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Iron Mountain Cloud. On the Visual Culture of a Virtual Information Manager

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When entering the official website of the US information management service provider Iron Mountain Incorporated, the first thing that might strike you in aesthetic terms is the brand design:[1] An isosceles triangle in triplicate, which is obviously an allusion to the eponymous iron mountain (Fig. 1). The company name next to the logo has a copyright symbol. The name and presumably also the abstract, in part a semi-transparent mountain range in its glowing shades of blue – is a copyright-protected trademark, as is only fitting for a global player with annual sales of around $4 billion most recently. If you scroll down a little more – ignoring the generic stock photos of cheerfully diverse people in apparently highly productive office situations, as well as the insistent pop-up offering to chat with a service representative – ten cuboids appear that catchily sum up Iron Mountain Inc.'s range of services: Data Centers, Information Management and Content Services Solution, Information Governance Advisory Services, Iron Cloud Data Management, Inventory Management Reporting, Entertainment Services, Secure Shredding, Secure IT Asset Disposition, and Secure Storage. These generic terms suggest, at least vaguely, that the services are somehow about digital data and document management, secure data storage, and sometimes permanent deletion.

Figure 1: Brand Logo of Iron Mountain Inc. © Iron Mountain Inc.

Talk is not only about »document storage« and »file management« on the countless subpages of the website but also about »digital transformation«, thus bringing the media materiality of the managed informational goods, ranging from »physical files« to »electronic media« into play. The information that Iron Mountain Inc. proposes to secure, administer, and occasionally shred is looked at from differentiated carrier-medial constitutions in this presentation. The advertised competencies can thus also be subdivided in terms of media history, but they do not, in any case, stop at the archival processing of informational goods in native digital format. Iron Mountain Inc. is not a Californian start-up – and does not try to give this impression. The possibilities for storage and conservation explicitly refer also to analog media. Even though the services offered make use of different information technologies,

the current presentation for potential customers is primarily focused on digital processes of securing, organizing, and ensuring accessibility. Iron Mountain Inc. promises that the traditional physical file, where it is still in use, can also not only be durably stored and conserved but also, if need be, transcoded and thus made into an object of digital information management in turn. The traditional file path is then – in light of the »immeasurably increased data processing power at the end of the paper file era«[2] – subject to a media-historical relegation, which, however, links the information stored in the file, the »paper knowledge«,[3] to the present of digital administration cultures – and especially so when the digital transformation in question means more than just attaching optical-electronically readable barcodes to physical file folders. Moreover, many places on the company's website feature generic pictograms (a brain for information management, a cloud for cloud computing, etc.), translating the digital services – including AI-based data discovery and scanning services – into more conventional visual shorthand. Standing above all this – also in terms of web layout – is the iconic three-fold trademark mountain: radiating perpetual calm, solidity, and stability, alluding to a timeless promise of protection and permanence. Whatever happens, wherever the current processes of transformation in the field of data protection and document management may lead – the iron mountain, a symbol of a natural storage medium in a way, can survive these upheavals and shocks. It will endure.

The present essay, however, is less interested in the briefly adumbrated information and interface aesthetics of the *ironmountain.com* website than in certain aspects of the visual or iconic self-presentation of a private information management service provider to which not only 94% of Fortune 500 companies but also a whole series of state actors have entrusted documents, files, and archives of all kinds for over 70 years. Thus, the now more than 1500 Iron Mountain storage sites around the world – including decommissioned iron ore mines, abandoned limestone mines, and converted hangars, as well as otherwise unassuming office buildings and warehouses – contain vast amounts of both analog and digital storage media, business documents and records of the most varied government agencies – »government collections that encompass everything from high-tech patents to the Social Security records of every American«[4] – and also, for instance, geological samples, DNA material and, albeit of lesser importance, illustrious storage objects without any direct informational value. Precious string instruments, jewels, and works of fine art from various private collections are found beside the literary, scholarly, and artistic estates of Charles Dickens, Charles Darwin, and Prince, among others. The non-digital master recordings of Sony, Universal, and Warner are stored and managed by Iron Mountain, as are the photographic originals from Bill Gates' former photo agency Corbis, which now belong to Getty Images and the Visual China Group.[5]

Drawing on media theory concepts of archive administration and storage media, the following case study will examine the extent to which Iron Mountain Inc., in its promotional communications, attempts to position itself as an efficient and reliable digital information management service provider, in particular by using visual footage of its own corporate history. This strategic self-historicization involves precisely those digital transformation processes forming part of the company's range of services that raise questions of storage-technological materiality and mediality but that are also related to the administrative problematics of data migration and data security. A first observation is that the visual culture in which Iron Mountain Inc. envelops itself as a brand responds, on the one hand, to the growing concern about storage erosion and data loss in the digital age and, on the other, to the lack of transparency of data management and data conversion in principle. Among other things, Iron Mountain Inc.'s dazzling corporate history is aesthetically mobilized in the context of these processes of promotional communication; the history of Iron Mountain Inc. is, therefore, the subject of the first section (I). Based on archival footage (such as newsreel material), the first section will look in particular at the company's phase as an »atomic storage« company at the beginning of the 1950s and its contemporary historical context. This historical situating and contextualization will be followed in the second section (II) by considerations informed by media theory on the question of the extent to which archival facilities are not simply places of mere storage and suspension, but rather, precisely by way of administrative processes, are constantly generating

dynamics and mobility. This is the basis for then going into more detail on the transformation in storage media itself, which is prominently represented in the visual culture of Iron Mountain Inc. and the presence of archive-related »information flows«.

