

Granular Certainty, The Vertical Filing Cabinet, and the Transformation of Files

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Historically, a file is a technology of gathering. Its name in English comes from ways to gather papers introduced throughout Europe at the turn of the 15th century. Papers that were strung on wire or string became known as ›files‹ care of the Latin word ›filum‹, meaning string or thread, via the French ›filer‹ to spin and thread. When they were gathered the string or wire was threaded through a hole punched in the edge of the papers, which were then usually hung from a peg.¹ In the following centuries, a file more commonly labelled piles of paper that were bound by string or leather and stored in bags, chests, cabinets, drawers, or on shelves and occasionally hung from hooks. In addition to gathering papers, circulation increasingly became important to the file, especially when it functioned as a case file that moved through government and law offices. The increasing importance of storage and circulation to the function of the file is evident in the work the word is asked to do in English. It has become common to blur the file as a document, the file as a container, and the act of putting the document into the container, such that it is logical to say: »Please file this file in that file«.

When scholars look at files as objects of study, they gravitate to the case file or something akin to it.² This form of file, a technology that articulates gathering and circulation, provides the focus for scholars who

in a number of ways respond to Max Weber's brief statement that files are critical to the »management of the modern office«.³ Therefore, care of Weber, files and their contents became a way to think about administration and government through historically specific relationships of paper, authority, and writing.

This article focuses on a different form of the file – the tabbed manila folder – and particularly its place of storage – a vertical filing cabinet (Fig. 1). This shifts attention to commercial offices and the early-20th-century American business imagination. Developed through a discourse of efficiency, this version of a file centred on gathering unbound papers based on common content. However, in contrast to a case file its intended use privileged concerns about storage over circulation; circulation was not absent from its development but it was secondary to the concerns raised by defining storage as a problem of retrieval. Therefore, to examine the file as a tabbed manila folder is to remove it from the history of administrative writing critical to the case file and locate it and the vertical filing cabinet that housed it within a history of storage.

The extension of the file to encompass a manila folder stored in a multi-drawer rectilinear cabinet also opens up the file to the history of information. It is the contention of this article that information is a



Figure 1: Globe-Wernicke: Steel Filing Equipment (Cincinnati, 1931), p. 3. Reproduced with permission of Hagley Museum and Library.

historically specific concept and the emergence of the tabbed manila folder and the vertical filing cabinet provides an object to understand the development of a distinctly modern conception of information as a thing that existed in the world, as something that was impersonal, discrete, and therefore easily extracted.⁴ To be clear, I am not claiming the manila folder and vertical filing cabinet created this conception of information but I am arguing that they provided an important way in which the properties of unbound paper documents became a way to grasp information; »separate and separable, bounded and distinct«.⁵ Paper in vertical files gave a material existence to information as a thing that could be detached and repositioned, reordered, and recombined.

When the filing cabinet emerged in the early 20th century, arguments in favour of the vertical files frequently used a comparison with the bound book. A story offered to explain the introduction of vertical files

in the U.S. Department of State provides an example of the presentation of the vertical file as an efficient successor to the book as a technology to store paper. In 1905, Elihu Root, a lawyer, with clients such as Andrew Carnegie, was appointed Secretary of State. When he arrived at the Department of State, he described himself as »a man trying to conduct the business of a large metropolitan law firm in the office of a village squire«.⁶ The Department's record-keeping practice was one of the sources for his frustration. As was common practice in offices through the 19th century, clerks used press books or copybooks to store incoming and outgoing correspondence in separate, chronologically ordered, bound volumes with limited indexing.⁷ The tipping point for Root came when a request for a handful of letters resulted in several large bound volumes appearing on his desk. In response, he demanded that a vertical filing system be adopted. In 1906, the department began to use a numerical subject-based filing system housed in vertical filing cabinets; a more comprehensive decimal filing system followed in 1910.⁸

Root's frustration spoke to the increasingly pervasive belief that records should be stored in a way that acknowledged the specificity and distinctiveness of their contents. Unbound paper could satisfy the resulting demand that knowledge should be more instrumental, where a sheet of paper represented greater specificity than a bound page. This instrumentalization of knowledge produces the modern conception of information that is the object of this article. For Root this was ›information‹ that could be understood outside of the chronology of the ongoing correspondence between the Department of State and a consular office abroad, the context that a bound volume provided. This is ›information‹ that can be comprehended independent of the context in which it is produced.

