: that primitive man can observe and think, and that he possesses, embodied in his language, systems of methodological though rudimentary knowledge” [...] “Similar conclusions could be drawn from an examination of those mental schemes and physical contrivances which could be described as diagrams or

of the synchronic constitution of language and technique developed by the anthropologists Vitor Bunak (Russian) and Leroi-Gourhan (French) who lead us to understand the simultaneous production of language, and the use of instrumental techniques. “The man makes concrete utensils and symbols, both of them resulting from the same process” (Maia 2015, 115).

For the development of human reason, it was fundamental that the advent of language would be allowed to organize and objectify reasoning. With language, the logical use of descriptions and arguments is allowed. What would logic, even prehistoric, be without language? How does one explain a causal relationship without language? These questions themselves bring about something remarkable: that it is the fact that language was invented by ILLITERATE human beings.

Language as the material agency of collective interaction in the world, with the world, and not as mere communication between humans. It is thus authorized to share knowledge, and then reproduce itself for the next generation. History is given more dynamism. Illusion finds that history only begins with writing. Before writing we lived as historical beings for millennia. Language, although without writing, allowed the development of these three areas of the human avatar: magic, technical knowledge, and religion. This trio has always accompanied our historical evolution. Despite recent incredible technical and scientific advances, we still see symbolic forces such as the “evil eye”, “bad luck”, “big eye”, “miracle cures”, and “spells that bring a loved one”. This is besides religious cults that have multiplied infinitely. If, today, religion and science have become formal institutions, the territory of magic persists in informality, even if active. There does not seem to be an opposition between science, magic and religion so antagonistic and destructive as this.

But in its origin, in pre-history, how did the differentiation between these three symbolic components of society take place? I’ll let Malinowski reveal this to us.

In magic, “early man seeks above all to control the course of nature for practical ends”. When he realizes “the limitations of his magical might”, it is then that he appeals to higher beings or gods (Malinowski 1954, 19). Roughly, we can say that on the one hand we have practical observations in science, and on the other we have the **desire for power** to feed the spell.²³ The border between magic and religion already has some points of contact. “Both magic and religion arise and function in situations of emotional stress: crises of life, lacunae in important pursuits, death and initiation into tribal mysteries, unhappy love and unsatisfied hate” (Malinowski 1954, 87). Magic is “based on man’s confidence that he can dominate nature directly, if only he knows the laws which govern it magically, is in this akin to science” (Malinowski 1954, 19). Religion, however, comes into play in the failure of magic by recognizing that human desire is powerless to achieve all goals.

formulas. Methods of indicating the main points of the compass, arrangements of stars into constellations, co-ordination of these with the seasons, naming of the moons in the year, of quarters in the moon – all these accomplishments are known to the simplest savages. Also, they are all able to draw diagrammatic maps in the sand or dust, indicate arrangements by placing small stones, shells, or sticks on the ground, plan expeditions or raids on such rudimentary charts. By coordinating space and time they are able to arrange big tribal gatherings and to combine vast tribal movements over extensive areas.” (Malinowski 1954, 33)

²³ “Science, even as represented by the primitive knowledge of savage man, is based on the normal universal experience of everyday life, experience won in man’s struggle with nature for his subsistence and safety, founded on observation, fixed by reason. Magic is based on specific experience of emotional states in which man observes not nature but him himself, in which the truth is revealed not by reason but by the play of emotions upon the human organism. Science is founded on the conviction that experience, effort, and reason are valid; magic on the belief that hope cannot fail nor desire deceive. The theories of knowledge are dictated by logic, those of magic by the association of ideas under the influence of desire. As a matter of empirical fact, the body of rational knowledge and the body of magical lore are incorporated each in a different tradition, in a different social setting and a different type of activity, and all these differences are clearly recognized by the savages. The one constitutes the domain of the profane; the other, hedged round by observances, mysteries, and taboos, makes up half to the domain of the sacred.” (Malinowski 1954, 87)

Early man seeks above all to control the course of nature for practical ends, and he does it directly, by rite and spell, compelling wind and weather, animals and crops to obey his will. Only much later, finding the limitation of his magical might, does he in fear or hope, in supplication or defiance, appeal to higher beings; that is, to demons, ancestor-spirits or gods. (Malinowski 1954, 19)

Magic, as an attempt to solve the aspirations of unsatisfied desires, is thus a result of personal frustration that needs to be compensated. Overcoming this dissatisfaction favours belief in a supernatural power of men over other men, and over the world. In its failure of omnipotence, in the realization that the supposed magician is impotent, it is then that religion begins to act. Religion becomes the preferred mystical channel to go beyond human material boundaries. Among all human frailties, the consciousness of death is the principal motive of religious demands, driven by the hope of reaching an eternal life, perhaps paradisiacal.

