

Europe as a subject and object of epistemic reflection

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Abstract

This study proposes a critical and theoretical approach from the social sciences, particularly anthropology and the philosophy of science, to analyze Europe as a subject and object of epistemic reflection. Through a hermeneutic and postfoundational approach, the author examines the emergence of modern science in Europe, its institutional consolidation, and its subsequent questioning from internal (Foucault, Kuhn, Derrida) and external (postcolonial and global south) perspectives. The analysis identifies three key moments: the constitution of the modern European scientific paradigm based on rationality, empiricism, and objectivity; The critique of these foundations from within European tradition itself and from postcolonial thought; and the emergence of a global need to pluralize science by recognizing other forms of knowledge. The text argues that Europe has played a dual role: creator of modern scientific thought and critique of its own heritage. The article's value lies in its ability to interpret Europe as an "epistemic mirror" where continuity and rupture, creation and deconstruction, converge. It introduces a powerful metaphor—the Ouroboros- to describe the self-reflexive dynamics of European science, and links this process to current debates on epistemologies of the South, the pluriverse, and the vital relevance of knowledge. The text concludes that Europe, in facing its own epistemic limits, can become a laboratory for the reconfiguration of global science. A critical review of its legacy does not imply its discarding, but rather its transformation. The construction of an ethically responsible, contextual, and dialogic science is presented as a contemporary urgency in the face of challenges such as sustainability, epistemic justice, and the survival of humanity. The author calls for a rethinking of science not only from the perspective of its effectiveness, but also from the perspective of its vital, ethical, and plural relevance.

Keywords: Europe; Epistemology; Modern Science; Postmodernity; Post-Colonialism; Epistemological Pluralism

1. Introduction

Europe has simultaneously been a creator of scientific paradigms and an object of epistemological critique. Its leadership in the construction of modern science is indisputable. Paradoxically, Europe also practices the self-deconstruction of its own archetypes. Like the self-devouring Ouroboros, Europe focuses on its "magnum opus," recreating, reconstructing, and destructive of its own epistemological logos, this time requiring the relevance of thought from the South. From the metamorphosis of mythical to rational thought in ancient Greece, when Thales proposed that water was the fundamental principle (arché) of all things, to Bruno Latour [1], championing a "symmetrical anthropology" that considers all "actants" (human and non-human) as equals, to the concept of the pluriverse. A pluriverse that not only requires being varied and inclusive but also ethical, responsible, and relevant to the global life of the universe. The Ouroboros never ceases to destroy or create itself. This cycle reflects how deconstruction processes do not seek a definitive end, but rather open new interpretations. Is this looking into the epistemic mirror, the reflection of its figurative quality to renew itself or the deleterious conversion of science in the face of its epistemic sins?

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2. Europe as a Subject: The Emergence of Modern Science

The Enlightenment, also known as the "Age of Enlightenment," marked a period of cultural, philosophical, and scientific transformations that shaped modern thought. During the 17th and 18th centuries, Europe experienced an intellectual revolution that sought to throw off the shackles of religious dogmatism and medieval traditions to embrace reason, empirical observation, and objectivity as the foundations of knowledge. In this context, the principles that would define modern science emerged and are still pillars of the scientific method today. Key figures such as Isaac Newton, John Locke, and Voltaire contributed to establishing a paradigm that privileged rationality, empiricism, and objectivity as indispensable tools for understanding and transforming the world.

2.1. Rationality as the Basis of Knowledge

Rationality, understood as the ability to think and reason logically and critically, became a guiding principle during the Enlightenment. Philosophers such as René Descartes [2] promoted the idea that human reason was the only sure means of achieving knowledge. In his work *Metaphysical Meditations* of 1641, Descartes formulated the famous principle "Cogito, ergo sum" (I think, therefore I am), establishing that rational thought is the basis of existence and the primary source of knowledge. This faith in reason was also reflected in the field of natural sciences, where universal laws began to be described through mathematical and logical principles. Isaac Newton [3], with his work *Philosophiæ Naturalis Principia Mathematica* of 1687, exemplified how rationality could unravel the mysteries of motion and gravity, providing a model for scientific inquiry based on logical rigor and internal consistency.

