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Managing Information Gaps and Non-Information

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ABSTRACT

While the focus of information science and technology research is in information, sometimes the lack of information, information gaps and non-information can make an equally great or even greater difference. The purpose of this panel is to nuance the understanding of the absence of information and addressing the gap in theorising, investigating and working with information gaps and ‘non-information’ across the information field. Panellists present research conceptualising, documenting, and describing information gaps and non-information and how they are dealt with in the information field specifically addressing: 1) how conceptualisations of information gaps and non-information influence how they emerge as describable entities; 2) what approaches to manage information gaps and non-information exist in information science and technology research; 3) what aspects of information gaps and non-information different approaches address, make visible and invisible; and 4) how novel insights from the current state-of-the-art research can be translated to practice, policies and actions.

KEYWORDS

information gaps, lack of information, missing information, secretive information behaviours, silences

INTRODUCTION

A key focus of information science and technology research is, as Bates termed it, to follow “the red thread of information in the social texture of people's lives” (Bates, 1999, p. 1048). A central aspect of this effort is to help people to find relevant information and as Dervin put it, “building bridges” (1998) across information gaps. In contrast to gap-bridging and the human-side of gaps in terms of information needs and, for example, anomalous states of knowledge, the gaps themselves—when information is not available, it has been silenced or it does not exist—have been addressed to a much less systematically in the earlier research. While the issues with non-existing and unavailable information are not absent from the earlier work, there has been little exchange across the information field in developing a structured understanding of them. In parallel, much of the earlier research pertinent to gaps and non-information has had a tendency to follow the information poverty (Haider & Bawden, 2007) or deficit discourses (Gray, 2022). The same tendency is also dominating the contemporary policy landscape. From this perspective, the lack of information unfolds as a problem of not finding the relevant information while often, the absence of information is an inescapable aspect of reality. Relevant information might not exist at all, it can be unavailable or unretrievable. Consequently, it is reasonable to ask if, how and whether all information gaps can or even should be eliminated, how gaps can be productive, when they are a source of distress, and what distinguishes unavoidable gaps from avoidable ones.

The purpose of this panel is to nuance the understanding of the absence of information and addressing the gap in theorising, investigating and working with information gaps and ‘non-information’, how they are managed and dealt with across the information field and how not only information but lack of it can make a difference. Panel members will present research conceptualising, documenting, and describing information gaps and non-information and how they are managed and dealt with in the information field specifically addressing: 1) how different conceptualisations of information gaps and non-information shape how they emerge as describable entities; 2) what different approaches to managing information gaps and non-information exist or have been proposed in information science and technology research; 3) what aspects of information gaps and non-information different approaches address, make visible and invisible; and 4) how novel insights from the current state-of-the-art research can be translated to practice, policies and actions. The panellists are information science researchers who have conducted empirical research and concept development relating to different aspects of information gaps and non-information relating to diverse settings and contexts, ranging from archaeology and health to information literacy, environmental communication, and information pertaining to illegal substances and gambling.

EARLIER RESEARCH

Much of the earlier information science and technology research has conceptualised both information gaps and non-information (i.e., information that does not exist) as a negative state of deprivation. Much of information behaviour literature has been focused on overcoming information gaps, remedying anomalous state of knowledge (Belkin et al., 1982), and satisfying information needs by providing more and more relevant information. Gap bridging, undoubtedly best known from the work of Dervin (1998), has become one of the most powerful metaphors in information research (e.g., Oduntan & Ruthven, 2020; Savolainen, 2006). The typical goal of developing information retrieval and management systems and services is similarly expressed in terms of providing searchers relevant information that satisfy their direct and indirect needs. A parallel assumption that is plainly wrong, is that relevant information exists for every conceivable query (Golebiewski & boyd, 2018). So far, while there have been calls for a closer attention to alternative underpinnings of information practices in the literature, they have tended to remain in a relative margin.

