

Fall 2024 Opening Plenary Footnotes Clifford Lynch, CNI Executive Director

These are some “footnotes”—citations and links—to documents I discussed or for more information about some topics mentioned in my December 9, 2024, opening plenary at the Fall 2024 CNI Membership Meeting. They are intended as starting points, not comprehensive introductions or surveys of the topics. I’ve not included links to broad topics like open science/scholarship that have been very widely covered and discussed. For some of the older material, I’ve also noted a few cases where a quick search failed to reveal an obvious open access online version; if readers have corrections on this please pass them along, and we’ll update these notes. Note that many of these are links that I have shared previously in CNI-ANNOUNCE messages. I hope they are helpful.

The Starting Point: 1996-1997

- *JSTOR: A History* by Roger C. Schonfeld: <https://www.jstor.org/stable/j.ctt7s6z3>
- TULIP
 - Interestingly, much of the “grey literature” of the Elsevier TULIP project doesn’t seem to have persisted online, at least in obvious places.
<https://www.clir.org/pubs/reports/mcclung/inv/065-2/>
 - Donald E. Riggs, C. Edward Wall, Ken Wachsberger, Nancy Gusack, and Clifford A. Lynch (Eds.). 1995. Special issue: Modes of Communicating Information and Knowledge. *Library Hi Tech* 13, 4 (Oct. 1995): <https://dl.acm.org/toc/liht/1995/13/4>
 - Marthyn Borghuis, Carnegie Mellon University Staff, Elsevier Science Publishers Staff, Cornell University Staff, Georgia Institute of Technology, School of Civil Engineering Staff, Massachusetts Institute of Technology Staff, and TULIP Staff. 1996. *Tulip: Final Report*. Elsevier Science Inc., USA.
<https://dl.acm.org/doi/book/10.5555/583045>
 - See also
 - UC/IEEE Project: <https://www.cni.org/wp-content/uploads/2013/06/The-IEEE.pdf>
 - CMU Project Mercury: Troll, D.A. & Richards, B.G. (1992). From Vision to Reality: Implementing the Distributed Electronic Library. *Proceedings of the ASIST Annual Meeting, 29*, 144. Retrieved December 13, 2024 from <https://www.learntechlib.org/p/146235/>.
 - https://www.tandfonline.com/doi/pdf/10.1300/J123v28n01_17
- Brian Eno, “The Big Market Years”

- JSTOR Version: Eno, Brian. "The Big Market Years." *Foreign Policy*, no. 119 (2000): 55–57. <https://doi.org/10.2307/1149525>.
- *The End of History and the Last Man* by Francis Fukuyama: <https://www.simonandschuster.com/books/The-End-of-History-and-the-Last-Man/Francis-Fukuyama/9780743284554>
- *The Long Boom: A Vision for The Coming Age Of Prosperity* by Peter Schwartz et al: <https://www.hachettebookgroup.com/titles/peter-schwartz/the-long-boom/9780738203645/>

Cyberinfrastructure

- NSFNET History & 1980s Supercomputing Program
 - https://www.nsf.gov/news/news_summ.jsp?cntn_id=103050
 - <https://new.nsf.gov/impacts/internet>
 - <https://www.ibm.com/history/nsfnet>
 - <https://fedtechmagazine.com/article/2016/11/nsfnet-served-precursor-internet-helped-spur-scientific-research>
- Material on UK E-science and E-scholarship program
 - <https://www.escience-grid.org.uk/>
 - <https://www.sciencedirect.com/science/article/abs/pii/S0167739X02000821>
 - Atkins Report: Revolutionizing Science and Engineering Through Cyberinfrastructure, Report of the Blue-Ribbon Advisory Panel on Cyberinfrastructure, National Science Foundation, 2003. Astoundingly, there doesn't seem to be an obvious "official" copy of this at the NSF or National Science Board sites, though there are several copies scattered around in other places. Here's one: https://web.archive.org/web/20191107234305id_/https://www.nsf.gov/cise/sci/reports/atkins.pdf
- Big Data
 - 2008 *Nature* issue: <https://www.nature.com/nature/volumes/455/issues/7209>
- 4th Paradigm
 - Book, *The Fourth Paradigm: Data-Intensive Scientific Discovery*. <https://www.microsoft.com/en-us/research/publication/fourth-paradigm-data-intensive-scientific-discovery/>
- Storage
 - National Academies Report: <https://nap.nationalacademies.org/catalog/27445/rapid-expert->

