The Transformation of Scientific Journal Editors' Mindset in the Big Data Era: Post-Print

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Abstract

With the advent of the big data era, editorial work for scientific journals faces new opportunities and challenges. The editorial thinking of scientific journals should be expanded from three aspects: thinking modality, thinking philosophy, and thinking orientation. Relevance, innovation, non-linearity, and holism constitute the core of thinking modality expansion; quantitative, multidimensional, and transformative philosophies constitute the core of thinking philosophy expansion; and the core of thinking orientation expansion encompasses the orientations of standards, data, and value.

Full Text

The Transformation of Editorial Thinking in Scientific Journals in the Big Data Era

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Abstract

With the advent of the big data era, editorial work in scientific journals faces new opportunities and challenges. Editorial thinking in scientific journals should expand in three dimensions: thinking form, thinking concept, and thinking dimension. Relationality, innovation, non-linearity, and holism constitute the core of thinking form expansion; quantitative, multi-dimensional, and transformative concepts form the core of thinking concept expansion; while standard, data, and value dimensions represent the core of thinking dimension expansion.

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In contemporary society, the application of big data increasingly demonstrates its advantages, expanding its reach across numerous domains including e-commerce, O2O services, and logistics distribution. Various sectors leveraging big data for development are assisting enterprises in continuously developing new business and innovating operational models. With the concept of big data, the analysis of consumer behavior, prediction of product sales, precision marketing scope, and inventory replenishment have all been comprehensively improved and optimized. Today's society is one of rapid development, advanced technology, and seamless information flow, where interpersonal communication grows increasingly close and life becomes more convenient—big data is the product of this high-tech era. Big data brings us three transformative conceptual shifts: using all data rather than random sampling; focusing on general direction rather than precise guidance; and emphasizing correlation rather than causation. The scientific journal industry will encounter new opportunities and challenges in this big data wave [1]. Influenced by the big data era, editorial thinking in scientific journals must also evolve with the times. This paper discusses three aspects—thinking concepts, thinking dimensions, and thinking forms—to analyze the expansion directions that constitute editorial thinking.

1. Expanding Editorial Thinking Concepts

Scientific and normative concepts have traditionally guided scientific journals. However, in the big data era, if scientific journals wish to develop and avoid obsolescence, their editorial thinking concepts must transform, expanding further toward quantitative, transformative, and multi-dimensional concepts.

1.1 Expanding Quantitative Concepts

Quantitative analysis and qualitative description constitute scientific language. In the big data era, quantitative thinking concepts should permeate scientific journal editors. Quantification represents the primary expression of scientific language in the big data era; the influence of scientific and technological achievements is now expressed through this language. The quantitative data format also serves as a corresponding embodiment of scientific achievements. With scientific development, quantitative scientific language has become the main manifestation of scientific and technological achievements. Big data is composed of individual data points, and the continuous development and innovation of modern mathematical models further quantify these data points, propelling the big data era forward. The further advancement of computerization and internet development makes it difficult for basic disciplines that cannot be quantified to progress in the big data era, ultimately resulting in their replacement by

other industries. If scientific journals wish to establish themselves in the big data era, they must expand toward quantitative concepts. Many disciplines have already integrated with this new scientific language [2], achieving breakthrough progress, with sequence stratigraphy and geodynamics serving as good examples.

1.2 Expanding Multi-dimensional Concepts

Editors of scientific journals should emphasize the transformation from "single-dimensional" to "multi-dimensional" concepts. In the big data era, editorial thinking may be deeply ingrained and difficult to change, but with the development of the times and social progress, one must advance or fall behind. While retaining sound thinking patterns, scientific journal editors should actively learn and apply new thinking approaches—on one hand, promoting and adhering to good traditional thinking methods, and on the other, actively absorbing and employing new thinking adapted to the times. As a beacon at the forefront of scientific development, journal editors cannot be complacent. While performing existing duties well, they should develop multi-dimensionally, as fulfilling responsibilities with single-dimensional or planar thinking is insufficient. Only through comprehensive application of multi-dimensional and stereoscopic thinking can work efficiency be improved and journal quality enhanced. People previously used three-dimensional concepts to describe space; if time is considered, then three dimensions become individual fragments. If editorial thinking in scientific journals can also enter multi-dimensional space, scientific journals will undoubtedly achieve rapid development.

1.3 Transformation of Thinking Concepts

Dialectical materialism posits that "human thinking is changeable." In the big data era, as people acquire and absorb massive, multi-element, and high-quality data resources, information accumulation will inevitably lead to qualitative change from quantitative change. The accumulation of new knowledge and ideas will transform existing thinking patterns to adapt to new phenomena. Scientific journal editors will also break through traditional thinking patterns in the reform wave of the big data era, establishing new thinking models, applying new knowledge, and courageously transforming and reconstructing to find new thinking concepts that enable the development of scientific journals.