I This Business Will Mushroom

A compact, essentially promotional YouTube video on the company's history, uploaded by the official »Webmaster Iron Mountain« account, has 73,054 views and 207 likes since the specified posting date November 15, 2009. Under the title »Iron Mountain – Our Story«, it reads: »Discover the hidden heart of the Mountain. Our entire story in this 4 minutes video«.[6] After the logo (here just the simple triangle, not the mountain range; the trademark applies for both variants), black-and-white footage of fighter jets flying in formation is to be seen with the year »1951« superimposed on it in large type and, somewhat smaller, two words: »Cold war« (Fig. 2). An offscreen voice, which sounds more like 1951 than 2009 in terms of the sound-recording technology (there is hissing and crackling), says: »One of the most dangerous threats to our nation's security is the possibility of attack by high-speed enemy bombers armed with nuclear weapons.« A man in uniform is then to be seen and, looking sternly into the camera, he notes laconically: »We cannot afford to take that chance.« After a cut to a busy city street and a sign (Fig. 3) reading »Public Shelter« and »Capacity 330«, we see a long line of men and women entering a bunker in a calm, orderly fashion. The footage again appears to be historical archive footage, but no further reference is provided. For the first time, by way of rolling captions, a connection is now made to Iron Mountain Inc.: »1951, Pennsylvania. A new company is founded in a depleted iron mine to protect information. ›Iron Mountain Atomic Storage, Inc.‹ is the name of this company.« The camera then pans over a photo album – the pictures in it are not themselves clearly discernible at first in this camera movement – and then a black-and-white photograph fills the frame. Four no-longer-young men are to be seen on it, suit and tie, in what is evidently an atom-bombproof underground room (Fig. 4). They look relaxed, not at all restless and certainly no panic.

Figure 2: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

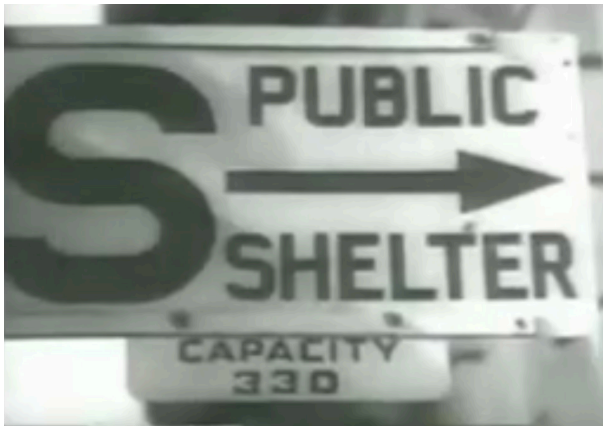

Figure 3: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

Figure 4: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

The camera pulls back, only now revealing the whole photograph. There are five men in all: one is calmly smoking, another, who still could not be seen a moment ago, is holding up a cardboard box. One of the room's

walls is made of brick, the other is rock. We are not in a normal large office space, but indeed underground. Bunk beds are visible as well as a conference table with folding plastic chairs. Captions again provide the context for the shot. The captions identify the men initially seen as »first customers«, trunk-like containers placed in front of each bunk bed contain the »first documents to protect.«

This is, in essence, what this historical sketch is about: Using archival footage, the promotional film tells the story of a company that, since its founding, has spared no effort, not simply to store the records, whether mundane or valuable, with which it has been entrusted somewhere and somehow to file them away and sort them, but also emphatically to secure them – if necessary, when the global political situation suggests or the Zeitgeist demands it – against the destructive effects of nuclear warheads – which at the start of the Cold War were undoubtedly very much on people's minds. It is thus an emblematic promise of protection that is positioned at the beginning of the extended corporate history and that creates an immediate connection between the assured survival of the documents that have been conferred for storage and management and the survival of the document owners. As shown here, the latter can also be brought to safety if need be. But since Iron Mountain is not only about persistence and resilience, about safely locking away and storing, but also about access, there are trunks with locks close by at the foot of each of the bunk beds that are provided for medium-term stays. Even as the bombs rain down, the customer thus always remains physically and concretely close to his all-important files, documents, certificates, and business papers. Indeed, the company's first facility in the eponymous iron ore mine in Rosendale/Kingston did not only offer archive-related services. A hotel of incredible dimensions was found in the vaults spread over seven underground floors, as the journalist Joshua Rothman learns during a visit from Bill Mesnick, the current manager of the facility:

> *[I]t contained fallout shelters, built and maintained by Iron Mountain for executives from Exxon, Shell, and other big companies. One especially elaborate shelter, he said, had sixty-five hotel rooms, each with a private bath, and a large cafeteria with a commercial kitchen; in the mid-century-modern bedrooms, curtains obscured the concrete. According to Mesick, in the event of nuclear war, some executives, along with their families, would have been evacuated by helicopter from New York City. ›They'd hired local folks to tend to them, to cook for them, to clean for them,‹ Mesick told me. Their idea was to wait out the storm while the debris and radioactivity were going on overhead – then they were going to come out and sell oil to everyone who was left. Every now and then, Mesick recalled, the executives would run a ›live exercise‹ – essentially, they'd come and hang out for the weekend.*[7]

Already in the first decades of the company's existence, the atomic-bomb-proof iron ore mine would repeatedly give rise to enthralled news coverage that, from the operators' point of view, must have appeared as free infomercials.[8]

In fact, however, Iron Mountain was not a unique phenomenon at the beginning of the Cold War but rather part of a nationwide project of »doomsday planning« that was also related to archival issues. Thus, the National Archives and Records Administration (NARA) and also, for instance, the Committee for the Protection of Cultural and Scientific Resources, under the direction of the librarian Scott Adams, developed detailed plans for the essential document collections of the USA that would also need to be secured in the event of a nuclear attack by the Soviet Union. Brett Spencer has studied the network of »shadow libraries« that emerged over the course of the 1950s and that linked both government facilities and privately run facilities in greater detail from a history of science perspective. His starting point is the observation that, even in the early phase, the overall strategic concept of the »doomsday movement«, which received broad support from a variety of state actors, was not only about protecting selected groups of people, such as government representatives. The aim was rather to continuously cache the main contents of the US informational landscape and to preserve them in the long term. This did not only mean governmental and important official documents that would provide survivors the competitive advantage of a »final backup« for the imagined new beginning after the nuclear apocalypse but also »the nation's cultural

heritage«. Storing information relating to standardized administrative processes appeared especially important to the planners. The storage contents to be secured basically consisted of information that was supposed to guarantee access to and processing of information: how-to manuals about, on the one hand, the criteria and procedures of the continuously implemented information storage (what to find where, what was filed where and how, and according to what system of classification, etc.) and, on the other, the official administration of the institutions of the entire country – from the local and regional levels all the way up to the national, as Spencer explains:

> *Although Cold War planners developed extensive protective measures for their leaders, population, industry, and military assets, the protection of knowledge underpinned all of their other doomsday plans, for the protection of other assets would be of little value if the country lost too much of its information and culture. If some government offices survived, they would be unable to carry out emergency operations or postwar recovery if they lacked essential documents. If some businesses and factories survived a nuclear attack, they would be of little use if company handbooks and technical designs were lost. In the minds of the Cold Warriors, preserving the nation's knowledge was even more essential than protecting the nation's leadership and population, for in the shattered postwar landscape, the ragged survivors of the war, whoever they might be, could in time rebuild the nation's government systems, work processes, technology, and financial institutions as long as the shadow libraries shielded their agency handbooks, work manuals, patents, and balance sheets. Shadow libraries, in other words, would safeguard the ›how-to‹ information and essential data that would allow the war's survivors to run the country's political and economic systems.*[9]