2.2. Empiricism: Experience as a Source of Truth

Along with rationality, empiricism was established as a fundamental principle for the construction of knowledge. Philosophers such as John Locke and Francis Bacon [4] argued that all knowledge comes from sensory experience and observation of the natural world. In his work "An Essay Concerning Human Understanding" of 1690, Locke [5] proposed that the human mind is born as a "blank slate," and that all ideas and concepts are formed from sensory impressions. Empiricism also transformed scientific methodology. Bacon, in his work *Novum Organum* of 1620, advocated an inductive approach, in which theories were developed from systematic observation and data collection. This approach contrasted with the deductive method prevalent in the Middle Ages and laid the foundation for the modern experimental method, in which hypotheses are tested through controlled experiments and empirical observations.

2.3. Objectivity: A Universal Ideal

Objectivity, understood as the ability to observe and analyze phenomena without bias or subjective influence, emerged as a central ideal of modern science. Enlightenment thinkers believed that knowledge should be based on verifiable facts and not on personal opinions or beliefs. This principle was reflected in the work of institutions such as the Royal Society of London, founded in 1660, which promoted collaboration among scientists and the transparent publication of experimental results. Furthermore, objectivity became an ethical standard for research, ensuring that results were reproducible and applicable in different contexts. The development of scientific instruments such as the telescope and microscope also contributed to objectivity by allowing direct observation of previously inaccessible phenomena.

These tools expanded the horizons of human knowledge and reinforced the idea that the universe could be understood through rigorous and objective research.

The Enlightenment marked a turning point in the history of human thought, establishing the principles of rationality, empiricism, and objectivity as the foundations of scientific knowledge. This period not only transformed the way Europeans understood the world but also laid the foundation for the development of modern science and its technological applications. Through the work of thinkers such as Descartes, Newton, and Locke, Europe consolidated a paradigm that emphasized the use of reason and empirical experience to unravel the mysteries of the universe. Although these principles have evolved over time, their legacy remains fundamental to the contemporary pursuit of knowledge and the effort to understand and improve our reality. Ultimately, the Enlightenment not only illuminated the past but continues to guide our present and future.

2.4. Key Institutions and Actors: The Role of European Academies, Universities, and Scientists in the Consolidation of Science

During the Enlightenment, academic institutions and networks of scientists played a crucial role in the consolidation of modern scientific thought. Scientific academies, such as the Royal Society of London and the Paris Academy of Sciences, promoted collaboration among researchers, the dissemination of knowledge, and the development of a scientific methodology based on empirical observation and experimentation. Universities also played a fundamental role by

providing spaces where new Enlightenment ideas were taught and debated [6]. These institutions trained a new generation of scientists and thinkers who embraced the principles of rationality, empiricism, and objectivity. Figures such as Galileo Galilei, who worked at the University of Padua, and Christian Huygens, associated with the Paris Academy of Sciences, led significant advances in fields such as astronomy, physics, and mathematics.

3. Europe as an Object: Epistemic Crisis and Internal Crisis

The concept of the "crisis of science" is not new in the West; it emerges as a critical reflection on the epistemological and ethical foundations of science, particularly in Europe. Giambattista Vico [7] warned that human knowledge was rooted in history, culture, and language; science cannot be reduced to natural methods, he predicted at that time, and Johan Herder [8] argued the need to understand cultures from their own values and contexts. This crisis questions the objectivity, neutrality, and universality of European knowledge, confronting it with its historical and political context. This phenomenon can be analyzed from three dimensions: internal critiques led by European thinkers, postcolonial perspectives that exposed its connection with colonial power, and a self-critical reflection on the legacy of European science.