The anecdote about Root also speaks to the increased importance of records and internal communication in organizations. Business historian JoAnne Yates explores changes in organizational communication through a focus on technologies that accompanied the rise of efficiency and management in U.S. business in the late 19th century. In her landmark work, Yates analyses technologies such as the typewriter, carbon paper, and the vertical filing cabinet to persuasively argue that they produced the communication system that

modern management required to function. I note her work not only because she offers an insightful critique of the emergence of the vertical filing cabinet, but also to clarify the focus of this article. Yates's interest in communication locates her examination of the vertical file within the Weberian framework that has shaped most of the academic interest in files (although she channels Weber unnamed, deferring instead to the writings of fellow business historian Alfred Chandler). In contrast, I approach the vertical file as a problem of storage within the history of information. My argument is that if we get ›under the hood‹ of the filing cabinet to understand how it works we learn how information was conceptualized and understood such that it could contribute to the goals of efficiency critical to corporate capitalism.

I offer the concept of ›granular certainty‹ to explore the necessity the U.S. business imagination granted to the articulation of a modern conception of information and turn-of-the-20th-century ideas of efficiency, and therefore the importance of efficiency and information to the rethinking of capitalism at a corporate scale at the turn of the 20th century. Efficiency, with its focus on planning and productivity, increased the need for businesses to have information at hand. However, granular certainty moves the analysis away from understanding the need for information to how information was conceptualized and practically constituted and organized. This shift in focus emphasizes the overlap between the importance of efficiency's embrace of standardization and the specific and a conception of information as something specific. The tabbed manila folder and the vertical filing cabinet emerged from this overlap between efficiency and information.

The following sections define granular certainty and information. The remainder of the article uses the framework of granular certainty to examine the development of vertical filing cabinets focusing on folders and tabs. In doing so it frequently dwells on what might initially seem obvious and redundant details, for example the function of tabs in a file drawer or how to use a manila folder. However, I offer the banality of this taken-for-grantedness to consider files and information as objects and categories shaped by dominant social and cultural values and practices. To use granular certainty to approach the tabbed manila folder and the vertical

filing cabinet as technologies of gathering is to argue that storage is not a neutral practice; the folder and filing cabinet, like other storage technologies, produce specific possibilities for action.

Granular Certainty

The vertical filing cabinet is not a passive object. When someone uses a filing cabinet, they are not presented with unlimited possibilities. The various parts of a filing cabinet shape how it is used to store and retrieve paper. Or put another way, what did a ›file‹ mean when it also came to label a tabbed manila folder stored on its edge in a drawer in a filing cabinet? As with other forms of the file, it functioned as a technology of gathering but its appearance in a filing cabinet placed new parameters on what it meant to store and retrieve files.

Granular certainty provides a way to explore how a file retrieved from a vertical cabinet shaped an encounter with paper that increasingly came to be seen as an encounter with information. It labels a logic central to economically driven ideas of efficiency and to the conception of information as a discrete unit. Within an economic context, granular signifies the belief that breaking things down into small parts to produce a high degree of detail or specificity would produce efficiency. Certainty indicates the conviction that this increased specificity would reduce individual discretion and increase the certainty that a task would be completed efficiently.

Granular certainty underscores the importance of engineers to the ideas of efficiency that appeared during the late 19th century in the United States; this version of efficiency combined ›commercial efficiency‹ (the relation between price and cost) and ›mechanical efficiency‹ (an input/output ratio of matter or energy).⁹ Specifically, the writings of engineers were critical to the emergence of management. As it became a profession management guided organizations towards the goals of efficiency. Managers made the machine, with its supporting ideas of harmony and order, central to the conception of organizational problems that they then argued required trained managers to solve.¹⁰ Therefore, as sociologist Yehouda Shenhav argues, their writings explicitly carried the assumption that everything was

a technical problem; they designated all participants in an organization as »rational constituents of the same system«. ¹¹ As management developed under the influence of men trained as engineers, the profession came to view disruption of any kind as a problem of uncertainty; technical problems and labour problems were approached as »machine uncertainty«. ¹²

The engineering-based form of management brought to offices the belief that breaking something down into small parts made it easier to understand and control. ¹³ Advocates believed that creating something small that could be apprehended, understood, and connected to something else would increase productivity (a new focus of the business imagination). As its application to labour via Frederick Taylor's scientific management illustrated, this was presented as an interchangeability of parts that demanded standardization within a specifically created system. Work was broken down into precise actions to ensure the appropriate energy and skill would be directed towards a given task with minimal decisions from workers. In an ideal situation, the information generated about specific tasks would be used to create a system to manage labour and production. Proponents believed that the system would lead to increased productivity by reducing the amount of time it took to complete a task through the specialization of work and/or the introduction of machines.

