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¹ Andrew Liptak, "After acquisition, Pinboard will shutter social bookmarking site Delicious," *The Verge*, June 4, 2017, <https://www.theverge.com/2017/6/4/15736722/pinboard-shutter-delicious-after-acquisition>.

Life on Ice: A History of New Uses for Cold Blood

By Joanna Radin. Chicago: University of Chicago Press, 2017. 288 pp. Hardcover and EPUB. \$40.00. Hardcover ISBN 978-0-226-41731-8; EPUB ISBN 978-0-226-44824-4.

After having guided her reader through technical, biological, philosophical, and ethical questions around the collecting and archiving of biological samples, Joanna Radin ends *Life on Ice* by asking a question: "What are the problems for which preservation provides solutions?" (p. 188). This is a bold ending to a book that questions scientific practices and invites both scientists and historians to reevaluate their relationship to biological traces from the past being used in the present and preserved for the future. One possible outcome of this question, Radin posits, is to raise awareness of the ongoing relationships and obligations between bioarchival materials, their originators (or their originators' descendants), and today's researchers. Such commentary also rings true in the case of nonbiological archives, and, while Radin's primary focus is on biological samples, the questions she raises within the context of bioarchives resonate in many ways with archivists dealing with analog and digital records.

Radin is an assistant professor in the history of medicine, anthropology, and history at Yale University. On her website, her research interest is described as the history of "'biological futures'—the ideas, materials, and practices that have shaped contemporary systems of knowledge about life and its potential."¹ *Life on Ice* is her first singled-authored book, and it considers historical and contemporary aspects of blood collection. More specifically, Radin describes different practices around the collection of biological samples gathered, transported, analyzed, and stored for reasons not always clear from the outset. These practices range from the technological (the development of suitably stable and transportable freezers) to the pragmatic (how to gain the trust of Indigenous populations to be allowed to take a sample of blood), and include the philosophical (is a frozen sample still alive?). Over the course of five chapters, the reader is introduced to many characters involved in the theory and practice of biological sampling: Basile Luyet is a Swiss priest-cryobiologist who founded an academic journal "for the elaboration and the experimental Study of Working Hypotheses on the Nature of Life" (p. 30); Henrietta Lacks is a woman whose

cancer cells were the source of the immortal HeLa cell line; and Davi Kopeawa is a Yanomami shaman and philosopher involved in the return of blood samples collected in the 1960s to those individuals or descendants and communities from whom they had been taken. One also learns that Albert Einstein, together with Leó Szilárd, applied for some thirty patents in the area of home refrigeration, an essential technology for preserving biological samples. Through the stories of these people, Radin weaves a dynamic tale of science that sheds light on the place of biological samples in today's world where blood can be donated and transfused, where the sperm of a single bull can be used to inseminate entire herds, and where, in 1985, epidemiologists were able to find evidence of HIV-1 in a blood sample that had been collected in the Belgian Congo in 1956.

Already for these reasons, this book is a riveting and informative read. It is even more so when read through the lens of an archivist. Foremost, this is because *Life on Ice* invites us to think about some fundamental questions relating to the archives profession. For example: what is the purpose of keeping archives at all?

The author gives two reasons in particular to justify keeping bioarchives. One relates to the fact that, in the 1960s, the first medium- and long-term effects of radiation on survivors of Hiroshima and Nagasaki in 1945 were being observed. By then, also, fear loomed of further nuclear attacks, and more and more chemicals entered daily lives, especially through the increasingly mechanized food chain. From the point of view of James Neele, a geneticist, these were reasons enough to archive biological samples to preserve an unspoiled sample of humanity's genetic heritage "before it's too late" (p. 86). If this is not carried out, "society in the future will be the loser" (p. 88), as put by the International Biological Program. Such archiving would also be potentially useful for reasons "as yet unknown," in case samples contained and communicated clues, for example in the area of epidemiology or population genetics, that could help solve problems not yet formulated (p. 55). This latter reason focuses on the potential future value of archival materials, while the former appears to value it in and for itself in case of future catastrophes.

These are only two of the reasons analyzed by Radin. Certainly, with traditional² and biological archives alike, questions of accountability, transparency, governance, and research, to name but a few, are usually more powerful than wondering whether archives are a snapshot of a time or potentially useful in the future, in case of a nuclear catastrophe. However, being guided through debates about why and how archiving is valuable now and in the future is a welcome opportunity to take a step back from daily archival activities much more rooted in the present.

