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Article abstract

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Archives and Technological Selection

Trond Lundemo

ABSTRACT

The archive is not a place for the undifferentiated storage of the past: the political role of the archive is to select what to include as the past and what to discard, in order to regulate the future. These selections are prescribed by laws and regulations, but they are also determined by the archival techniques available for inscription, storage, indexing and access. The author analyses the technological selections of two ages of the archive. The first age is that of the intermedial archive emerging after the end of the text archive monopoly, with the gramophone, photograph and, in particular, film. The gaps and contradictions resulting from this configuration of media are investigated through a discussion of the media set-up of Albert Kahn's *Les archives de la planète* (1908-1931). The second age is that of the digital archives, and the digitization of analogue material, again with *Les archives de la planète* as an example. Instead of understanding these ages of archival technologies as autonomous and separate, the author argues that they should be approached as "superimposed" archival regimes in order to tease out the current interrelations between analogue and digital archives.

The archive is not a place for the storage of the past: on the contrary, it is founded on the *selection* of what to include in archival storage and what to exclude. Selection is the constituting principle of the archive, and by regulating what is to be understood as the past, and consequently deciding the future, the archive is the locus of political decisions. Some of these selections are made as conscious choices by legislators and archivists, while others depend on technological, economic and social conditions that define, but yet often elude, the archive. The politics of the archive changes over time according to shifts in archival techniques and material supports. For these reasons, it is as important to ask what is excluded from the archive as to

only look at what it contains. On different levels, selection is the process of deciding that some things will be left out from inscription and storage, thus excluding aspects of events from retrieval and access as it is stored in an archive. This means that no archive stores "all" of an event, creating gaps and lacunae in the preservation of the past.

In order to approach and analyze the constituting processes of archival selection, its lacunae and discarded elements, one has to think of different active forms of selection. In the archive as an administrative institution, laws and regulations prescribe what to include and what to discard. This is the defining factor of the archive, as opposed to collection, where such formal criteria most often are lacking. Selections are also made, however, by archival technologies on many levels: in inscription, storage, indexing and access. These technological *dispositifs*, in Michel Foucault's understanding of the term, are by no means independent of legal, social and economic selection factors, as they often meet the prescribed requirements for the individual archive, as well as its use and access, its funding, etc. Archival techniques are not solely tools for storing the past according to conscious choices by legislators and archivists, however. They also have agency in the sense that they set the conditions of possibility for inscription, storage, indexing and access. When we ask what is excluded from the archive, we will here do so by focusing on what the archival techniques actually do in their processes of selection.

I will discuss the relations and differences between archival selections of two epochs that concern the moving image. In the age of the "Gutenberg Galaxy," to borrow Marshall McLuhan's famous expression, archives stored the past as written or printed texts. This means that all kinds of events had to be described in words in order to be stored in the archive. The processes of information selection in written descriptions are evident, as they have to translate anything visual, audible, etc. into writing. Here I will not be concerned with the different techniques of inscription in the age of text archives. My first period of investigation will instead be the *intermedial* archive, when technological media such as the gramophone, photography and film became

part of an archival constellation in the latter half of the nineteenth century. As emphasized by the German media theorist Friedrich Kittler in his book *Gramophone, Film and Typewriter* (1986, pp. 1-19), these nineteenth-century systems of inscription not only add information (sound and image) to the text archive. Instead, this is a rupture in the archival logic of the text archive, as the constellation of media creates gaps and contradictions between images, sounds and texts. Media archives select information based on technological factors that cause media to inscribe different things. Albert Kahn's *Les archives de la planète* (1908-1931) offers a good example, where colour photographs and films of the same place or event often co-exist to inscribe different things (colour or movement).

My second period of analysis consists of today's digital technologies. Digital code embodies another shift in the archival logic of the intermedial archive. Digitization entails a conversion of other media, as it never archives the "born-analogue" material itself, but transcodes it and makes it accessible only as "surface effects" on screens. Since this is a transcoding and conversion of analogue materials, where everything is stored in the same code, this archival technology is no longer "intermedial" in the sense that it consists of different media. The algorithms of computer software decide how one can use the digital archive, but are themselves inaccessible to the user. The organizational principle structuring what is accessible and stored is itself irretrievable. The epistemological and political consequences resulting from the digital configurations of analogue materials make the archive a privileged place for addressing the selections making up the past today. *Les archives de la planète* and its current digitization will provide us with an example of these selections at work.

What Is an Archive?

