Science of Law, 2026, No. 2, pp. 55-59
DOI: 10.55284/2sw3ma94

The Ideology of Western Science

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Keywords:
Epistemology,
Human sciences,
Ideology,
Modernity,
Science.

Article History:
Received: 02 / 09 / 2025
Revised: 17 / 12 / 2025
Accepted: 25 / 01 / 2026
Published: 19 / 02 / 2026

Abstract. This article explores the dialectical relationship between science and ideology within the intellectual framework of modernity and argues that scientific knowledge does not develop solely through internal methodological dynamics, but is deeply shaped by social, political, economic, and ideological conditions. By tracing the historical emergence of the history of science and examining debates between internalist and externalist perspectives, the study highlights how epistemic frameworks are influenced by broader cultural and ideological structures. Moreover, the paper analyzes the impact of modern materialist paradigms on both the natural and human sciences, emphasizing how the extension of experimental methodology to the study of human beings has often led to reductionist interpretations. It contends that modern Western rationality, while placing the human being at the center of knowledge, paradoxically contributes to his conceptual marginalization. The study concludes that science and ideology exist in a dynamic and evolving interaction, and that understanding this relationship is crucial for critically evaluating the limits, assumptions, and social functions of neoteric scientific knowledge.

1. INTRODUCTION

Notwithstanding the fact that our present age is described as the age of science and is even named after the type of major scientific achievements it has witnessed such as the age of the atom, the age of the computer and information technology, and the age of communications, etc. These achievements have indeed changed the nature of contemporary life and stamped it with their character. Yet the truth remains that all the political, economic, and even scientific manifestations of the age, and all forms of social consciousness, are a reflection of the philosophy of ideology, which in turn is nothing but a superstructure and the product of the level of development of the relations of production in society.

Although both ideology and the natural and technical sciences constitute the superstructure of the structure of social consciousness, while ordinary consciousness, composed of empirical, psychological, and social knowledge, forms the infrastructure of this structure, hence the priority of ideology becomes evident at the level of the relationship between science and ideology. For, the relationship between science and ideology is a complex one and exists on two levels (Wathiq, 2005): first, its relation to philosophical ideology (the theoretical level); and second, its relation to state ideology (the level of social practice).

At the first level (the relationship between science and philosophical ideology), the main characteristic of the natural sciences is their search for true and reliable knowledge, and the endeavor to discover the objective laws of the material world in order to predict the directions of its actual movement and to control them in the service of humanity. The importance of the critical philosophical review of the history of the development of these sciences lies, first, in understanding how humanity was able to acquire this knowledge as a result of its struggle with the natural environment, and then in studying this method and developing it to accelerate the process of acquiring such knowledge in the future. At the second level, the relationship of science to the orientations of the state (the level of social practice), the scientific policy of any state whether planned or random is ultimately subject to the ideology and orientations of the state. For, state decisions in the field of science directly affect scientific policy in the country concerned. It is therefore naïve to claim or assert the independence of science from politics. As often as, the proportion of allocation from the state's general budget to support scientific institutions (Al-Aroui, 1993, p. 40).

The concept of ideology in neoteric scientific thought is a matter of great importance, and those who have engaged in scientific thought have raised it and made it implicitly or explicitly the central of their discussions. Therefore, it can be said that it has been a subject of concern for thinkers, researchers, and epistemologists alike, each from his own perspective and according to the viewpoint that accords with his interests. I mean by this the issue of bias raised by Dr. Al-Messiri.

- Now we shall discuss the issue of ideology from a specialized scientific horizon that naturally has epistemological extensions aiming to understand the ideological nature of Western knowledge that is, to raise philosophical issues related to epistemology and thereby enter into a debate and discussion dominated by a general philosophical character.
- True philosophy of science is dialectic; the dialectic of reality and reason. Thence, the aim of contemporary rationalism has essentially been to highlight the weaknesses and errors in positivist theories and conceptions of reality and of the nature of scientific practice. It seeks to capture the dialectical only at the theoretical level. For this reason, we look at science through an excessively theoretical problematic that does not attempt to uncover the hidden roots underlying theoretical weaknesses that is in addition to what is ideological within scientific practice itself (Al-Aroui, 1993, p. 41) and to reveal its backgrounds, which are always backgrounds governed by authorities other than the authority of science. Ideological struggle remains absent from the theoretical scene, especially since it has sought to confine itself to demonstrating the dialectic of the theoretical and the dialectic of theoretical knowledge without revealing the fundamental connection to scientific conditions. Indeed, the conditions for producing scientific knowledge, conceptions, and methodologies are ultimately material conditions. What characterizes contemporary rationalism is its neglect of the historical and social dimension of theoretical practice and its failure to notice that the theoretical weaknesses in positivist conceptions of reality and of the nature of scientific practice. Although appearing as theoretical weaknesses are in fact ideological atonality