Lévi-Strauss complements these perceptions: “religion consists in a humanization of natural laws and magic in a naturalization of human actions”. In this way, he defines religion as the “anthropomorphism of nature” and magic as the “physiomorphism of man”.²⁴

I leave with Malinowski his last words in his great little book:

The function of magic is to ritualize man’s optimism, to enhance his faith in the victory of hope over fear. Magic express the greater value for man of confidence over doubt, of steadfastness over vacillation, of optimism over pessimism. Looking from far and above, from our high places of safety in developed civilization, it is easy to see all the crudity and irrelevance of Magic. But without its power and guidance early man could not have mastered his practical difficulties as he has done, nor could man have advanced to the higher stages of culture. Hence the universal occurrence of magic in primitive societies and its enormous impact. Hence do we find magic an invariable adjunct of all important activities. I think we must see in it the embodiment of the sublime folly of hope, which has yet been the best school of man’s character. (Malinowski 1954, 90)

This historical condition, as pointed out by Malinowski, in referring to magic as a supportive occurrence, is perhaps necessary for further human development toward other civilizational milestones that can be extended to religion, and, more evidently, to technique. These three corporate functions have several elements in common. Separating them by the indicator of rationality-irrationality is a historical misconception that has been endorsed even by renowned anthropologists. To suppose the primitive populations are immersed in superstitions, incapacitated in a pre-logical state, reveals a pernicious ethnocentric gaze.²⁵ Such an assumption creates difficulties in the understanding of the historical transformation as something gradual, chained,

²⁴ And still explicit: “There is no religion without magic, or magic that does not contain at least a grain of religion. The notion of a supernatural exists for a humanity which attributes itself to supernatural powers and which in turn lends nature to superhuman powers” (Lévi-Strauss 1989, 247).

²⁵ “Professor Lévy-Bruhl tells us, to put it in a nutshell, that primitive man has no sober moods at all, that he is hopelessly and completely immersed in a mystical frame of mind. Incapable of dispassionate and consistent observation, devoid of the power of abstraction, hampered by ‘a decided aversion towards reasoning’, he is unable to draw any benefit from experience, to construct or comprehend even the most elementary laws of nature” (Malinowski 1954, 25). We must remember another side of Lévy-Bruhl and his influence on Febvre and Bloch, with the concepts of “mentality” and “collective representation” (Tambiah 1990, 87-88).

beginning in the Palaeolithic and culminates with our era, which for some would already be the Anthropocene. What Malinowski reveals to us is, on the contrary, a gradual development of our most striking civilizational characteristics.²⁶

It is necessary to understand these three functions as equally intelligible and intellectualized human activities. They are revealing of the creative potentiality of our ancestors in equating the problems that arose. Even the use of magic does not equate us with beasts. They are existential programs that pursue objectives to be achieved. Actions with well determined purposes, in this sense, are rational actions. They are intentional actions.

“We do not return to the vulgar thesis that magic is a shy and stammering form of science”, as Levi-Strauss warned us. Magic, technique, and religious thought are three historically constituted possibilities. “Instead of opposing magic and science, it would be better to put them in parallel, as two unequal modes of knowledge as to theoretical and practical results.” (Lévi-Strauss 1989, 28)

The “savage” was never more than the animal condition, still surrendered to the mastery of its needs and instincts, which often pleased us to examine. Neither was this consciousness dominated by affectivity nor steeped in confusion and participation. (Lévi-Strauss 1989, 58)

Our prejudices nourish a bland anthropology, of “we” against “them”. Or are we to insist that before Aristotle there was no logic? Were we not rational? But after all, what is logic? It may even seem like a mysterious entity, that guarantees by its use that we become the only animals said to be rational. But as we read in *Organon*, every mystery falls apart. Yes, logic is not due to a gene of divine origin, but rather it is simple and ordinary words organized in a particular way that then direct the actions of the agents more effectively. The slow and gradual construction of logical capacity – and its constitutive linguistic base – stimulated unexpected developments in the human species.