As »atomic storage« businesses, private service providers like Iron Mountain Inc. from the start formed part of this national project to archive the country's essential information stocks – both its institutional operating system and its relevant documentary history – via a »strategic triad« of »protective strategies«: »vaulting, dispersing, and duplication«.[10] The idea of »remote storage« was decisive for this concept. For security reasons, the storage venues, which were to be continuously filled and hence constantly updated, were supposed to be located at a distance from both the institutional and private document producers. If the latter facilities were destroyed, essential documents and the related operational instructions would still be preserved – ideally at different locations, thanks to standardized duplication processes. In order to determine atomically resilient distances and material properties of suitable places of safekeeping, i.e., physical conditions of »informational survival«, the Atomic Energy Commission (AEC) carried out special »blast tests« – with a differentiated view of the materiality of informational goods.[11]

The founder of Iron Mountain Inc., Herman Knaust, knew how to assert himself in terms of the economy of attention under conditions of the »outsourcing« of survival-relevant information that was also very much desired on the part of the government, and he counted on his iconic »vault against the atom«:

> *...boasting that the two-hundred-foot magnetite iron ore walls made the new Iron Mountain facility ›about the safest spot in America‹. He reinforced the mountain with steel bars and concrete walls, adding plaster to keep out water. Offering 1.8 million square feet of total storage space, Iron Mountain had a maze of shafts running through it that opened up to several ten-thousand-square-foot caverns with ceilings so high they were invisible. Some tunnels were lined with smaller vaulted rooms that clients could rent, and visitors had to use elevators that rode at forty-five-degree angles to reach some of the deepest chasms. Clients leased storage spaces for a range of information materials, including federal documents, patents, formulas, insurance notes, blueprints, films, and account records (including delinquent customer account records). By 1961, the mountain housed two hundred thousand microfilm reels, including eighteen thousand newspaper rolls, in addition to innumerable print documents.*[12]

On the other hand, the pictorial history of Iron Mountain Inc. does not explicitly mention its more distant history.

This was also about a conversion of the iron ore mine that was later equipped with a bunker hotel. Initially, the purpose was not to provide protection from enemy atom bombs, nor survivalism or the safekeeping of endangered documents, but rather to cultivate mushrooms. The »Knaust boys« already owned the abandoned iron ore mine in 1939, 12 years before Herman Knaust would found Iron Mountain Atomic Storage Inc. in Livingston, New York. When the *New Yorker* magazine sent a reporter to the Hudson Valley in 1944, Herman and Henry Knaust, the sons of German immigrants, were already »the greatest mushroom producers in the world« – »by a very wide margin«, as Robert M. Coates writes in »A Strange Place To Grow Things«, his 7 October 1944 report:

> *Mushrooms have no season. They grow as well in February as in August or September; all they need is a moist, dark place and a temperature that remains fairly constant around fifty-five degrees. These are conditions that the mines fulfill perfectly. [....] The tunnel was larger than I had thought. [...] We were standing in the main part of the mine – one huge cavern, really, about fifty feet high and some hundreds wide – which has an area of roughly five acres, or about four times the size of the concourse in Grand Central Terminal. There are smaller caverns, or galleries, opening off it that add considerably to the mine's dimensions. [...] As I stood there, I became aware of a tinkling sound, sometimes near, sometimes farther away, but as regular as the ticking of a clock; it was the drip of water from the ceiling, and I heard it the entire time I was inside.*[13]

When Herman Knaust died in 1970, the *New York Times* summed up his entrepreneurial biography in an obituary as follows: »Mr. Knaust went into the mushroom business with his brother, Henry, early in the prohibition era. He had owned a small wood and coal business in New York. He learned about mushrooms after a brewery, converting its premises for mushroom growing, asked him for wood to make trays needed to grow the fungi.« The article continues:

> *Mr. Knaust also was the founder of the Iron Mountain Underground Storage Corporation – which provided an atomic bomb shelter for business and personal records in an abandoned iron mine about 40 miles south of Albany. He bought the medium-sized mountain with its abandoned mine in 1939 to use its shafts for the cultivation of mushrooms. He subsequently decided to turn it into a shelter after hearing from some of his employees, who were refugees, how some of Europe's safest vaults had proved inadequate during World War II for the protection of priceless records. In 1951, a year after he had turned one of the shafts into a series of vaults of concrete and steel, Mr. Knaust had rented 25 of the vaults to concerns in the United States and Canada. Work on the mine was done by 60 refugees from Baltic lands, whom he had hired as part of a Lutheran church program to aid displaced persons.*[14]

The second conversion – turning an iron ore mine, which initially housed a mushroom farm thanks to favorable microclimatic conditions, into a high-security warehouse for »information defense« under the changed conditions of the post-war period (but undoubtedly also because the mushroom business had fallen into crisis due to competition from Europe and Asia) – is already accompanied by what must have been a costly marketing campaign, as we can read on the German version of the *ironmountain.com* website: »While Knaust was setting up the first ›archives‹ inside Iron Mountain, he opened his sales office in the Empire State Building. Thanks to his knack for publicity, he managed to convince notable figures such as General Douglas MacArthur to visit Iron Mountain.«[15] Getty Images, a current client of the facility, owns the rights to a 24-second newsreel film that shows the high-point of the company's »safest spot in America« campaign.[16] Iron Mountain Atomic Storage president Herman Knaust is to be seen opening an almost hypertrophic-looking – and, as an off-screen voice proudly notes, nearly 30-ton – vault door. While in the next shot, the camera lingers over the details of the meter-thick swing door, following the rotating vault door levers with obvious enthusiasm – before uniformed men then begin to maneuver lift trucks stacked high with crates into the inner vault structure of the former iron ore mine – the soundtrack talks about the high demand from museums and banks due, in particular, to »international tensions« (The East

River Savings Bank was in fact the »first customer« at the time).