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(Mohammed, 1983) with repercussions for the balance of intellectual forces struggling in the ideological arena. Consequently, criticizing the methodological foundations and epistemological views of positivist currents should not be a mere theoretical epistemological critique, but must be accompanied by a critique of ideology.

- For philosophy and epistemology as one of its branches is ultimately a class struggle at the level of theory and ideas, and the reason for this is that neoteric epistemology assumes various forms and shapes and should not be regarded as separate doctrines existing independently; more willingly, it represents a continuity and extension of the formation of a single ideology. Hence, we have judged their positions to be ideological first and irrational second.
- They are ideological in that their view of scientific practice inserts philosophical visions into it, not only in the form of a deliberate and conscious philosophy, but also in the form of a problematic from which the scientist views his laboratory practice. This leads him to adopt an unconscious philosophical outlook that unwillingly converges with official philosophical outlooks produced by the history of philosophy, and makes his philosophy of science consecrate ready-made philosophical positions. Therefore, posing the question of scientific knowledge within a testing problematic that views science as extracting an image of reality and translating it entrenches a well-known position in the history of philosophy and consequently draws us into a traditional philosophical conflict between materialism and idealism. Ultimately, it also entrenches a class position at the theoretical level, one that has political extensions and ideological-scientific repercussions.
- Karl Popper's belief that scientific work is a narrow, purely experimental and fragmentary activity that does not grant its practitioner the right to issue propositions possessing objective certainty prior to experience, as Al-Messiri states, since science has faced problems produced by its own development throughout its course, particularly in the physical sciences, namely the problem of certainty (Mohammed, 1983, p. 55) led him to deny the existence of a philosophy of history, or to repudate the possibility of future prediction, and also to deny the possibility of speaking of a philosophy of science or of nature. On the other hand, as for what is meant by irrationality, it is not that it falls into metaphysical positions, but rather that it neglects the role of reason in the process of knowledge and does not take into account the dialectic of reason and reality.

2. THE HISTORY OF SCIENCE AND ITS IDEOLOGICAL BACKGROUNDS

Attentiveness in history in general is linked to decisive periods in the history of societies. For, when a given society undergoes a radical transformation and a comprehensive upheaval that affects its pillars and foundations, the need emerges to situate that period within the broader context of history in order to seek answers to possible questions concerning the causes that led to such changes and events. Furthermore, the emergence of interest in the history of science does not depart from this rule and the nature of this field cannot be understood except within specific theoretical and social conditions that led to its rise. Its emergence was not linked to a particular person or author, but to a general intellectual climate (Mohammed, 1983, p. 87).

Investigating the causes or conditions that allowed this field to arise shows that amongst the most important was the emergence of a new cognitive model that strongly contrasted with the old cognitive model founded on the views of Aristotle and Ptolemy, and which continued with the thinkers of the Middle Ages and the Renaissance. These thinkers believed that true knowledge had been given once and for all in history through Aristotle, Ptolemy, Hippocrates, Galen, and others. Therefore, they confined themselves to providing commentaries, explanations, and glosses on the books of these figures, as if their writings contained all knowledge and their foundations had been definitively established (Mohammed, 1983, p. 88).

With the beginning of the modern era, the signs of a new cognitive system began to appear with thinkers, scientists, and philosophers who considered that the true domain of knowledge is nature; that investigating and probing its secrets, analyzing its various elements for the purpose of ordering and classifying them, and discovering its general laws, constitute the true field of human intellectual activity.

It was natural that the emergence of this new cognitive trajectory would lead to the destabilization of the old conception of science and of scientific truth.