Pointing out that absence and need of information are not always the principal reason for interacting with information does not mean that the lack of information would not often be a real problem. An information gap is an integral part of information experience (Gramini, 2022) and far from being merely a minor hindrance to interacting with information. It is often a major impediment to do whatever one desires or needs to accomplish, cause of anxiety and additional work. For example, Fulton shows how the lack of information is a major barrier to helping those vulnerable to harm from gambling (Fulton, 2019b). Missing (meta-)information—metadata (Tenopir et al., 2015), and for instance, paradata (Huvila, 2022)—is a barrier to data reuse that sometimes can be remedied by effective management and curation (Luong et al., 2021), sometimes through meticulous analysis of the data itself by using methods such as cognitive mapping (Fu et al., 2022) and critical data modelling (Wickett, 2023). Golebiewski and boyd (2018) underline further how even information systems, including search engines, should implement measures to mitigate adverse effects of data voids. Easy to access information and information systems that hide complexity and enact filter bubbles—including the major contemporary search engines—contribute to the creation of information gaps, ignorance and skewed informedness (Haider et al., 2022; Haider & Rödl, 2023).

While gaps and non-existence of information (or existence of non-information) can clearly be experienced as a deficit, it is not necessarily only detrimental. Increasingly common experience of information overload (Belabbes et al., 2022) has made it apparent that more is not always better. People restrict and control their urge to search, as Haider (2017) puts it, and abstain from information for multiple reasons. Information avoidance is routine everyday life information strategy (J. D. Johnson, 2009). It is a common strategy of dealing with information overflow but also when encountering potentially distressing information, for example, relating to medical conditions and personal non-trivial situations (Case et al., 2005). Avoidance can play out in terms of habituated long-term passive bypassing of information that is incongruent with personal, for instance, religious or political views, or as active short-term coping mechanism for dealing with bad news (Narayan et al., 2011).

Information seekers' avoidance of information and intentional creation of information gaps can also function as strategies of directing attention to more relevant aspects of the remaining information. Börjesson et al. (2022) analysis of archaeological research data points to how even the lack of information can be informative of how research was conducted. Harviainen and colleagues (e.g., 2020) have shown how in anonymous environments, factors such as artificially created usernames can become important pieces of information for establishing potential trust. Omitting details—such as names of individuals and replacing them with a collective name—can be used to increase trust on information and redefine who or what acts as a cognitive authority with particular information in a given situation. Huvila (2017) shows how archaeologists use anonymity and authorship designated to field directors and 'archaeology' as a collective actor to (re)define and negotiate trust in their information work.

The both positive and detrimental experience of information gaps and non-information instigate and are linked to particular information behaviours and practices. Sometimes secrecy and retaining information can be a key premise of a particular activity. For example, selective withholding and sharing of information are fundamental in how urban exploring is experienced (Fulton, 2017). Also, selective or delayed release may be a premise for archiving sensitive data in research, industry and government alike, generating purposeful information gaps (Bowers et al., 2021). A study of secretive information behaviours of gamblers, their families and friends show how specific information practices can contribute to keeping—the apparently fundamentally negative—behaviour of gambling addiction secret (Fulton, 2019a) but how supportive information behaviours can help in their recovery (Fulton, 2022).

Besides gaps, both information research and neighbouring fields have referred to a broad array of alternative concepts to discuss non-existing information. Philosophers have pursued the understanding of the nature of absence and nothingness beyond only as a negation of presence or non-absence (Mumford, 2021). Absence is a central concept and issue also in such disciplines as archaeology (Wallach, 2019) and material heritage studies (Felder et al., 2014; Rubio, 2020) where absence of information and transience of physical contemporary and historical

artefacts routine. In parallel, especially critical studies of knowledge organisation (e.g., Olson, 1998), data (Muller & Strohmayr, 2022) and records management (V. Johnson et al., 2017; Youngman et al., 2022) in the information field but also in, for example, history and archaeology (e.g., Davis, 2012; Huggett, 2020) have highlighted the presence and implications of conscious and unconscious silences in information and how it is described. Finally, forgetting and removal provide additional examples of associated concepts to the making of non-information that has attracted attention both in information research and beyond. Forgetting has been embraced in heritage and memory research in the information field (Jansson, 2023; Youngman et al., 2022) but also, for example, studies of scientific work (Hauser, 2021) and information futures (Rosenbaum et al., 2007) underline its generative nature in the contemporary culture where digital information systems, as Shilton notes, “increasingly banish forgetting” (Shilton, 2012 p. 1911). The related concept of removal has been used to describe practices that are in the essence enabling and facilitating forgetting, namely erasing and selective keeping of information (Homewood et al., 2020).

