

Part 1: Reflection from Sarah R. Demb, Coeditor

The theme of this issue, *Records management in the Anthropocene: pathways and challenges presented by climate change* was set in motion over five years ago by a Harvard study group entitled Catastrophic Risk: Technologies and Policy that I attended, which was run by cryptographer and data security expert Bruce Schneier in autumn of 2015. The study group was academic in nature rather than administrative and was attended mostly by postdoctoral and graduate students at MIT and Harvard, with a smattering of nonstudents such as myself, in fields as diverse as network computing, artificial intelligence, information governance and environmental science. The study group topics included ways of approaching and analyzing potential existential risks presented by nuclear weapons, biological accidents and pandemics, computers and artificial intelligence (robotics, nanotechnology and lethal autonomous weapons systems), cyberattacks and “extreme” climate change. It is telling that I remember almost nothing of the discussions on pandemics. We also discussed risk perception and response (cognitive biases, state versus non-state actors and the differences among risk prevention, detection and reaction).

Throughout the weeks that the study group met, I was struck by the almost naïve inability of most participants to truly conceive of the impact, mitigation needs and implications of long term or permanent loss of the power grid and information networks almost all of our work and lives now depend upon. Even when power loss was discussed, the baseline assumption by almost everyone in the room, including those who had grown up in places where electric power and network access remain patchy or inaccessible to the majority of populations, was that backup services such as generators and remote second-site offices and server farms would be available within a matter of days or perhaps a week. This failure of imagination, which bears very little resemblance to the reality for most organizations, prompted me to think harder about the nature of information resilience and infrastructure precarity that already impacts records management activities and looms large as the effects of climate change (such as extreme temperatures, flooding and fires) begin to manifest themselves on almost permanent, or at least cyclical, basis. What, if anything, were records managers doing to anticipate, respond to and mitigate these effects?

When the following spring the publisher Litwin announced a symposium on Libraries and Archives in the Anthropocene, this seemed like an opportunity to expand on ideas that I had only briefly introduced at the seminar. Bruce and I submitted a proposal, and subsequently, I presented our coauthored piece at NYU in May 2017. Our paper explored the feasibility of the pursuit of digital archives in a world simultaneously facing reduced natural resources, increased political instability and widespread economic inequality. At what catastrophic point might the lack of access to written knowledge and communications technology push us over the edge? If that point is closer than we would like to believe, why are we – both the archives and the information community at large – working so hard to preserve digital information against such great odds? As information moves into increasingly monoculture Web-based systems, they are increasingly vulnerable to a variety of threats, including natural events such as coronal mass ejections, climate events exacerbated by human-generated emissions of greenhouse gases such as floods and fires and malicious hacking of information content and infrastructures. System resilience is one part of any defense, and this includes the resilience of our collective information resources.



Dawn J. Wright characterizes digital resilience as “data and tools [...] freely accessible, interchangeable, operational, of high quality, and up-to-date [...]”; but this presupposes an available baseline infrastructure for output and delivery. The Anthropocene cannot necessarily guarantee such an infrastructure (even where the political will, economic resources and cooperative networks exist to support it) for output and delivery and may actually nurture forces that disable it. The USA is a perfect example of an information culture that relies on a teetering infrastructure (Bakke, 2016).

The COVID-19 pandemic has enabled – perhaps forced – many of us to make our holdings more accessible to a wider, broader audience that makes creative use of information kept over time – big data and deep data – in meaningful ways. But these efforts are still a drop in the bucket. We have centuries of material to digitize and an enormous wealth of born-digital material to preserve over the long term – its exponential growth makes the basic tasks of appraisal, processing and short-, medium- and long-term access via metadata and a plethora of platforms difficult if not impossible under the best of circumstances. The staffing and under-resourcing critical to successful records management and archives work was frayed before the pandemic, but it has laid bare the contradictory relationships between improving information access and the realities of resilience and precarity. The concomitant increase in remote work practices have created new challenges (such as a significant surfeit of digital video recordings) for many records managers and our information technology colleagues. And in the worsening circumstances of the Anthropocene, which may be inevitable, it is not clear how to save the digital information vital to basic survival, never mind documenting our histories as a species. We need to ensure that our information systems resilience remains commensurate with threats, but more importantly, we need to ensure that the information itself is resilient. It is not clear that we have achieved maturity in information resilience. We are working diligently to produce and preserve digital information but need to become more strategic in our efforts – and in our IT partnerships, whether internal or external – and to take seriously the fragility of the infrastructure on which our digital collections rely.

Two years later as the editors of this journal discussed ideas for special issues, records management and climate change was the first one that came to my mind. Archivist/records manager and climate change activist Eira Tansey, whom I had met at the NYU symposium, was my first choice for guest co-editor.

Part 2: Reflection from Eira Tansey, Guest Coeditor

The theory and practice of records management has much in common with climate change adaptation and mitigation. What both areas have in common is a sophisticated, frequently changing and often underappreciated relationship to risk.

In a complex organizational context, risk cannot be entirely eliminated, but with adequate resourcing, it can be anticipated and mitigated. Records managers can assess recordkeeping environments to understand the risks of interrupted workflows, insecure storage and over- (or under-)retained records. While many, if not most, records managers cannot fully eliminate these risks – their resource constraints and limited power within organizational hierarchy prevent them from fully carrying out their mission – skillful records managers know that the ultimate heart of their work is prioritizing the various forms of risk, identifying methods of risk reduction and gaining buy-in through prevention, which is much cheaper than remediation.