Information

A conception of information as a discrete unit also follows the logic of granular certainty and therefore easily aligns with efficiency and system. These latter ideas did not create this conception but the articulation of efficiency, system, and information did contribute to the pervasive uptake of information as something that could be standardized, atomized, and stripped of context. Rather than the older definition of information as an individual mental process (to be informed or to be educated), this conception of information attached it to something that could be possessed, obtained, received, and conveyed. ¹⁴ While examples of this usage can be traced back to the 18th century, the 19th-century development of media such as dictionaries, encyclopedias, railway timetables, travel guides, and

the modern newspaper gave more visibility to the slow and ad hoc emergence of information as a thing that existed in the world as something that was impersonal, discrete, and therefore easily extracted. ¹⁵

Information historian Ronald Day argues that by the turn of the 20th century, »an increasingly instrumental and technological view towards knowledge [emerged], increasingly leaving behind and demoting an older hermeneutic understanding.« ¹⁶ One aspect of this change was an »enthusiasm for classification as a technology of search and retrieval«, which historian of science Alex Csiszar argues engaged philosophers, scientists, librarians, and lawyers in this period. ¹⁷ This article adds engineers and businessmen to that list. That is, classification, understood as making knowledge instrumental in the form of something that could be labelled information, is compatible with the project of efficiency through the shared logic of granular certainty. Outside of business, in natural history, paleontology, and census work, the instrumentalization of knowledge was often labelled »data« which, in contrast to information, captured a quantitative bias and the processing of numbers. ¹⁸

In the business world, tables, graphs, grids, headings, and paragraphs were increasingly used to arrange knowledge as small units on paper to show different parts of a subject in one view or at a glance – as ideas of efficiency spread outside of business similar examples can be found in hospitals and social work where narrative reports were either abandoned or broken up into smaller sections to create an impersonal report that anyone in a profession could understand. ¹⁹ The magazine »Machinery« informed its readers in 1912 that useful information was »carefully and systematically collected« and then »classified and digested«. Created through procedure, such information could be presented as superior to »individual judgement«. It was this process that took knowledge and made it »accurate information« easily understandable by anyone and »instantly available whenever a problem is presented to management«. ²⁰

Thus the classification of information was rethought as a spatial and temporal problem through the logic of granular certainty. Information had to be found and understood quickly. In the first decade of the 20th century the index card, pre-printed with divisions to

create a table, became an important way to produce specificity and standardization. To apply ›system‹ to the business of shipping or insurance, or to records in a police station, a dentist's office or a real estate office was to use these specifically formatted cards.²¹

In the office, the vertical filing cabinet emerged at this moment when knowledge and its organization (i.e. classification) became a problem to be solved by efficiency and labour. The vertical filing cabinet gave the subsequent conception of information as discrete bits a more tangible presence. The partitioning on a timetable, newspaper page, or index card was translated to the guides in a file drawer, with the result that retrieving paper from the drawer became akin to handling information (as opposed to processing data). A file in its form as a manila folder could be understood through the idea of information as a discrete unit as suggested by attempts to explain the merits of vertical filing cabinets through phrases such as »good indexing means you will be able to place your hand on the information ...«²² or »information does not rot in our files, it is continuously shuttling back and forth between file and every day business use«.²³

The Vertical Filing Cabinet

The vertical filing cabinet, developed in the 1890s in the United States, rapidly became common in offices in the early decades of the 20th century. In this period, guides to office practice quickly identified the key principle of vertical filing as »the filing of papers on edge, behind guides, bringing together all papers, to, from, or about one correspondent or subject«.²⁴ This was achieved by placing paper on its long edge in a tabbed manila folder, which was sized to fit precisely in a drawer. In addition, a file drawer usually had tabbed guide cards higher than a folder to identify the content of groups of folders. A drawer also had a follower-block or compressor. This was a piece of wood or metal placed at the rear of the cabinet that was designed to keep papers standing on their long edge while taking up as little drawer space as possible.