Despite all these difficulties, we can affirm, with Georges Canguilhem (1904–1995), that the subject of the history of science in all cases is constituted by two sets of discourses or statements produced by researchers about specific scientific subjects. In addition, researchers and scientists formulate the results of their research in the form of propositions interconnected and governed by a precise and rigorous logic, and the subjects studied by scientists, before they are shaped into a specific discourse or statement, are not the subject of the history of science; rather, its subject is these themes once they have been theoretically formulated within a specific discourse. The history of science is thus a discourse about discourse, or discourses that incarnate distinctive or decisive results in a given scientific field and are interconnected, mutually influencing and being influenced throughout history, so that they acquire historical meaning and significance by virtue of this very interconnection (Toby, 1997, p. 52).

This definition may appear approvable; however, does it not also apply to other fields of knowledge, such as the history of philosophy or the history of art? This would deprive it of any procedural effectiveness in defining the subject of the history of science. For, we could likewise define the history of philosophy or the history of art as a discourse that endeavors to appropriate other discourses and to view them in their interrelation and historical sequence according to a specific perspective (Toby, 1997, p. 53).

Since its emergence until today, this field has been associated with three types of orientations or theoretical backgrounds that have bestowed upon it particular and specific meanings and aims within their internal systems. At the outset, the field of the history of science was linked to ideological backgrounds that emerged within the qualitative transformation experienced by European society beginning in the seventeenth century. On the other hand, it has also been shaped by the changes over time in historians' conceptions, interests, and priorities. These historiographies have been characterized by heterogeneity and divergence, and have often not been governed by neutrality and fidelity to the texts as much as they have been guided by specific ideological, philosophical, or epistemological visions.

3. SCIENCE AND IDEOLOGY

There is no doubt that ideology in general is what drives and directs scientific development and stimulates research in certain fields of knowledge rather than others. Since, at the level of early human beings, the urgent need to live and preserve survival was the real motive behind searching for and inventing means and tools that expanded with the expansion of that need (Toby,

1997, p. 76). For, the feeling of fear and danger drove early humans to fashion the spear or the sword in order to protect themselves from threats, whether from predatory animals or invading members of their own species.

In reality, necessity is determined by need, and the latter is not related to cognitive factors but to other factors outside the cognitive field, such as social, economic, and political conditions, etc (Toby, 1997, p. 74). Here, emerges the problem of the relationship between the cognitive and the ideological, or between necessity and ideology. Owing to the fact that science does not develop and produce knowledge solely for internal reasons specific to it; rather, there are non-cognitive factors that govern the production of knowledge. These factors do not merely constitute the origins and roots of knowledge, but also permeate its forms and contents.

The stimuli and motivations for seeking and producing knowledge come from outside the cognitive field. For this reason, Jean Piaget holds that necessity within the intellectual structure of societies differs according to the general cognitive framework, which is itself determined by factors external to it, namely ideology. Piaget states: “The difference between one explanatory system and another is not a methodological difference, nor a difference in the concept of science; it is an ideological difference translated within a different epistemic framework.” It follows that the “obscure” and the “self-evident” are always proportionate to a given epistemic framework and are, to a large extent, determined by the prevailing ideology (Salah, 1980, pp. 56-57).

Moreover, ideology does not stop at stimulating scientific research and directing knowledge; it is also what selects and determines the fields and subjects to be addressed, or those to be avoided either because they are considered useless or because they are sacred and prohibited. Speaking of the motivations of scientific research, Piaget says: “Pressure or stimulation comes from social sectors; they demand solutions to problems of a scientific nature.” (Abd al-Salam, 1993, p. 55)

History provides countless examples showing that ideology has designated science and directed it to serve its purposes and objectives. For insatnce, the development and flourishing of research in the field of nuclear physics in the twentieth century were driven by the Cold War between the Eastern and Western blocs, with the aim of developing military capabilities and weapons (J. Piaget, 1982, p. 281).

Likewise, the development of experimental psychology stemmed from the desire to understand individuals’ abilities and morale and to select those capable of leadership in intense battles; for this purpose, tests and assessment scales were developed during the First World War (Abd al-Salam, 1993, p. 56).

There is no doubt that the military and authoritarian mentality (Autoritarisme) lay behind the development of many sciences, especially the experimental ones. On this basis, it is said that science developed in military laboratories. Accordingly, Michel Foucault argues that the sciences that take the human being as their subject such as demography, sociology, psychology, medicine, etc. arose and developed in order to domesticate and control human beings (Abd al-Salam, 1993, p. 76), within the context of his analysis of the relationship between knowledge and power.