The challenges faced by records managers have remarkable similarities to those faced by climate scientists. Climate scientists develop models projecting how various emissions scenarios over decades may affect everything from global average temperature to sea-level

rise to glacier melt. Similar to records managers, climate scientists know that risk is complex, and addressing it will require cooperation from many people – especially policymakers – who do not understand their work, but who are crucial to finding solutions.

If climate change represents one of the largest risks that our contemporary society has ever faced, and we assume that it will affect virtually every sector, then it is worth thinking about how records managers' approach to risk can take lessons from the world of climate change science and policy. One place to reconsider our thinking is our assumption that technology will resolve everything.

Whether it is carbon capture for greenhouse gas emissions or blockchain for recordkeeping, advances in technology are often presented as the primary and even singular solution by which complicated problems will be resolved. In reality, technology alone cannot solve complex problems of risk. No technology is powerful enough to replace the "people-power" that is necessary for adapting to risk. Risks – whether posed by climate change or inadequate records management – present problems that will need to be primarily solved by a critical mass of people making cooperative decisions for long-term security. It is gratifying to see how many of the papers in this issue recognize that technological innovations alone cannot solve the challenges faced by records managers.

Part 3: Commentary on the papers in this special issue

In this stage of the Anthropocene, records management presents us with a neat paradox – the processes that create, maintain, deliver and preserve records, which currently rely primarily on fossil fuels and their greenhouse gas outputs, are themselves agents of the climate change threatening our records and archives. In the early Anthropocene at the time of the industrial revolution, information technologies limited their impact on the environment to their manufacturing processes (for devices such as typewriters) and the relatively small amount of energy used by dedicated carriers such as the telegraph and the comparatively lighter use of coal-fired trains and ships, and then early automobiles primarily used to transport mail and people (and therefore information and records). About 150 years later, we belatedly realized that simply switching from old-growth forest-sourced to recycled paper did not solve the greenhouse gas problem to which we were contributing.

Now the prime media of electronic records consumes vast amounts of power to keep servers running cool, share records at speeds that often overload older infrastructures and preserve information via migration over time. The same resources are also used to slow aging paper from succumbing to the increased temperature and humidity extremes created in part by these very same power demands. Most organizations are now "information businesses" even if they purport to deliver other products or services. And as such, their workflows are eating themselves in exponential power requirements. The paradox is a fascinating, and if we are not careful, mesmerizing one.

Records management should contain the tools to slow this growth or at least to mitigate some of its results. But as the papers in this special issue show, low awareness of the functions records management carries out, lack or perceived lack of agency within the profession and the continued need to demonstrate our value as a practice impedes our professional response.

Sidney Netshakhuma's case study of the impact of climate change on the Mpumalanga Province Archives in South Africa allows us to see the dilemma that many of our under-resourced colleagues in the Anthropocene front line of the Southern hemisphere face if they are forced to be reactive to disasters rather than to proactively reduce the carbon footprint of

their facilities. Netshakhuma underscores the importance of core activities such as appraisal that help to minimize volume and prioritize collections from the outset so that we can plan for and respond to climate change events efficiently and effectively. Similarly, Ana Serano and Moises Rockembach, writing about climate change Web archives in Brazil and Portugal, echo this call for attention to appraisal, but in their case, they are concerned that data critical to helping to better understand and mitigate climate change are now held in the physical and political ephemerality of the Web medium, in which preservation of that data depends on accurate appraisal of available content. Amanda Oliver mapped the impact of climate change to Canadian repositories and surveyed archivists regarding their level of disaster preparedness, finding that while many professionals have a disaster response plan, few are planning for long-term climate threats. Lois Evans surveyed archivists, records managers and IT professionals to assess organizational commitment to sustainability. The findings show that while there is some nascent work with “green IT” initiatives and storage approaches, achievements in sustainability were primarily a serendipitous benefit, as opposed to the result of a concentrated organizational commitment. Like her Canadian counterparts, Georgina Robinson’s survey of British information professionals shows that levels of awareness about climate change and perceived agency to effect mitigation vary widely, weakening our professional response. Salvador Barragan offers us intriguing opinions and suggests an informatics approach to risk-based appraisal that can help us to quantify our decisions in hopes that this might overcome the barriers organizational culture and the individual psychology of collecting present to our agency for enabling the destruction and deletion of non-archival records.

Although the papers in this issue are thought-provoking, provide valuable data and can form the basis for further discussion and hopefully for action at sector, institutional and individual levels, in the main we do not present the entire spectrum of topics represented in the original call for papers. These topics included consideration of records management’s contribution to and mitigation of climate change; increasing reliance on fragile infrastructures; legal liability, rights, ownership and ethics in the Anthropocene; and challenging aspects of climate and climate change outcomes on long-term (rather than permanent) preservation, including on emulation and migration models.

This situation is likely due to two reasons: the current pandemic had an adverse impact on the response to the call for papers coming as it did a mere two months into the epidemic, but also because when we summarize the tone of the papers overall, in general, records managers feel they still do not have the agency, influence or resources needed to engender change within their organizations, even via policy – whether it is advising on how to effectively reduce the amount of data stored on servers (and thereby emissions) via systematic appraisal and disposition, advocating for green transportation to offsite storage facilities and for renewable energy utilities or even questioning the utility of creating certain record types. This reflects long-standing research on consensus building and optimism (Venkataraman, 2019) in which non-consensus business strategies undermine willingness to pursue medium- or long-term goals, such as achieving some level of resiliency while addressing our impact on climate change. Consensus relies on a shared understanding of our work. Using an information governance approach, we need to solidify our relationship building with senior management and our colleagues in information technology to better advocate for the measures that will help to mitigate the role records management currently plays in contributing to climate change and to empower us to support information resiliency within the context of the Anthropocene.

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Further reading

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