Journal of the Association for Information Systems

Volume 25
Issue 1 *Special Issue: The Future Impact of AI on Academic Journals and the Editorial Process (pp. 37-181)*

Article 4

2024

Evolving Epistemic Infrastructure: The Role of Scientific Journals in the Age of Generative AI

Youngjin Yoo
Case Western Reserve University, youngjin.yoo@case.edu

Follow this and additional works at: https://aisel.aisnet.org/jais

Recommended Citation
Yoo, Youngjin (2024) "Evolving Epistemic Infrastructure: The Role of Scientific Journals in the Age of Generative AI," *Journal of the Association for Information Systems*, 25(1), 137-144.
DOI: 10.17705/1jais.00870
Available at: https://aisel.aisnet.org/jais/vol25/iss1/4

This material is brought to you by the AIS Journals at AIS Electronic Library (AISeL). It has been accepted for inclusion in Journal of the Association for Information Systems by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Journal of the Association for Information Systems (2024) **25**(1), 137-144
doi: 10.17705/1jais.00870

EDITORIAL

ISSN 1536-9323

Evolving Epistemic Infrastructure: The Role of Scientific Journals in the Age of Generative AI

Youngjin Yoo[1]

[1]Weatherhead School of Management, Case Western Reserve University, USA, youngjin.yoo@case.edu

Abstract

Scientific journals, crucial components of our epistemic infrastructure, have continuously adapted to the changing technological landscape. Today, we stand at the precipice of a transformative phase brought about by generative AI, specifically large language models such as OpenAI's GPT and Google's Bard. In this opinion piece, I examine the implications of these models for the future of scientific journals and various stakeholders in the scientific community, including journals, scholars, and universities. To envisage the future trajectory of scientific journals, it's imperative to comprehend the operational mechanisms of these models and the fundamentally recombinatorial nature of human knowledge creation. I suggest that one of the significant roles generative AI can play is facilitating "long jumps" in our knowledge exploration process. I further propose *decentralization* and *deferred and temporary binding* as two crucial characteristics of the evolving epistemic infrastructure that supports precarious knowledge production. I foresee a future where scientific journals extend beyond their traditional gatekeeping roles. I call for scholars—as authors, reviewers, and mentors—to utilize these technologies to traverse the broad landscape of potential knowledge, fostering a more inclusive and dynamic scientific ecosystem.

Keywords: Generative AI, Sociology of Science, Decentralization, Deferred and Temporary Binding, Recombinations

David G. Schwartz was the accepting senior editor. This paper was submitted on June 25, 2023 and underwent two revisions. It is part of the Special Issue on The Future Impact of AI on Academic Journals and the Editorial Process.[1]

> *The Glass Bead Game is thus a mode of playing with the total contents and values of our culture; it plays with them as, say, in the great age of the arts a painter might have played with the colors on his palette.* (Hermann Hesse, *The Glass Bead Game*)[2]

1 Introduction

We stand at the threshold of a transformative epoch in the scientific world as generative artificial intelligence (AI) technologies, such as OpenAI's GPT (https://openai.com) and Google Bard (https://bard.google.com/), can potentially bring a fundamental redefinition of the conventional epistemic infrastructure that underpins the generation, validation, and assimilation of knowledge (Nature, 2023; Else, 2023; Liebrenz et al., 2023). I use the term *epistemic infrastructure* to encompass the foundational systems, institutions, and mechanisms that underpin the creation, validation, dissemination, and consumption of knowledge within our society. This infrastructure includes educational frameworks, research bodies, libraries, the scientific community, digital information

[1] I used OpenAI's ChatGPT-4 (May 24th version) in preparing this manuscript to brainstorm possible topics. I used Grammarly to proofread the manuscript. All ideas and sentences are my own.

[2] The connection between this paper and *The Glass Bead Game* was inspired by a dinner conversation with Kalle Lyytinen.

platforms, as well as the norms and rules adhered to by these entities in their quest for knowledge. The epistemic infrastructure serves as the backbone of our collective intellectual pursuits and plays a pivotal role in shaping our understanding of the world.

