Adapting to Change and Progressing with the Times: A Post-print Study of Mr. Jing Jipeng's Theoretical Thoughts on Information Science

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Abstract

[目的/意义] Mr. Jing Jipeng is a renowned information scientist in China, who has been prolific throughout his life, dedicated to research on the disciplinary system and education of information science. Theoretical research provides the logical foundation for disciplinary development and its integration with practice; Mr. Jing's research achievements in information science theory have, to a certain extent, offered new perspectives and opened up new fields for the study of information science in China. His theoretical thoughts on information science constitute a distinctive school of thought and hold significant value for the development and maturation of the information science discipline.

[方法/过程] Following the trajectory of the formation, development, and crystallization of Mr. Jing Jipeng's theoretical thoughts on information science, this study organizes the characteristics of his theoretical thoughts chronologically. Information science is closely linked to the development of the times; Mr. Jing conducted forward-looking research on information science in keeping with the times, and his rational judgments are reflected in the research content of information science across different periods. Therefore, this paper analyzes and summarizes the essence of his theoretical thoughts on information science from the perspective of theoretical research content.

[结果/结论] First, Mr. Jing's theoretical research on information science is chronologically divided into three stages: the embryonic period, the formation period, and the deepening period of his theoretical thoughts. Second, the research content of his information science theory is analyzed from four aspects: the theoretical system of information science, information economy, information ecology, and information science education. Finally, based on the aforementioned two aspects, this study provides an in-depth analysis of the essence of his information science theory and examines the personal charisma revealed by Mr. Jing in his dedication to the cause of information science.

Full Text

Preamble

Abstract: [Purpose/Significance] Jing Jipeng is a renowned information scientist in China who dedicated his life to researching the disciplinary system and education of information science. Theoretical research provides the logical foundation for disciplinary development and its integration with practice. Mr. Jing's theoretical achievements in information science have offered new perspectives and opened new research fields for the discipline in China, establishing a distinctive school of thought that holds significant value for the development and maturation of information science. [Method/Process] Following the trajectory of the formation, development, and maturation of Jing's theoretical thought, this paper traces the characteristics of his ideas chronologically. As information science is closely linked to societal development, Jing conducted forward-looking research that kept pace with the times, with his rational judgments reflected in the research content of different periods. Therefore, this study analyzes and summarizes the essence of his theoretical thought from the perspective of research content. [Result/Conclusion] First, Jing's theoretical research is chronologically divided into three stages: the initial period, formation period, and deepening period. Second, his research content is analyzed from four aspects: information science theoretical system, information economy, information ecology, and information science education. Finally, based on these two dimensions, the paper delves into the theoretical essence of his thought and reveals the personal charisma reflected in his lifelong dedication to information science.

Keywords: Jing Jipeng; Information Science Theory; Information Science Ideology

Jing Jipeng is a distinguished contemporary information scientist in China who devoted his entire life to information science research, committing his energy and talent to disciplinary development, theoretical system construction, educational model innovation, and talent cultivation. His academic achievements, disciplinary contributions, and exemplary mentorship demonstrate profound expertise. Over more than four decades, his research has encompassed information science theoretical systems, information users, and information science education. His published works, leadership of over a hundred research projects, establishment of professional teaching teams, and cultivation of numerous academic backbones reflect his unwavering dedication and patriotism, exerting far-reaching influence on China's information science enterprise. Works such as *Introduction to Information Science*, *Theoretical Foundations of Information Science*, *Information Science Theory*, and *Information Ecology Theory and Application* serve as textbooks for information science programs in Chinese universities. His research has shaped a unique academic trajectory, with his forward-thinking vision and decisive leadership in disciplinary construction, professional education, and talent training establishing an unshakable reputation across three generations of scholars in the information science community.

Mr. Jing's lifelong dedication to information science forged his image as a rigorous scholar, shaped his distinctive personal charisma, articulated his profound intellectual system, and reflected his selfless commitment to education. His theoretical thought represents the crystallization of his academic achievements and constitutes a significant chapter in the developmental history of China's information science enterprise. Currently, *Complex: Academic Collection of Jing Jipeng* (hereinafter referred to as *the Collection*) [1] serves as a comprehensive summary of his research. However, Mr. Jing's profound theoretical thought, distilled from a lifetime of scholarship, warrants deeper exploration. As the *Book of Learning* states, "Observing each other's excellence is called polishing" [2]; the theoretical thought and personal charisma emerging from his research deserve admiration and emulation from younger scholars. Thus, studying his theoretical thought is particularly important.