Approaching these issues demands a general theoretical concept of the archive, which has been famously elaborated by Michel Foucault, in *Archaeology of Knowledge* and elsewhere. The archive is "the first law of what can be said, the system that governs the appearance of statements as unique events" (1969,

p. 129). Instead of a place where "everything" of the past is collected in a smooth linear sequence, the archive is the general system of the functioning—the forming, transforming and grouping—of statements. It has often been noted how Foucault's theoretical concept of the archive departs from the written archive of the "Gutenberg Galaxy," in other words the technology of writing, and doesn't take the intermedial archive into account. Foucault's archaeology often stops short of the media archive, but the technological system of what can be said and not in the archive also applies to the determining role of sound and image archival technologies. Foucault's concept of the archive focuses on the factors conditioning and limiting the statement. In the intermedial as well as in the digital archive, technologies other than language condition the forces of power operating through selections.

The principles according to which archival technologies condition the selections of the archive are fully in line with Foucault's theory. Yet, it would be a mistake not to pay attention to the fact that Foucault (1969, p. 173) was not addressing physical, existing archives, but forming a theoretical concept according to which his archaeology would describe specific discursive practices.[1] This is the distinction conveyed when he writes "archive" in the singular in French, whereas physical, existing archives always are denominated in plural. In moving from the Gutenberg archive to the intermedial or digital archive, one also needs to devote attention to the technological conditions of existing archives. Here I will adhere to Foucault's theoretical concept by addressing the systems of archival selection and exclusion, yet at the same time focus on the archaeology of material objects in the form of archival technologies determining factors of inscription, storage, metadata and access.

Foucault addressed various epochs of written archives. An archive has been different things at different times, and the Greek *arkheion* of Athens was of course submitted to different practices of storage and access than the online archive of today. This in no way means that the *arkheion* is irrelevant to our archival situation, as it too was subject to questions of which information to include in the archive. The archive is a concept

that has been used for political ends within very different societies and cultures, and consequently takes on different meanings according to where it surfaces. An archive, instituted by the political authorities for specific ends, will establish criteria for what is to be collected and what is to be discarded, who has access and who has not, etc., at a given time and place in history.

"Archive," from the Greek "arkhe," etymologically means not only origin or beginning, but also commandment and government. The famous opening statement of Jacques Derrida's "Archive Fever" (1995, p. 9), "'Arkhe,' we recall, names at once the *commencement* and *commandment*," is connected to Foucault's concept of the archive as "the law of what can be said." But while Foucault's theoretical concept does not address spatial dimensions, because it is not describing physical archives, Derrida also points out the place of the archive: "*in this place* from which *order* is given." When the archive is provided with a place, this also opens the space for analyzing existing archival technologies. The commandment of the archive makes one think of conscious processes of selection and elimination as an order from the government, but these instructions for what to include and what to discard are also part of archival media themselves.

The archive of Athens preserved the law, and was simultaneously the place from which the law was given. A modern judicial archive has as its assignment to collect court material and decisions in all legal processes in a nation state. This material constitutes the foundation for future court decisions, and the judicial archive cannot just make a random selection of documents. The archive both preserves and constitutes the law, and is the place for political acts and decisions. For these reasons, archives are institutions submitted to strict regulations concerning what to collect and what to discard. While this function may seem self-evident for judicial archives, it also applies to the principles of very different kinds of archives. For instance, most rich countries have an archive for collecting and preserving what is broadcast on radio or TV, acting under the law on legal deposits, which also describes what these archives do not need

to collect (broadcasts from abroad, web broadcasts, etc.). These selections may not constitute legal regulations in themselves, but like the law they aim at regulating the future through the constitution of the past.

This is what makes the archive something different from a collection. A collection isn't legally bound to administer the gathering and preservation of defined archival materials of a specific kind. This makes most national film archives administrative institutions, whereas YouTube, for instance, is a collection where entirely random factors decide what goes into the video servers. A collection is a private or organization-based initiative to collect objects and documents that are not legally bound by the authorities. This stands in contrast to the archive, where selection is always formally regulated. An archive decides what shall and what shall not be stored and retrieved, and thus defines what can be said and what is visible of chosen events at a certain time. Consequently, what is of importance is the question of archival functions in a political sense.