LAYOUT OF THE PANEL

The panel starts with an introduction to information gaps and non-information as topics of research and practice and brief overview of key concepts in this area. After the introduction, all panellists give short lightning talks on their work relating to the panel topic with a specific focus on theoretical and empirical insights and reflecting on implications for information practice, policy and action. After the lightning talks, the panellists provide brief commentaries on their colleagues’ presentations with a focus on identifying commonalities and differences in approaches and the relationship between their differing understandings of information gaps and non-information. During the final 30 minutes of the panel, the audience is invited to join the discussion. The discussion is guided by the moderator and facilitated by a series of questions based on the panellists’ presentations. Before the closing of the panel, the panellists are invited to give short reflections on how they would push the state-of-the-art of research on information gaps and non-information. The panel closes with an invitation from the moderator to the audience to contribute to the discussion started at the panel.

The presentations and commentaries combine two parallel approaches to engage with information gaps and non-information. All presentations explicate how gaps and the lack of information are conceptualised in different contexts across the information field and how these different understandings coincide and diverge. At the same time, all presentations also engage with the question of what—possibly positive, negative, or for instance, desirable stabilising or transformative—implications the gaps and non-information might have in particular contexts or situations. By bringing these two perspectives together, the panel explicates gaps and non-information as a perspective for information and technology research and their implications for key questions regarding information behaviour and practices, knowledge organisation, information management, literacies and systems development.

Panellists and their contributions

Isto Huvila, Uppsala University (moderator)

Isto Huvila presents empirical findings of his research on information gaps and non-information in archaeological documentation of archaeological work. The presentation draws on an ongoing empirical research project on archaeological information work and documentation of information making processes and practices in archaeology. A major source of information gaps in archaeology stems from the fragmented nature of archaeological material but Huvila’s presentation shows how gaps are also inherent in the documentation of the incomplete sources. Some of the omissions and non-information are accidental but many are conscious and aimed at making information work and the documentation more informative and effective by leaving out unnecessary details, increasing the trustworthiness of the documentation and pointing attention to relevant details. The findings call into question information gaps and non-information as a deficiency and points attention to how the lack of information can be informative.

Professor Isto Huvila holds the chair in information studies at the Department of ALM (Archival Studies, Library and Information Science and Museums and Cultural Heritage Studies) at Uppsala University in Sweden. His primary areas of research include information and knowledge management, information work, knowledge organisation, documentation, and social and participatory information practices.

Lisa Andersson, Uppsala University, Sweden

Lisa Andersson presents empirical findings of her research (conducted in collaboration with Emma Laurin, Department of Education, Uppsala University) on information work in families with children with autism and ADHD, including a focus on managing non-information and information gaps in everyday life and the care of the child. The presentation draws on completed empirical research on parents’ interactions with welfare actors, such as education professionals like teachers and special education specialists (Andersson & Laurin, forthcoming). While parents engage in a wide range of information work tasks such as finding, interpreting, evaluating, opposing and sharing information with and between welfare actors, a substantial part of the information work consists of managing information gaps. Major sources of information gaps in the everyday life and care of children with autism

and ADHD is uncertainty related to diagnoses, the needs of the individual child, and the responsibilities and capacities of the professionals in contact with the child. The implication is that parents need to find ways to communicate potential information about diagnoses and interpretations of the child's need to professionals who may or may not have the responsibility and capacity to support the child. The findings show that non-information is unavoidable in the situation, it can for example take several months to establish a correct diagnosis, but that the parents' information workload could be alleviated by innovative use of health and education information systems, leaving parents with more time and energy to focus on the well-being of the child and the family. Further research will probe deeper into how parents experience the information workload, in what situations they are experiencing the information workload as burdensome, and what can be done in terms of health and education information systems and practices to alleviate the burden of parents' information work and particularly the management of missing, potential or incomplete information.

Lisa Andersson is a researcher in information studies at the Department of ALM (Archival Studies, Library and Information Science and Museums and Cultural Heritage Studies) at Uppsala University in Sweden. Her primary areas of research include data, information and knowledge management, information work, and documentation. She specialises in research and professional practices, including the semi-professional work of caretakers.

Crystal Fulton, University College Dublin

Crystal Fulton will present findings from her research into the social impact of gambling in Ireland, addressing how secretive behaviours create information gaps for families affected by gamblers as they navigate this crisis context for information. Findings reveal that those affected by harmful gambling have multiple, diverse information needs, which result from secretive information behaviours. Research outcomes point to a public health issue in which information provision for those affected by harmful gambling requires urgent and significant attention, in particular the development of information and services aimed at helping the recovering gambler's social connections who struggle to overcome missing information and barriers to information.

