Parallel Empires of Knowledge: AI and the Fracturing of Global Science

Márton Demeter, Ferenc Petruska, Gergő Háló

[1,2,3] *Ludovika University of Public Service, Hungary*

ABSTRACT

This study examines shifting patterns in global academic knowledge production through the lens of world-systems theory, focusing on the role of generative artificial intelligence (AI) in reshaping epistemic hierarchies. Drawing on longitudinal bibliometric data (1996–2023), it analyzes publication volumes, international collaborations, and open access trends across core (U.S., U.K.), semi-peripheral, and peripheral regions, with special attention to China's emergence as a leading scientific producer. The paper highlights a growing divergence in AI infrastructure and access: Western scholars increasingly rely on open tools like ChatGPT, while China's closed ecosystem is governed by distinct political and epistemic norms. These developments may entrench parallel scientific systems, exacerbating inequalities in visibility, legitimacy, and collaboration. As AI becomes a central driver of research practices, the paper argues for inclusive, interoperable knowledge infrastructures to avoid deepening global academic fragmentation. The findings offer a critical perspective on the geopolitics of knowledge in the digital age.

Keywords: World-Systems Theory, Generative Artificial Intelligence, Global Knowledge Production, Academic Bifurcation