In a similar vein, the question of how to define "bioarchives" is also an intriguing thread throughout this book. Traditional archives tend to be defined both through the materials themselves and the practices carried out on archival

materials by institutions for cultural or administrative purposes. The array of definitions and citations given in SAA's own *Glossary of Archival and Records Terminology* attests to this.³ These definitions are fit for most purposes in the majority of archival works and institutions. However, bioarchives, as discussed by Radin, appear to prioritize the potential value of materials and the potential loss of valuable information in a way that traditional archives might not. This information might be biological (about the individual whose sample it is), general (providing a data point in a population study), or medical (about viruses stored in the samples). Considering these different kinds of potentials is captured by the phrase "freezer anthropology," referring to studying information in samples that goes beyond that of samples themselves (p. 156). This potential even leads some anthropologists to argue that biological samples "belong to mankind's patrimony," not to their original individuals or populations, who can be at the center of repatriation debates (p. 170). These two different ways of thinking about archives differ in perspective: on the one hand, archives as somewhat finite holdings described with functions and contexts, and, on the other hand, bioarchives as valued for knowledge they might hold and for the "new uses" they might have (p. 157). These two approaches have developed separately and in their own ways for different reasons, but now that they have been brought together in Radin's book, I believe there may be value for traditional archivists in incorporating some ideas from bioarchivists as this can only enrich the way we care for and make accessible the holdings in our custody.

Such approaches to bioarchives that center on their potential reinforces, in my reading, the place of traditional archives as part of a cultural network of individual and cultural memories, of artifacts and traces. They are connected to museums, libraries, and digital repositories, and archivists are keen to connect these resources to one another. If traditional archives are unique but connected, bioarchival materials are unique but somewhat isolated. For me, Radin's discussion of the potential of bioarchives should further encourage the common practices of traditional archives of collaborating, exchanging, and developing shared standards that facilitate access to archival materials. Archives are stronger together. Perhaps a future definition of archives might incorporate this clearly.

The existence of archives and their role in preserving the collective memory of societies and cultures are often tinted with questions of ownership and ethical debates around individual rights to privacy, informed consent, and ownership of intellectual content. Whether the archival material is blood or letters, the debates are similar. Radin covers some of the debates around privacy and consent, discussing in particular the problem with the implications of open-ended consent for the use of collected biomedical specimens and whether this consent is inferred, implicit, or explicit. In the current context of personal data protection debates—and particularly in Europe the entry into force, on

May 25, 2018, of the General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679), which strengthens citizens' rights in the area of personal data protection, including the so-called right to erasure—Radin's book provides many interesting parallels.⁴ For example, the notion that personal data has a cultural and social value: how does one find a balance between an individual's rights and the importance of cultural memory? The repatriation approach taken with some biological samples might be one solution, but what is the equivalent for traditional archives? What, for example, should Germany do with the archives of the Ministry for State Security (Stasi) archives? These archives are currently kept and accessible, but the vast quantity of personal data collected without consent means that keeping them might contradict current data protection laws. These materials cannot be repatriated, like blood. Certainly, the question of informed consent should loom large, and a bioarchivist's perspective might help traditional archivists hone practices in an age of seemingly ever-increasing data-protection challenges.

Bioarchives and traditional archives both work toward making archival materials available in the long term so that they can support research and inquiry. The different nature of materials in our respective storage rooms notwithstanding, my impression is that, in the bigger picture, these two archiving areas bear more similarities than differences. Reading about the technological challenges faced by those collecting, freezing, transporting, thawing, sequencing, and analyzing biological samples, and reading about how these technological challenges were overcome and how national and international symposia were held to discuss such challenges, was reassuring. It made me optimistic with regard to some challenges currently faced by traditional archives, such as digital preservation. If long-term preservation can be done with blood and semen, it should be achievable with PDFs and TIFFs. Furthermore, while we work together on these questions, we should also remember to take a step back and not lose track of what problems we are solving, for whom, and for how long. Radin's book will provide useful insights to any archivist interested in tackling such questions.

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¹ See "Research," Joanna Radin, <http://joannaradin.com/research>.

² I use "traditional" archives here merely as opposed to biological archives, or "bioarchives."

³ See *Glossary of Archival and Records Terminology*, s.v. "archives," <https://www2.archivists.org/glossary/terms/a/archives>.

⁴ See Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance), <http://data.europa.eu/eli/reg/2016/679/oj>.