
Joanna RADIN, *Life on Ice: A History of New Uses for Cold Blood*
(Chicago, The University Chicago Press)

Using the liquids that course through our bodies to get at a deep, valuable and vulnerable past has become big business. You simply send off your sample via snail mail and, some weeks later, learn that your ancestry is composed of x percent this, y percent that, and z percent something else. But direct to consumer genetic ancestry testing requires more than just tissue samples from customers. It also requires some kind of reference category—a group of people whose ancestry is deemed unimpeachable. In genomic terms, theirs is the real German, Indian or Senegalese DNA (never mind the fact that Germany, India and Senegal are far too new and fluid to ground plausible genetic categories). In other words, the traces contained in our genomes can only serve as ancestral markers because they bear very particular resemblances to the DNA of peoples whose origins we do not question. In our churning, migratory, and increasingly admixed world, these apparently stable populations are cast as the reference categories for genomic meaning-making. Plenty of ink has already been spilt interrogating the validity and implications of this way of divining ancestry and ethnicity. However less attention has been paid to an important, much more longstanding practice in the biosciences: banking the bodily tissue of people who represent some sort of unspoiled baseline.

Joanna Radin's recent book, *Life on Ice*, shows us how efforts to collect and preserve the tissue of these human bio-anchors has a rich history. Nowadays, you only need to give 23andMe and its rivals some saliva in order to reveal ancestral truths about the real "You". Most life science researchers, however, prefer blood. As Radin recounts in exacting and thought-provoking detail, biological anthropologists, human geneticists and the like began collecting and preserving the blood of people who seemed untouched by modernity decades ago. In many respects, the research programs Radin recounts bear little resemblance to direct-to-consumer DNA testing. However, after reading the book it is difficult to avoid the conclusion that they created the conceptual architecture and trialed the infrastructure for the new genetics of race and ancestry.

Radin's fascinating history of freezing and biobanking human blood stretches back into the 19th century and the development of freezer technologies for food storage and transportation. That said, the story proper begins in the 1930s and the early stirrings of cryobiology. This new field, focused on the effects of extremely low temperatures on living things, provided a scientific entry point into longstanding religious debates about immortality and the very boundary between the living and the dead. Thus it is no coincidence that the so-called "father of cryobiology", Basile J. Luyet, was also a Father in the Catholic Church. He was the first to seriously investigate and promote the potential of what he and others called "latent life". What happens when cold temperature, and the radically arrested metabolism it induces, leaves an organism or a biological specimen in a sort of liminal space between life and death? How can we master the science and art of freezing life? To what uses could cryobiology, once perfected, be put? In this way, cryobiology sought to elucidate "the fundamental nature of life" and "enable researchers to displace and disperse biological matter through space and time" [19].

Life on Ice traces the broader effort to collect, freeze and bank masses of human blood back to the mid-20th century and the emerging post-war order. Radin describes the infrastructure of the tripartite "cold chain" that is required to keep human tissue samples at a sufficiently low temperature as they move across vast distances. For this book, that mostly means moving blood from a field site in the Global South to a lab/cryobank in the North. This involved, first, the ability to generate artificial cold, which Radin's opening chapter shows developing from the 19th century onwards. Second, frozen objects had to be managed, maintained and then circulated—a capacity developed during the early 20th century in close interaction with the booming industrial agriculture and food markets. Finally, in order to render human blood useful for science at geographical and temporal removes, temperatures had to be controlled with sufficient precision. Although the pieces started to fall into place with attempts to transport blood for transfusions during World War II, it was during the early Cold War period that a cold chain suitable for bioscience was first established.

Amidst radical cultural and technoscientific tumult—not least the specter of nuclear annihilation—a sprawling network of researchers and bureaucrats sought to assemble an archive of our species' biological diversity before it was too late. Radin shows us how an ethos of *salvage* animated these efforts and made indigenous peoples the

primary target. Against the backdrop of the Cold War and the interminable erosion of “primitive” lifeways, researchers and international organizations like the World Health Organization came together to collect and catalog a remnant human diversity. For evolutionary biologists, it represented a last chance to study what human biology looked like when it was perfectly adapted to a local environment. For epidemiologists, it was an opportunity to catalog disease resistances and histories. For geneticists, it was a chance to glimpse the panoply of human diversity that had developed over millennia before it was eroded by migration and admixture.

Life on Ice pays particular attention to the multiple temporalities at play in these efforts to collect and freeze indigenous blood. Alongside their short-term goals, researchers sought to create an archive for posterity. This blood needed to be “cold” in two important respects. First, researchers were influenced by Claude Lévi-Strauss’ notion of “cold societies” that were yet to be rendered “hot” by modernity. These apparently stable and unchanging populations represented a priceless snapshot of unadulterated human evolution that might be gone by the time we had the tools to unpack it. Second, blood samples from these cold societies had to be placed in freezers—their processes of metabolic action and decay suspended by the cold—so that the secrets within could be pursued by labs located in North America and Europe, and perhaps the future. The idea was that the signatures embedded in the blood of these cold-society people would be rendered so cold that they could be drawn upon by future generations of scientists. All this frozen blood, in other words, was supposed to become a durable repository of our evolutionary past.

