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Introduction: The Arctic as an Archive

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Titelseite

Arctic Archives: Ice, Memory and Entropy







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## **Introduction: The Arctic as an Archive**

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SUSI K. FRANK & KJETIL A. JAKOBSEN

In 541 AD, the East Roman Emperor Justinian was at the height of power. In his capital Constantinople, he had built the Hagia Sofia, the church that was to remain the world's largest for a thousand years. Roman law was collected and codified, Roman customs and traditions restored. Almost all of Italy had been recaptured from the »barbarians« in victorious campaigns. The emperor was on the verge of reestablishing the Roman Empire in Western Europe. Then misfortune struck, as disastrous crop failures and plague weakened his state and army. Justinian was obliged to retreat to the eastern Mediterranean. In Western Europe, ancient civilization gradually disappeared, and history took a different path. A generation later, scarcely more than 5,000 people lived in Rome, amidst the mighty ruins of what had been a city of millions. According to geologists, surveys of the Greenland ice for the year 540 show a large increase in the sulfur content in the Earth's atmosphere, which is due to an enormous volcanic eruption, probably in the tropics. The result must have been temperature drops and crop failures of global proportions.

Studies of the Arctic ice may help our understanding of European history. The polar regions are the knowledge archives of the planet, partly for climatic reasons, partly because human interventions have until recently had less impact than elsewhere.

### **ICE AS A MEMORY MEDIUM**

Considered as a medium of remembrance, ice and permafrost in the Arctic differ from other natural archives in terms of which ages they conserve and in what form that happens. While stone receives only very old layers, ice and earth preserve younger layers giving information not only about geological, but also about historical facts. The storage medium ice allows an extremely precise dating and it

preserves in a protective way. Where stone preserves only in petrified form and with the help of high pressure, earth and above all ice can preserve life almost in the form it had during its lifetime. Mammoths that turn up in the melting glaciers of Siberia are so well preserved that the meat may be edible.

Among the three memory media stone, earth and ice, ice is the most vulnerable and unstable, because it depends on temperatures below zero degree Celsius. Consequently, climate change not only threatens our future, but in a sense also the past. The Ice Archive itself reveals a lot about the causes of climate change. Ice from 2011 contains 40% more CO<sub>2</sub> than the one frozen in 1740, before the Industrial Revolution. Global warming will reduce the extent both of ice capping and permafrost. The natural archive that has evolved and remained untouched over millions of years, dissolves as it is released from the glaciers and the thawing Arctic tundra. Not only mammoth carcasses come to light, but also, notably, different types of traces of human history, which thus gain a new presence, before they decay and disappear. This applies to the mummies of leaders of early civilizations that appear in Siberia (such as the Altai princess), the remains of a large number of Arctic expeditions, and the seal and whaling industry in the Arctic, but also for various traces of the Soviet camp system, which the authorities would rather have blurred. In Eastern European literature, which deals with the traumas of Stalin's GULAG, the melting ice in Siberia is an issue. Varlam Šalamov, who with his *Kolyma Tales* has created one of the most important literary monuments of the GULAG, describes permafrost as an ally of the victims, a medium of remembrance that retains the traces of crimes that are barely narrative in their monstrosity. In post-Soviet times, Sergei Lebedev, but also the Czech writer Jáchym Topol approach the melting polar permafrost from a postmemory perspective. But, whereas in Lebedev's novel *Oblivion* (2012) the icy GULAG-archive allows for ritually bemoaning those who had been waiting ›undead‹ in the intermediate-state of frozenness and thus doing justice to the dead, Topol envisions the GULAG ›archive‹ in an apocalyptic way: In his 2006 issue of *The Trip to Bugulma*, Topol asks what will happen when the ice melts and the mountains of corpses from the GULAG appear?

## A TRAVELLING CONCEPT

»Archive« has become a prime example of what Mieke Bal calls a »traveling concept« in academia. It has moved from history and law to geology, paleontology, biology and information science. Scientists in many disciplines talk of natural

archives and the law of many countries, including Germany, today includes provisions on natural archives, especially on soil and moors.