It has become commonplace to understand "archive," in the colloquial use of the term, as a metaphor for all stored information. Wolfgang Ernst (2007, pp. 64-66) has repeatedly criticized the all-engulfing metaphor of the archive because it diverts attention from the very precise political role held by the archive. Nevertheless, these metaphorical uses of the concept of the archive cannot simply be ignored, because they bear testimony to a change in the way one understands archives and storage at a time of technological rupture from the analogue to the digital. Furthermore, the relationship between archives and collections also demonstrates how Foucault's concept of the archive cannot be applied only to physical archives, as the rules for what can be said (and not), and by extension shown and heard, at a given time also apply to collections. Moreover, as not all selections are prescribed by legislators and archivists, but are also determined by archival techniques, selections also condition what is collected and stored in "collections."

Because techniques of inscription and storage are not just tools for preservation but also determine what can be inscribed and stored at a given time, they also condition the selections

made by the archive. Inscription and storage alone do not form archives, but they inform the defining exclusions of the archive. As shown by the shifts in inscription systems arriving with photography, phonography and film at the end of the nineteenth century, recording technologies irrevocably also instigated ruptures in archival structures. There is no longer a unified way of indexing and accessing this material as there used to be in the text-based archive, and the information stored may be contradictory and incomplete. This heterogeneity of storage supports complicates the prescription of selections. This is why the new storage media of the late nineteenth century made it hard to distinguish the archive from the collection, a distinction that has only become more problematic in the digital age.

The principle of selection persists in the intermedial and digital archives, however. The archive is the place for the inscription of past events, not only to exert the discursive power of naming the past and to discard certain materials, but also in order to be able to regulate the future. As the German media archaeologist Knut Ebeling (2007, pp. 56-57) states:

> Through its selection of the past, the archive regulates what are to be the law and the history in the future, and what isn't. Its legislative function isn't only directed into the past to which it attests. It is also directed towards the future, which it encodes. The past is, after all, only stored and put aside in order to have it accessible in the future. . . . The archive stores a past so it can break through to people in the future. . . . The archive doesn't collect a past reality, it encodes a reality to come. . . . It decides from the outside what can, and cannot, be understood as facts in the future.

If the archive writes the code for the future, it is closely allied with the judicial, legislative and executive power of a country. The question of who has access to the archive has often been seen as a condition for democracy, and some years ago, the 2,500th anniversary of democracy was celebrated because the central archive of Athens was open to public access. Even if only a small part of the population could read, and in spite of the inaccessibility of the original documents of the archive in Athens, as the archive magistrates (*Archons*) distributed

transcripts, the fact that selected parts of it allowed access has been seen as the birth of democracy (Ebeling 2007, pp. 126-132).

In his archaeology of the archive, Knut Ebeling has expertly shown that many implications of the archive, such as the foundation of democracy, have to be at least nuanced, and often revised altogether. He demonstrates how the degree of an archive's openness is directly proportional to the degree of its surveillance capacity. The democracy associated with the archive, as discussed in the age of online access, is based on surveillance. A central part of the networks of technology surrounding the modern subject is their storage of traces of a person's every transaction, Internet navigation and even physical movements. Among the pre-emptive measures against terrorism, which are today implemented by almost all governments of liberal democracies, are automated techniques of surveillance in the name of defending democracy. In this sense, the YouTube logo's call to "broadcast yourself!" is also a way to protect democracy. In this view, the total democracy promised by the Internet has its flip side in total surveillance and control. In the current situation of online access to archives in the Internet, as well as for the idea of the Internet as the global archive itself, it promises to make of our age the absolute triumph of democracy. The enlarged definition of the archive as the Internet not only gives the impression of unlimited access but also allows users to write the archive themselves. This demonstrates one of the ways in which the archive writes the code for the future; it inscribes itself into democracy as its foundation and guarantee.

When one celebrates the beginning of democracy at the instigation of the archive, this serves the specific aim of investing our current technical media with a notion of democracy. One should be cautious to project the archive of Athens onto the Internet, however, since they belong to entirely different biopolitical regimes. Anchoring our surveillance techniques in Athens' archival inscription of the subject is equally ahistorical. Different functions of the archive imply and express different processes of subjectivization and subjection. The human as a

subject under God, under the King, under the nation state and subject to Google and Facebook are very different subjects. For this reason, the archive and its techniques of storage and access must be historicized in order to analyze its *dispositifs*, and consequently how it produces subjects of democracy and surveillance.