With the help of tabbed guide cards and folders, champions of vertical filing claimed it »will give complete information at a glance, and will be automatic

and self-checking«.²⁵ The declaration that a filing cabinet was automatic looped the vertical filing cabinet into the dominant faith in machinery. Mediated by the metaphor of the machine, the filing cabinet took shape as something that could be counted on for its speed, efficiency, and order. From this perspective, a filing cabinet was automatic because partitions predetermined a paper's location. Or as advertisers were fond of saying, it remembered the location of a document; anyone could open a drawer and find the papers they were looking for (as long as they could read and understood alphabetization or the logic of numerical divisions).

Anthropomorphizing (and celebrating) the filing cabinet as something that remembered aligned it with the turn-of-the-century promise that machines would independently perform work people had previously done. Thus, an aspect of the efficiency proponents claimed for the filing cabinet derived from a distinction between machines and people in terms of memory. This was partly to do with capacity. A filing cabinet could house the volume of papers now considered necessary in a business world where efficiency depended on planning, which in turn required a constant flow of information. As Yates notes, this was frequently expressed as an impersonal memory, the memory of an organization gathered in one place rather than scattered on desks in piles of paper.²⁶ However, when advertisers described that memory as automatic they accorded the filing cabinet not only the status of memory, but also a recall that was more reliable than people, a machine-like precision necessary to deal with the increased use of paper in offices.

The precision advertisers and office management experts granted to the filing cabinet derived from how it stored loose paper. As I noted above, the filing cabinet was unique because it stored loose papers on their long edge. This was labelled ›vertical‹ in contrast to common techniques of flat filing or ›horizontal‹ filing, usually in boxes designed to emulate books with alphabetized manila guides attached in to the interior. Papers placed on their long edge in folders were more easily retrieved than papers placed in a pile and the classifications were easier to see when placed ›vertically‹ on tabs. In addition, a file drawer could also store considerably more papers than a flat file without limiting the possibility of easy