Crystal Fulton is an Associate Professor in the School of Information & Communication Studies at University College Dublin (UCD), Ireland. Her research focuses on social participation in a range of everyday social settings, from information worlds in serious leisure contexts to the social margins and darker communities. Her work has revealed new constructs around information creation, secrecy, and manipulation, extending the boundaries of our understanding of information behaviour. Funded by the Irish Research Council for Ireland, she conducted the country's first national project to examine the social impact of gambling addiction, and further research for the Department of Justice and Equality, her research has been used to support new legislation in Ireland.

Jutta Haider, University of Borås

Jutta Haider discusses the notion of "networked silences," which refers to a particular logic of ignorance that emerges at the intersection of various information infrastructures - often algorithmic and commercial - with everyday life and capitalist society. Specifically, she elucidates how different expressions of ignorance associated with climate change, including productive, necessary, strategic, manipulative, as well as destructive ones, are co-constituted by algorithmic systems and various datafication imperatives. Haider argues that this gives rise to complex and layered, yet specific, sociotechnical and socio-political configurations that she proposes to conceptualise as "networked silences" (Haider et al., 2022; Haider & Rödl, 2023).

Jutta Haider is Professor at the Swedish School of Library and Information Science (SSLIS). Her research focuses on the shaping of knowledge and information, but also of ignorances and ways of not knowing, in contemporary digital cultures. This includes work exploring paradoxes of media and information literacies and the crisis of information, as well as the algorithmic shaping and datafication of environmental concerns and the climate crisis.

J. Tuomas Harviainen, Tampere University

J. Tuomas Harviainen will present findings from Dark Web boards where people buy and sell illegal narcotics and related materials, as well as discuss the effects of the substances, and related topics. Of particular interest to information studies is the way in which the disnormative, often criminal nature of the information makes people use non-optimal communication strategies in order to avoid legal consequences, and how they have to navigate the establishment of sufficient trust through communication while trying to stay anonymous. Data for this research comes from the projects *Extremist Networks, Narcotics and Criminality in Dark Web Environments* (ENNCODE, 2020-2022, Finland) and *Sieci kłacza, obieg znaczeń i treści oraz konteksty offline internetowego handlu narkotykami* (2022-2025, Poland).

Harviainen is Professor of Information Studies and Interactive Media at Tampere University, Finland. His main research interests are the information practices of marginalised communities and the information sharing that sometimes takes place between competing businesses within creative industries.