2. The Developmental Process of Jing Jipeng's Information Science Theory

2.1 Initial Period of Theoretical Thought (1970s)

Mr. Jing's lifelong dedication and scientific achievements reflect his profound bond with information science, a connection that proves the importance of practice in nurturing his theoretical thought. Just as drawing water requires a rope, scholarship depends on practice. The seeds of his theoretical thought sprouted from his early information service capabilities, which were demonstrated through his responsiveness in establishing information science research laboratories/institutes/departments, setting up academic programs, and cultivating teaching staff.

In the early reform and opening-up period, society urgently needed information science talent, yet information education had long been neglected due to societal development constraints and Cultural Revolution-era obstacles. Based on rational judgment of this reality, decisive action became the preferred solution. Upon entering the information field, Mr. Jing led an investigation team to Beijing, Wuhan, Shanghai, and other cities to examine library and information science education, accumulating valuable experience. Responding to contemporary needs, he championed the establishment of a scientific and technical information research laboratory at his university, launching a series of information service activities and academic initiatives that established the laboratory's reputation. Shortly thereafter, he established China's first full-time information science research institute at a university—the Information Science Institute of Jilin University of Technology (later merged into Jilin University). In May 1978, Mr. Jing led a faculty team to propose and establish the first industry organization for information science among mechanical engineering universities, serving as its director-general. For over a decade, the organization held biannual information activities, initiated the first national "information retrieval course" training program, published the first *Information Science* textbook, and con-

ducted the first evaluation of university information work, becoming a model for university information services nationwide.

Establishing an information science major was essential for cultivating professionals. In June 1978, the "Information Science Major Preparatory Group" was formed with Mr. Jing as its head. In 1980, the Department of Information Engineering was officially established with Mr. Jing as dean. His determination and vision were demonstrated through mobilizing faculty, establishing information engineering laboratories, conducting international study tours on information science education, and implementing the first large-scale national training program for information science faculty.

2.2 Germination Period of Theoretical Thought (1980s)

As reform and opening-up gained momentum, societal development urgently required scientific research transformation and adaptation. The growing demand for information technology made research on scientific and technical information, information education, and information theory increasingly important. Mr. Jing's drive in the information field positioned him at the forefront of his time. With the establishment of the scientific and technical information research laboratory, institute, and department, research responsibilities followed. As the saying goes, "One cannot cook without rice"; the sparks of Mr. Jing's theoretical thought were not castles in the air but emerged from continuous practical exploration, with his achievements laying the foundation for his academic ideology. The successive establishment of the research laboratory, institute, industry organization, preparatory group, and department created a robust framework for cultivating backbones and securing disciplinary resources, demonstrating the forward-looking nature of his vision for information science development in the early reform era.

Mr. Jing's natural science background led him to believe that grasping the essence of applying knowledge to practice was key to seizing the pulse of the times, reflected in his textbook compilation and initial theoretical system construction. Societal demand for information talent prompted new developments in information science education, and while research was burgeoning, systematic textbooks remained scarce. During this period, Mr. Jing compiled a series of practical textbooks. In 1984, his edited *Introduction to Information Science* was well-received by the field, becoming essential "nutrition" for social information institutions and university education. The book introduced fundamental theories, methods, and basic knowledge of scientific and technical information work, closely integrating with contemporary societal needs and demonstrating strong applicability [3]. In 1989, he authored *Practical Information Science*, systematically elaborating on information science, scientific and technical information work, information education, and modernization of information services, with practical value for researchers, information professionals, and students [4]. Evidently, his theoretical thought was intimately connected with social practice from its germination, aligning with the social nature of information science.

The research boom in scientific and technical information and enterprise information drove practical progress, yet also highlighted the urgency of theoretical research. During this period, Mr. Jing preliminarily constructed an information science theoretical system. In 1987, he secured a research project on the theoretical system, producing high-quality articles such as "Certain Issues in the Basic Theory of Information Science," where he critically argued that Brookes' information science theoretical system, based on Popper's World 3 theory, carried idealistic pluralistic undertones that obscured relevant concepts. He proposed following Lenin's approach of calling them first, second, and third-order things, with information science work collecting and organizing third-order things, and its basic theoretical task being to study the interaction between second and third-order things, viewing information and intelligence as having a consanguineous relationship in connotation [5]. In 1989, he applied the information reflection principle to information science research, arguing that mutual interference during information reflection was a primary cause of difficulty in obtaining specific information, and that the purpose of information work was to most effectively facilitate information reflection while minimizing interference [6]. This principle expanded the theoretical scope of information science and foreshadowed information economy research.