On the other hand, Gaston Bachelard agrees with Piaget on many issues concerning the history of science, particularly the belief that necessity is an evolving context rather than a fixed one. Nevertheless, he holds the opposite view to Piaget regarding the causes of scientific progress: for Bachelard, science advances and develops due to internal rather than external factors, he belongs to the view whose proponents are called (internalists), as opposed to the view known as (externalists).

According to Bachelard, scientific knowledge is produced and develops according to its own intrinsic conditions. The development of research methods and tools is what is responsible for the progress and flourishing of science, he likens this to temporal duration, which is propelled only by itself. Moreover, if social and political factors intervene in scientific knowledge, they hinder its development and growth.

The relationship between science as a whole and progressive ideology is a dialectical and evolutionary one (Mohammed, 1983, p. 54): the development of one leads to the development of the other, and the latter remains open to all the possible developments of the former, modifying its theses, abandoning what is no longer compatible, or even constructing a new intellectual framework capable of assimilating the results of the general sciences. At the same time, it does not impose cognitive limits on science, but stands against misleading claims that present themselves as scientific in order to reintroduce idealism in a guise adorned with science after true sciences had stripped it naked, expelled it from the house of humanity, and buried it in the cemetery of history as with astrology and similar doctrines (P Fraisse, p. 60).

The relationship between the natural sciences in particular and materialist ideology is inseparable except at the purely cognitive level of the natural sciences. Whoever accepts science as a means of understanding and transforming the world will accept its materialism, whatever his idealist convictions may be. Since, the alternative path would be to deny the validity of science. However much scientists may be accused of ideological or political narrow-mindedness, they are necessarily materialists. For, science is not merely a system of knowledge; it is first and foremost a method of scientific thinking, and then a body of knowledge that distinguishes science from non-science on the one hand, natural sciences from social sciences on the other, and one science from another on a third level.

4. THE HUMAN AND NATURAL SCIENCES IN THE CONTEXT OF MODERNITY

The foundations that shaped Western knowledge, according to the new concept of reason, were formulated from within the Western cultural system itself and from within the historical movement through which this reason passed, it was profoundly influenced by the religious question, as manifested in the political role of the Church and its opposition to science. Subsequently, in order for knowledge to be liberated, it became necessary to break the authority of religion, an authority founded on the claim that it possessed “total” truth, toward which the “partial” sciences aspired (Yumna, 2000, p. 206).

Presently, after centuries of Western research, modern Western knowledge has almost exhausted its energy. Besides, everything produced by modernity has become part of a fixed cognitive system, there has emerged a deep awareness among scholars of the modern natural sciences, as Dr. Abdel Wahab El-Messiri indicates that total or even quasi-total knowledge is impossible, that the domain of the unknown increases at a rate greater than that of the known, and that our material scientific knowledge of reality is not certain but largely probabilistic, due to the impossibility of fully explaining reality through material interpretation alone.

This has led to the erosion of epistemological certainty and to the spread of phenomena that had not been previously anticipated. Indeed, Western reason had thought it had erased them, assuming they remained a feature of “backward” societies (Yumna, 2000, p. 232).

After matter became the supreme reference of knowledge, the human being came to be viewed as highly developed matter in its most refined form. Yet how grim is this logical consequence of material reference: that the human being, despite his distinction from other forms of matter, is ultimately reduced back to it.

Thus, Western knowledge in the human sciences at the beginning of the last century witnessed a strenuous effort to apply the experimental method within its fields. This led to a fragmented understanding of the human being, while at the same time failing to achieve its aim. By reducing the human being to nature, this process results in his reduction and misinterpretation (Thomas, p. 72).

The realization of Western knowledge has produced what Dr. El-Messiri calls a distinctly Western paradox: it ultimately leads to a zero point. The attempt to control the human being, predict his behavior, and even alter his patterns begins by placing the human at the center after human sensibility had become the sole source of knowledge only for natural material laws to replace him and then gradually displace him.

The process ends with the complete deconstruction of the human being, even the elimination of the very concept of “man” (Thomas, p. 77).

