Editor's Note

In the summer of 2024, Clifford Lynch announced his retirement as executive director of the Coalition for Networked Information (CNI) after 28 years at its helm. CNI quietly launched a project to create this Festschrift to document and honor his legacy. Authors began contributing articles in early 2025, with a planned publication date of July 2025. Since the final membership meeting of Cliff's tenure was April 7–8 in Milwaukee, the plan was to surprise him, surrounded by colleagues and friends, with a presentation of the table of contents of this special issue. However, just two weeks prior to the meeting, Cliff's health worsened; he was told about the Festschrift and received project details and articles. Though unable to attend in person, he participated in the CNI membership meeting via Zoom and also virtually joined his retirement reception, which included readings of excerpts from each article in this volume. Sadly, on April 10, 2025, Clifford Lynch passed away. Festschrift contributors wrote their articles prior to his passing, and we have chosen not to alter their original language.

A Farsighted Integrator

Marjory S. Blumenthal

abstract: Clifford Lynch brought interdisciplinarity and insight to the work of the Computer Science and Telecommunications Board at the National Academies of Sciences, Engineering, and Medicine. His contributions responded to the Internet-driven rise of computer-based information infrastructure as a phenomenon and as a source of economic, social, legal, and policy disruption. Issues he flagged in the 1990s continue to challenge libraries and scholarship today.

Introduction

I met Clifford Lynch, known as Cliff, in the early 1990s. I had become the first executive director of the Computer Science and Telecommunications Board (CSTB) at the National Academies in 1987. My early years there involved building relationships with a wide range of experts in information technologies; related research, applications, industries, and societal impacts; and relevant public policy. At that time, Cliff stood out for his unusual (to me) background. He was a libraries person, which I found puzzling at first—*why libraries*? But he was also a computer scientist, and that was a source of validation at CSTB.

Cliff contributed to multiple CSTB activities. He spoke at events, wrote material for CSTB reports, and participated in committee deliberations on such topics as information infrastructure, literacy (both information and information-technology literacy), and intellectual property rights. More often than not, those topics intersected, and Cliff was perceptive in acknowledging and assessing their interactions. This integrative outlook was (and is) a differentiator; so many experts focus on their primary expertise, whether as technologists, social scientists, lawyers, or something else.

Information Infrastructure

At the heart of Cliff's contributions to CSTB was information infrastructure, a topic included in CSTB's initial slate of interests when it was established in 1986. Information infrastructure loomed large in the 1990s. During that decade, the confluence of progress

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in networking and other computing technology, growing business interest in networking, and the commercialization of the Internet (historically limited to research and education environments, where it was developed and experienced its earliest uses), led to concern among "public interest" organizations (including libraries, among others) that the Internet's commercialization might thrive to their detriment. The Clinton administration spotlighted the issue beginning in January 1993 and leveraged Vice President Al Gore's long-standing interest in networking and the early Internet (supported indirectly by CSTB in the late 1980s).[1] With Gore's stewardship, the National Information Infrastructure (NII) initiative expanded to become the Global Information Infrastructure initiative.

CSTB engaged numerous experts and stakeholders in examining information infrastructure trends and their implications, not only for the supply of information infrastructure but also for the wide variety of its users. Consistent with CSTB's home within the National Academies, impacts on users associated with research, education, and libraries were a particular concern. Cliff proved to be an ideal contributor to explorations of potential directions for information infrastructure and the associated trade-offs, uncertainties, and ramifications. Unlike some public-interest advocates who sound alarms and amplify the fear, uncertainty, and doubt among their constituencies, Cliff demonstrated an appreciation for economics and the sometimes subtle interplay of costs and benefits associated with information infrastructure and the potential or actual government actions addressing it. He was thoughtful in contemplating practical implications for research and public libraries. In particular, he was realistic and farsighted in his understanding of the concerns of publishers. That intellectual property issues evident in the 1990s remain unresolved today contributes to continuing challenges for libraries.

