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The Knowledge Infrastructure of Astronomy

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Big data, data-intensive science, and eScience are contemporary terms to describe research fields that generate, manipulate, and manage large volumes of data. Astronomy was among the first data-intensive fields, hence many other domains wish to learn from the experience of astronomers. Their knowledge infrastructure – an ecology of people, practices, technologies, institutions, material objects, and relationships – has accumulated over millennia. Over the last several decades, the practice of astronomy has transitioned from analog to digital technologies. In turn, the broad adoption of common tools, standards, and technologies has enabled astronomers to construct infrastructure components such as the Astrophysics Data System (ADS), the Strasbourg Astronomical Data Center (CDS), the NASA Extragalactic Database (NED), the Virtual Observatory, and data archives for missions such as Chandra, Hubble, and the Sloan Digital Sky Survey. While far from complete or seamless, the knowledge infrastructure for astronomy provides more comprehensive access to scientific publications and data than do most other scientific domains. This talk is drawn from continuing research on scholarship in astronomy (Borgman, Sands, Golshan, Darch, & Traweek, in progress) and a forthcoming book (Borgman, 2015).

Borgman, C. L. (2015). *Big Data, Little Data, No Data: Scholarship in the Networked World*. Cambridge MA: MIT Press.

Borgman, C. L., Sands, A. E., Golshan, M., Darch, P., & Traweek, S. (in progress).

Building blocks of the night sky: Creating a knowledge infrastructure for astronomy.

[Christine L. Borgman](#), Professor & Presidential Chair in Information Studies at UCLA, is the author of more than 200 [publications](#) in information studies, computer science, and communication. Her monographs, [Scholarship in the Digital Age: Information, Infrastructure, and the Internet](#) (MIT Press, 2007) and [From Gutenberg to the Global Information Infrastructure: Access to Information in a Networked World](#) (MIT Press, 2000), each won the [Best Information Science Book of the Year](#) award from the American Society for Information Science and Technology (ASIST). Her next book, *Big Data, Little Data, No Data: Scholarship in the Networked World*, will be published by MIT Press in early 2015. She is a Fellow of the American Association for the Advancement of Science and of the Association for Computing Machinery; a member of the Board of Directors of the [Electronic Privacy Information Center](#), U.S. Co-Chair of the CODATA-ICSTI Task Group on Data Citation and Attribution, and previously served on the U.S. National Academies' [Board on Research Data and Information](#) and the U.S. National [CODATA](#).