Scientific journals exist at the nexus of modern epistemic infrastructure, serving as the meeting point for knowledge creation, validation, dissemination, and consumption (Baldwin, 2015). The advent and rise of AI carry significant implications for scientific journals, which have traditionally been the arbiters of high-quality research. In this opinion piece, I speculate on the future evolution that scientific journals need to undergo in order to retain their relevance and effectiveness in this burgeoning era of generative AI. As one of the earliest online-only journals in the management field, the *Journal of the Association for Information Systems* (JAIS), is well positioned to face these new challenges.

2 The Evolving Role of Scientific Journals in Epistemic Infrastructure

As we trace the evolution of human civilization, from ancient Greece to the scientific revolution and the Enlightenment, to modernization, the advent of the internet, and the current era of generative AI, we observe a parallel evolution in our means of knowledge creation. Inextricably linked with these developments is the transformation of our epistemic infrastructure—the systems, institutions, and mechanisms underpinning knowledge generation, validation, and assimilation (Csiszar, 2016).

In ancient Greece, scholars advanced human understanding through philosophy, mathematics, and the nascent beginnings of the scientific method. The evolution of knowledge creation was rooted in the sharing of ideas in symposiums and early learning institutions, such as the library of Alexandria. The epistemic infrastructure of this era was primarily oral and text-based, with knowledge disseminated through dialogues, scrolls, and books (Katz & Katz, 1995).

The scientific revolution and the Enlightenment brought a fundamental shift. The invention of the printing press facilitated the widespread sharing of ideas and research findings, transforming the epistemic infrastructure into one that was more accessible and democratic. Nevertheless, it wasn't until the 17th century that scientific journals, as we perceive them in their present form, emerged as a critical element within the epistemic infrastructure (Csiszar, 2016). Prior to the emergence of these modern scientific journals, intellectuals disseminated their discoveries and inventions via personal letters, public and private presentations, and full-length books. The first scientific journal, *Philosophical Transactions*, was published in 1665, introducing a new medium for the systematic dissemination of scientific discoveries (Csiszar, 2016). This marked the beginning of a new era where scientific journals played a pivotal role in propagating new knowledge.

With the advent of modernization and industrialization, the pace of scientific discovery accelerated. Technological advancements, such as the telegraph and later the telephone, further revolutionized the epistemic infrastructure, allowing for quicker communication and collaboration. Scientific journals began to specialize, reflecting the increasing differentiation of scientific disciplines. In the early days, research articles were published primarily at the discretion of editors, who occasionally consulted trusted experts in the field. Einstein's papers were reviewed solely by the editor-in-chief, Max Planck, and his co-editor, Wilhelm Wien (Brümmer, 2003). John Maddox, a former editor of *Nature*, observed that Watson and Crick's famous "double helix" paper "could not have been refereed: its correctness is self-evident. No referee working in the field (Linus Pauling?) could have kept his mouth shut once he saw the structure" (Maddox, 2003).

The institution of the peer review process in the 19th century further increased the rigor and reliability of published research. The first documented instance of a peer reviewed scientific publication is attributed to the Royal Society of Edinburgh, which released a compilation of peer reviewed medical articles (Shema, 2014). The establishment of peer review systems was intended to enhance the prominence of the scientific community, a development that corresponded with the establishment of the notion of scientists (Csiszar, 2016). The journal *Nature* set a precedent by being the first scientific journal to formally mandate peer review, a policy it introduced in 1973 (Baldwin, 2015; Newmark, 2015).