Archives are defined by their omissions and exclusions. These lacunae determine, and are determined by, what can be said, and by extension, seen and heard at a given time. The archive organizes the constitution of the past through selections, in other words, through censorship. In this sense, if the archive is understood as a guarantee of democracy, it implies that democracy is conditioned by, and founded upon, surveillance and censorship. As shown by Knut Ebeling, this principle is as valid for the variety of inscription techniques informing the Metroon in Athens as for today's "social" media. Their technological conditions for censorship and elimination are entirely different, however. This prompts us to ask how this censorship works at different historical periods, what it does, and what its technical conditions are.

The Intermedial Archive

As we have seen, every age of archival technology represents a particular set of selections in the archive. The variety of text inscription techniques, from the archive in Athens to that of today, make different kinds of selections, but they have in common that they all had to store information as text. Visual events, sounds, speech and other sensory dimensions were transcribed in text. This translation of the sensory world in the act of collecting and inscribing had a clear practical advantage in its homogeneous storage code. It meant that its indexing, its metadata, could be made in the same medium as its storage code, as excerpts, keywords and titles. Also, access was facilitated in the single-medium archive, as the transcriptions could be deciphered with the everyday human sensory apparatus, as long as one knew how to read. Archives are still to a large extent text-based, so describing them in past tense is inaccurate. As soon as the text archive is connected to other media, however, this medial unity of the information stored is shattered, and the role

of text in the intermedial archive is transformed due to its new configurations in relation to other media.

With the intermedial archive emerging at the end of the Gutenberg Galaxy era, the interrelations between the different media constitute a range of archival selections. While the invention of the recording of image and sound often brought about discourses around preserving reality itself, as in photography's "pencil of nature" (Talbot 1844), it was also clear that film, photography and the gramophone made selections from reality. On the level of inscription and storage, sound recordings exclude anything visual, photography freezes a moment in time and excludes movement, while film is also a two-dimensional selection of a section of the world defined by the frame, discarding sound and colour (in its early phase). In archival ordering and indexing, sound and image recordings prove resistant to linguistic metadata, as it implies another selection of the "content" of the information. Should a film be catalogued according to the persons recorded, its place or date, or other aspects of the image? There is more to the picture than the proverbial thousand words. At the level of access, there is also a fragmentation of the archive, as sound and image may be stored on very different supports, and most importantly require different "reading" technologies. A sound recording needs to be played by a gramophone or, in later formats, a tape player; a film needs projection or at least an editing table to be accessed. To the extent that these media are accepted into official archives, there is a fragmentation of the archive on the level of inscription, storage, indexing and access.

Another technological selection of the intermedial archive concerns the storage support. While phonograph cylinders and gramophone records can be preserved without the same efforts, celluloid film is an organic material that easily decomposes if it is not stored in ideal conditions. In proper storage, film can be preserved for several hundred years, but the very idea that films should be preserved came only much later than the beginning of the technology. Still today, or perhaps especially in this age of digitization, the preservation of celluloid films is something that needs to be argued. The ephemeral quality of moving images,

together with its late and only gradual acceptance as an archival technology, makes the film archive an institution of the traces of lost works. These facts are of course well known, but they also constitute an important part of the technological selections in archival media. Only the digital seems to be subject to a higher degree of impermanence on the level of storage.

While the text archive provided a translation of what was heard or seen into words, there is no "translation" possible between the gramophone, film and typewriter (Kittler 1986, pp. 1-19).[2] With disparate media in the archive, what is said could contradict and differ from what is shown; what is heard constitutes a different world than the one seen. Cinema, bringing together the three forms of inscription—text, sound and moving image—illustrates this perfectly. It is exactly the complementary relationship between these archival techniques that motivated the inclusion of intertitles in films around 1905 and sound in various ways from the first films, but with a fixed sound track from about 1930. There is of course no *telos* in this development, but the interconnection between the three techniques of inscription and storage would have been uncalled for had they captured the world as it is. This is why the intermedial archive of the twentieth century displays gaps and contradictions and often resists indexing, and why it is seen as less reliable for the construction of history than the text archive:[3] in writing, sound, speech and visual events are all inscribed according to the same principles of selection.

A good example of how the intermedial archive performs technological selections of information can be seen in a collection of film and colour photography posing as an archive: Albert Kahn's *Les archives de la planète*. The wealthy Jewish banker Kahn set out to document the planet's modes of life through the media of film and photography, and sent cameramen to more than fifty countries between 1908 and 1931. It is important to note that this "archive" isn't a collection of existing images, but employs technological media to inscribe and store different life forms that Kahn was convinced would soon disappear in the wake of the globalization of the late nineteenth and early twentieth centuries. Furthermore, this "archive" displays

the gaps between media and the exclusions of information active in any kind of inscription and storage. *Les archives de la planète* conceptualized the world through a very specific media set-up, where colour photography, film and, to a certain extent, stereographs intersected and alternated with each other.