2. Expanding Thinking Dimensions

Thinking, like force, has dimensions. Author dimension, article dimension, and reader dimension have traditionally been considered the three components of editorial thinking dimensions in scientific journals. In the big data era, the explosive growth of information also brings us new dimensions: data dimension, standard dimension, and value dimension. Scientific journal editors should also incorporate these three thinking dimensions.

2.1 Expanding Standard Dimensions

As massive, unscreened, and diverse data flood our surroundings, people are not yet fully prepared to receive this information. On one hand, industry standards and rules for big data entry, supplementation, and screening remain imperfect; on the other hand, the unfamiliarity of the scientific journal industry with new models has resulted in the absence of unified entry standards for editing, proofreading, and distribution, leaving online databases in chaos. Therefore, exploring new industry standards and norms represents an important task for the foreseeable future. Scientific journal editors should actively participate in formulating these standards, striving to gain a certain degree of discourse power in the process.

2.2 Expanding Data Dimensions

In the big data era, data constitutes its components, and each data point represents a resource. Scientific journals are industries that produce and create data. Like other products, the workflow of scientific journals requires attention to property rights protection. Therefore, journal editors must enhance their sensitivity to and focus on data, mastering the core data of journals to preserve their product and ensure sustainable development [3]. Expanding the data dimension serves as the guarantee that scientific journal editors can establish themselves in the big data era.

2.3 Expanding Value Dimensions

The core value of scientific journals lies in data, viewpoints, and knowledge. In the big data era, only by attaching great importance to this value and applying it reasonably can the high value of scientific journal data be realized. However, this does not mean closing off from the world, as sharing is the trend. Those unable to provide data will inevitably be abandoned by the times. Therefore, we must focus on maximizing the value of journal content, emphasizing the maximization of value in the processes of data collection and screening, transmission and exchange, and multi-dimensional dissemination.

3. Expanding Thinking Forms of Scientific Journal Editors

In the big data era, big data thinking is essential, and the transformation from original thinking to new thinking patterns is necessary. Scientific journal editors should, while maintaining traditional thinking, actively expand and develop new thinking to achieve the reconstruction of thinking forms.

3.1 Holistic Editorial Thinking

Scientific journal editors must emphasize the holism of journal data and information. Editorial work should proceed from multiple dimensions, angles, and

in diversified ways, without arbitrarily truncating original texts. Multiple elements should be reasonably integrated into content, and editorial forms should be fully expanded while meeting normative and standard requirements, thereby enriching the overall form of scientific journals. Editors should focus on every aspect of journal distribution, grasp the core elements for overall planning, and contribute to the distribution effectiveness and dissemination scope of scientific journals.

3.2 Relational Editorial Thinking

The primary tasks of scientific journal editors in work processes such as manuscript receipt, review, revision, and discussion involve perfecting journal data and reprocessing and overall arranging text. This constitutes a unique work process that demands high relational thinking capability. Understanding the data content of an entire article, or the relationship between this article's content and another's, or between this journal's content and other journals' content—all represent relationships between text and text, data and data. To properly handle these multiple relationships, editors' relational thinking capability is crucial.

3.3 Non-linear Editorial Thinking

Structural, non-structural, and fragmented [4] data constitute multi-variable, non-linear big data. Enhancing the non-linear thinking capability of scientific journal editors can improve sensitivity to data information. Expanding and strengthening editors' non-linear thinking capabilities facilitates their understanding of new scientific big data research models based on non-linear mathematics.

3.4 Innovative Editorial Thinking

Data recombination, reuse, open valuation, and expansion and depreciation innovation represent innovative forms of big data. The innovation in editorial thinking discussed here is not innovation in the traditional sense; it is a new thinking form that can manifest in the deep development and innovation of data, with greater emphasis on conceptual innovation.

4. Conclusion

The globally renowned consulting firm McKinsey first proposed the arrival of the "big data" era, stating: "Data has penetrated every industry and business function domain, becoming an important production factor. People's mining and utilization of massive data heralds a new wave of productivity growth and consumer surplus." Big data has existed for some time in fields such as physics, biology, environmental ecology, as well as in military, finance, and communications industries. During such a period, scientific journal editors should change their thinking patterns and accelerate learning and development [5] to adapt to

the impact and influence of the big data era. The expansion of editorial thinking is a key factor for establishing development in the big data era. With the push of the internet, the time available for expanding editorial thinking is decreasing. If scientific journals cannot adapt to this rapidly developing society, they will inevitably be replaced by emerging industries.

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Note: Figure translations are in progress. See original paper for figures.