The introduction of the internet marked yet another transformative shift (Csiszar, 2016). The digitization of journals and the advent of online databases, such as PubMed and JSTOR, made scientific knowledge more accessible. The internet changed how the research was disseminated and conducted, enabling global collaborations, data sharing, and new forms of peer review. In 1991, arXiv started to publish unreviewed preprints of research articles. In 2000, JAIS was established as an online-only journal under the leadership of Phillip Ein-Dor, the founding editor-in-chief, and backed by the Association for Information Systems, the largest global association of information systems scholars. And in 2006, PLOS ONE became the first open-access journal. It is important to note that these technology-enabled changes marked the emergence of predatory journal activities. This is a good reminder that technology has a Janus face—both good and bad.

As we stand on the cusp of the AI era, generative technologies like OpenAI's ChatGPT and Google Bard are poised to redefine our epistemic infrastructure once again. These tools offer novel ways to generate, validate, and consume knowledge, potentially further democratizing information access. As AI becomes increasingly sophisticated, we can envision a future where it plays a role in conducting research, analyzing data, and even contributing to the peer review process. Scientific journals have remained at the nexus of knowledge production, validation, and consumption through all these technological shifts. As the epistemic infrastructure evolves with the advent of AI, so too must scientific journals. They will need to adapt and innovate to maintain their relevance and efficacy, ensuring that they continue to uphold the integrity of scientific discovery in this new era.

This brief history of the evolution of scientific journals underscores the intertwined nature of technological advancement, knowledge creation, and our epistemic infrastructure. As we look to the future, we must be mindful of how these elements continue to shape and inform each other, bearing in mind the fundamental role that science and scientific journals play in this dynamic interplay.

3 Understanding Generative AI and Combinatorial Nature of Knowledge Creation

Generative AI, specifically large language models, is at the forefront of a paradigm shift in our epistemic infrastructure. These models, such as OpenAI's GPT series and Google's Bard, have an unprecedented ability to generate novel content that can potentially contribute to, transform, or distort our epistemic infrastructure of knowledge creation, validation, and dissemination. To understand the impact of these models on epistemic infrastructure, it's crucial to first understand how they function.

Large language models are trained on a vast array of existing texts, mainly from the internet. However, they do not understand text in the way humans do. These models are statistical machines that analyze patterns in the data they are trained on and then generate text based on those patterns. The key to their generative capabilities lies in their architecture, specifically the use of transformers, a type of neural network architecture that processes input data (like text) in parallel rather than sequentially, allowing for more complex pattern detection over larger spans of text (Vaswani et al., 2017).

When generating new text, these models make predictions based on the context they are given, choosing the next word in a sentence by calculating the probability of each possible next word based on the words that came before it. They do not have a concept of "truth" or "fact" but rather generate outputs based on the patterns they have detected in their training data (Mialon et al., 2023).

Unraveling their implications for our epistemic infrastructure requires a comprehensive understanding of their operational mechanisms and, crucially, an appreciation for the inherently combinatorial nature of knowledge creation—a theme echoed in the work of Stuart Kauffman (1993, 1995), Brian Arthur (2009), and Herbert Simon (1996). In a "fitness landscape model" proposed by Kauffman, different points in a landscape represent different possible combinations of genetic or characteristic traits, and the height of each point represents the "fitness," or adaptive success, of the combination of those traits within a certain environment. Arthur, in his book *The Nature of Technology*, develops an evolutionary theory of technology by likening technology to a language, where just as words can be combined to form sentences, individual technologies can be combined and arranged to create new and more complex technologies. Similarly, Simon conceptualizes design as a goal-directed search process of exploring the "solution space," where designers search through possible configurations and combinations to find optimal solutions within the defined constraints and criteria. These ideas all underscore the same fundamental truth: human creativity and, consequently, the process of knowledge creation are essentially combinatorial (Fleming & Sorenson, 2001, 2004; Levinthal, 1997). From this perspective, what we perceive as knowledge creation is a search within a probabilistic combinatorial space.