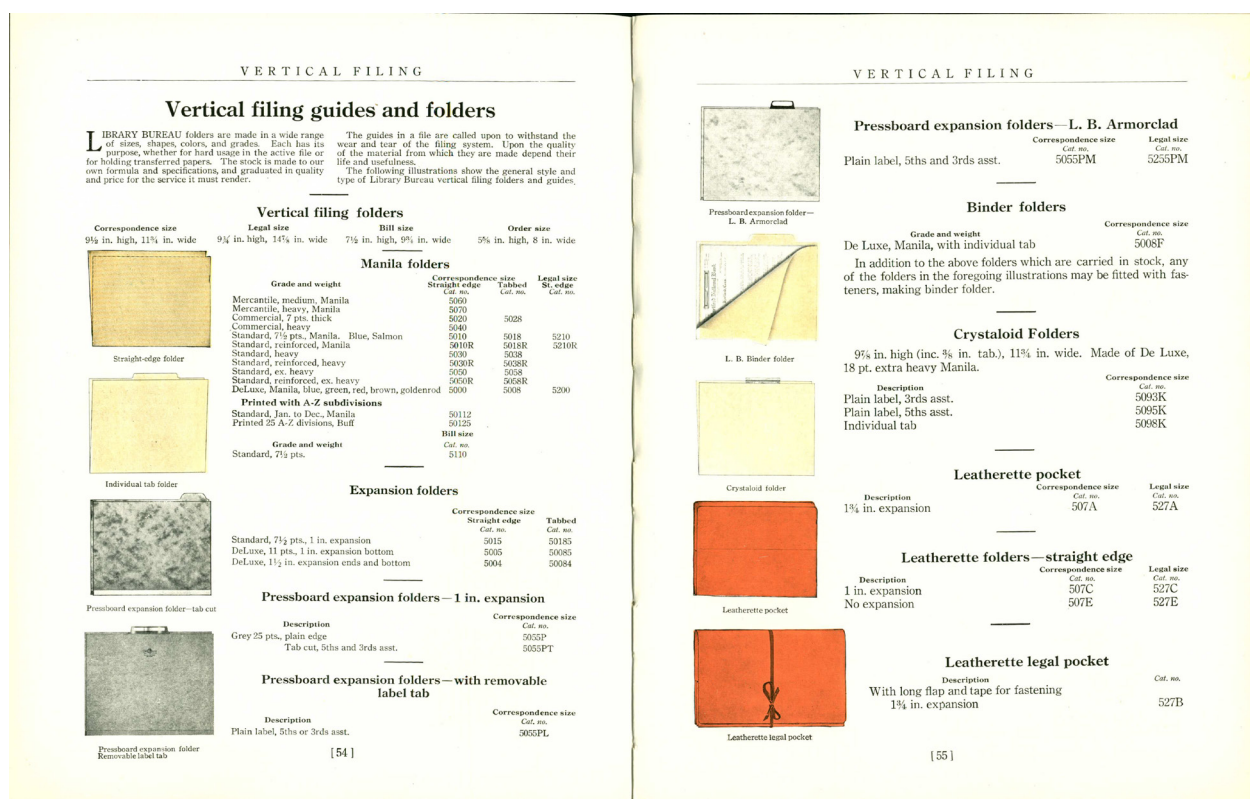


Figure 2: Library Bureau: Vertical Filing (Boston, 1924), p. 54 (Source: Author's collection).

retrieval. All of this made it easy to label flat filing inefficient; pigeonholes were also considered outdated because of limited storage volume and the lack of easy access.²⁷

Therefore, unlike its predecessors, the filing cabinet manifested the fusing of the singularity of paper and the specificity of information as a discrete thing through its storage techniques. Information, grasped as individual pieces of paper, became malleable, both in its physical shape and its contents. The efficiency that office management literature and advertising associated with the vertical filing was achieved through the use of a tabbed manila folder.

Manila Folders

A folder allowed loose papers to be gathered together (Fig. 2). The fact that the folder immediately surrounded papers, enveloped them, made clear an advantage unique to vertical filing: it was easier to store and retrieve loose papers without damaging the

paper or affecting the integrity of the storage system, whether it was organized alphabetically, numerically, geographically, or by subject.²⁸ In 1898, when some of the first vertical filing cabinets lacked folders, the president of an office equipment company, and a former folder sceptic, announced to a salesmen's meeting, »it is a distinct service to have the folders, you can pick the things right out. Things can't get out of place.«²⁹

As a file, the folder worked to gather and partition groups of papers. It provided a tangible boundary within which all papers that addressed the same »matter« could be placed. That is, the »place« the folder marked was a location in a classification system. Or put another way, as the object that was arranged numerically or alphabetically the manila folder became the basic unit of vertical filing; folders became the object of classification.³⁰

This gathering function locates the manila folder in the history of files. However, older administrative files were more like booklets where different paper items were threaded in a particular order not to be removed from the co-documentary context the folder created.³¹ In

contrast, a manila folder gathered items so that papers retained their looseness – they remained sheets or pieces of paper rather than taking on the characteristics of ›pages‹ in a book.

To be clear, dividing space to enable storage was not new. ›Orderly furniture‹ had long existed in the form of storage chests and cabinets of curiosities and other technologies that contributed to a ›cabinetization of knowledge‹.³² However, efficiency, an instrumental understanding of information, and the reliance on paper to mark divisions created a distinct moment in the history of orderly furniture.

The efficient arrangement of space in a file drawer depended on a folder having a standard size. Adhering to a faith in granular certainty, the folder provided the standardization that extraction and interchangeability depended on. As the folder celebrant noted above, a manila folder could be easily removed, and therefore so could all its contents – the relevant papers on a particular matter. In extolling the merits of folders, advocates emphasized that individual papers could be easily removed because they were stored unbound; a folder allowed a person to exploit the looseness of a piece of paper in the interests of efficient storage and retrieval.

For a folder to work effectively, it had to be made of paper that was stronger than the papers it contained. This meant that it had to be made of a material stiff enough to stand up to the wear and tear of use, especially regular opening and closing. The industry quickly coalesced around folders made out of a single sheet of manila paper. The use of a specific kind of hemp rather than wood pulp made this paper thicker. Known as ›Manila Hemp‹, abaca fibre came from a species of banana unique to the Philippines and had arrived on the northeast of the U.S. care of ›grass rope‹ on Filipino ships; a patent for manila paper was issued in 1843.³³ When used in the manufacturing of folders, manila paper was folded once, so the front flap was approximately one-half inch shorter than the back to create a space to label the contents of the folder. It was accepted that to support the weight of its contents when being taken out of a drawer, the paper needed to be folded so that the paper's fibres or grain ran from top to bottom but not side to side.