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Roles of Libraries

An important illustration can be found in Cliff's contribution to a workshop and associated report exploring the changing nature of information infrastructure.[2] His chapter was titled "Future Roles of Libraries in Citizen Access to Information Resources through the National Information Infrastructure." In that chapter, Cliff examined popular assumptions about universal access as the role of telephony began to diminish. He recognized that the real issues and opportunities relate to what one can do via a NII, not merely having access to it, and how making use of such an infrastructure implies a need for corresponding education and awareness.

Cliff examined the rise of digital libraries and their relationship to traditional libraries, the persistence of library roles as providers of information to the public, and the NII as a source of benefit to libraries. He anticipated change (some if not all of

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which would be disruptive) in the information supplier ecosystem, including roles and relationships of for- and not-for-profit entities. With refreshing honesty, he discussed why publishers might be antagonized by libraries. He acknowledged that not all traditional sources of information might survive as independent entities, especially when "commercial organizations are also free to appear on the network to compete with libraries for patrons." (Some might argue such competition has already begun with Amazon as a publisher and distributor.) He was forthright in pointing out that "the majority of information has never been available for free use" and that "rights-holders are under no obligation to make their information available to libraries in electronic form under any terms." He noted, however, that "many of the policy compromises that characterize copyright law are not usually accommodated in licenses for electronic information resources." As he observed, "It is hard to distinguish where differential pricing ends and a refusal to license to libraries begins."

Cliff was prescient in noting that public libraries are more vulnerable than other kinds of libraries to the economics of networked digital content. Long before today's ebook pricing laments, he recognized how going digital meant moving away from easy interlibrary loan and the first-sale doctrine (which gives owners of copyrighted works rights to sell or lend their copies) to a contract and licensing regime, drawing on early library experiences with electronic databases. He noted that rights-holder restrictions obviate the potential benefits of the networked environment, which technically should facilitate transfers among institutions.

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Cliff pondered digitization prospects in that chapter, written at a time of more anticipation and experimentation than experience. He commented perceptively on transitional aspects as more electronic versions and new electronic content become available. He flagged libraries' role in preservation (a comparatively low-profile concern during the height of National Information Infrastructure and Global Information Infrastructure enthusiasm), noting that the cultural record is not the concern of a for-profit publisher. And he explained his dislike of the term "digital library," a term that nevertheless persisted, because it reduced the concept of a library to its collections.

A provocative speculation in the chapter contemplated potential subsidies to assure the realization of public benefits from the NII. The discussion did not feature the term "digital divide," perhaps because that term became more common a few years later. More questionable—at a time when the scope and scale of content and service offerings could only be imagined—were his speculations about the breadth of information available through the NII and the expectation that a minimum set of information might be available to all.

Literacy and Intellectual Property

Cliff also contributed insights to CSTB projects focused on literacy and intellectual property. His input to a project on information technology "fluency" compared and contrasted information-technology literacy with information literacy. He argued that

both are needed and detailed what is desirable in each case.[3] Cliff was farsighted in, for example, asserting the value of information literacy engaging all modalities, not just text—and in arguing that understanding information policies is part of information literacy.

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Finally, Cliff served on the study committee for a major project on the implications of information technology for intellectual property, especially copyright. The committee's report continues to resonate today thanks to the growth and diversification of digital content and the stagnation (or stasis, depending on one's perspective) of copyright policy.[4]

Those trends, of course, have substantiated the tensions he discussed in "Future Roles of Libraries." The library example opening *The Digital Dilemma: Intellectual Property in the Information Age* rings true today, without immediate prospect of remediation:

> Borrowing a book from a local public library would seem to be one of the most routine . . . acts in modern civic life . . . Yet the very possibility of borrowing a book, whether from a library or a friend, depends on a number of subtle, surprisingly complex, and at time conflicting elements of law, public policy, economics, and technology [that] may well be thrown completely out of balance by the accelerating transformation of information into digital form.