Human beings excel at local search and short leaps, moving incrementally along the landscape of existing knowledge (Ganco & Hoetker, 2009). However, major scientific breakthroughs typically occur when we make long jumps, bridging distant and often disparate areas of the knowledge landscape (Fleming & Sorenson, 2001, 2004). But to make these long jumps successfully, we need a map—guidance to navigate the vast and complex terrain of potential knowledge (Fleming & Sorenson, 2004).

This is where generative AI can play a pivotal role. By recombining existing ideas in new and potentially novel ways, large language models can synthesize vast information and identify patterns that might be difficult for naked human perception to detect. This ability to detect and generate novel combinations of ideas could serve as a tool for those long jumps, enabling researchers to traverse the knowledge landscape in ways that were previously unimaginable. AI models can synthesize vast amounts of information and detect plausible patterns. In this sense, "hallucinations" by generative AI models are not hallucinations. Rather,

they highlight the gap between what is and what ought to be in light of probabilistic combinatorial patterns.

Nevertheless, while these AI models could provide a powerful tool for exploration, it's crucial to remember that they are not infallible guides. They don't possess a concept of "truth" or "fact"—instead, they generate outputs based on the patterns detected in their training data. So, while they can suggest new paths across the knowledge landscape, the responsibility for evaluating the value, validity, and desirability of those paths still rests with human experts.

In this context, the role of scientific journals becomes even more crucial. They can provide the critical evaluation needed for AI-generated or AI-assisted knowledge while also establishing guidelines for the ethical use of AI in scientific research. They could further utilize these models to enhance the efficiency of the publishing process, aiding in tasks that range from initial manuscript screening to the curation of personalized research feeds.

In summary, the emergence of generative AI as a part of our epistemic infrastructure can usher us into a new era of knowledge discovery. By recognizing and harnessing the combinatorial nature of knowledge creation, we can use these powerful tools to explore more of the vast landscape of potential knowledge, fostering a more innovative and inclusive scientific community.

4 A New Glass Bead Game? Toward a Decentralized and Precarious Epistemic Infrastructure

Just as they have in the past, scientific journals and their peer review systems must continue to adapt to the shifting technological landscape. In my perspective, incorporating generative AI into our epistemic infrastructure is not a distant prospect—it's an existing reality that is only accelerating. As a non-native English speaker, I find that language-enhancing tools powered by large language models, like Grammarly, provide immense value. These tools are a cost-efficient and effective alternative to traditional human copy editors and proofreading services. Furthermore, scholars have long been using advanced statistical and visualization tools to aid their knowledge-creation process. Using online grammar checkers, human editors, or sophisticated computational tools in manuscript preparation isn't deemed unethical or problematic. Therefore, I believe that the effective use of generative AI in all knowledge-creation aspects should be allowed and actively encouraged. With the integration of Bard into Google Docs and ChatGPT into the Microsoft Office suite in the form of Copilot, this advancement is inevitable, and it's time to accept it.

Given this, I see little value in debating the regulation of the use of generative AI in our scientific processes. Embracing AI is inevitable. It is time to embrace this inevitability. Instead of resisting this shift, we must acknowledge the fundamental transformation of our epistemic infrastructure and ensure that our journals adapt accordingly. We must ask ourselves: What is the nature of our creativity? How do we evaluate it? What roles do tools play in our scientific practice? And, crucially, what truly matters in our pursuit of knowledge?

Against this backdrop, I propose two key directions for the evolution of our epistemic infrastructure: *decentralization* (Beck et al., 2018; Kyriakou et al., 2022) and *deferred and temporary binding* (Yoo et al., 2012; Zhang et al., 2021). A blend of generative AI, human reviews, and blockchain technology could potentially revolutionize this infrastructure, transforming scientific knowledge creation, validation, dissemination, and consumption.