The study of traveling concepts can open up an interdisciplinary dialogue, especially if these are linked to a common research object, as is the Arctic ice for many disciplines. By confronting common but perhaps differently used terms in an interdisciplinary dialogue, one recognizes theoretical premises that otherwise would have been difficult to see.

The natural archive has been a concept for more than 200 years. According to the biologist and science historian Georg Toepfer, the first documented use is by the Comte de Buffon, who in 1778 made it the task of the natural scientists to excavate the »archives of the world«. In the decades around 1800, the archives of nature were already a frequently used linguistic image, as scientists discovered the geological measure of time and experimented with mental models to think of the relationship to a natural history that had almost instantaneously received a dimensionality beyond human capacity. Isaac Newton, who lived in the 17th century, believed the world to be 5,600 years old, citing biblical evidence. Already for Immanuel Kant 100 years later, the globe is several tens of millions of years old.

As old as the concept of the natural archive is, it remains disputed due to its partly metaphorical character. Archive theorist Wolfgang Ernst warns against what he calls a metaphorical use of the concept of archives. Archives are not just any collection of memories of the past, they are intentional. The feudal lords carefully archived their »titres«, their legal claims on everything from kings to serfs. Modern archives are tied to legal or administrative processes. The archivist classifies, sorts and stores on the basis of certain principles and with intent. The core of the archive concept, as Ernst develops it, is the feedback mechanism between database and decision. Just as a computer always records what it does and stores, the operations in databases, which in turn form the basis for new operations, bureaucracy and courts file their decisions with the goal of being able to make new ones in the future.

Natural archives are not archives in this sense, as they were not created intentionally and because there is no purposeful selection in nature. Nevertheless, natural archives are also selective; they preserve the traces of specific life forms and time periods and overlook others, all in a systematic way, which may often be reconstructed. The scientist is, in principle, in the same situation as the historian who comes into an archive and, by definition, wants to use it for something other than what it was created for. Both know that the past has been stored in a manner that is incomplete for their purpose, that the material has gaping gaps, and that they are facing systematic and often irredeemable loss.

## MELTING ARCHIVES

Especially as a result of Michel Foucault's writings, the archive has become a buzzword used for many types of memory and in a variety of scientific disciplines. Foucault simply replaced the term history with archives and archaeology. He did this to force a reflection on knowledge and power, breaking the habits of storytelling, pointing to the dumbness and distance of a past that exists only through its future-oriented use in the present.

Not only research, but also contemporary art today revolves around the archival concept. Under the heading *The Encyclopaedic Palace of the World*, the Venice Biennale in 2013 illuminated how artists create alternative worlds by collecting, systematizing and archiving objects, images, artefacts and dreams. Ice is a medium of memory, but also a much used metaphor for the archive, in popular and artistic forms as well as in the scientific imagination. The Ice Age is a favorite theme of digital animation film. In his philosophical fable *Fragment d'histoire future* of 1896, the social philosopher Gabriel Tarde described how climate change transforms the world into a vast archive of frozen forms of life that in turn provide the blueprint for the technological mediation of a virtual world in an underground network society. 100 years later, the Wachowski siblings drew on Tarde's vision for the storyline of their celebrated films about the digital Matrix.

The digital technology that permeates the entire social life of today's society is constantly producing archives. Most of us walk around with a personal archive on the smart phone that contains more information than a royal library did at the time of the Sun King. Unlike analog media, digital communication always leaves traces that may be archived. Digitization makes the archive ubiquitous, while at the same time destabilizing it, setting it in motion. The Internet breaks the traditional understanding of the archive by replacing fixed memories with a culture of ceaseless circulation of data.

Drawing on Zygmunt Baumann's differentiation between »solid« and »liquid« modernity, it is striking how the empires of 19th-century »solid« modernity consolidated their control over territories with the help of enormous archives. »Liquid« modernity causes the major crisis of today's archive (Røssaak 2010: 16). Modernity threatens the archive's solidity with liquidation, yet, as Spring and Schimanski point out in their contribution to this volume, the response to this threat is »the very modernity of archival techniques, paradoxically embedded in the liquidity of global (ex)change.« The internet archive is, as Wolfgang Ernst underlines, »anarchival«, so every effort to preserve the archive has to face up to the fact it is always in motion.