When the collection of materials for the archive ended in 1931, due to Albert Kahn's bankruptcy in the wake of the stock market crash of 1929, it comprised 72,000 autochromes (a new colour photography process on glass plates invented by Louis Lumière in 1907), 183,000 metres of film (over one hundred hours of projection) and 4,000 stereographs (Amad 2001, p. 139). The film material mostly remained unedited, as only small parts of it were screened on rare occasions. The multiple media used in the Kahn archive demonstrates that none of them on its own could give a full and coherent documentation of an event. Kahn equipped photographers and cinematographers with both still and moving image technologies because they complement each other. The visual modes of these techniques store different aspects of things and events, and are consequently techniques for the selection of information: colour photography lacks movement, films lack not only colour (except for the colour film footage in the archive that was shot in the late 1920s) but also photography's frozen moment in time.

This points to an important factor in the discussion of cinema as well as of the role of the image in the archive at the time. While in 1898 Bolesław Matuszewski already argued that films are "a new source of history," the post-Gutenberg Galaxy archive is also a heterogeneous archive. For the first time, sound is stored as sound and visual events as moving images, a fact producing the awareness that what is seen is different from what is said, that texts tell other stories than images. It is an archive of gaps and contradictions, where knowledge is produced through putting fragments together. The multiple media model of Kahn's archive could be read as an attempt to cover all aspects of events by having different media complement each other. For instance, Paula Amad understands the multimedia set-up of the archive as a synthetic approach and an attempt to give the full picture of the places recorded (Amad 2002, p. 22). There are

clearly important aspects of events, however, that the archive shows no or little interest in. The most obvious case in point is the absence of any sound recordings of events, places and people. According to the permanent exhibition at the Musée Albert Kahn in the Boulogne district in the suburbs of Paris, Kahn brought along a phonograph on his trip around the world in 1908, but when this was broken in transportation, no attempt was made to replace it. The Kahn archive is an archive of visual phenomena, informed by the understanding that different media record different things. There is no illusion of a "total medium" or a synthesis of arts in the Kahn archive.[4] Rather, this archive places the edges and the gaps of modern media in full view, conscious of how technical media overlap and contradict each other. Various media were used because they have different qualities, and consequently also different shortcomings.

Kahn wanted to make an "inventory of the surface of the globe inhabited and developed by man as it presents itself at the start of the twentieth century in order to fix once and for all the practices, the aspects and the modes of human activity, whose fatal disappearance is only a question of time" (Kahn, quoted in Amad 2001, p. 144). This surface of the globe had become visible at a certain time only, with photography, with a new kind of description in the literature of Flaubert and Balzac, and comes fully into view with the moving image. In the words of Jean Brunhes, the director of the archive, "the precious discovery of cinema adds to the form the expression of movement itself, which is the rhythm of life" (quoted in de la Bretèque 2002, p. 139).

Brunhes' view portrays media differences as a simple addition, securing a seemingly fluent transition from the still to the moving in the archive. Just like the accounts of the famous Lumière screening at the Grand Café in 1895 recount that it started with the projection of a still image that suddenly burst into motion, redeeming the movement of the mass leaving the Lumière factory, it proposes a media genealogy that obliterates the co-existence and hence the differences between the still and the time-based image in the archive. In practice, however, what is so interesting in the composition of media divisions in the Kahn archive are the

incompatibilities between the still and the moving. The Kahn project displays the tensions that exist between still photography and the moving image in the archive. Rather than understanding movement as an added dimension to the still photograph, the latter should be seen as a different section of the world, offering access to moving aspects of things but unable to render a moment in time unless the movement of the film is frozen.

In order to examine the issue of media configuration further, it is interesting to note how the Kahn archive was understood as an undertaking that depended on the new technologies of colour photography and cinema in order to *fix* the modes of human activity. The phototechnical term used by Kahn in the quotation above underlines the role of the media used, and photography performs a selection of what to inscribe and store by fixing a moment in time; in other words, by excluding movement. Since the collection is not a film and photography archive, serving the preservation of existing documents for their own sake, but instead the preservation of life forms *through* the means of film and photography, the media set the conditions for what aspects of life can be collected. The *dispositifs* are clearly seen as the condition for the recording of the collection's subjects, the everyday life of ordinary people, but they also set off their "fatal disappearance [which] is only a matter of time" (Kahn, quoted in Amad 2001, p. 144). The technologies that make people and everyday life visible are also the tools for their disappearance.