The current epistemic infrastructure is characterized by centralized platforms and institutions that underpin the creation, validation, dissemination, and consumption of knowledge within our society. In a way, they set the rules of the "glass bead game."[3] At the core of this system lie scientific journals, which serve as the primary gatekeepers of scientific knowledge. Scholars conduct their research in their own private space and assemble all components of the research in the complete form of a manuscript. They submit these manuscripts to journals, where they undergo a rigorous review process. Peer reviewers, handpicked by journal editors, validate the research's quality and relevance. The reviewers, editors, and authors go through rounds of negotiation before the final form of the article is determined. Once accepted, these articles in their complete form are disseminated, often gated by paywalls or limited accessibilities, curating a specific trajectory for the flow of knowledge. The credibility and significance of research often hinge on the journal's reputation, its impact factor, and other established metrics, rather than the intrinsic value or interdisciplinary relevance of the research itself. Thus, journals, as centralized gatekeepers, play a crucial role in maintaining scientific integrity in the epistemic infrastructure.

[3] In his novel *The Glass Bead Game*, Hermann Hesse presents a fictional intellectual game in a future society where players create intricate patterns by synthesizing the entirety of human cultural achievements. In the Castalian world of Hesse's novel, players of the game are lauded for their ability to masterfully weave together disparate elements of human understanding. In a way, scholars are participating in a glass bead game integrating theories, data, and methodologies from multiple domains.

In contrast to the centralization of the existing system, the envisioned future epistemic infrastructure with *decentralization* and *deferred and temporary binding* seeks to distribute the power of knowledge creation, validation, dissemination, and consumption in time and space. In this envisioned future, I see the possibility of a fusion of the two concepts further complemented by the granularization and technology-assisted verification in our epistemic infrastructure.

Decentralization (Beck et al., 2018; Ellinger et al., 2023; Kyriakou et al., 2022) could leverage technologies like blockchain to store and validate granular knowledge components—data, reviews, methodologies, etc. without centralized gatekeepers. With its immutability and decentralization, blockchain technology could be harnessed to ensure the integrity and transparency of scientific research at every stage. Each phase of the scientific process—literature review, hypothesis formulation, experimental design, data collection, data analysis, and interpretation—could be documented as a "block" in the "chain." These stages, time-stamped and recorded on the blockchain, would form a permanent, tamper-proof record, open to verification by the scientific community, thereby reinforcing the reproducibility and credibility of research. Each knowledge component, once validated by scholars, could be stored transparently and immutably, breaking down the barriers of institutional gatekeeping and promoting a more democratized and participatory knowledge ecosystem.

Deferred and temporary binding (Yoo et al., 2012; Zhang et al., 2021), on the other hand, would introduce a novel approach to knowledge synthesis. Instead of static, predefined publications controlled by editors and publishers, generative AI could access and combine validated knowledge components in real time, crafting scientific articles on the fly. This dynamic synthesis would ensure that the knowledge output is adaptive, up to date, and responsive to the evolving landscape of research and understanding. Instead of permanent knowledge production, we can envision precarious knowledge production. While one might find the idea of precarious knowledge production absurd, in light of the fallibility of scientific knowledge (Chalmers, 2013; Popper, 1969), it simply implies an acceleration of the scientific discovery process.

Generative AI could catalyze the creation of new knowledge from this extensive record of scientific activity. By analyzing and synthesizing the information stored on the blockchain, AI could recognize patterns, establish connections, and generate novel hypotheses or insights. This process could speed up scientific discovery and foster "metaknowledge" creation, reflecting the understanding of how knowledge is created and used within the scientific community through an incremental cumulative tradition.

The application of the concept of decentralization and deferred and temporary binding of recombinant knowledge in our scientific practice is not entirely new. In 2017, as a program co-chair, I introduced the idea of a paper-a-thon at ICIS in Seoul. This concept allowed scholars possessing fragments of knowledge to participate in a parallel ad hoc recombinatorial exercise during the conference. We imagined researchers with various strengths—data set possession, methodological expertise, theoretical understanding, or excellent writing skills—coming together to produce manuscripts that they couldn't produce individually—which turned out to be true. The winning paper from this paper-a-thon was later published in JAIS (Wessel et al., 2021).