The criterion of success in the collective life of animals, and not only humans, is due to the effectiveness in interactions with the environment through oral communications of understood meanings of the world. One might even say that this will be an evolutionary criterion, an agency guiding evolution. It is language that is more than literally constituted in the body of this interactive agency.

The Use of Logic: A Historically Situated Learning

Precisely these findings, combined with the fact that Aristotle is the first author known to produce a treatise on logic, are symptoms for another finding. This material about which Aristotle’s work speaks, was the current language of his time. This was a pre-existing material and routinely accessible to all. That is, in *Organon*, Aristotle “did not invent anything”, in the sense that everything that *Analytics* is about (which was designated as what we call “Logic”) was an arduous and remarkable work of systematic organization of the instrumental linguistic bases of analytical thought, later said to be rational.²⁷ In reality, the most appropriate forms of action driven by a correct and efficient reasoning for the achievement of goals and objectives, have historically been constructed in the daily work of human

²⁶ Tambiah makes some criticisms to the work of Malinowski, especially (Tambiah 1990, 72), alongside substantive compliments (Tambiah 1990, 70-71). His criticisms, however, did not weigh on my judgment.

²⁷ *Organon*, besides being a treatise on logic, is also a monumental study of the philosophy of language. Through it one can observe how logic and language are intertwined.

inhabitants in the last millennia. A long and arduous human creation. Logic is a historical product.

Yes, logic is a historical production that needs support for its establishment. And the support, the structural basis upon which the logical form is imprinted, is language. Our symbolic universe, in which language is immersed, presents a hierarchy, a depth. First a linguistic base and then possible ways of organizing the signs, the senses. Language carries, conveys, forms of meaning. And logic is one such form, just as poetry is another. What Aristotle did in *Organon* was to demonstrate this fact. He explained the linguistic format that an inference must obey to be an *Analytic*. And, of course, he did it by ordering and modelling the terms of the support language, organizing the meanings issued by the subject. He established the syllogistic procedure to obtain conclusive meaning effects. They are effects of meaning that guarantee us greater effectiveness in the practice of life. The importance of logic, of its ordination, long before Aristotle, was to make the actions directed by language more effective in the human routine. The pre-Aristotelian “organon” was given by the effectiveness of human actions guided by language.

For example, what is the position of the cut and the correct height of a branch or stem to prepare and produce seedlings? These are questions that, when verbalized and thus shared in human groups, show language in action. An action whose shared effectiveness only occurs if the language used to characterize this process, has the same practical consequence as those presented by the empirical learning with the stakes of the native plant. In semiology it is said that both have the same effect of sense. That is, if the stakes used by subjects in both descriptive forms are equally successful, and their process produce seedlings from the plant. The language-driven action portrays the causality extracted from the farmer’s observations. The logic expressed in language shows the supposed material connections observed in the world. This is language in effective action.

Here is an alert, sounding like an omen, about an urgent need for anthropological research: it is necessary to develop ethnographic studies that show, with rigour, how this human conquest – of language and, subsequently, of logical – has occurred throughout history. This need is even stronger because Aristotle has not been able, by non-existence, to make any reference to some previous work.²⁸ That is to say, the rules of efficient logical reasoning, right and true, were already circulated and socially consolidated, now fit for Aristotle to systematize them. My question is: how has this historical construction occurred since the most archaic eras? Is it an attempt to reproduce something that occurs in the world? I agree that it is a human creation, yes, but due to the interaction with the environment, due to the observation/perception of the functioning of the natural world. And in that sense, would it be a copy of the occurrences in the world?

These questions refer us to another, more fundamental question: what is the language-world relationship? Does human logic reproduce a logic of nature? When speaking of “laws of nature”, is the genitive correct? Or is it a human construction, a proposition of scientists? Is there a logic of nature? Finally, I present here, in this text, many more doubts than solutions to the intricate relation of thought to practice.