2.3 System Formation Period of Theoretical Thought (1990s)

The practical experience accumulated through information engineering department and national information network construction, the expanded information horizons developed for perfecting the education system, and the information thinking formed through textbook compilation and preliminary theoretical system construction laid a solid foundation for deepening his theoretical thought. Consequently, his thought took shape in the 1990s, with his research during this period demonstrating a "user-centered" orientation.

His articles exhibited a user-centered theoretical style. In 1991, "Constructing a User-Centered Information Science Theoretical System" argued that solving the user's position in the theoretical system was the breakthrough point for research, constructing a comprehensive framework based on Kato's scientific research program methodology. This pointed the direction for theoretical research to meet users' information needs and solve their absorption and utilization problems [7]. Represented by Mr. Jing and based on information science principles and Marxist philosophy, the user-centered theoretical viewpoint formally took shape, rivaling contemporary theories such as "science-communication," "society-knowledge," "information resources-network," and "information-knowledge-wisdom." This view aligned with Indian information scientists Rajagopalan and Rajadran's five principles of user-centered information science. In 1992, "Analyzing User Perspectives in Information Science Theoretical System Schools" incisively pointed out the user's core position in information systems [8]. Research trends in 1992's "Preliminary Exploration of User Questionnaire Evaluation Methods for Information Services" [9], 1993's

"Research on User Training for Computerized Information Retrieval" [10], and 1994's "Analysis of Environmental Factors Constraining Transformation from Potential to Actual Information Users" [11] demonstrated that his user perspective originated from and returned to users, possessing both theoretical height and practical grounding.

Systematic theoretical frameworks and practical experience are crucial for disciplinary development. In 1996, *Theoretical Foundations of Information Science* explained the theoretical system from perspectives of definition, foundation, structure, system, core forces, and development trends, providing important reference value for research paradigms [12]. In 1997, the revival of *Information Science* journal occurred. As its founder and editor-in-chief, Mr. Jing felt a strong sense of mission for its revitalization, recognizing the difficulty of establishing an excellent theoretical journal. This sense of responsibility drove him to align with academic frontiers and maintain quality. In the same year, he established the Jilin University of Technology School of Business Management through university-enterprise cooperation, becoming a model for such partnerships.

2.4 Deepening Period of Theoretical Thought (21st Century to Present)

As information technology permeated various industries and integrated with information resource development and utilization, human information functions, particularly management and decision-making, gained unprecedented attention, ushering in an information revolution. Meanwhile, the tension between economic development and environmental protection prompted reexamination of the human-ecology relationship. Against this backdrop, Mr. Jing further researched the information economy and timely proposed information ecology perspectives, deepening his theoretical thought and reaffirming its convergence with societal development.

Information economics applications in information science spawned new interdisciplinary intersections, generating momentum for information service characteristics such as service orientation, timeliness, and utility, leaving an indelible mark on societal development. In 2002, Mr. Jing established the Information Economy Theoretical Research Base—Jilin University Information Resources Research Center—and published a series of works. Textbooks included *Applied Information Economics* (2002), *Information Economics* (2004), *Information Sociology* (2004), *Information Economic Analysis* (2005), *Enterprise Information Planning and Management* (2006), and *Information Economics* (2007). Among these, *Information Economics* (2004) was listed in Jilin University's Top 100 Excellent Courses Construction Project as part of the 21st-century information management and information systems textbook series [13]; his lecture course *Information Economics* (2007) was rated as an excellent course at university and provincial levels, with the textbook approved as a Ministry of Education "Eleventh Five-Year" planning textbook [14]. Academic articles included "Out-

line of Network Information Resource Management Research" (2000), which attempted to create new paradigms for network-based information resource development [15]; "Research on the Operating Mechanism of Informatization Driving Industrialization" (2002), which constructed a mechanism for informatization-driven industrialization [16]; "Research on Enterprise Informatization Construction and New Models" (2003), which proposed new enterprise informatization models under network technology development [17]; and "Research on the Evolution Mechanism of the Information Industry System" (2008), which established an information industry evolution model based on economics and complex adaptive systems theory to explore evolution mechanisms [18].