Another newsreel film, entitled »1950s – Microfilm is transported for secure storage at Iron Mountain Atomic Storage Vault, in New York«,[17] starts with a rotating printer paper roll (we can make out what look like endless columns of numbers and can surmise that these are business records) and then shows how a new delivery for storage typically proceeds. The Kingston facility is shown: »Atomic Storage Vaults,« as in the engraving on a wall. (Fig. 5) A Wells Fargo Bank delivery truck drives up, and a door to the facility opens. Two uniformed men are waiting inside; the driver maneuvers the truck into the loading dock. After filling a safe-deposit room – there are cuts to armed security personnel guarding the outer door – the locking of the iconic vault door is again presented as the finale. (Fig. 6) Joshua Rothmann, revisiting Iron Mountain and Knaust in the same magazine 69 years after the first *New Yorker* report, illustrates the former »Mushroom King's« impressive PR talents clearly by way of a making-of story:

> *Knaust purchased the twenty-eight-ton bank-vault door from a bankrupt bank in Ohio – he paid a dollar for the door, and twenty thousand to ship it – because he thought it gave the mine a Fort Knox atmosphere. He hired a dozen ex-cops, armed them with Colt .45s, and stationed them as guards. He put in an underground generator because, he told the Wall Street Journal, ›If we got into an atomic war, we might need that power.‹ He made boastful but accurate predictions, telling the Journal, ›This business will mushroom.‹*[18]

Figure 5: Screenshot from Newsreel: »1950s—Microfilm is transported for secure storage at Iron Mountain Atomic Storage Vault, in New York« © Iron Mountain Inc.

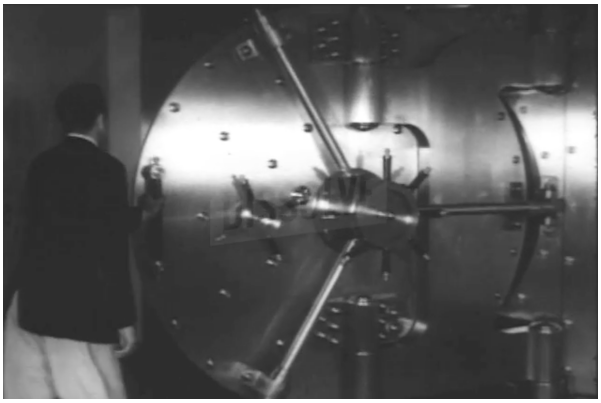

Figure 6: Screenshot from Newsreel: »1950s—Microfilm is transported for secure storage at Iron Mountain Atomic Storage Vault, in New York« © Iron Mountain Inc.

II Keep Your Information Flowing and Your Data Secure

When being stored, archival goods are typically addressed by a series of administrative practices and processes. The administrative routines include, in particular, standardized procedures of inventory and metadata creation, which are supposed to ensure that long-term archival preservation is connected to concrete procedures of localization and gaining access. Archives cannot be reduced to an initial event of safekeeping: a brief temporal process of definitive deposit and storage. The stored objects – understood here in the broadest sense as information that has been inscribed on storage media of any kind – must, in principle, be findable and, moreover, retrievable from the archive location on request. There is no archiving without long-term potential for consultation. Since the archival order gets inscribed in the chosen material artifacts in the course of their archival storing, archival objects (and the informational goods with which they are connected as media) always also contain criteria and protocols of their archival-bureaucratic measurement and encoding.[19] Thus, with respect to archival goods, we can always ask in what form – according to which administrative rules of procedure using which sets of media – they have been processed in archival-administrative terms:

in what way, for example, they have been captured using institutionally managed repositories and systems of organization and classification. As Sven Spieker has argued, this typical constellation of archival storage administration also involves the general question of the media or the mediality of the archive: »In the archive, the stored materials, the principles of its organization, and the media that record them are so entangled that they cannot be extracted from one another«.[20]

The process of initial inclusion in an archive can thus be understood as a medially organized demobilization inasmuch as goods that are inserted into an archival logic – and hence goods that have to various extents been given repository metadata and made localizable and retrievable – are transferred to more or less inaccessible archival spaces, in order to impregnate them with the protection and persistence promised by storage media. The secure storage requires a kind of containment, which takes the archivally warehoused object out of circulation and suspends it. The archival space is supposed to eliminate or reduce temporally induced effects of corrosion and to protect the archival object from unauthorized access. This does not only apply to the dystopian special case of a possible nuclear attack, which was prominently taken up by Iron Mountain Inc. in the 1950s, but also to the ordinary everyday archival life found everywhere. Insofar as use gives rise to traces and utilization implies wear-and-tear, the following rule could be formulated from the point of view of archival conservation: the more inaccessibly and immovably stored, the more securely and permanently preserved.

But this only describes one side of the archive as the normal case. Archival media should not be reduced merely to media of arrest that organize demobilization – even if storage as suspension is an elementary archival process. Since, however, archives are also obliged to carry out a transmission function, inclusion in an archive does not (at least not only) mean locking-away and stasis. Archives remove discrete material excerpts of reality from the commerce of the present, consolidating them as archival goods, but, at the same time, in the course of doing so, they lay down new channels and transport media via which the stored objects and informational goods are supposed to remain accessible and consultable in the future – also in derivative form: via directories, lists, catalogs or as copies secured via reference chains. Archival storage is thus constitutively related to administrative protocols and media of extractive distribution. Strategies and storage techniques have to include retrieval resources in their calculations. Although archival goods are demobilized and integrated into a bureaucratic regime[21] of conservational restrictions on movement, which establishes barriers to access and communicates archival authority; at the same time, they are connected – in a way as compensation – to archivally characterized and administered transport routes, thus remaining fundamentally transportable: namely, addressable, distributable and thus re-mobilizable.[22]

From a logistical point of view, archives are thus less repositories than depots.[23] In terms of storage theory, the systemic demand for accessibility leads to the use of temporary storage and caches. Archival institutions do not only collect and hold material artifacts; they conserve archival goods for differently tailored distributive agendas. They have to do this because depending on the transmission intention (whether cultural, institutional, or as in the case of Iron Mountain Inc., guaranteed in private contracts), archival goods are not simply dead matter that has been put away forever, but rather, in information-theoretical terms, they can be understood as archival-bureaucratically processed artefactual signals.