Conclusion

From my perspective as a science and technology policy analyst, information infrastructure is a microcosm for examining and understanding how computing and communications technologies evolve and affect people and institutions. Although planning for this article proceeded independently, corroboration came from Cliff's plenary talk at the December 2024 meeting of the Coalition for Networked Information (CNI).[6] Cliff chose then to reflect on the rise of information infrastructure and key developments during and surrounding the 1990s. Using the (newer) label "cyberinfrastructure," Cliff's comments set the stage for his arrival at CNI in the late 1990s and its agenda under his early leadership. As he observed, the 1990s "movement to the Net" was the biggest issue for many. People struggled to understand the implications of networked information "across the landscape." Business models and approaches to education were among the phenomena disrupted, although thanks to their early experiences developing and using computer networks (including components of the early Internet), campuses had a rare moment in the vanguard of networked experience. He closed out this theme by remarking on the launch of a new CSTB study committee to advise the National Science Foundation on how it might continue to support the advance of information infrastructure.

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In hindsight, it is easy to see that most of Cliff's 1990s observations endure. Much has changed in terms of information technology, its uses, and its suppliers, but the tensions and policy challenges persist. Fifteen to 20 years later, we can see that, by and large, Cliff got it right.

Cliff's interdisciplinary outlook is of particular value when contemplating next steps for institutions and public policy. He offered insights into competing interests when it came to both content and conduit (as networks were sometimes referred to in the 1990s) and other tensions. Also prescient was Cliff's recognition that connectivity was just the beginning of the changes that emerged as the Internet became commercial and took off globally.

While Cliff's thoughtful contributions leveraged his insights as an information scientist—that is, as a computer scientist and an expert on libraries and the handling of information in its different forms—the 1990s also saw the rise of a different kind of person in the debates over relevant public policy: lawyers. That trend has led to more polarized advocacy and more lobbying over issues where Cliff's historic constituencies might be outspent and outmaneuvered. But solid, reasoned, interdisciplinary, and balanced arguments of the kind for which Cliff Lynch is known remain important tools for those communities as information infrastructure continues to evolve and to pose new challenges.

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Notes

1. White House, *The National Information Infrastructure: Agenda for Action* (1993), https://clintonwhitehouse6.archives.gov/1993/09/1993-09-15-the-national-information-infrastructure-agenda-for-action.html.
2. Computer Science and Telecommunications Board, National Research Council, *The Changing Nature of Telecommunications/Information Infrastructure* (Washington, DC: National Academies Press, 1995), 86–97, https://nap.nationalacademies.org/catalog/4816/the-changing-nature-of-telecommunicationsinformation-infrastructure.
3. Clifford A. Lynch, "Information Literacy and Information Technology Literacy: New Components in the Curriculum for a Digital Culture," position paper submitted to the Computer Science and Telecommunications Board of the National Research Council (February 1998); Computer Science and Telecommunications Board, National Research Council, *Being Fluent with Information Technology* (Washington, DC: National Academies Press, 1999), https://nap.nationalacademies.org/catalog/6482/being-fluent-with-information-technology.
4. Computer Science and Telecommunications Board, National Research Council, *The Digital Dilemma: Intellectual Property in the Information Age* (Washington, DC: National Academies Press, 2000), https://nap.nationalacademies.org/catalog/9601/the-digital-dilemma-intellectual-property-in-the-information-age.
5. Clifford Lynch, "Survey of Developments, Trends, and Prospects," Opening Plenary, Coalition for Networked Information (CNI) Fall 2024 Membership Meeting, Washington DC, December 9, 2024, https://www.cni.org/mm/fall-2024/plenary-sessions-f24.
6. Computer Science and Telecommunications Board, National Research Council, "Future Directions for NSF's [National Science Foundation's] Advanced Cyberinfrastructure," National Academies of Sciences, Engineering, and Medicine, 2024), https://www.nationalacademies.org/our-work/future-directions-for-nsf-advanced-cyberinfrastructure.