

AI's dual impact: Transforming society and social sciences

Chinese Journal of Sociology

2025, Vol. 11(1) 3–4

© The Author(s) 2025

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/2057150X251316601

journals.sagepub.com/home/chs**Tianji Cai¹  and Junming Huang² **

We are witnessing an unprecedented surge in the adoption of artificial intelligence (AI) across diverse domains of human society. The pace and depth of this transformation have already outstripped, and will likely continue to surpass, the readiness of individuals and institutions. This rapid evolution introduces profound uncertainties, manifesting as a blend of societal concerns, opportunities, and challenges. Key concerns include privacy violations, exacerbation of social inequalities, and increased energy consumption. On the other hand, AI offers remarkable opportunities: improved modes of communication, advanced text analysis, breakthroughs in machine learning, and greater data accessibility for informed governance. These developments enable deeper, more dynamic investigations into social phenomena.

Social scientists are uniquely positioned to observe and interpret the societal impacts of AI. They can analyze how AI reshapes human interactions, institutions, and systems, while also reflecting on its transformative effects on research methodologies and practices. The proliferation of digitized data—from online surveys and administrative records to social media streams and mobility trackers—equips researchers with advanced tools to address both enduring and emergent sociological questions. This special issue explores these intricate dynamics and provides insights into the transformative role of AI and big data in the social sciences, comprising two review articles, one perspective piece, and three methodological contributions.

Jonathan JH Zhu, Tai-Quan Peng, and Hai Liang systematically review computational communication research as a subfield within computational social science. They demonstrate how computational methodologies such as user analytics, content mining, and computational experiments augment traditional approaches, yielding novel insights into user behavior, content dynamics, and communication effects.

¹Department of Sociology, Institute of Collaborative Innovation, University of Macau, China

²Paul and Marcia Wythes Center on Contemporary China, Princeton University, USA

Corresponding author:

Junming Huang, Paul and Marcia Wythes Center on Contemporary China, Princeton University, Princeton, New Jersey 08544, USA.

Email: pub@junminghuang.com

Yu Xie and Sofia Avila examine the societal implications of generative language models, a prominent facet of AI. They explore the technological drivers and potential social consequences of generative large language model-based AI, emphasizing how AI may reshape interpersonal relationships and soft skills in a post-knowledge society. This forward-looking analysis invites critical reflection on the sweeping societal transformations ushered in by the AI revolution.

Jiongyi Cao and Tianguang Meng tackle the pressing topic of AI ethics and governance. Leveraging online survey data and social media analyses, they investigate public perceptions of AI ethics across eight dimensions, including safety, transparency, fairness, and human dignity. Their findings offer valuable insights into societal attitudes toward AI governance.

Justin Curl and Xing Xie provide an overview of federated learning, a machine learning paradigm that enhances data privacy while enabling collaborative model development. They evaluate its potential to address concerns about economic concentration and data privacy, while highlighting technical hurdles, such as data leakage and high communication costs, that must be addressed before broader implementation.

Qing Lan, Haonan Guo, and Tianji Cai apply machine learning to analyze municipal solid waste (MSW) management trends in urban environments. Using government data, they identify key factors influencing MSW, such as population density, household energy consumption, household size, and tourism. Their research underscores the potential of big data and AI to address urban environmental challenges and inform policy development.

Yuxin Hou and Junming Huang present a comprehensive review of natural language processing (NLP) techniques and their applications in the social sciences. They discuss methods for text representation and analysis, addressing critical challenges such as data representativeness, interpretability, and algorithmic bias. Their review advocates for the ethical and effective use of NLP to enhance the quantitative analysis of textual data in social science research.

These advancements, however, come with significant challenges. Researchers must grapple with the growing demand for high-quality data, trade-offs between AI performance and privacy, shifting roles of knowledge and personal identity, rising energy consumption, and the responsibility and reliability of AI models. Addressing these challenges is essential for harnessing AI's full potential while mitigating its risks.

We hope that this special issue inspires further inquiry and fosters interdisciplinary collaboration in this dynamic field. We extend our sincere gratitude to the authors, reviewers, and editorial team for their invaluable contributions.

ORCID iDs

Tianji Cai  <https://orcid.org/0000-0002-8962-2660>

Junming Huang  <https://orcid.org/0000-0002-2532-4090>