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REFERENCES

- Andersson, L., & Laurin, E. (forthcoming). *Parental information work and wage work capacity in families with children with autism and ADHD*. Centrum för Kompetensutveckling inom vård och omsorg: Jämlig hälsa i en osäker värld, Stockholms universitet, 11-12 maj 2023. <http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-498630>
- Bates, M. J. (1999). The invisible substrate of information science. *JASIS*, 50(12), 1043–1050.
- Belabbes, M. A., Ruthven, I., Moshfeghi, Y., & Rasmussen Pennington, D. (2022). Information overload: A concept analysis. *Journal of Documentation*, 79(1), 144–159. <https://doi.org/10.1108/JD-06-2021-0118>
- Belkin, N. J., Oddy, R. N., & Brooks, H. M. (1982). ASK for information retrieval: Part I.: Background and theory. *Journal of Documentation*, 38(2), 61–71.
- Börjesson, L., Sköld, O., Friberg, Z., Löwenborg, D., Pålsson, G., & Huvila, I. (2022). Re-purposing Excavation Database Content as Paradata: An Explorative Analysis of Paradata Identification Challenges and Opportunities. *KULA: Knowledge Creation, Dissemination, and Preservation Studies*, 6(3), Article 3. <https://doi.org/10.18357/kula.221>
- Bowers, J., Cushman, J., Sarathy, J., & Zittrain, J. (2021). 'Time Capsule' Archiving through Strong Dark Archives (SDA): Designing Trustable Distributed Archives for Sensitive Materials. *Journal of Archival Organization*, 18(3–4), 147–176. <https://doi.org/10.1080/15332748.2022.2110552>
- Case, D., Andrews, J., Johnson, J., & Allard, S. (2005). Avoiding versus Seeking: The Relationship of Information Seeking to Avoidance, Blunting, Coping, Dissonance, and Related Concepts. *Journal of the Medical Library Association*, 93(3), 353–362.
- Davis, N. Z. (2012). The Silences of the Archives, the Renown of the Story. In S. Fellman & M. Rahikainen (Eds.), *Historical knowledge: In quest of theory, method and evidence* (pp. 77–96). Cambridge Scholars Publishing.
- Dervin, B. (1998). Sense-making theory and practice: An overview of user interests in knowledge seeking and use. *Journal of Knowledge Management*, 2(2), 36–46.
- Felder, M., Duineveld, M., & Assche, K. V. (2014). Absence/presence and the ontological politics of heritage: The case of Barrack 57. *International Journal of Heritage Studies*, 1–16. <https://doi.org/10.1080/13527258.2014.948483>
- Fu, Y., Lomas, E., & Inskip, C. (2022). Cognitive mapping and its implication for understanding cultural behaviors and experiences in libraries. *Library & Information Science Research*, 44(3), 101181. <https://doi.org/10.1016/j.lisr.2022.101181>
- Fulton, C. (2017). Urban exploration: Secrecy and information creation and sharing in a hobby context. *Library & Information Science Research*, 39(3), 189–198. <https://doi.org/10.1016/j.lisr.2017.07.003>
- Fulton, C. (2019a). Secrets and secretive behaviours: Exploring the hidden through harmful gambling. *Library & Information Science Research*, 41(2), 151–157. <https://doi.org/10.1016/j.lisr.2019.03.003>
- Fulton, C. (2019b). The information needs of individuals affected by harmful gambling in Ireland. *The International Journal of Information, Diversity, & Inclusion*, 3(3), 11–28. <https://doi.org/10.33137/ijidi.v3i3.32962>
- Fulton, C. (2022). The hidden, manipulated, and secret information world of gambling addiction: Maximizing use of in-depth, narrative interviews to understand social impact. *Library & Information Science Research*, 44(4), 101193. <https://doi.org/10.1016/j.lisr.2022.101193>
- Golebiewski, M., & boyd, danah. (2018). *Data voids: Where missing data can easily be exploited*. Data & Society.
- Graminius, C. (2022). Fast-food information, information quality and information gap: A temporal exploration of the notion of information in science communication on climate change. *Journal of Documentation*, 78(7), 89–105. <https://doi.org/10.1108/JD-03-2021-0072>
- Gray, L. (2022). Information Abundance and Deficit: Revisiting Elfreda Chatman's Inquiry of Marginal Spaces and Populations. *Journal of Critical Library and Information Studies*, 3. <http://journals.litwinbooks.com/index.php/jclis/article/view/151>