To what extent does *Les archives de la planète*, as "an inventory of the surface of the globe" (Kahn) of the early twentieth century, translate these surfaces and movements into the digital format to which we have access in the archive today? Like almost every archive and collection, *Les archives de la planète* has been in a process of digitization over the past few years. The conversion of *Les archives de la planète* into the Fonds Albert-Kahn informatisé pour la recherche (FAKIR) presents the material in an indexed and ordered fashion. In the age of digitization of analogue materials, there is a demand on archives to make their holdings "accessible" online, or at least in computers on the premises. The "access" imperative is a prerequisite for public funding, and implies an economy of the "content." The question of how the

"content" of an archive, a museum or a collection can be made "accessible" varies according to the media of their holdings. Nobody believes that the digital representations of the ancient objects of a historical museum entail access to the "content" of the collections, but this confusion is quite often the case for film and photographic archives. This relationship between the analogue and the digital makes *Les archives de la planète* an important case for the discussion of archival selections in an age of online access.

The configuration of the analogue media of Kahn's project has been completely transformed in their digital conversion. The difference between the media created tensions and contradictions in the intermedial archive, while there is only one medium in the FAKIR database. In the conversion to digital code the images are stored in the same medium, they are subject to the same operations and retrievals, and they require only one kind of machine to be accessed. In the interface to the digital database, navigation is conducted according to a world map, where all digitized media look the same. For this reason, there is, strictly speaking, not a convergence of media in the computer, as the digital does not contain analogue images. On the contrary, what the digital archive excludes is exactly what it so often promises to contain: analogue media.

Digital Selections

In the digital archive, the difference between text, sound and still and moving images only exists as surface effects on the screens as we look, listen and read. The documents do not exist in text, picture or sound formats, but are only simulated when we demand them. In many cases, digital is the only technology available for access to the "content" of analogue pictures. The Kahn archive is an example of this, as the films were seldom edited together and there were few or no prints struck of them. Except for a few researchers and archivists, nobody has access to the actual films or autochromes of the Kahn collection. Since the analogue documents are close to invisible, their existence is easily forgotten and the digital is mistaken for the material of the archive itself. Digital archival technologies, however, per-

form their selections precisely by excluding the analogue. If the computer is a multi-medium able to simulate other media, it is so in the singular only: instead of a convergence of other media in the computer, there is only one new medium capable of simulating the intermedial archive.

Because binary code does not contain the analogue signal but rather excludes it, this also has consequences for modes of indexing the materials. While *Les archives de la planète* in its analogue, intermedial format was indexed with a place, a date, the name of the camera operator, the length of the film and a short description of its subject, its online presentation demands a very different indexing (Amad 2010, p. 80). In the digital database giving access to Albert Kahn's collection, indexed according to places on a world map, images are tailored and ordered to tell stories through editing and written explanations. Film shots are edited together, their beginnings and ends cut off, and in this way assigned a meaning. The indexing of the database serves a unifying selection process. It makes selections of content according to a narrative of past events that moves the Kahn collection from an archival logic to a historiographical one. The database indexing tends to place the shot in a historical context, in a causal chain of developments conveyed in writing. Furthermore, digital access obliterates the distinctions between media. This is most clearly shown by the relations between the still and the moving image. The moving image is reduced to a frozen frame in the FAKIR database, and resembles a still photograph until it is eventually set in motion by a click on the image.[5]

What exactly is lost or discarded in the digitization of analogue materials? This is a complex question connected to the scanning resolution of images, storage capacity and various analogue-digital hybrid forms, all of which cannot be treated fully in this essay.[6] Any digitization of the analogue, however, will need to proceed through compression of the information; in other words, through selection. In visual media, this compression may proceed through JPEG standards for still images and single frames of films, while for moving images it is done through MPEG standards. This means that graduations and

nuances of colour above a given threshold are discarded. This factor of selection often gives rise to discussions about image quality and resolution based on our experience of the image. These kinds of phenomenological arguments, however, are of secondary importance to the question of the functions of archival technologies for selection.