Another initiative, recently started by *MIS Quarterly*, is the "registered report" experiment.[4] Authors submit a manuscript with an introduction, literature review, methods, and pilot data for a peer review. If accepted, the authors commit to conducting the data collection and analysis as promised. The manuscript is essentially accepted under the condition that the authors fulfill their promise made in the initial review process.

Bloxberg is a dedicated blockchain infrastructure used to secure scientific data with reputational proof-of-research institutions (Kleinfercher et al., 2022). [5] Founded in 2019 by 11 institutions, Bloxberg uses the proof of authority as the consensus algorithm. The Bloxberg infrastructure can be used to support various applications to support various aspects of knowledge creation, validation, and dissemination activities.[6]

These three examples demonstrate that the movement toward the *decentralization* and *deferred and temporary binding* of the recombinant scientific discovery process has already started. With these movements in motion, in the future, scientific journals could radically redefine their traditional role. Instead of merely gatekeeping new research by connecting the outcome of private knowledge creation by individual scholars with public dissemination and consumption through a scientific validation process involving blind peer review, journals could become facilitators of this innovative mode of *synthetic knowledge creation and validation*. They could provide platforms for recording and verifying scientific activities on the blockchain and leverage AI to curate and dynamically combine knowledge components stored there to generate new synthetic

[4] https://misq.umn.edu/call_for_papers/registered-reports

[5] https://bloxberg.org/discover/genesis/. I would like to thank an anonymous reviewer for suggesting the Bloxberg project as an example.

[6] https://bloxberg.org/apps/member-dapps/ and https://bloxberg.org/apps/external-dapps/

knowledge that is verifiable. Instead of being static repositories of knowledge, they could evolve into dynamic platforms, facilitating the real-time synthesis of knowledge through generative AI. These "journals" would serve as interfaces, calling upon blockchain-stored components to produce content tailored to individual needs, ensuring that the knowledge disseminated is both current and comprehensive. In an extreme scenario, meta-articles could be dynamically generated by recombining existing verified knowledge blocks. These meta-articles, existing only temporarily and in purely digital form via deferred binding of underlying verified knowledge blocks, could represent a new form of scientific discourse.

Much like the glass bead game, which abstracts and synthesizes vast amounts of knowledge into intricate patterns, the envisioned infrastructure seeks to weave together individual, validated knowledge components into a coherent whole. Where the traditional model might be likened to individual, isolated games being played, each with its own players and rules, the decentralized system is more akin to a dynamic, ongoing glass bead game, continuously evolving with each new contribution. This ever-evolving game has the potential to encompass a broader spectrum of human understanding, breaking down the silos of disciplines and promoting a more interconnected, holistic view of knowledge.

While human peer reviews would undoubtedly retain their significance, they could be augmented with machine verification or "crowd-sourced" verification enabled by the blockchain. AI could be deployed to identify relevant research for inclusion in a journal issue or to create personalized "feeds" of research tailored to individual readers in real time.

5 Conclusion

As we stand on the precipice of a transformative era in the scientific landscape, it is imperative that we thoughtfully engage with and adapt to these emerging technological realities. By recognizing and harnessing the recombinatorial nature of knowledge creation, we can utilize these powerful tools to explore more of the vast landscape of potential knowledge. In an envisioned future, scientific journals could radically redefine their traditional role by not only connecting traditional knowledge creation and dissemination/consumption via validation but also by facilitating dynamic synthetic knowledge creation, validation, dissemination, and consumption.

The integration of generative AI and blockchain technology as a complement to human expertise offers a vibrant vision for the future of our scientific epistemic infrastructure and the roles of all its stakeholders. By embracing these technologies, we can create a more dynamic, transparent, democratic, and dynamic scientific ecosystem—an ecosystem that respects the recombinatorial nature of knowledge creation, upholds the imperative for verifiability, and stands ready to face future challenges.