Today, what can be said strictly about the language-world relationship is that “the effect of meaning retained in language, exposed by language, is the same as that obtained from the world through our interaction with the environment.” In this sentence, which I have emphasized in the quotation marks, is missing an element that is essential: the subject that captures the meaning of both the sentence and the world. The subject is the link between language and world. Effect of meaning is a semiological concept that cannot do without the

²⁸ Aristotle himself acknowledges “who, before him, had nothing to cite, despite the pains he suffered in search of possible previous sources, from which his analytical and rhetorical exercise constitute the first in the Greek school and, as a result, in the other schools.” (Gomes 1985, 9)

subject. The subject equals the retained literal meaning of a linguistic expression to the perceived meaning of some event in the world.²⁹ Without subject there is no language.

Thus, there are those who want to see the language-world relationship as a relation of “copy”, of “representation”, but that is not what it is about, it is a misunderstanding.

It is also a clarification, the most productive definition of language goes beyond literality and, based on semiology, enters the meanings.

The idea of a language expands beyond linguistics, gains materiality and advances through ethnology. Language, in this expanded sense, a broad sense, will be conceptualized as that which carries and articulates the meanings apprehended by the subjects, whether they are apprehensions of the literal sense given by words or by the semiological sense given by objects. It is more than literal language. (Maia 2015, 20)

Without demeaning the importance and necessity of the ontological understanding of the world, for a historical knowledge, the metaphysical propositions of being are quite problematic. For metaphysics can lead us to the thought of being itself, erasing its conditions of historical possibility. Exactly this notion fuels the claim of considering language as a copy of something in the real world. In this sense, two entities are compared as if they were autonomous: the language and the world, also called, real. But the existence of language depends on humans, and not only, it also depends on the world and its interactions with. Just as the perceived world also depends on the language that designs and qualifies it.³⁰ This innovative understanding is a merit of considering language as more than literal, forged by meanings, and not as a system of signs simply as a form of communication. The world itself is only perceived through the concepts that express its meanings.³¹

Historians cannot think of a reality of super-sensible and isolated beings, without their conditioning environments, without their constitutive relations. The qualities of being itself seem like illusions that offend the historical understanding of both the material environment, and human beings. The entities that populate history are relational entities. They interact with each other. For history is more than useful, it is necessary, to replace metaphysics with pragmatics.

Metaphysics, an Idealistic Illusion before History?

By metaphysical bias, entities seem to have a life of their own, having autonomy. They seem to gain concrete and independent existence, as isolated entities. Sneaky nouns are created that gain ontological reality, become beings in themselves. As with logic, reason, language, causality, magic, science... and, in these cases, they are usually capitalized: Science, Nation, Truth etc. We are against this guidance.

I see how problematic this thought is: to suppose a Real beyond the reality experienced in sensible life, a Real achieved only by reflection, by the use of Reason, with the purpose of unveiling the primitive and transcendent nature of the Being that would be the base the world. This phrase is completely alien to the territory frequented by a historian.

²⁹ This is the role of Derrida's “trace”, as quoted in note 8, see Maia 2015, 118 ff, 134-137. The subject is the one who captures a vestige (trace) of something in the world and gives it meaning and thus imposes on the vestige a linguistic expression. It is more than literal language in action, see quoted text, below.

³⁰ Remember Peter Winch, already quoted: “It is not reality that gives meaning to language. The real and the unreal are shown in the sense that language has” (Winch 1994, 37).

³¹ This is a consequence of Fleck, of his style of thought that provides a directed view, *Gestaltsehen*. See Maia 2015, 118-121, see also Fleck 2010, 142.



The metaphysical influences that privilege the analysis of being itself are multiple and varied. Those who highlight magic and science as two isolated and conflicting entities qualify magic as superstition, which is a mistake, and science as truth. But in this way, they lose decisive elements in each of these entities. An integral understanding demands that they be evaluated by their contents and by their relations, among themselves, and with their surroundings. Comparing passion fruit with mango may make sense on some occasions, but nothing speaks of the specific characteristics of these fruits. It is a comparison that may be suitable for the consumer in the supermarket, or at the table, but little is clarified about these fruits, their agricultural needs and their characteristics in cultivation, or their botanical constitution. The passion fruit tree is a vine and the mango tree is a sturdy tree with a woody trunk. Removing the fruit from the plant that produces it impoverishes any evaluation. Like comparing magic and science without the society that surrounds and produces them. In that case, it is absolutely useless to compare magic from primitive tribes to modern science. It simply serves to justify prejudice.