Perhaps the most fascinating element of *Life on Ice* is the fact that most of its key protagonists were acutely aware of how much they did not and indeed *could not* know. Rather than a shortcoming, however, they made this a central selling point. A key part of their pitch to funders was the prospect that this frozen blood would be taken up by research programs whose goals, methods and technologies they could only begin to imagine. In this way, the book opens up interesting lines of inquiry into the role of the future in scientific planning and decision-making. Iddo Tavory and Nina Eliasoph¹ have directed our attention to the importance of “coordinating futures” or “anticipation” in social action. However, we do not have a good framework for thinking about the role of uncertain futures in scientific projects or

¹ Iddo Tavory and Nina Eliasoph, 2013, “Anticipation,” *American Journal of Sociology*, 118(4): 908–942.

fields. While Kaushik Sunder Rajan² and others have pointed towards the highly promissory nature of “biocapital”, Radin shows how an entire research enterprise can rest in large part on its capacity to enable future research that we cannot yet conceive of. Perhaps the most interesting homolog actually comes from Andrew Lakoff’s work on disaster preparedness (see esp. 2007),³ where we see how Cold War thinking led US planners to undertake wide-ranging studies and massive works projects to mitigate the unknowable calamities that, perhaps, lay ahead. In both Radin’s and Lakoff’s cases, we see how extensive Cold War infrastructures were put in place to deal with uncertain futures. All sorts of experts, it seems, were grappling with humanity’s newfound capacity to wreak carnage on itself.

Sociologists may feel a little frustrated by Radin’s rather gestural approach to theory and, above all, the limited number of strands that are followed through into the 21st century. To be sure, *Life on Ice* secures great mileage from a few projects that collected a few tens of thousands of samples from indigenous peoples. But Radin suggests that there is now probably something like 600 million preserved human tissue specimens in US freezers alone, and perhaps many more. The book’s lofty goal is to show us nothing less than how the freezer has performed “as a machine for revealing the fundamental mutability and instability of life itself,” and one that can “reveal forms of biological and social relation that exist between people—as well as the microbial communities within them [...]” [157]. And yet, we learn almost nothing about what else is being done with these millions of samples. Radin provides only a passing reference to their role in consumer ancestry and health risk testing, and a sentence or two on their role in forensics (mostly identifying and exonerating criminal suspects) and biosecurity (e.g. anthrax and small pox specimens). The book closes with a powerful discussion of the ongoing contestation over stored human blood samples (see below) and what those contests can tell those of us who sometimes find ourselves working in other kinds of historical archives. However, I was left wondering what else has been done with the very samples whose collection and storage Radin recounts in such rich detail. It is a lacuna that limits the book’s value as a history of the present.

Still, sociologists will very much appreciate the many-varied relations covered in this history of science. Throughout *Life on Ice*,

² Kaushik Sunder Rajan, 2006, *Biocapital: The Constitution of Postgenomic Life* (Duke University Press Books).

³ Andrew Lakoff, 2007, “Preparing for the Next Emergency,” *Public Culture*, 19(2): 247-271.

we encounter a dizzying array of actors and fields. From the life sciences, we find research programs spanning epidemiology, disease resistance, evolutionary biology, population genetics, biological anthropology and beyond. Along the way, we see how frozen blood became a major concern for the World Health Organization, the NSF and NIH, and especially the multi-national International Biological Program that conducted an unprecedented series of large-scale studies between 1964 and 1974. We also see how it occupied major figures in 20th century biology like James Neel and D. Carleton Gajdusek. We follow a research vessel, the *Alpha Helix*, on its politically fraught voyages to South America and the Pacific Rim in search of primitive peoples whose blood could be stored in its floating freezers and brought back to labs in places like Ann Arbor, Bethesda and Binghamton. But life scientists and health researchers are not alone in this book. We also encounter the clergy, big agriculture, Birdseye, the Pentagon, and several national governments and social movements. In other words, Radin's is a story driven not only by questions of biology and medicine, but also commerce, war and ideas about salvation and human rights.

Life on Ice is also a story of changing norms around informed consent, and especially our right to control if and when parts of our bodies can be used in research studies that have not even been conceived of yet. The book comes to a close with a fascinating account of the contestation over cold blood in the past few decades. Indeed, Radin's analysis is most poignant when she discusses how some indigenous peoples' rights movements have reclaimed and repatriated tissue samples that were taken from them long ago. To the scientists maintaining and working with this long-frozen blood, it was a wrenching loss. To the communities who were able to lay their blood and that of their recent ancestors to rest, it was a cathartic reunification. Hence Radin's most distinctly sociological point: "While life forms and their traces can be frozen, time, place, and most importantly, relationships, cannot" [188]. The millions of human specimens found in labs and biobanks around the world will never be stable objects, even if they are expertly frozen.