- Haider, J. (2017). Controlling the urge to search. Studying the informational texture of practices by exploring the missing element. *Information Research*, 22(1), CoLIS paper 1613.
- Haider, J., & Bawden, D. (2007). Conceptions of information poverty in LIS: a discourse analysis. *Journal of Documentation*, 63(4), 534–557. <https://doi.org/10.1108/00220410710759002>
- Haider, J., & Rödl, M. (2023). Google Search and the creation of ignorance: The case of the climate crisis. *Big Data & Society*, 10, 1–12. <https://doi.org/10.1177/20539517231158997>
- Haider, J., Rödl, M., & Joosse, S. (2022). Algorithmically embodied emissions: The environmental harm of everyday life information in digital culture. *Information Research*, 27(Special issue with conference proceedings from CoLIS11, Oslo, Norway, May 29-June 1, 2022), paper colis2224. <https://doi.org/10.47989/colis2224>
- Harviainen, J. T., Haasio, A., & Hämäläinen, L. (2020). Drug traders on a local dark web marketplace. *Proceedings of the 23rd International Conference on Academic Mindtrek*, 20–26. <https://doi.org/10.1145/3377290.3377293>
- Hauser, E. (2021). What is the Thermal Conductivity of Copper? The Production of a Fact Through Scientific Forgetting. *Proc. Assoc. Inf. Sci. Technol.*, 58(1), 185–195. <https://doi.org/10.1002/pra2.447>
- Homewood, S., Karlsson, A., & Vallgård, A. (2020). Removal as a Method: A Fourth Wave HCI Approach to Understanding the Experience of Self-Tracking. *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, 1779–1791. <https://doi.org/10.1145/3357236.3395425>
- Huggett, J. (2020). Capturing the silences in digital archaeological knowledge. *Information—an International Interdisciplinary Journal*, 11(5), 278. <https://doi.org/10.3390/info11050278>
- Huvila, I. (2017). Archaeology of no names? The social productivity of anonymity in the archaeological information process. *Ephemera*, 17(2), 351–376.
- Huvila, I. (2022). Improving the usefulness of research data with better paradata. *Open Information Science*, 6(1), 28–48. <https://doi.org/10.1515/opis-2022-0129>
- Jansson, I.-M. (2023). Challenging the problem of un-democratic participation: From destruction to re-construction of heritage. *Journal of Documentation*, 79(2), 509–526. <https://doi.org/10.1108/JD-01-2022-0025>
- Johnson, J. D. (2009). An impressionistic mapping of information behavior with special attention to contexts, rationality, and ignorance. *Information Processing and Management*, 45(5), 593–604. <https://doi.org/10.1016/j.ipm.2009.04.005>
- Johnson, V., Fowler, S., & Thomas, D. (2017). *The silence of the archive*. Facet.
- Luong, H. Q., Fallaw, C., Schmitt, G., Braxton, S. M., & Imker, H. (2021). Responding to Reality: Evolving Curation Practices and Infrastructure at the University of Illinois at Urbana-Champaign. *Journal of EScience Librarianship*, 10(3), 1202. <https://doi.org/10.7191/jeslib.2021.1202>
- Muller, M., & Strohmayr, A. (2022). *Data Silences in Data Preparation: Toward a Taxonomy*. Workshop Investigating Data Work Across Domains: New Perspectives on the Work of Creating Data, CHI'2022.
- Mumford, S. (2021). *Absence and nothing: The philosophy of what there is not*. Oxford University Press.
- Narayan, B., Case, D. O., & Edwards, S. L. (2011). The role of information avoidance in everyday-life information behaviors. *Proceedings of the American Society for Information Science and Technology*, 48(1), 1–9. <https://doi.org/10.1002/meet.2011.14504801085>
- Oduntan, O., & Ruthven, I. (2020). People and places: Bridging the information gaps in refugee integration. *JASIST*, 72(1), 83–96. <https://doi.org/10.1002/asi.24366>
- Olson, H. A. (1998). Mapping Beyond Dewey's Boundaries: Constructing Classificatory Space for Marginalized Knowledge Domains. *Library Trends*, 47(2), 233–254.
- Rosenbaum, H., Blanchette, J.-F., Curry, M. R., Lievrouw, L. A., & Day, R. E. (2007). Forgetting and (Not) forgotten in the digital future. *Proceedings of the American Society for Information Science and Technology*, 43(1), 1–4. <https://doi.org/10.1002/meet.1450430160>
- Rubio, F. D. (2020). *Still Life*. University of Chicago Press.
- Savolainen, R. (2006). Information use as gap-bridging: The viewpoint of sense-making methodology. *JASIST*, 57(8), 1116–1125. <https://doi.org/10.1002/asi.20400>
- Shilton, K. (2012). Participatory personal data: An emerging research challenge for the information sciences. *JASIST*, 63(10), 1905–1915. <https://doi.org/10.1002/asi.22655>
- Tenopir, C., Dalton, E. D., Allard, S., Frame, M., Pjesivac, I., Birch, B., Pollock, D., & Dorsett, K. (2015). Changes in Data Sharing and Data Reuse Practices and Perceptions among Scientists Worldwide. *PLOS ONE*, 10(8), e0134826. <https://doi.org/10.1371/journal.pone.0134826>

Wallach, E. (2019). Inference from absence: The case of archaeology. *Palgrave Communications*, 5(1), 94. <https://doi.org/10.1057/s41599-019-0307-9>

Wickett, K. M. (2023). Critical data modeling and the basic representation model. *JASIST*. <https://doi.org/10.1002/asi.24745>

Youngman, T., Modrow, S., Smith, M., & Patin, B. (2022). Epistemicide on the Record: Theorizing Commemorative Injustice and Reimagining Interdisciplinary Discourses in Cultural Information Studies. *Proc. Assoc. Inf. Sci. Technol.*, 59(1), 358–367. <https://doi.org/10.1002/pa2.759>