This question is more epistemological than phenomenological. Just like the focus on content diverts attention from archival politics, the experience perspective tends to obscure the power relations at work in making selections. For instance, the cultural myth that everything is always accessible on the Internet, propagated in the name of the "archival clouds" of the Web 2.0, directs all attention to content and obscures organizational principles of digitization, indexing and algorithms. The algorithms of computer software are highly protected property, and for this reason inaccessible, even if they decide how we can use our computers and navigate the digital archive itself. The algorithms making our navigation in and between databases possible determine the indexing and access to digital archives at the same time as they are most often irretrievable to users (Groys 2000, p. 19).[7] Even if users also often disregard the classification criteria of written and analogue archives, as they are a means to access information only, they are generally openly displayed and accessible to the public. In digital databases, however, one does not learn about the algorithms storing every Google query connected to a machine address, or how our personal profiles for advertisement targeting are established as the primary source of revenue of Facebook. The invisibility and inaccessibility of these determining programs and algorithms once again demand a revision of the easy equation between archival access and democracy. The illusory all-encompassing archive is a condition for the eluding principles of archiving: the organizational principle of selection is always retreating from the light of the "content."

It may be problematic to locate the inception of democracy in Athens' archive, as shown by Ebeling and others, but that should not stop us from asking questions about democratic input in an age when the prerogative of archiving increasingly

lies with private corporations. Corbis and Google supply images browsed through the software veils of Microsoft and Apple. The principles for what to store and what to discard in these archives are not subject to any kind of democratic control, as it is a patent-protected business secret. There is no constitutional principle of public access in the property of Google, as there is in national archive institutions and in the legislation prescribing their tasks and selections. These archival constellations offer seemingly unlimited access to the "content" of the archives, as it generates traffic and by consequence commercial revenue, but provide no access to the defining principles of selection forming this content, which could be argued to be the structuring principles of our time, the algorithms of these programs.

The new technologies of marketing have entered the archive, and set the conditions for funding of national institutions as well as the revenue of corporations. When the nation state begins to see its archiving prerogative taken away, its institutions are called upon to engage in the competition for virtual visitors, viewings and matches. The surveillance aspects of this change in the archive are well known, as storage of the data traces we leave is outsourced to private interests. With the commodification of the archive comes the calculability of public interest and potential consumption. With digitization of the archive comes a "pseudo-personification": individual consumer profiles, customizing of products, users with a username and a password. The user receives suggestions of what more to look at on YouTube, and what further products other customers "like them" bought on Amazon. We may "write" the digital archive ourselves, but we write in a given code and a defined program.

The Internet is a space for undifferentiated storage, but one set up for the transmission of data rather than a permanent one. The impermanence of the websites that we encounter every time we receive the message that a link is expired and a "page not found" is another element in the selection of information in the digital archive. The Internet is always potentially subject to censorship through the control of the root servers supporting the Domain Name System (DNS). The transmission control protocol/internet protocol (tcp/ip) compatibility allows free communication

between computers, but the DNS makes it accessible for total central control, as a company or an organization, even a country or the whole of the Internet, can be shut down by taking out elements of the domain name such as the name, the nation (fr, ca, uk, etc.) or the dot itself (Galloway 2004, pp. 46-53). Irrespective of whether the Internet is understood as an archive or not, it depends on important archival functions such as indexing (DNS) and access (tcp/ip). Digital archival technologies shift the emphasis from storage to transmission, which in turn sets the entire concept of the archive in motion.

Conclusion: Superimposed Archives

There are good reasons for reconsidering the Kittlerian development of media storage from writing to analogue media and then to digital transcoding. The 1-3-1 model (text—gramophone/film/typewriter—digital) conveys an idea of finality and absolute shifts between archival epochs. The text archive consists of many different supports and techniques of writing; these documents, moreover, still exist in the archives. The heterogeneity of the intermedial archive also persists in a digital age, as shown by the existence of various film and photograph formats and supports for sound inscription. The conceptual complexity of today's archives rests with the fact that one has to think about not one, but several aspects of the archive at the same time.

We have not just witnessed a shift from archives of analogue media to digital media. Certainly, there are archives storing information in digital code only, but any archive holding pre-digital materials has to work out a configuration of the relations between analogue and digital. This configuration entails the distribution of relations on the level of recording, storage, indexing and access. "Archives" must today be understood as compound entities, in which the physical storage of objects and documents is connected with their descriptions or visualizations made for online access. In many cases, we are faced with a "superimposition" of archives, with digital and analogue aspects, which demands that the concept of the archive itself be rethought. The answer to the problem of identifying the current archival situation is neither to reveal the selection processes at work in the

digital conversion of analogue media alone, nor to maintain an idea of the primacy of the analogue archive, but to analyze how these dimensions shape and determine each other.