In Islamic civilization, human behavior was considered unpredictable; the concept of freedom is fundamental. Although other intellectual trends affirmed the possibility of prediction, they nonetheless placed it beyond the scope of human cognition and confined it to divine power that is, to the Owner of existence and its First Cause.

This Western knowledge also produced a racial classification of human beings based on material foundations and affirmed inequality among peoples. Further, Non-Western peoples, their lands, and their resources were viewed as utilitarian material that the Western “superman” could employ for his own benefit, considering himself the most advanced and refined of peoples.

Francis Fukuyama, one of the American thinkers, published his book Our Posthuman Future (Washington, 2003), under the subtitle “Consequences of the Biotechnology Revolution,” in which he expresses concern that the human being may lose his soul, he was preceded by the British writer and novelist Aldous Huxley in his novel Brave New World, which illustrates how the human being gradually loses his soul in the name of progress, technological development, and advancement.

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Thus, our present age is undoubtedly the age of science. The contemporary world respects nothing but scientific thinking. The greatest weapon in today’s world is the weapon of science and scientific facts. Our world now depends on science and believes in science.

4.1. Ideology of the Scientific Community: Thomas Kuhn

Kuhn turns to what he calls the “ideology of the scientific community,” granting it central importance in understanding the nature of scientific activity, and just as a society becomes a coherent community not merely a sum of isolated individuals through ideology, the paradigm may be considered the ideology of the scientific community, ensuring its cohesion and homogeneity within a specific historical period.

In his 1971 study, Second Thoughts on Paradigms, Kuhn elaborates on two sets of ideas explored through paradigms. First, there are the shared elements that enable professional communication within the scientific community, facilitate the relatively smooth circulation of problems, and support consensus among scientists regarding theoretical judgments, he refers to this as the disciplinary matrix. Second, there is a set of ideas explaining why the scientific community accepts particular concrete solutions to specific problems in a coherent and sequential manner which Kuhn calls the exemplar matrix. Together, these two dimensions reveal the extent to which a paradigm carries an ideological function that shapes and structures the scientific community.

It is therefore unsurprising to view the paradigm as the ideology of the scientific institution. Yet, unlike ideology in general which primarily creates a degree of harmony among members of a group the scientific community is characterized by a distinctive level of solidarity, cooperation, and collective integration.

From this perspective, Kuhn argues that any explanation of scientific progress must ultimately rest on sociological and psychological factors, as well as on an analysis of the value system or ideology that operates within scientific institutions. Besides, by understanding scientists’ values, one can better comprehend the problems they choose to address and the solutions they ultimately endorse. Kuhn rejects the possibility of excluding these ideological factors from any serious account of scientific advancement.

For this reason, Kuhn paid particular attention to the cultural and social dimensions of science, emphasizing its affinity with other civilizational phenomena. His philosophy of science is thus grounded in a historical periodization of science through the succession of paradigms, each embodying a distinct intellectual and institutional configuration.

5. CONCLUSION

In light of the foregoing analysis, it becomes intelligible that the relationship between science and ideology constitutes one of the central questions in understanding the nature, development, and function of modern knowledge. Science, far from being a purely neutral or self-sufficient enterprise, is embedded within historical contexts and shaped by social structures, cultural values, and ideological orientations that influence both its trajectory and its interpretations.

This study has shown that scientific progress cannot be explained exclusively through internal methodological evolution, nor solely through external social pressures; rather, it unfolds through a dynamic interaction between epistemic structures and material conditions, and the history of science, the debates between internalist and externalist perspectives, and the paradigm theory of Thomas Kuhn all reveal that scientific communities operate within value-laden frameworks that guide problem selection, theoretical acceptance, and standards of rationality.

Moreover, the modern extension of experimental models to the human sciences has exposed deep philosophical tensions, while modernity initially placed the human being at the center of knowledge, it ultimately risked reducing him to a material entity governed by impersonal laws. This paradox calls for a critical reassessment of the philosophical assumptions underlying contemporary scientific rationality and its claims to objectivity and total explanation.

Ultimately, science remains a foundational force in shaping the contemporary world. Yet its power and authority must be accompanied by critical awareness of its ideological dimensions and social implications. Recognizing the dialectical interplay between science and ideology does not diminish the value of scientific knowledge; rather, it deepens our understanding of its limits, responsibilities, and transformative potential within human civilization.

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