After all, each historical entity is a production originated from a certain economic and social formation. To understand magic, it is appropriate to follow in Malinowski's footsteps, to examine the relationships established in that society.

We are faced with intellectual impoverishment by letting ourselves be influenced by metaphysics. The act of "metaphysical" discourse, creating entities, is a violent act against historical thought. Things, like historical entities, have a process of production inherent in them. Nothing is born out of nothing, nor lies in the vacuum of the socio-material conditions of existence. History and metaphysics thus lie at opposite poles in cognitive inquiry.

For us historians, the most divergent question between metaphysics and history is that of their respective objects of study. Metaphysics applies to transcendence and to the earliest causes, away from the empiricism of the routine facts of life. Unlike history, it seeks the reality underlying the reality of phenomena, the Real. However, to abandon the human perceptions retained from the world, and to exclude the opinions based on the sensory activity of the individuals in favour of a transcendent knowledge, is a hard blow against history. It is true that personal judgement is not a guarantee of truth, but who has it? Universal Reason?

And the problems for the history continue. Everything indicates that there has been a contamination of the question of causality by metaphysical proposals. Causality is not an ethereal substance, it is a material relation between things in the world. Around the notion of cause and effect there are several unknowns and explanatory omissions, there is something magical and mysterious in the conception that links the cause with its consequence. The solution of this imbroglio cannot be a mystique that designates something resembling a transcendental reason. There is a need to produce an epistemological strategy that will exhibit and explain it satisfactorily in the investigation of the causal nature of phenomena. Cause and effect, connected together, is a notion that refers to the phenomenal world, and to the events of the world. It is a relational notion whose claim is to be indicating the manner in which one event is necessarily produced by another. But to say that one thing produces another is to go beyond hypothetical logical connection discourse, or vague subjective perception. To do so, it is essential to demonstrate how causality occurs in our world of facts. How does the outbreak of the consequence arise from the cause that precedes it. It is necessary to retract in detail the effect being part of the cause. The crucial question is: how does that indicated as cause, effectively produce its effect? The demonstration of the nexus causal link between cause and effect, is essential when it comes to causality.

It should be noted that causality generally occurs as a process, a causal process. The concept of “process”, coming from the natural sciences, refers to a sequence of interrelated occurrences, each with its causal nexus. The causal process designates a chain of events that, starting from a first cause, produces as a consequence a series of consecutive effects, as it happens with the process of development of a foetus until arriving at the adult stage.

The stages of human development since prehistory attest to the importance of the understanding obtained through the notion of causality. In the Palaeolithic, removing splinters by making the planned collision between two stones meant having cause and effect as something almost simultaneous, which greatly facilitates the perception of the causal relationship. Already in the Neolithic, cause and consequence can be separated by days, months and even years. Imagine the motivation of ploughing the land and planting ears of corn. It takes several articulated and sequential actions with a goal to be realized in the distant future. What about the castration of young animals with a view to their slaughter – more fruitful – years later?

Thus, the so-called logical reasoning has become increasingly routine, including being applied to magic-religious conceptions, and not only in the technical practice of work. Through this instrument, empirical foundations have been formed to educate and foster our reasoning, called, logical. By this we can affirm that, long before Aristotle, the pragmatics of human actions invented logic.

The literature on the prehistoric cognitive stages is still quite lacking in the closer examination of the importance of causality. Understanding the world and the possibilities of human action in this world through causal relations propitiated – I suppose – the development of human evolutionary traits, and transformed its cultural phenotype. It was through the causal understanding that the desire for power, which guides the magic, found its reason for being and its *modus operandi*. In magic, fantastic desire can be seen as the cause of its demands. The prehistoric subject designs for himself the agency aspired by his desire; he supposes to hold a magical power that acts on other individuals, on plants and animals. From the understanding of causal relations, the primitive being “created” the magic. By the same procedure, one sees that the more refined understanding of causality with pragmatics also decrees its opposite, the decline of magic. It suffices to verify that the spell does not rigorously comply with what is desired in the actions of the magician: the consequences of magical acts are not observed with the expected frequency. The ritual is not enough to have a good harvest as magic does not guarantee it. It is necessary though to simultaneously apply the technical knowledge already acquired. This does provide a greater guarantee of success. In this way, the same conditions that foster the appearance of magical thinking also impose the evidences of its limits. To this, Keith Thomas noted that Malinowski already had the elements that indicated the weakening of the magical power.³²