Longing for immortalization of the present moment (and lovingly being aware of its vainness), romanticism in literature and art gave birth to a mythology of freezing and petrification. At least five writers of German romanticism – E.Th.A. Hoffmann, A. v. Arnim, J.P. Hebel, F. Hebbel, F. Rückert – were inspired by an incident at the Swedish mines of Falun, where a man who was just about to marry, had been buried by a rock fall only to resurface as a completely preserved corpse some thirty years later. The experience of his bride, an old woman by now, inspired the romanticists' concept of the uncanny. They made it a key narrative of romanticism and used it to explore the new conceptions of time that emerge in the context of what Friedrich Kittler has called the »Notation System (Aufschreibesystem) 1800« (Kittler 1985). Characteristic of »Notation System 1800« is a new near ubiquity of print culture and the emergence of more profound forms of state power, key words being mass education, prescription armies and nationalism. In the classic texts of German romanticism, Kittler unravels a meaning level exploring the paradoxes of memory and experience in a culture where time could for the first time be archived and stored systematically, but where this could still only be done very indirectly in the code of the alphabet. At the time of J.W. Goethe and Leopold Ranke all data flows had to »pass through the bottleneck of the signifier« (Kittler 1999: 4).

19th century historicism, with its framing of the past in the form of written narrative, that is as what we still call »history«, is a key script within *Notation System 1800*. (Jakobsen in Røssaak 2010: 131) So is the modern museum, which being a typically romantic invention, established new ways of keeping the past present and at the same time giving evidence to its irretrievable »pastness«. The monopoly of writing when it came to storing the past was broken in the 19th and 20th century with the invention of new storage media like photography, gramophone and film, and finally of the digital media, allowing for new types of archives and new ways of ordering and re-enacting the past, as well as other social orders. Archival regimes employing specific media techniques like the printed or handwritten word of »Notation system 1800« or the photography, typewrite, film and gramophone recording of what Kittler calls »Notation system 1900«, allow distinct social formations to emerge. That includes the »anarchival societies« (Jakobsen 2010) of our contemporary digital world.

## ICE AND ENTROPY

Interestingly enough, information science speaks the language of thermodynamics. The basic principles of information science were defined in 1948 by Claude Shannon in the article »A mathematical theory of communication«. Shannon modelled information & communication processing on the theory and mathematical patterns of thermodynamics. Entropy is a measure of the degree of order within a system. At minus 273 degrees Celsius zero entropy prevails. More entropy means less system and more movement. Ice is structured, water flows. In Shannon, entropy becomes a measure of the information content in a communication. Low entropy means that the variable is determined and therefore has a low information content. You know in advance, what will be said so the communication brings little new. Not only the terminology of information science, but also that of media practice often employ the language of temperature. Freeze and freeze-frame are key concepts concerning the way the visual media deal with time. Films and photographs »freeze« time and bring the people of the past to life for us. Furthermore, in the media archives worldwide, films and photographs are stored frozen to outlive time, the same applies to digital storage media. Robert Scott and his men died in the snow and ice of the Antarctic, but the films and photographs they had taken remained intact.

Everyday language and some cultural theory associates life with movement, death with standstill and cold. A well-known work of film-theory, Laura Mulvey's *Death 24 x a second: Stillness as a Moving Image*, sets up an alleged dialectic between the »living image« and the frozen and thus »dead« still image, the »freeze« of which the film consists (Motion in analog film is an illusion caused by the eye being exposed to 24 still images per second). When the film image is frozen, this means, writes Mulvey, »a transition from the animate to the inanimate, from life to death.« (Mulvey 2006: 15)

The metaphors are striking, yet from the scientific perspective, this association of death and the freeze could be misleading. In her choice of metaphor, the well-known film researcher and feminist makes perhaps the same mistake that the father-in-law of one of the authors made when, a few years ago, he tried to terminate a wasp colony which had settled in on the roof of his Norwegian home. Tor, as his name is, took the wasp nest that he had sealed at night, when the wasps gather in it to rest, and put it in the freezer at minus twenty. The next day, he shook the seemingly lifeless wasps out of the nest into the toilet and drew the flush. After a few minutes, it began to hum in the bathroom... In theory – and occasionally in practice – it is possible to preserve life by freezing it. Strong heating, however, kills.