The "half sea water, half flame" entanglement between information technology-driven societal development and environmental/natural resources pushed ecological issues to the forefront of 21st-century discourse. The "information explosion" and the relationship between information and people also posed new challenges for information science research. Focusing on information technology, Mr. Jing published articles such as "Analysis of Mechanisms and Application Benefits of Information Technology Penetrating the Machinery Industry" (2000) [19] and "The Impact of Information Technology on Enterprise Competitive Advantage" (2002) [20], exploring application value. Regarding information ecology, he led major projects including the National Social Science Fund 重大项目 "Research on the Formation and Evolution Laws of Network Information Ecological Chains" and general project "Research on Information Ecosystem Construction Theory and Application," publishing numerous papers on information ecology issues related to networks, microblogs, enterprises, e-commerce, and knowledge portals, as well as mechanisms and technologies. "Prospects for Information Ecology Theory Research" (2009) advocated research under systems, balance, interaction, and humanistic perspectives [21].

The development of information science theory today still involves considerable debate over its scope, core, and boundaries. Mr. Jing's theoretical thought has continuously deepened against this disciplinary backdrop. He authored *Information Science Theory* (2009), which architecturally demonstrates the theoretical structure of information science, systematically 梳理 its theoretical foundations, and elaborates on information systems theory, information architecture theory, competitive intelligence theory, knowledge management theory, and information ecology theory from developmental and innovative perspectives, pioneering the exploration of relationships between information ecology theory and information science and making scientifically predictive judgments about applications [22]. *Information Ecology Theory and Application* (2017) systematically introduces information ecology theory and applications, representing a relatively comprehensive and in-depth domestic monograph on the subject [23]. His incisive analysis of the relationship between information ecology theory and information science pointed out developmental trends that are now reflected in the widely discussed field of artificial intelligence.

3. Research Content of Jing Jipeng's Information Science Theory

The development and formation of Mr. Jing's theoretical thought is a process of continuous deepening and advancing with the times. Examining his research themes across different periods reveals distinctive era characteristics and personal charisma, demonstrating his warmth and respect for the discipline. His theoretical system constitutes the essence of his thought, creatively exploring disciplinary growth points in information economy and information ecology while germinating and maturing within information science education. These four research areas collectively shape his theoretical framework.

3.1 Constructing User-Centered Theory: Information Science Theoretical System

Mr. Jing's theoretical system aligns with the historical development of Chinese information science. Like his lifelong bond with information science education, his theoretical system engraves this connection into China's disciplinary trajectory. His system can be divided into three distinct periods: germination, formation, and deepening. The germination period reveals his developmental direction; the formation period established his theoretical characteristics; the deepening period represents the integration of his theory with societal trends. These periods are evident in his publications. *Introduction to Information Science* embodies the germination period with its "emphasizing technology and practicality" theme, laying foundations from practical information science [3]. *Theoretical Foundations of Information Science* shifted focus from scientific and technical information work to theoretical construction, addressing the period's excessive focus on "information" that obscured the essence of intelligence. The book constructed the theoretical system from definitions, foundations, structure, core forces, and trends, providing reference value for research paradigms [12]. *Information Science Theory* further analyzed the theoretical architecture, systematically 梳理 foundations, principles, and disciplinary structure while elaborating on information systems, architecture, competitive intelligence, knowledge management, and information ecology theories, incorporating information ecology into information science to trigger disciplinary growth points [22].

The user-centered core value permeates Mr. Jing's theoretical system. "Constructing a User-Centered Information Science Theoretical System" identified solving the user's position as a research breakthrough [7]. *Information Science Theory* emphatically stressed the user's core position, arguing that the theoretical system should shift from "thing-centered" information sources and systems to "human-centered" approaches, from technology-dominated to humanity-dominated, and from universal applications to knowledge domains, proposing strengthened user theory research, revealing information flow patterns from the user perspective, and developing user-oriented information policies [22]. His user-centered system serves as a wake-up call against the "technology-heavy, humanity-light" crisis triggered by information technology, reminding that tech-

nology ultimately serves users. User information behaviors continuously refine their profiles, while information systems' exploration of user interests and needs adds searchable dimensions, laying foundations for deep theoretical development. Service to users requires innovative thinking; Mr. Jing timely identified new development directions, proposing an innovation mechanism and model for information science with information technology as driving force, information demand as pulling force, information resource transformation as internal driving force, and information resource development, utilization, and management as external driving forces [24].