- National Science Foundation (and other) workshops
 - https://www.nationalacademies.org/event/41736_04-2024_artificial-intelligence-and-automated-laboratories-for-biotechnology-leveraging-opportunities-and-mitigating-risks-a-workshop
 - https://www.nsf.gov/awardsearch/showAward?AWD_ID=2335891&HistoricalAwards=false
 - https://www.nsf.gov/awardsearch/showAward?AWD_ID=2332452
 - https://www.nsf.gov/awardsearch/showAward?AWD_ID=2335910
- British Library Cyberattack
 - There's a blog post that provides context at: <https://blogs.bl.uk/living-knowledge/2024/03/learning-lessons-from-the-cyber-attack.html>
 - Full report: <https://www.bl.uk/home/british-library-cyber-incident-review-8-march-2024.pdf>
- Specialized Infrastructure
 - 5th Global Research Platform Workshop: <https://www.theglobalresearchplatform.net/meetings/the-5th-global-research-platform-workshop/>
- Cybersecurity
 - 2024 National Science Foundation Cybersecurity Summit
 - Website: <https://www.trustedci.org/2024-nsf-cybersecurity-summit>
 - Cybersecurity at Sea - Addressing Unmet Challenges and Leveraging Collaborative Solutions (Plenary)
 - Slides: https://www.google.com/url?q=https://docs.google.com/document/d/e/2PACX-1vSw2K9J89-pG3JPQarqaOLqTXlrHubfz25epw5_Ju1-AjUHIEHr9VG6aecrasrsGYkrOtSle7X37nQU/pub&sa=D&source=editors&ust=1734738191708905&usg=AOvVaw2Zl6ixRX6cCbyfaVm7_mWa
 - Video: https://youtu.be/TLNJ3Szu-2A?si=PmDt4_cTDg7QuJ2S
- Workforce
 - Missing millions report: https://www.nsf.gov/nsb/news/news_summ.jsp?cntn_id=308617
- National Academies Future Directions for the National Science Foundation's Advanced Cyberinfrastructure: <https://www.nationalacademies.org/our-work/future-directions-for-nsf-advanced-cyberinfrastructure>

Scholarly Communications

- Authentication and Reader Privacy
 - See literature on Shibboleth
 - <https://incommon.org/software/shibboleth/>
 - <https://www.shibboleth.net/about-us/the-shibboleth-project/>
 - InCommon: <https://incommon.org/>
 - Research Identity Federations: <https://refeds.org>
 - “The Rise of Reading Analytics and the Emerging Calculus of Reader Privacy in the Digital World” by Clifford Lynch: <https://doi.org/10.5210/fm.v22i4.7414>
 - Representing Mathematics
 - “Machine-Assisted Proof” by Terence Tao in Notices of the American Mathematical Society: <https://www.ams.org/notices/202501/rnoti-p6.pdf>
 - Bulletin of the American Mathematical Society
 - Volume 61, Number 4: <https://www.ams.org/journals/bull/2024-61-04/>
 - Volume 61, Number 3: <https://www.ams.org/journals/bull/2024-61-03/>
 - National Academies Report: Developing a 21st Century Global Library for Mathematics Research: <https://doi.org/10.17226/18619>
 - Curated Data Environments
 - Life-Cycle Decisions for Biomedical Data: The Challenge of Forecasting Costs (National Academies): <https://doi.org/10.17226/25639>
 - Predictive Databases
 - See AlphaFold: <https://deepmind.google/technologies/alphafold/>
 - Summary of this work in a paper (preprint) in *Nature*: <https://www.nature.com/articles/s41586-021-03828-1>
 - <https://techcrunch.com/2021/07/22/deepmind-puts-the-entire-human-proteome-online-as-folded-by-alphafold/>
 - <https://arstechnica.com/science/2021/07/google-turns-alphafold-loose-on-the-entire-human-genome/>
 - Changing Mix and Coordination of Government-Academic-Federal Research Funding
 - National Academy of Medicine. 2024. *The State of the U.S. Biomedical and Health Research Enterprise: Strategies for Achieving a Healthier America*: <https://doi.org/10.17226/27588>
 - The Vision for American Science & Technology (VAST) Committee: <https://sciencetechaction.org/vast-task-force/>

- “A New Vision for American Science” in *Science* by Sudip S. Parikh et al: <https://doi.org/10.1126/science.adu7982>
- Open Science and National Security.
 - See recently renewed US-China treaty signed Dec 13 and the surprisingly limited press coverage
 - Amendment and Extension of the U.S.-PRC Science and Technology Agreement (STA): <https://www.state.gov/amendment-and-extension-of-the-u-s-prc-science-and-technology-agreement-sta/>
 - *Nature* article: <https://www.nature.com/articles/d41586-024-04175-7>
 - *Science* article: <https://www.science.org/content/article/united-states-and-china-renew-science-pact-despite-rising-tensions>
 - “The Trap of Securitizing Science”: <https://issues.org/wp-content/uploads/2024/12/100-103-Shih-Wagner-The-Trap-of-Securitizing-Science-Fall-2024.pdf>
 - See also “From Lab to Leadership: How Data Can Keep America Ahead” <https://open.substack.com/pub/scsp222/p/from-lab-to-leadership-how-data-can>

Preservation and Stewardship

- Licensing rather than first sale/ownership
 - *The End of Ownership: Personal Property in the Digital Economy* by Aaron Perzanowski and Jason Schultz: <https://mitpress.mit.edu/9780262535243/the-end-of-ownership/>
 - *Vanishing Culture: A Report on Our Fragile Cultural Record* (Internet Archive): <https://blog.archive.org/2024/10/30/vanishing-culture-a-report-on-our-fragile-cultural-record/>
- Systems Stewardship, with a particular focus on social media:
 - Stewardship in the “Age of Algorithms” by Clifford Lynch: <https://doi.org/10.5210/fm.v22i12.8097>