To be or not to be, is that the prime question? Or should we rather discuss chaos, system and contingency? In the traditional sense, creating something would mean moving from non-being to being by setting things in motion. However, what if everything is already moving? What if the basic state of the universe is chaos? In that case, to give life would mean to establish system and structure. For much of the philosophical tradition from Aristotle to Sartre, death is non-being. It is nothingness; frozen and cold. According to the cybernetic perspective, however, death may be said to be hot, it is »too much« rather than »too little«. Death occurs when entropy becomes too high. The temperature rises and the organ systems dissolve into chaos. Therefore, to create life does not mean to set something in motion, but rather to freeze something in a pattern. Contrary to what everyday language might make one believe, the rising entropy of global warming will probably mean less rather than more life.

## CULTURE OF THE ANTHROPOCENE

In this volume, the memory medium of ice and the melting archives of the polar regions are examined from various angles. Preserved in the ice are traces of the geological and climatic history of the earth, as well as of the past, of life forms and history, including the history of modernity with its typical attitude towards nature as an object of conquest, of control and of transformation, expressively represented in the discourses of polar conquest and the imagery of the Arctic in Soviet modernity.

Most of the papers began as contributions to a conference »Archives of the Arctic. Ice, Memory and Entropy« on the melting archives of the Arctic which was held in November 2013 at the Humboldt University of Berlin, organized by the two editors of this volume. The approach was cross-disciplinary, with geologists and computer scientists presenting alongside artists and literary scholars. Taking the concept of the anthropocene seriously, is to acknowledge that conventional distinctions between the arts and sciences no longer apply. The anthropocene is an epochal concept designating the commencement of significant human impact on the Earth's geology and ecosystems. There is as of yet no agreement on the exact dating. Homo sapiens has made significant impact on ecosystems since the species started to spread across the globe. Thus, there is evidence that many species of larger animals (hominoids included) were exterminated, as the hunter communities of Homo sapiens expanded from the origin in Africa, reaching new continents, where animals were unused to the threat. However, since the twentieth



century, with the taming of nuclear power, with genetic engineering and with anthropogenic climate change humans are changing the face of the Earth at a speed which is often referred to as »the great acceleration«. Culture is shaping nature, and the two cannot be separated in any convenient way; we need to understand the one in order to understand the other.

The first part of this book is about clarifying the concept of the archive and tracing it as a travelling concept between disciplines. It has become customary in many disciplines to talk of natural archives. If so, in what sense? Are there archives in nature in the same way as there are legal or scientific archives? Several contributors in this book observe that the metaphor of the archive tends to be taken in too static a sense. Archives are not fixed, even if they aim to control and converse across time. Contemporary digital archives are liquid. As data, this new kind of archive tends to be online, is relational and also open to a wide range of manipulations.

An archive is not given once and for all; it is intentional and needs to be maintained and used, even performed. The world is still a stage and the Anthropocene is an anthropo-scene. Contributions in the second part of the book each in their way examine how the Arctic archive is performed, by the natural scientists of the Global Seed Vault at Spitzbergen or the flourishing popular fiction inspired by Arctic archives, by Arctic explorers of both sexes or by avant-garde artists who by staging the metaphorical imagery of ice negotiate the notion of the archive as well as its agency. Finally, there is the thought provoking case of archival utopia, inside snow ball earth, as narrated by the great 19th century social theorist Gabriel Tarde in the allegorical novel *Fragment of Future History*.

Contributions in the third part are about ice, as a metaphor for medium and time and as an actual medium of memory. Examples mostly from German post-Holocaust and Russian post-Soviet literature demonstrate the significance and ubiquity of ice imagery when it comes to topics and states of politically problematic and traumatic memory. In highly complex tense negotiations of the Holocaust, memory on ice appears not only as a figure of preservation, but also for the isolation of memories from their previous constellation, keeping them from access and from being shared and worked through. It turns out that the imagery of Arctic ice not only gives way to reflections about ice as a memory medium, but also to reflections about natural archives as counter-archives and thus as a means to correct history that has been falsified by archives as instruments of political power.

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