3.2 Interdisciplinary Exploration: Information Economy

Mr. Jing's natural science education background and solid foundational knowledge led him to view information technology as a main thread in information science development, creating new interdisciplinary intersections by combining information science theory with information economics. Based on his research acumen and insight, he dedicated himself to applying information economics to socio-economic development, becoming one of the earliest scholars to apply advanced technology to information science. His information economy research is fully reflected in today's big data economy, demonstrating the foresight of his developmental predictions.

His information economy research covers multiple dimensions. Based on economics and complex systems theory, he established an information industry evolution model to explore mechanisms from micro, meso, and macro perspectives, clarifying interactions among investment, technology, innovation, and market demand to promote industry development [18]. At the practical level, he explored information resource allocation in technology transfer [25]; proposed new enterprise informatization models under network technology [17]; constructed operating mechanisms for informatization-driven industrialization to promote China's industrialization process [16]; analyzed Jilin Province's information industry structure using grey system theory to identify development strategies [26]; and introduced the comprehensive information industry strength method to evaluate provincial information industry levels [27]. His *Information Economics* (1995) [28] promoted the integration of China's scientific and technical information service industry into the global information economy in the 1990s.

3.3 Empowering Discipline Development: Information Ecology

The knowledge, transmission, and utility attributes of intelligence [22] place information management and knowledge management in important positions, driving exploration of scientific essentials in big data environments. Today's robust artificial intelligence development requires grasping opportunities and challenges. Mr. Jing integrated ecological theory with information science, conducting information ecology research that positioned user information needs, retrieval, and utilization at the core of information systems, aligning with the

development characteristics of socialism with Chinese characteristics in the new era.

Mr. Jing believed information ecology studies the relationships among information, humans, and information environments, using mature ecological principles to examine interactions between human society and information environments, guiding and coordinating information society development with the natural world [22]. Based on this, he proposed applying new information ecology theory to information management, including ecosystem construction mechanisms, operating mechanisms, and organization models for information and knowledge under ecological perspectives [21]. "Research on Information Ecological Community Evolution Mechanisms" employed systems theory, synergy theory, information theory, and catastrophe theory to study evolution mechanisms, identifying social communication, domination, coordination, interaction, and mutation as primary mechanisms [29], establishing theoretical foundations for information ecology in information science.

The relationship between information ecology and information science can be supported through definitions, research objects, and content. Definitionally, information ecology concerns the total relationships among information, people, and environments. Its research object is the information ecosystem, treating humans, information, and environments as interacting wholes where humans play decisive roles. Its content involves information ecosystems and balance, environment management, global information environments, and enterprise informatization [22]. The human-centered core of information ecology aligns with information science's focus on user needs, making users the core object when applying ecological theory to information science. Ecosystem components—information people, information, technology, organizational structures, infrastructure, strategies, culture, and institutions—all revolve around users. Mr. Jing's user-centered ecological view both inherits his formation-period perspectives and innovates theoretical content for the new era.

3.4 Dedication to Education: Information Science Pedagogy

Mr. Jing has dedicated over 40 years to information science education, pioneering new models for schooling and talent cultivation. His contributions are evident in his bold establishment of educational frameworks and his meticulous scholarship. The preparation of the discipline, establishment of the Department of Information Engineering, four deanship appointments, completion of major research projects, and publication of papers and monographs have condensed his 40-year devotion into a legacy that continues through his ongoing service on doctoral dissertation committees and as honorary editor-in-chief of *Information Science* magazine.

In educational models, Mr. Jing maintained an open mindset, introducing advanced Western concepts. During early reform and opening-up, Jilin University

of Technology was still exploring its path. From 1984 to 1998, Mr. Jing led study tours to the United States, Japan, Canada, Australia, France, Germany, Britain, and Russia to examine educational conditions, facilities, curricula, and talent cultivation, broadening faculty horizons and accumulating experience for China's nascent information science education. In 1997, he established the Jilin University of Technology School of Business Management through university-enterprise cooperation, creating a model for such partnerships.