These magical-mystical conditions involving metaphysics propagate and reach various latitudes. They contaminate idyllic myths of human nature that extend to Christianity and beyond. It is by obeying these rules that we become special beings in nature: “children of the first cause”, made in the image of God. And as such, we receive a gift, the Reason. We become rational beings capable of apprehending and glorifying the divine work, the causality that organizes and directs the world. The world has, from these premises, its own organization, its jurisprudence: the natural laws. With causality driven by Christianized metaphysics, there are prescriptions to be followed by the natural world and, of course, by men; everything that occurs is causal and emanates from an organizing intelligence of the

³² The cultural decline of magic historically occurs with the impossibility of showing how magic (as a cause) actually produces its consequences, its effects. Like the “evil eye”, does the destruction of the sign of an opponent’s name, or the piercing of a needle-cloth doll produce their wrongs in others? How does the rain dance work? After all, it will always rain at some point after the dancing ritual. See also: Thomas 1991, 524, 527, 681-682.

universe. When modern science was performed, researching and discovering “the laws of nature”, it was being motivated by this idyllic metaphysics. Science followed its mystical mythic origin myths. And the human being, as the most illustrious subject of deity, can and ought through knowledge guided by his gift of reason, unmask such natural causalities. Thus, we see that not only magic has among its ingredients the transcendental magic potion of mysticism. Science also drinks from the same source. The roots of modern science grow over the same mythical swamp that gives rise to magic.

Of course, the differences and similarities between the magic of “cold societies”, as Levi-Strauss used to say,³³ and modern science make comparative study attractive, but this requires a lot of care. The greatest of these is the temptation for anachronistic analysis. But note that in metaphysics there is no difficulty in comparing primitive magic with modern science, despite its temporal distance of thousands of years and its spatial drift. They are products of completely different societies, they are two distinct social and economic formations. But in metaphysics this is not the question, it is not an impediment. When one reaches the essence, the truth of being, it becomes the absolute Truth, regardless of any context or chronicity. Thus, one can compare Magic with Science. There is no historical error, there is no anachronism, since metaphysics does not take into account the historical conditions of production. There is no metaphysical relativism to act as an obstacle to the comparative analysis of these entities. Despite the difference between their historicities, they occupy the same analytical space. After all, metaphysics is the realm of absolute, timeless beings.

It does not question the existence of perception of causality, but the authenticity of causality as something transcendental. What is in doubt here, and is simply a doubt, is the ontological consideration of causality, and its existence as if it were an entity. Without the need for material reasoning, as if his perception were enough to make his agency explicit.

Towards a Conclusion: Magic, Science and Religion and the Perception of a Causality

But here I intend to focus on another aspect in addition to causality being considered as a subjective question, or a metaphysical proposition. I disregard the concept of an objective truth for causality, and I concentrate on the actual practice of its perception. I emphasize the use people make of their perceptions. After all, it is these perceptions that fuel your beliefs and motivate your behaviour and actions. And such consequences are independent of the value of truth that the supposed perceived causality has. That is, even if wrong, the perception of some causality is already causal. If individuals perceive relationships that they consider causal relationships, it is enough for effects to take place and for them to gain historical reality. The resulting assemblages produce movements and differences. This is the basis of the dynamics of human action on the environment, whether in the instrumental techniques of survival, whether in science, in magic, or in religion.

To have or not to have the perception of something – that can be designated as causality – is an essential condition for ensuring the success, or otherwise, of the development of animal life in its interaction with the world, in its struggles for existence.

The perception of cause-and-effect relationships had two major consequences. Thanks to the belief in the metaphysics of causality, the human being constructed

³³ “The clumsy distinction between ‘peoples without history’ and others could be advantageously replaced by a distinction between what we call [...] ‘cold’ societies and ‘warm’ societies” (Lévi-Strauss 1989, 259).

religions, spells and diverse sciences. On the other hand, thanks to the belief in the pragmatics of causality, man devoted himself to routine work to survive, and to transform the world.