3.1. Internal Critiques: The Emergence of Foucault, Derrida, and Kuhn

In the 20th century, European thinkers such as Michel Foucault, Jacques Derrida, and Thomas Kuhn opened gaps in the traditional perception of science as a neutral and objective system. Foucault [9,10], through his analysis of power-knowledge, showed how the production of knowledge is inextricably linked to power relations and regimes of truth. Derrida [11], through deconstruction, questioned the idea of a universal truth. Kuhn [12], for his part, argued in "The Structure of Scientific Revolutions" that science does not advance linearly, but rather through "paradigm shifts," thus questioning the idea of cumulative and universal progress, highlighting the importance of language and cultural contexts in the construction of knowledge. These internal critiques challenged the dominant positivism and paved the way for more reflective and contextual approaches.

3.2. Postcolonial Perspectives: The Universality of Science in Check

Non-European authors, such as Edward Said [13], Spivak Gayatri [14], and others linked to postcolonial thought, criticized the alleged universality of European science, pointing to its connection with colonialism and Eurocentrism. Science, they argued, historically served as a tool for legitimizing the colonial project, justifying the exploitation and subjugation of non-European peoples under the imagery of "civilization" and "progress." Indigenous epistemologies and other forms of knowledge were marginalized or dismissed as superstition, revealing how European science was not neutral but deeply ideological. Sylvia Wynter [15,16] argues how the European human being was considered the epitome of humanity and the consequences of this hyper representation in worldviews. This approach highlighted the need to decentralize knowledge and recognize the contributions of other cultures in the production of knowledge.

3.3. Self-Critical Reflection: Europe Facing Its Own Legacy

In recent decades, Europe has embarked on a profound self-critical reflection in disciplines such as philosophy, sociology, and the anthropology of science. This debate has addressed Europe's role as a hegemonic center of global knowledge and its limitations in understanding realities outside its historical and cultural context [17,18]. Not only the content of science has been questioned, but also its methods, institutions, and values, advocating for a more inclusive and pluralistic science. Contemporary authors emphasize the importance of rebuilding intercultural dialogue, where scientific knowledge can coexist with other epistemic systems on equal terms. Jean-François Lyotard [19] even argued that the production of knowledge is not limited to the aspiration for truth but to its usefulness. The "crisis of science" does not imply a total rejection of scientific knowledge, but rather an invitation to critically reflect on its foundations, limitations, and relationships with power. Europe, both as the source of these critiques and as their object, is in a key position to rethink its legacy and open itself to new, more inclusive, democratic, and contextual forms of knowledge. This process is essential for addressing global challenges such as environmental sustainability, human overpopulation, and the lack of ethics in a truly plural and transformative way, asking ourselves: What future are we building for all? [20,21, 22].

4. Europe in the Epistemic Mirror, Continuity and Rupture

Europe and its intellectuals have shaped science since ancient Greece, when Anaximander identified the beginning of the universe in the ineffable infinite; Anaximedes found it in the air, and Leucippus in the atom. Pythagoras, a good mathematician, identified it in numbers, while Heraclitus saw it in fire, when it became entangled in permanent transformations. Europe, a faithful heir to fire, would be convinced of the absolute of change; thus, observing itself in

the mirror of its own invention, prey to conscience, the gateway to heaven and hell, it seeks to divine the future, to find its own philosopher's stone, and with it, the exquisite expression of the omnipresent power that allows the gods—and only them—to create and uncreate themselves. Is this the significance of how European science, in turn, has questioned its own foundations of origin? Or is it simply the continuation of the change established by Heraclitus, and continued by the dialectic of Friedrich Hegel? [23].

For centuries, Europe has been the epicenter of scientific and cultural development, setting the standards for what is considered legitimate knowledge. However, in recent decades, the continent has been forced to look into the "epistemic mirror," critically reflecting on the continuities and ruptures of its legacy. This debate revolves around three axes: the contemporary review of the scientific legacy in the face of postmodern critiques, the role of the social sciences as tools of analysis and transformation, and the challenges of building a truly pluralistic global science.