The film archive has always been a configuration of a complex set of media. Cinema has integrated various media and modes of exhibition, referring to earlier media as well as contemporary ones. It is well known that the moving image appeared as part of a complex intermedial environment, in terms of production, technology and exhibition. The emergence of cinema belongs to the industrial age, or what Foucault would analyze as the disciplinary society. This period entails a certain *connectivity* of media, which is dominated by thermodynamic machines and decentralized networks. With the digitization of images, media connectivity shifts. The regime of the digital promotes different kinds of connectivities, cybernetic machines and distributed networks. The distribution of moving images is predominantly taking place through the interconnectability between autonomous computers. The digital database provides a mode of media connectivity after the heterogeneity of the intermedial paradigm of the archive, where the gaps and conflicts resulting from the juxtaposition of the temporal image and the still image, or of sound and writing, are no longer present. Digital technologies have their own principles of selection.

Even if the analogue is what digital technologies by definition exclude, the digital archive simulates the Gutenberg and intermedial archives. Digitized archives feed on the analogue holdings of the archive, which serve as source material for new digitizations as standards change and demand updated solutions. In spite of many of the programmatic statements typical of a period of archival transition such as ours, the conversion of analogue film and photography to digital files does not imply the end of film base, which remains unchallenged as the superior storage medium for moving images. For this reason, it would be insufficient to see the Kahn collection only in its digital aspect (FAKIR) to which users have access. The unedited films and the autochromes of *Les archives de la planète* remain intact. Well over a hundred years of film production remains stored on analogue support in film archives, and will continue to be so.

"Born-analogue" films persist as masters or "originals" in the archives, and they require that we devote attention to how they are connected to other media at the time of their production as well as their interconnection with digital files. The task for contemporary archive theory is to think about the various ways in which these connections are construed, and how the relations between photochemical film and bits are coded. The attraction of the archive lies, for this reason, in its theoretical reinvention in this age of technological selections.

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NOTES

1. Wolfgang Ernst (2002, pp. 18-19) criticizes Foucault's theoretical concept precisely because it ignores the physical, existing archives and privileges a transcendent *dispositif*. Foucault's concept is, however, still useful for addressing the material and technological properties of different kinds of physical archives.

2. See also Kittler (1985).

3. Paula Amad (2010, pp. 21-22) analyses film as a "counter-archival" medium on the basis of the challenge it poses to positivist historiography, as well as its technological disturbance of the order of the text archive.

4. The synthesis perspective is often associated with Ricciotto Canudo (1911). André Bazin discusses the myth of the total medium in "Le mythe du cinéma total" (1946).

5. Most of the research devoted to the media of *Les archives de la planète* examines the analogue format only. Paula Amad discusses its digital database on the last page of *Counter-Archive* (2010). Teresa Castro (2006), who reads Kahn's project as an atlas and as a cartographic endeavour, as is made explicit in the FAKIR interface, also stops short of analyzing the indexing of the digital format.

6. Giovanna Fossati gives a good account of many of these ramifications in *From Grain to Pixel* (2009, pp. 33-61).

7. Groys notes how the archival support remains hidden to the user, probably truer than ever at the turn of the millennium.

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RÉSUMÉ

Archives et technologies de sélection

Trond Lundemo

Une archive n'est pas un endroit où l'on stocke indifféremment les traces du passé. Le rôle politique de l'archive est de sélectionner ce qui doit participer du passé et ce qui doit être mis de côté, de manière à réguler le futur. Ce processus de sélection repose sur des lois et des régulations, mais il est également prescrit par les techniques d'archivage disponibles, tant pour l'inscription, l'entreposage, l'indexation et l'accès. L'auteur de cet article analyse les sélections technologiques à deux époques distinctes de

l'archive. La première est celle de l'archive intermédiale, qui émerge après le monopole de l'archive textuelle, avec l'arrivée du gramophone, de la photographie et, surtout, du cinéma. Les lacunes et les contradictions qui résultent de cette nouvelle configuration médiatique sont investiguées à la lumière des propos d'Albert Kahn dans *Les archives de la planète* (1908-1931). Les archives numériques et la numérisation du matériel analogique constituent la seconde époque analysée, de nouveau avec *Les archives de la planète* comme exemple. Plutôt que d'essayer de comprendre ces différentes technologies archivistiques comme appartenant à des périodes autonomes et séparées, l'auteur propose de les appréhender comme des régimes archivistiques « superposés », dans le but d'éclairer les relations entre les archives analogiques et numériques.