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PECULIARITIES OF CONSTRUCTIVISM IN THE STYLE OF SCIENTIFIC THINKING

SULTANOVA GULNOZA SABIROVNA
professor, (DSc) of the Department
"Philosophy and national idea"
Samarkand State University after named Sharof Rashidov
Samarkand, Uzbekistan
sgulnoza33@gmail.com

Abstract

This article explores the influence of constructivist philosophy on the style of scientific thinking, focusing on epistemological and methodological dimensions. Constructivism challenges the objectivist ideal of science by emphasizing the active role of the subject in the construction of knowledge. Drawing from key thinkers such as Thomas Kuhn, Imre Lakatos, and Paul Feyerabend, the paper analyzes how scientific paradigms, research programmes, and methodological pluralism reflect constructivist tendencies. Furthermore, the article highlights recent contributions from Uzbek philosophers such as Sh. Rakhmatullayev and R. Allaberganov, who have examined the cultural and linguistic foundations of scientific knowledge in the post-Soviet context. The study demonstrates that constructivism fosters a flexible and dynamic understanding of scientific development, relevant to both global and regional philosophical discourses.

Key words: constructivism, scientific thinking, epistemology, paradigm, cognitive style, philosophy of science, Kuhn, Feyerabend, Uzbekistan

Introduction

In the philosophy of science, the concept of scientific thinking has undergone significant evolution. From the classical rationalist tradition, which considered scientific reasoning as a purely logical and objective process, the shift toward constructivist interpretations has radically transformed our understanding of knowledge. Constructivism emphasizes that knowledge is not simply discovered but constructed by individuals and communities through their interaction with the world and with each other [1].

This epistemological shift gained momentum in the twentieth century with the works of philosophers such as Thomas Kuhn and Paul Feyerabend. Their ideas challenged the linear, cumulative view of scientific progress and introduced a more dynamic, pluralistic model. In Kuhn's paradigm theory, scientific revolutions are not merely based on empirical falsification but on changes in worldview [2]. Feyerabend went even further by arguing for "epistemological anarchism"—the idea that no universal scientific method exists [3].

The constructivist approach also has deep implications for the understanding of scientific thinking as a style. It no longer centers solely on logical structure or methodological rigor but includes cultural, linguistic, psychological, and social factors. In this context, the "style of scientific thinking" is shaped not only by cognitive processes but also by non-cognitive influences, such as values, beliefs, and traditions [4].

Contemporary Central Asian philosophy—especially in Uzbekistan—has seen increasing interest in constructivist approaches to scientific knowledge. Scholars such as Shukhrat Rakhmatullayev and Rustam Allaberganov have highlighted the culturally mediated nature of epistemology, calling for a synthesis of global philosophical traditions with local intellectual heritage [5].

Methods

This study adopts a comparative-philosophical and hermeneutic methodology, analyzing key texts in the philosophy of science to elucidate the features of constructivism in scientific thinking. The approach involves interpretative analysis of theoretical frameworks proposed by Western and Uzbek scholars, tracing how constructivist elements are embedded in their epistemological models. The study also includes a historical-contextual review of major philosophical shifts that influenced scientific rationality from modernity to postmodernity.

A particular emphasis is placed on dialectical analysis, which allows for the examination of the interplay between cognitive and non-cognitive dimensions of scientific thought. This dialectical approach is essential to understanding how

scientific thinking evolves not only through logic and experiment, but also through sociocultural factors, language, and institutional structures [6].

Furthermore, the article integrates insights from Uzbek philosophical literature that explore the intersection between traditional epistemologies and contemporary constructivist models, reflecting the importance of national intellectual contexts in shaping universal philosophical discourse [7].

Analyzes and results

The analysis reveals several distinct features of constructivism in the style of scientific thinking:

1. Paradigm Relativity and Epistemic Pluralism

Kuhn's theory of paradigms demonstrates that scientific knowledge is embedded within historically contingent frameworks. Scientific progress, in this view, is not linear but discontinuous, driven by shifts in collective understanding rather than pure rationality [8].

2. Rejection of Methodological Monism

Feyerabend argues against the idea of a single scientific method, asserting that progress in science often depends on breaking methodological rules and embracing diversity of approaches. This reflects a constructivist attitude that values creativity and flexibility in scientific inquiry [9].

3. Sociocultural Embeddedness of Knowledge

Constructivist models emphasize that knowledge is shaped by cultural norms, language, and institutional power. Latour's analysis of laboratory life shows that even "objective facts" are constructed through negotiation, instrumentation, and consensus within scientific communities [10].

4. Cognitive-No cognitive Interplay

The style of scientific thinking under constructivism is not solely determined by rational analysis, but also by intuition, emotion, values, and social expectations. This understanding broadens the philosophical definition of rationality and challenges the dichotomy of logic versus subjectivity [11].

5. National Contexts in Scientific Epistemology

Uzbek scholars such as Rakhmatullayev and Allaberganov emphasize the necessity of integrating local intellectual traditions into global philosophical discourse. They argue that understanding is always situated, and that national schools of thought contribute significantly to the formation of epistemic styles [12].

Discussion

The findings illustrate that constructivism, as a philosophical approach to scientific thinking, marks a departure from the ideal of pure objectivity and methodological rigor. It foregrounds the epistemic role of context, interpretation, and cultural mediation. The paradigm theory introduced by Kuhn shifts the focus from empirical accumulation to conceptual revolutions shaped by communities of practice. Similarly, Feyerabend's methodological anarchism undermines the authority of uniform standards in favor of intellectual pluralism and creative divergence [13].

Bruno Latour's ethnographic studies of scientific laboratories further dissolve the boundary between science and society. He demonstrates that scientific facts are constructed through iterative interactions among scientists, tools, texts, and institutional protocols, suggesting that knowledge is contingent upon its modes of production [14].

In the Uzbek context, scholars like Rakhmatullayev and Allaberganov stress that local cultural and linguistic frameworks significantly influence the formation of scientific styles. Their work underscores the importance of integrating national intellectual traditions into the global philosophy of science. By doing so, they contribute to the development of a more inclusive epistemology that recognizes the validity of non-Western scientific perspectives [15].

Overall, constructivism reconfigures the notion of scientific thinking as a dynamic process. It incorporates not only the logical and methodological but also the intuitive, ethical, and historical dimensions of knowing. This approach aligns with contemporary developments in cognitive science and philosophy, which

emphasize the interaction between affect, embodiment, and reason in mental processes [16].

.Conclusion

Constructivism has profoundly influenced the philosophy of scientific thinking by revealing its multifaceted, culturally grounded, and socially negotiated character. Scientific thinking, from this perspective, is not a universal logic but a historically and contextually shaped style—one that varies across paradigms, disciplines, and civilizations.

By integrating insights from both Western theorists and Uzbek philosophers, this article shows that constructivism is not merely a critique of positivism but a constructive framework for understanding the diversity of scientific rationalities. Such a perspective fosters epistemic humility, intercultural dialogue, and methodological pluralism—values that are increasingly vital in an era of globalized science and education.

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