This consideration can be elaborated even more clearly with an approach by George Kubler, whose study »The Shape of Time: Remarks on the History of Things« (1962) – which is principally (but explicitly not only) about media that are regarded as artworks – is recently being increasingly discussed again, especially with regard to media theories of archival transmission, and already played a background role as provider of meta-historiographical keywords in Hans-Jörg Rheinberger's history of the »experimental system«.[24] Kubler's conviction, which can be made useful for media theory, that transmission is based on »apparatuses of transmission and translation, […] on the signal transmissions of the past and the transformations in the relay«,[25] points to the necessity of (re)mobilizing what is preserved – what, in the sense of a »transmission along the axis of time«,[26] as Hartmut Winkler has defined the archive's transmission function, is supposed to stay reachable – as a flow of information again and again. To

this end, Kubler writes, »switching stations« are needed, whose communicative and administrative-technical protocols are also inscribed in what can be extracted from archival holdings in each present in its own way. What is also, in principle, transported with them is the possibility of extending the information-technological signal chain:

> *Historical knowledge consists of transmissions in which the sender, the signal, and the receiver all are variable elements affecting the stability of the message. Since the receiver of a signal becomes its sender in the normal course of historical transmission (e.g. the discoverer of a document usually is its editor), we may treat receivers and senders together under the heading of relays. […]. Each relay willingly or unwittingly deforms the signal according to his own historical position.*[27]

Conversely, it follows that archival goods no longer being moved are not safely preserved in every respect but bear an increasing risk of obsolescence. From this perspective, the preservation – the survival – of archived goods does not only depend on technical parameters like, for instance, regulating humidity in the archive, but also on the continuity of empirical archive retrieval and use: i.e. on archive-related information flows. In this way, archival goods, if they have never been consulted (or have not been for a long time), are threatened with invisibility, oblivion, and ultimately disappearance. Aleida Assmann theorizes this constellation as follows: Unused, movement-resistant archival goods may still be »latent« as material media in the storage memory if the continuity of conservation practices is maintained – but they lose informative signal strength. In case they remain unused, the revitalizing, as it were ›life-preserving‹ mobilization towards the functional memory becomes more and more improbable, despite the physical persistence of the archived objects, and the transport route becomes longer and longer.[28]

Lorraine Daston, arguing not mnemo-culturally but rather praxeologically in light of scientific archives, takes a similar view but also connects the preservation of archival goods to recurring use, to interlinking movements of information, and speaks of transcription procedures and »chains of transmission.« This refers to a socio-technical transmission chain of distributed *agency*, which is based, in the sense outlined, on goods deposited in archival memories having to be re-mobilizable for every present:

> *Longevity is no accident: a chain of individuals and institutions links Babylonian cuneiform tablets with NASA's Five Millennium canons, and the fossils piled up in a seventeenth-century cabinet of curiosities with a twentieth-century digital database. At each stage of transmission, key information about the original context in which the archive was compiled might be lost; standards for precision, reliability, and relevance also have their history. Without scholars and scientists, copyists, printers, proofreaders, curators, librarians, archivists, programmers, and the institutions that at every step support them, from monastic scriptoria to the modern university library, the chain would break.*[29]

Archival objects – in the sense of all storage media that contain information formatted on carrier media for the purpose of archiving – are thus ›in motion‹ for the simple reason that they are products of continuing transcription histories, in the course of which information is not copied without loss, but rather is also always ›relayered‹ and thus modified: for instance, when it comes to processes of digitization and data migration, as in the range of services offered by Iron Mountain Inc. For Daston, this transport process, praxeologically broken down, is a transformative one. The transport good can always, in principle, be questioned in terms of the transformative effects of the transport route:

> *But the new, handier archives do not supplant the old ones; layers of transcription simply accumulate. […]. At any moment a query could send a researcher burrowing down through the layers of transcription in search of some overlooked detail that has suddenly become crucial. […]. The archive is not and cannot be unchanging. But its usable past must be spliced and respliced with a mutable present in order to guarantee a usable future.*[30]

Administratively organized forms of movement are thus found in the archive, on the one hand, by virtue

of basic requirements for the issuance of archival goods, which cannot be completely and permanently canceled even in institutions that operate with long-term embargo periods, only selectively issued »passes« (Farge), or other restrictive policies for rejecting access authorization. Moreover, even where external access to archival goods is not permitted, archive-internal movement patterns ensure that there is mobility in the system. Archival storage is fundamentally connected to institutionally regulated processes of »(re)encoding.«[31] Thus, routine archival document-administration procedures – which are related, say, to the inclusion of new goods, operations of reevaluation, reclassification, and reassignment, or the establishment of categories that are being introduced for the first time – lead to repeated reshufflings that not only assign (relatively) new locations in the archival space to individual goods but also dynamize the whole archival system of relations. In addition to the procedures of selection and review that guide uptake into the archive, these include, in particular, the permanent processes of organization and reorganization that make archives productive, effective, and history-making – among other things, because they variably (or reversibly) situate archival goods in taxonomic orders and hierarchies of visibility.

To this extent – precisely because of continuously occurring administrative processes and despite all dominance of storage agendas – archives are not a final resting place, but instead represent a bureaucratically regulated circulatory space, which is permeated by mobility controls and in which archival storage goods remain fundamentally transportable, because they can be rearranged in definite rhythms and are successively shifted further into the (temporally conceived) depths of the archival space by the arrival of new goods, but can also be moved back to visible, accessible, topical surfaces thanks to use queries and lending for purposes of consultation. The prerequisite for this is a whole series of administrative media – catalogs, directories, repositories – via which stable archival addresses are routinely produced and administered. At first glance, the address systems themselves do not seem to be particularly mobile but rather bound to relatively enduring, path-dependent scripts and protocols of archival administration, the purpose of whose inertia is to keep archival transport routes and movement patterns as constant as possible over long periods of time.

If archival institutions in the sense discussed are specialized in administratively organized mobility, archival goods movement, and archive-generated information flows, in addition to providing long-term secure storage capabilities, the question arises as to how an up-to-date information management service provider like Iron Mountain Inc. addresses this key aspect in its promotional communication. The previously discussed sequences from »Iron Mountain – Our Story« also show storage processes (transporters drive trucks into loading docks, crates are transported into rooms and stacked up), but, nevertheless, only deal in passing with the constitutive – and from the customer's point of view, too, not unimportant – mobility in the archive, but initially above all highlight the iron mountain that comes from the company's pre-digital history: namely, as symbolic guarantee for atomic-bomb-proof persistence and solidity.