4.1. Contemporary Review: Continuity and Rupture of the Scientific Legacy

In a context of postmodern critique and globalization, both European and global thinkers have revisited the European scientific legacy. However, we must recognize that from within this continuity, the validity of principles such as rationality and the scientific method, pillars of the Enlightenment project, is acknowledged. Postmodern critiques, led by authors such as Derrida and Lyotard, have dismantled the idea of a universal and neutral science, showing how it has historically been influenced by power interests, colonialism, and cultural exclusion, without ignoring its usefulness. Bruno Latour [1] proposes "symmetrical anthropology," which studies human and non-human subjects without epistemic privileges. The contemporary review seeks to reconcile these two aspects, promoting a more critical approach that preserves scientific rigor while incorporating plural and contextual perspectives.

4.2. The Role of the Social Sciences: Europe as an Object of Study and Epistemological Laboratory

The social sciences have played a key role in the critical analysis of Europe, both from within and from external perspectives. However, it is impossible to deny their influence on global imaginaries. Europe as an object of study has allowed researchers from non-European contexts, using their own sociological and anthropological tools, to analyze the structures of power, inequality, and exclusion inherent in the European project. For example, postcolonial studies have unmasked the connection between science and colonialism. The continent has also been an epistemological laboratory. From France, thinkers such as Bruno Latour have proposed new epistemologies that integrate multiple forms of knowledge, challenging traditional dichotomies (science/nature, subject/object, human/nonhuman). This approach transforms Europe into a space for experimenting with critical theories and interdisciplinary models, which can be very useful for the continuity of humanity. "Condoning ignorance in the paradigms of contemporary science is a seasoned act" [22]. Metaphorically, if Thales told ancient Greece that the beginning of everything was in water, Europe didn't fall into the temptation of the beautiful Narcissus to contemplate his reflection, enamored with himself.

4.3. Current Challenges: Toward a Global Science Relevant to Life

One of the greatest contemporary challenges is to build a global science capable of transcending ethnocentric biases. It requires the recognition of other knowledge systems, what Boaventura de Sousa Santos refers to as the epistemologies of the South, and from all points of the compass. A kind of emancipation of science. This implies not only including diverse voices, but also responsible ones; rethinking the methodological and epistemological foundations of science so that they are inclusive and contextually relevant, promoting epistemological pluralism. A dialogue between knowledge systems. The "epistemic mirror" in which Europe looks at itself reflects both the richness and the limitations of its scientific legacy. As it faces postmodern and postcolonial critiques, it faces the opportunity to transform itself once again into a key player in the development of a plural and global science, but also relevant to integral life. This process, although fraught with tension, is essential for overcoming historical and ideological biases and building inclusive, relevant, and representative knowledge of the world's multiple realities. Like Ouroboros, a mythical figure who never ceases to be destroyed or created, Western science, after having dazzled the human universe, submits to epistemological and even moral critique. It is as if demonstrating the strange magnificence of the creators who offer themselves as a holocaust for liberation and parousia, this time from epistemological sins.

5. Conclusion

This study has shown that Europe occupies a unique epistemic position as both the architect and critic of modern scientific paradigms. Through a hermeneutic and post-foundational lens, the analysis reveals how rationality, empiricism, and objectivity emerged as foundational values during the Enlightenment, only to be critically reexamined from within European thought and by postcolonial perspectives. Europe's self-reflective capacity, symbolized by the Ouroboros, underscores the dynamic tension between continuity and rupture in its intellectual legacy. By confronting

its epistemic limits and engaging with diverse knowledge systems, Europe can contribute to the construction of a plural, ethical, and contextually grounded global science. This study encourages a transformative dialogue between epistemologies and will benefit society by promoting more inclusive, responsible, and life-relevant scientific paradigms for facing global challenges.

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