As Aristotle pointed out, causality allows us to establish a safe procedure for the attainment of knowledge. However, for such knowledge to be useful and to integrate the historical collection of human practices over time, from one society to another, it must satisfy certain requirements of every public good: must be accessible to all, and be universally known. After all, all knowledge – to be called as such – must be collective, that is, it needs to be socially shared. And of course, its diffusion and general reproduction require some pedagogy to spread the knowledge of how to execute it.

This pedagogy must contain some symbolic and pragmatic features. The symbolic character stems from the need for the causal process to be understood as an event in itself, that is a signifier and that it gains meaning. The pragmatic aspect associated with this meaning makes explicit the step-by-step of that knowledge transformed into an action. That is, it must be shown how effectively a cause produces its effect – a requirement, still of Aristotle (2016, 269), that the act of knowing requests its demonstration.

The core of causality lies in the meaning that the subject establishes. This understanding, which provides a centrality for the subject, for the perception of the subject, leads us to a subjectivist explanatory mode. However, in this model, the subject's belief refers to an apparent paradox, since it assumes that there is a causal relation between facts in the world. That is, subjectivism relies on another belief, on the natural objectivity of the world. This confrontation between the orientations of objectivism and subjectivism becomes a difficulty in the understanding of causality. Both perspectives have a common basis, consider subject and object as separate, independent entities. Now the accent falls on the object, or on the subject. Double equivocation. The core of the subject-object question is not found in any of the parts, isolated by analytical devices. The effective question is: the interaction between them. An interaction that is both mental and material. This is the sense of a symbolic agency that must be looked at by theory of practice.³⁴

To reaffirm this pragmatic posture, considering both objectivism and subjectivism, it can be said that without the subject-object interaction there is no causality. Without an object, without the world, there is no way for a being to become a subject. On the other hand, without a subject there is no theory of Newton's gravitation, nor of Einstein's. There is no science, no magic, no religion. Science, magic, and religion are human narratives that describe the possible forms of subject-world interactions in the world.

Such interactions always occur under the aegis of the practice that transforms a doing into a knowing and vice versa. And it is with the know-how that a new knowledge takes root and enters human history, it becomes an historical fact incorporated into the becoming of future societies, as with the domination and routine use of fire. And this occurs not only with the cultivation of vegetables and the extraction of natural goods, but also with the domestication of animals.

In interacting with the world, the human being perceives some regularities, there are recurring occurrences, such as day and night. There are sequences of events that seem to indicate that some predate others, such as breastfeeding after birth in mammals, or after flowering follow the fruits. There is also a different class of events in which human activity proves to produce desired and programmed consequences. Like the one that produces stone chips to be used as blades. Or like the one that makes a cudgel from the tibia of a great animal,

³⁴ Explaining what is implied: symbolic-material agency. This interactivity has already been well explored in Maia 2015, 79 ff and in specific article, Maia 2017.

or that that digging out and modelling a tree trunk produces a canoe. However, not all regularities are well acquainted with the model of causality, such as seasonal succession (although spring always succeeds the winter, it is not appropriate to say that winter causes spring). Rigour requires that there be a demonstration, a logical implication of the antecedent toward the consequent, that is, a factual description of the interconnected causal stages.

The idea of cause was striking not only for scientific research or to produce magic, as we have seen, but it was much broader in its effects. It drives human actions routinely to face the difficulties encountered in their environment, therefore equating them. And even more, it was by observing and understanding the effects of the use of tools, and the practice of working with such tools, that human participation was allowed to produce something. The tool and associated work were considered as the causes of the production of goods and satisfaction of their needs. In this way, the notion of cause contributes firmly to the development of culture, as Dewey had already pointed out.

It was this condition of adaptation to the environment that allowed human societies to conquer rigorous logical thinking as a form of possibility for the development of what is called rationality. The human being becomes the “rational animal” as a result of their collective interactions, of the historical sharing of their life experiences, of organizing a grammar for thought, considering the continuous learning in the use of symbolic linguistic forms associated with material practices.

Concluding: man is not born as a rational human being, but he becomes one; that is, rationality is a human gift, yes, but a gift built, and produced by the historical evolver. From the Palaeolithic to the threshold of the Anthropocene, resulting from the practice shared in their interactions with the environment.

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