In »Iron Mountain – Our Story«, it is a leap forward to 1995 that brings about a change in perspective that aims precisely at archive-specific promises of mobility. Safekeeping moves into the background in the following sequences, letting instant accessibility and storage conversion processes take center stage. For right after the historical photo documentation of the »first customer« and »first documents to protect«, another, only schematically discernible, mine entrance is to be seen, which, accompanied by a trumpet fanfare, serves as the background for a running series of numbers that goes from »1951«, the year of the company's founding, to the 1990s at first. Now the promotional history film finds itself in what is by now undoubtedly the company's most iconic or photogenic facility, a former lime mine in Boyers, Pennsylvania, that was acquired from a competitor, the National Storage Company, in 1998 and – labeled as »The Underground« – has been playing a crucial role in Iron Mountain Inc.'s self-presentation ever since (among other things, for instance, in »Before the Cloud, an Underground Mine of Physical Data«, a 360° video of the *New York Times*):

> *220 feet below the ground and with a temperature constantly between 60-65 degrees Fahrenheit, the mine is home to a 150-acre underground lake that*

maintains a perfect temperature for document preservation. It also (surprisingly enough) has its own restaurant, fire trucks, and water treatment plant and is managed as its own underground community. The mine is almost completely out of the view of the public, meaning hundreds of people drive by it every day without even knowing it is there, which was the exact intention of the mine's design. […]. With vaults ranging from a personal size of a few feet to that of shopping malls, (at around 220,000 square feet) it is easy to see why Iron Mountain is such a sought out and heavily secured area that is being protected by the community, state, and the government 24 hours a day, 7 days a week.[32]

After the indeed enormous dimensions of the facility have been given their due in a series of establishing shots and tracking shots (Fig. 7, 8, 9) in the spirit of the promise of guaranteed safekeeping, which is still part of the core of the trademark, »Iron Mountain – Our Story« moves to the archive-internal processes with the aid of superimposed formulas, which are meant to clearly extol the range of services offered. The presentation of administrative mobility efficiency, thanks to digital transformation processes, now takes up the most space (Fig. 10). In the self-presentation, the promise of efficiency is principally related to movement, conversion, and pragmatic accessibility, thus avoiding any one-sided emphasis on the aspect of archival conservation, which could be associated with inaccessibility and complicated or even blocked access. The focus is thus no longer the security of the facility vis-à-vis the exterior but rather the modernity of the archival administration that is operationalized internally – as a dynamic process that establishes and guides needs-based information flows towards the end customer. Barcodes are constantly being scanned with laser guns that were presumably futuristic-looking in 1995 (»Customer files managed«), instant access is promised (»Billions of documents ready for request«), data migration routines (»tape archiving and conversion«) become the focus. The fact that the information intended for archiving can be made flexible in terms of carrier media, in order to increase the speed and practicality of information access, is narrated as a logistical bifurcation, inasmuch as the information given to the company for safekeeping can, on request,

Figure 7: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

Figure 8: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

Figure 9: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

be kept in two complementary storage states. On the one hand, as physically tangible objects (whether files, analog photographic originals, audio tapes, or hard drives) in concretely localizable archives, which are climate-controlled and surrounded by impenetrable rock. On the other hand, as transfer-ready, transport-optimized data objects in digital databases. As an

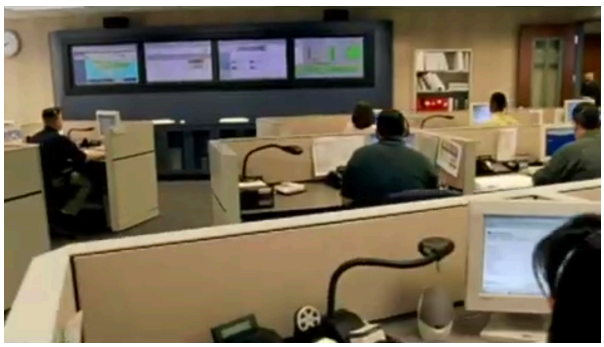

Figure 10: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

Figure 11: Screenshot from video »Iron Mountain – Our Story« © Iron Mountain Inc.

information manager, Iron Mountain Inc. does not only monitor both media-technical aggregates but, above all, guarantees their connection via »chains of transmission« (Lorraine Daston) – and equips the related elements with different distributive resources, ranges, and practical applications.

In the next step, »Our Story« jumps, as announced, to 2010 (which at the time of the making of the promotional video was still some months in the future). As stock photography for topoi of digital media culture, which has been in constant use since, we see the typical interior of a data center (Fig. 11), nondescript with long rows of neatly arranged server towers one next to another. (»First end-to-end archiving platform as service in the world«; »petabytes of data available to use«; the captions explain). The promise of protection itself, which continues to be evoked, is now rendered not only by the physical impenetrability of the mine facility as such but, with a drum roll on the soundtrack, also by showing digital technology, which seems to be bundled in a kind of corporate situation room full of monitors (»24/7 Supervision«).

That data migration processes can also function as a method of sustainable safeguarding of information under digital conditions is also mentioned (»130,000 PCs backing-up automatically«). From this perspective, the transformation in storage media is not simply an ad hoc shift but rather entails a new kind of processuality of the stored informational goods, which are now integrated into automated routines of continuous storage transfer, whose aim is archival persistence. While Iron Mountain Inc. began offering »electronic vaulting« and »digital archiving« as services already in the early noughts, the all-encompassing shift to cloud services as the main pillar of corporate strategy took place relatively late (»Iron Cloud« was introduced in 2017). Up-to-date data storage services require in turn different storage media infrastructures than traditional, principally paper-based document archiving. Thanks to its longevity and relatively fast readability, magnetic tape (which is also comparatively inexpensive) serves here as the main storage medium for the data backup systems used.