Regarding talent cultivation levels, Mr. Jing advocated for diversified models. In the early reform period, he examined Soviet information education, which emphasized improving expertise and quality while focusing on primary and continuing education, serving as a wake-up call for China's then-undervalued information education [30]. Seizing the post-reform education development opportunity, he established Jilin University's information science discipline, becoming a pioneer in founding the major and department. In 1982, he pioneered an engineering-background information engineering major for undergraduates, inspiring other universities to follow suit. He advocated for establishing multi-level education systems with scientific curricula [31], achieving master's authorization in 1986, library science and archival science master's and information science doctoral authorization in 2000, library science doctoral authorization in 2005, and first-level doctoral authorization in library and information science and archival management in 2010, creating continuous support for disciplinary development.

In talent cultivation models, Mr. Jing proposed in 1981 that theoretical research and teaching were essential aspects of university information work and the only path to improving professional standards, with teaching and research being primary academic activities [32]. In 1983, he proposed establishing diversified information education systems to cultivate engineering information talent through teaching, research, experimentation, and service [33]. His dedication produced China's first *Information Science* textbook and the academic journal *Foreign Information Science* (later renamed *Information Science*), which he described as his "carefully nurtured child" [1]. His spirit and achievements in cultivating information science talent remain worthy goals for our generation.

4. Characteristics of Jing Jipeng's Information Science Theory

Information science theoretical research and practical exploration are like two wheels of a cart, complementing each other. Mr. Jing's practical experience in information science catalyzed his theoretical system formation. His achievements in establishing majors and departments rooted his thought deeply, driving continuous refinement of theoretical frameworks and attempts to guide disciplinary development from theoretical heights. While disciplinary evolution is complex, his thought provides inspiration for successors by 梳理 intricate details and outlining theoretical architectures, making him a distinctive node in disciplinary history.

4.1 Timeliness and Openness

Mr. Jing's theoretical research encompasses four aspects: theoretical system, information economy, information ecology, and education. His user-centered perspective represented a forward-looking grasp of human importance in the information environment. Post-reform information technology transformations prompted his timely identification of information economics as a disciplinary growth point. In the new era of socialism, ecological concerns and human-centered values became prominent features, leading his forward-looking integration of ecological theory into information science. In education, he seized post-reform higher education opportunities to establish majors and departments, cultivating numerous educators and practitioners, with his foresight also evident in early examinations and adoption of foreign educational models. Throughout these timely decisions and achievements, his theoretical thought aligns with China's societal development, demonstrating distinctive era characteristics.

4.2 Practicality and Foresight

Mr. Jing's natural science background and achievements imbued his thought with a pragmatic spirit. From his initial bond with information science, he immersed himself in establishing majors, departments, and educational exchanges. His accomplishments demonstrate his down-to-earth style, decisive character, and innovative spirit, providing Jilin University's information science program with solid resources and talent reserves from its inception. Accumulated practical experience and personal charisma fostered a "investigating things to extend knowledge" spirit evident throughout his scientific and technical information work, information economy research, and practical information science studies.

4.3 Human-Centered and Ecological Perspectives

Mr. Jing's theoretical system formation period revealed his human-centered values, positioning information users at the core of theoretical research and constructing a user-centered theoretical framework in the 1990s. In the 21st century, his deepening research introduced ecological theory into information science, creating new interdisciplinary intersections. The penetration of artificial intelligence into various fields highlights human value and needs, and Mr. Jing's emphasis on users represents rational judgment and forward-looking grasp of disciplinary trends, fully embodying his human-centered view of information science development.

The development of Mr. Jing's theoretical thought exhibits distinct era characteristics, with research on theoretical systems, information economy, information ecology, and education forming its foundational framework. He pursued information science as a lifelong endeavor, stating, "Over 40 years of information science education and theoretical research, the information enterprise constitutes my entire academic life and almost my entire life." His construction of theoretical systems, expansion of research fields, development of education,

and cultivation of talent all bear his dedication and passion. The *Collection*'s sentiment of "providing for future scholars and serving the nation" [1] aptly demonstrates his scholarly demeanor of lifelong dedication without seeking reward. His scholarly journey, integrated with the information science enterprise, writes a history of lifelong commitment that inspires our generation to forge ahead with dedication.

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