For scholars, this shift will necessitate a reevaluation of their roles as authors, reviewers, and mentors. As authors, they will have to become comfortable with the increased transparency and verifiability of their research processes and contributions. They will also need to develop proficiency in utilizing AI and blockchain technologies to augment their research and writing. As reviewers, the task will not be about gatekeeping but about providing meaningful and constructive input in a decentralized knowledge-creation system where the review process itself becomes a part of the immutable scientific record. As mentors, they will need to guide early-career researchers in navigating these changes, equipping them with the necessary skills and competencies to thrive in this new environment. They will have to foster an understanding of the ethical and practical implications of these technologies and instill respect for the transparency, accountability, and collaborative spirit they promote.

The practical implications of this evolution may be equally profound. A crisis of reproducibility is plaguing certain disciplines (Baker, 2016; Peng, 2015; Rodgers & Shrout, 2018). Such a problem could be mitigated in an ecosystem where research processes are transparent and verifiable. The use of AI could expedite the discovery process, potentially leading to faster breakthroughs. Blockchain technology could democratize scientific discourse by enabling crowd-sourced verification, thereby reducing bias and enhancing the diversity of perspectives.

Finally, these changes call for a reconsideration of faculty evaluation, particularly in the areas of tenure and promotion. Traditional metrics of productivity and impact may no longer suffice in a landscape transformed by AI and blockchain technologies. The emphasis on single-authored publications may give way to a more collaborative, recombinatorial model of knowledge creation. Contributions to blockchain-verified research processes, the quality of peer review, and the mentorship of early-career researchers in these new technologies could become valuable indicators of a faculty member's impact. As we move forward, evaluation frameworks must evolve to reflect these changes, rewarding innovation, collaboration, and transparency in addition to the traditional measures of scholarly output.

In the end, the future of our epistemic infrastructure lies in the hands of all stakeholders—journals, scholars, and universities. By accepting the digital revolution led by generative AI, we can strive for a more innovative, inclusive, and resilient scientific community, ever committed to the pursuit of knowledge.

References

Arthur, W. B. (2009). *The nature of technology: What it is and how it evolves*. Free Press.

Baker, M. (2016). Reproducibility crisis. *Nature, 533*(26), 353-366.

Baldwin, M. (2015). Credibility, peer review, and Nature, 1945–1990. *Notes and Records: The Royal Society Journal of the History of Science, 69*(3), 337-352.

Beck, R., Müller-Bloch, C., & King, J. L. (2018). Governance in the blockchain economy: A framework and research agenda. *Journal of the Association for Information Systems, 19*(10), 1020-1034.

Brümmer, J. (2003). How genius can smooth the road to publication. *Nature, 426*(6963), 119-119.

Chalmers, A. F. (2013). *What is this thing called science*? (4th ed.). Hackett Publishing.

Csiszar, A. (2016). Peer review: Troubled from the start. *Nature, 532*(7599), 306-308.

Nature. (2023). Tools such as ChatGPT threaten transparent science; here are our ground rules for their use [editorial]. *Nature*. https://www.nature.com/articles/d41586-023-00191-1

Ellinger, E. W., Gregory, R. W., Mini, T., Widjaja, T., & Henfridsson, O. (2023). Skin in the game: The transformational potential of decentralized autonomous organizations. *MIS Quarterly*. Advance online publication. https://doi.org/10.25300/MISQ/2023/17690

Else, H. (2023). Abstracts written by ChatGPT fool scientists. *Nature, 613*(7944), 423-423.

Fleming, L., & Sorenson, O. (2001). Technology as a complex adaptive system: evidence from patent data. *Research Policy, 30*, 1019-1039.

Fleming, L., & Sorenson, O. (2004). Science as a map in technological search. *Strategic Management Journal, 25*(89), 909-928.

Ganco, M., & Hoetker, G. (2009). NK modeling methodology in the strategy literature: Bounded search on a rugged landscape. In *Research methodology in strategy and management* (Vol. 5, pp. 237-268): Emerald.