As the Internet spread and imposed itself, however, what changed, above all, were the »access« options that customers were asking for and now expect, as is also repeatedly emphasized in assessments of Iron Mountain's business model:

> *Tape data storage is an archive, which is long-term storage of inactive or low-activity data retained for future use. […] Iron Mountain built a business of storing data that did not need to be frequently accessed if at all. Tape provides a low-cost way to store lots of data. When the cloud came along, it cast a shadow on a few of the significant disadvantages of Iron Mountain's business, specifically the difficulty of accessing the data and the fragility of the physical tapes. These two issues happen to be two of the advantages of cloud-based solutions. In a recent survey done by IDG Research, results showed that 79% of respondents are likely to move some legacy tape data to the cloud. The respondents saw the cloud as a better solution in categories such as scalability, efficiency, data availability on demand, and cost savings.*[33]

Consequently, the company's current visual communication on popular platforms like YouTube involves numerous »virtual tours,« which are not only supposed to present »our global data center portfolio« to interested parties and potential customers as a clinical-looking routine operation, but also point to the low-threshold accessibility and availability of the stored informational goods. Identically-constructed videos like »Iron Mountain NJE-1 Data Center, 360 Virtual tour«,[34] »Iron Mountain VA-2 Data Center Virtual Tour«,[35] or »Iron Mountain DEN-1 Data Center, 360 Virtual Tour«[36] (FIG. 12, 13) show barely distinguishable, hall-like interiors full of servers, while the promotional voice-over now reformulates the company's still main promise of security no longer just in terms of the characteristics of the physical location, but also as a cyber-security approach, and at the same time emphasizes the supposedly guaranteed sustainability of the facilities thanks to only using renewable energy sources.

But what appears more important – say, in »Iron Mountain Virtual Reality Site Tour«,[37] a comparatively extensive 10-minute-long overview of Iron Mountain Inc.'s digital business model – is the energetically-mobile state of the stocks of information given to the company for archiving. The iconic Iron Mountain, again in triplicate, forms a visually receding background on which a brightly shining grid is superimposed; it thus seems already to be digitally permeated and encompassed. But what is then depicted – via implied administrative activity in unassuming office interiors – are, above all, practices of transcoding information goods, ranging from the scanning of various paper documents (but also X-rays from patient files) to the creation and administration of digital databases: »Here in Iron Mountain Scanning Center records are prepared and indexed by trained imaging specialists.« Documents that are particularly sensitive in terms of data protection law serve as chosen example:

> *The healthcare records indicated by the guides came from a local hospital where employees lost valuable time searching for patient information in filing cabinets and boxes. With the growing volume of health records and tightening regulation ensuring the privacy and security of personal data along with ease of access became increasingly difficult.*[38]

Figure 12: Screenshot from the Virtual Tour of an Iron Mountain Data Center © Iron Mountain Inc.

Figure 13: Screenshot from the Virtual Tour of an Iron Mountain Data Center © Iron Mountain Inc.

Under these conditions, information management does not simply mean safekeeping but describes the administration of a »lifecycle of information«. The associated mobilization is also explicitly related to recent tools for productively exploiting data: »Now that the information is digitized, it can be put to use. The data is fed into Iron Mountain's AI-powered insights tool where it can be visualized and mined for business efficiencies and cost savings«. In the visual presentation of the informational life cycle, all kinds of conventional »paper knowledge« is still to be seen, materialized in the shape of paper documents and stacked-up cardboard boxes, but that is now – as a visual allusion to transcoding and productivity-increasing feeding into digital data streams – also covered by a »smart« grid and connected to it. Whereas these passages from the Iron Mountain Virtual Reality Site Tour talk of building digital mirror archives, the question of the materiality of the archived holdings continues, however, to be relevant in light of security aspects: explicitly in the form of magnetic-tape-based offline archives, according to whose

administrative logic the stored information is precisely not cloud-computable, but rather »stored in a secure off-site vault creating a protective physical air gap.« At this level, the overarching »keep your information flowing« leitmotif is, then, no longer related to connectivity and access, scanning and mining, but only rather to routine data migration processes in which stored »archival tapes« are regularly re-recorded to protect against physical-material data loss.

Apart from this, overall, the general fact that digital processes of archiving cannot, in principle, be presented without taking into account the materiality of carrier media and that loss of information can be a consequence of digital storage media becoming physically inaccessible is only given rather casual treatment. (The final sequence of »Iron Mountain – Our Story« prefers to disappear into space by way of a very amateur-looking sci-fi animation). However, what is at issue in this context is not only the state of conservation of information support media but also the »lifecycle« of an archival facility in the sense of the (non-)sustainability of the associated energy balance. Iron Mountain Inc. very much has its own approaches in this respect. Thus, the lime mine archive in Boyers includes »Room 48«, in which energy efficiency experiments are conducted. The energy requirements of high-performance cooling systems have, for instance, led companies like Google/Alphabet to set up their new data centers in places like Hamina. The energy efficiency of cloud computing is supposed to be ensured there via a cool water system that draws water directly from the Gulf of Finland. Based on similar considerations, Microsoft started a project a few years ago using server submarines – called »Nantick« – in which the unavoidable heat generated by the server farms is supposed to be immediately and completely regulated by the ambient coolness of the ocean. In the case of Iron Mountain, it is the aforementioned underground lake in the mountain that promises to reduce energy-consumption costs thanks to geothermal processes:

> *Unlike other limestone mines which are normally covered in layers of porous sandstone, The Underground was blessed with a roof of shale, which acts as a natural umbrella. Water is absorbed into the ground around the mine, instead of through its ceiling. The subterranean lake is an anomaly created by groundwater that moves by osmosis into caverns at the low point of the mine where, at depths of four to eight feet, it spans hundreds of acres. For now, Iron Mountain uses the lake water in a motorized chiller tower from Krack Corp. to cool hot air coming from data center ducts. But [Iron Mountain] believes the 50-degree water could eventually be circulated to the data center and back to the lake to naturally expel heat, eliminating the need for any HVAC system.*[39]

Thanks in no small part to the acquisition of IO Data Centers LLC (2017) and ITRenew (2021), Iron Mountain Inc. has developed into a global player in digital information management in the last decade. In principle, the storage administration services offered form part of the massively expanded storage routines of digital media cultures, in which, to generalize, more and more everyday activities are being datafied in a more and more granular way and being pulled into digital storage nearly in real time. Thus, it is not only fitness gadgets that are recording every step on the stairs, wristwatches recording sleep patterns, browsers recording history logs in minute detail, search engine providers recording every keystroke, social media platforms recording every click on every like button, streaming services recording all content consumption, and smartphones constantly recording their GPS-localized spatial position. Everywhere, non-human actors equipped with sensor technology are involved in capturing and storing events in the lifeworld. In this context, Sven Spieker has argued that the digital expansion and intensification of storage agendas also entail consequences for relatively traditional storage institutions like the archive:

> *For (analog) archives, it was traditionally imperative to make a strict distinction between (their own) inside and what is external to them. The digital archive functions […] less as an inside defined by its demarcation from an external environment than as an environment without an outside. It is becoming more and more difficult to distinguish the archival good from the non-archival good in this environment. We do not ›enter‹ this digital archival environment, we move within it. Information is not so much filed in such an environment; rather it goes on its way like a cloud.*[40]

Although Iron Mountain Inc. does not run any archival facilities in the narrower institutional sense – which are typically assigned a function of cultural transmission and are often run by state actors – it nevertheless attaches importance to being perceived as an archive-like storage institution in its external presentation, as was shown in this essay by looking at Iron Mountain's visual promotional communication. This is, above all, related to the promise of long-term conservation and protection against material deterioration. The archival semantics that Iron Mountain Inc. constantly invokes to advertise the solidity of its own service offerings are precisely not supposed to give the impression that it is simply a matter of caches, as in the cloud-based logic of environmentalizing everyday and incidental storage processes. The company's own cloud is supposed to be conceived in terms of the solid Iron Mountain and to indicate its difference from the digital present of distributed storage architectures, which as »environments without an outside« tend to appear unsituated and ephemeral (without in fact being so, as we can see as much from the infrastructures that are really involved, like fiber optic cable networks[41] and data centers,[42] as from their carbon footprint[43]). The strived-for archival semantics – which are associated in Iron Mountain's self-representation with the corporate history of an atomic storage service provider guaranteeing information security – offer a perspective that is well-adapted to communication strategy insofar as the associated practices of resolute shielding, secure storage, and long-term conservation precisely do not appear to be connected with the unbounded, indiscriminate storage forms of digital media cultures. Moreover, the archive continues to be conceived in terms of a selective view of what could be relevant from the present for the future and thus not collected arbitrarily, but rather specifically selected, stored, recorded, and kept available for a »new temporal location«.[44]

The archive – the semantics, ideas, and practices associated with it – in this respect becomes attractive again as a producer of difference, as Spieker argues in »Bürokratische Leidenschaften« [Bureaucratic Passions]:

> *Per the traditional theory of the archive, archives certainly store many things, but not necessarily everything. Today, on the other hand, the circulation of data and information is increasingly played out in a global archival space that has lost its outside. In this sense, talk of the archive, when referring to the global data storage of our day, is misleading. Our problem as contemporaries is less deciding what an archive is than grasping what an archive-free space would have to look like, if there could still be one. And here a paradox emerges […]: what the outside of the archive is today are precisely those traditional archives in which it is still a matter of separating what is worth conserving from what is not, of deciding what is worthy of being archived under the given conditions.*[45]

Following this line of thought, institutional archives form an outside of the ›global archive‹ that has been pulled inward to the extent that they are particular – particularly carefully administered and particularly secure and protected in the long term – places of knowledge from the perspective of which those storage excesses can be observed that the traditional archive – via the norms, methods, and epistemologies associated with it – attempts at first to keep on its outside. The iconography of the Iron Mountain, the corporate history that is prominently evoked by way of visual documentation of nuclear bunkers, vault doors, and storage chambers located in the depths of abandoned mines – as a historical part of a shadow libraries network that was supposed to contain the information landscape and operating system of an entire nation – works with precisely this inside/outside difference: An, on its own account, storage-forming inside that is protected and administered like an archive and that shares all kinds of networked digital media technology with its storage-excesses-prone environment, but not the history of Iron Mountain as emblematic storage medium.

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7 Joshua Rothman: The Many Lives of Iron Mountain, in: The New Yorker, October 9, 2013, online: https://www.newyorker.com/business/currency/the-many-lives-of-iron-mountain (17.04.2023).
8 Thus, the facility made a lasting impression on the German news magazine Der Spiegel, which, in February 1966, wrote: »Since the Cuban Missile Crisis, more and more U.S. companies have moved to fanning out or digging in. ›It is safe to say that five hundred of the most important companies in the country have taken precautions‹, Virgil L. Couch, industrial defense head in the Office of Civil Defense, summed up. According to a survey by the Wall Street Journal, 19 of 35 major US banks have established second headquarters, mostly underground. One of the largest joint facilities was installed in an abandoned iron ore mine in the Iron Mountain 200 kilometers north of New York. It has its own power, water supply, and air filtration systems, as well as food depots. Megatons of layers of rock and ore and a 28-ton door shield the hollowed-out mountain core from the blast and heat of an H-bomb, as well as the radioactive fallout. In exchange for exorbitant rent, the ›Iron Mountain Atomic Storage Corporation‹ (slogan: ›The safest place on earth‹) offers refuge in the mountain. Vaults for duplicates and microfilm of company files; miniature branch offices for emergency operations; luxuriously designed large spaces. In case there is a national disaster, the Standard Oil Co. can send two hundred of its most important employees into the underground office. Six floors of office space and a communications center with wireless and teletype equipment await them. Bedrooms, lounges, kitchen, dining room and a music room with seating and a red and gold couch provide for comfort, while fake windows and artificial flowers provide atmosphere. Altogether, the mine refuge already has 700 customers.« (Kontor für den Krieg, in: Der Spiegel, 10, 27.02.1966, online: https://www.spiegel.de/spiegel/print/index-1966-10.html (17.04.2023))
9 Spencer: Rise of the Shadow Libraries, p. 168.
10 Spencer: Rise of the Shadow Libraries, p. 148.
11 One of the more well-known cases was a test named »Operation Teapot«. »In Operation Teapot, AEC staff gathered forty-five bookshelves, vaults, microfilm cabinets, and filing cabinets, filled the units with books, paper records, microfilm, movie reels, and historical documents, and positioned them at various distances from ground zero. Some units were left in the open air, and others were placed inside buildings. Meters were inserted into the units to measure thermal, blast, and radiation effects. The project staff then detonated a thirty-kiloton A-bomb and sifted through the resulting wreckage.« (Spencer: Rise of the Shadow Libraries, pp. 149f.).
12 Spencer: Rise of the Shadow Libraries, p. 164.
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Abstract

The article deals with the visual culture surrounding the information management service provider Iron Mountain Inc. The market-leading company was founded in 1951 by a mushroom farmer who converted a decommissioned iron ore mine into an »atomic storage facility« for business papers and other documents. Based on visual materials (promotional short films, archival footage, corporate design), the article examines the digital transformation of the storage media involved and asks how the former Cold War start-up cultivates the image of a virtual archive bureaucracy that links the history of »atomic bomb-proof« repositories with the promises of digital access, processing, and administration.

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