Katz, A. M., & Katz, P. B. (1995). Emergence of scientific explanations of nature in ancient Greece: the only scientific discovery? *Circulation, 92*(3), 637-645.

Kauffman, S. A. (1993). *The origins of order: Self organization and selection in evolution*. Oxford University Press.

Kauffman, S. A. (1995). *At home in the universe: The search for laws of self-organization and complexity*. Oxford University Press.

Kleinfercher, F., Vengadasalam, S., & Lawton, J. (2022). *Bloxberg: The blockchain for science: Whitepaper 2.0*. Bloxberg. https://bloxberg.org/discover/genesis/

Kyriakou, H., Müller-Bloch, C., Beck, R., Hahn, J., Halaburda, H., Henfridsson, O., & Maruping, L. (2022). Blockchain: Challenges and opportunities for management research. *Academy of Management Proceedings*.

Levinthal, D. A. (1997). Adaptation on rugged landscapes. *Management Science, 43*, 934-950.

Liebrenz, M., Schleifer, R., Buadze, A., Bhugra, D., & Smith, A. (2023). Generating scholarly content with ChatGPT: Ethical challenges for medical publishing. *Lancet Digital Health, 5*(3), e105-e106.

Maddox, J. (2003). How genius can smooth the road to publication. *Nature, 426*(6963), 119-119.

Mialon, G., Dessì, R., Lomeli, M., Nalmpantis, C., Pasunuru, R., Raileanu, R., . . . Celikyilmaz, A. (2023). *Augmented language models: A survey*. arXiv. https://arxiv.org/abs/2302.07842

Newmark, P. (2015). Who nurtured Nature? *Current Biology, 25*(22), R1060-R1061.

Peng, R. (2015). The reproducibility crisis in science: A statistical counterattack. *Significance, 12*(3), 30-32.

Popper, K. R. (1969). *Conjectures and refutations*. Hutchinson.

Rodgers, J. L., & Shrout, P. E. (2018). Psychology's replication crisis as scientific opportunity: A précis for policymakers. *Policy Insights from the Behavioral and Brain Sciences, 5*(1), 134-141.

Shema, H. (2014). The birth of modern peer review. *Scientific American*. https://blogs.scientificamerican.com/information-culture/the-birth-of-modern-peer-review/#

Simon, H. A. (1996). *The sciences of the artificial*. MIT Press.

Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., . . . Polosukhin, I. (2017). Attention is all you need. *Proceedings of the 31st International Conference on Neural Information Processing Systems*.

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind-Jensen, T. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation. *Journal of the Association for Information Systems, 22*(1), 102-129.

Yoo, Y., Boland Jr., R. J., Lyytinen, K., Majchrzak, A., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for Innovation in the Digitized World. *Organization Science, 23*, 1398-1408.

Zhang, A., Yoo, Y., Lyytinen, K., & Lindberg, A. (2021). The unknowability of autonomous tools and the liminal experience of their use. *Information Systems Research, 32*(4), 1192-1213.

About the Authors

Youngjin Yoo is the Elizabeth M. and William C. Treuhaft Professor in Entrepreneurship and a professor of information systems in the Department of Design & Innovation at the Weatherhead School of Management, Case Western Reserve University, where he also serves as the associate dean of research. An Association of Information Systems Fellow, he is also WBS Distinguished Research Environment Professor at Warwick Business School, UK. He is a faculty co-director of xLab at Case Western Reserve University. He has worked as an innovation architect at the University Hospitals in Cleveland, overseeing the digital transformation efforts at one of the largest teaching hospital systems in the country. He studies digital innovation and has published at leading academic journals such as *MIS Quarterly*, *Information Systems Research*, *Organization Science*, *Journal of Association of Information Systems*, *Information & Organization*, *the Communications of the ACM*, and *Academy of Management Journal*.

Copyright © 2024 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712 Attn: Reprints, or via email from publications@aisnet.org.