Manila folders were produced in three different thicknesses, measured in ›points‹ ranging from 7 to 11;

each point was equivalent to 1/1000 of an inch.³⁴ Folders of different weights were used depending on whether a folder contained papers that would be continuously used or occasionally accessed, or whether papers were stored short term or long term. Sulphate was heralded as the key to high-quality folders for regular use or long-term storage.³⁵ The so-called ›extra strong folders‹ could also be made from pressboard, which was the label for two pieces of 25-point cardboard-bound gusset style and reinforced with linen.

The folder's value as an enclosure also came from its capacity to contain different sized paper. Although the United States lacked a uniform paper size akin to what developed in Germany in the 1920s, most American businesses began to coalesce around 8.5 inches × 11 inches or 8 inches × 10.5 inches. A folder (or a file drawer) could easily accommodate the slight differences that occurred around these sizes. More significantly, it could contain paper that varied in size (as long as it was smaller than the folder) including catalogues, memos, postcards, and receipts. Therefore, because it was used to gather a range of different sized papers, the folder brought standardization to attempts to increase the certainty that specific papers could be found. In providing easy access to papers (and protecting papers), the folder became the unit of vertical filing.

In newspaper and publishing offices, where clippings and photographs populated file drawers, folders and paper were critical to the standardization that underwrote the modern storage of paper.³⁶ Too small for drawers sized for correspondence, clippings were usually attached to a letter-sized sheet of paper to create a uniform size and then placed in folders or envelopes. Thus attached to, or placed within, larger and sturdier pieces of paper, a clipping could be stored vertically (on its long edge) for easy retrieval. A ›stout oblong manila envelope‹ was common. However, as always, solutions unique to a specific office existed. The New York Municipal Library attached transparent tissue paper to a manila card to create a pocket so that ›a number of clippings can be thrust into the pocket in such a way as to be still legible‹.³⁷

The faith in granular certainty required the divisions and subdivisions created by folders in a drawer to be clearly marked if storage and retrieval were to be efficient and timely actions. In an attempt to use folders

to emphasize specific categories, filing equipment companies made use of colour as a »subsidiary means of classification«. ³⁸ Coloured folders were part of the early sales pitch for filing systems. Catalogues from the 1890s stressed the value of colour to clearly show distinct categories, for example, »classes of correspondence«, ³⁹ forms, ⁴⁰ and signatures. ⁴¹ Different coloured folders could also be useful at multiple stages of the filing process, even outside the drawer (and when folders were not placed vertically). One how-to-file book explained, »when the table is piled with returned files each day, the colours make rapid automatic searching possible«. ⁴² Coloured folders were celebrated with the claim that they »aid appearance, guide the eye and save time and mental effort«. ⁴³ In performing the latter, colour was presented as a way to ensure that a filing drawer would take on the burden of remembering with the accuracy and speed critical to the goals of efficiency. ⁴⁴

Tabs

The folder was critical to the storage and partitioning of papers, but tabs were necessary to identify what was inside a folder and therefore to enhance the experience of specificity involved in encountering folders in a filing cabinet – the experience that made using a filing cabinet an encounter with information as a discrete unit. These »indexing projections« ⁴⁵ were attached to folders (or to guide cards that marked divisions between groups of folders) to create space to write a label to identify the contents of a folder or a division in a filing system.

Promotional literature emphasized that tabs made files efficient by making the indexing system visible. They functioned as »sign-posts in the file [...] to locate quickly any desired material«. ⁴⁶ By adding visibility to accessibility, it was assumed that the eyes of the workers would lead their hands to the correct file with minimal thought. Underscoring the common use of alphabetical systems, one catalogue stated that tabs provided the visibility for a system »based on the telephone directory with which everyone is familiar«. ⁴⁷

Although, tabs should ideally »always stick out in plain sight like a sore thumb«, ⁴⁸ this was more easily stated than achieved in early vertical files. While library card catalogue drawers (a few decades older than the

vertical filing cabinet) had tabbed dividers, the more frequent use of tabs on folders created a different set of problems that took several decades to solve. In a file drawer, regular use often caused tabs to become damaged, dirty, and difficult to read. The problems associated with wear stemmed from having information at your fingertips, literally. The tabs absorbed moisture from »the hands of user while being handled«. ⁴⁹ Frequent handling also caused tabs to become bent or curled over. Clerks accentuated both these problems by regularly using tabs as handles to remove folders from drawers. ⁵⁰ Manufacturers redesigned tabs to be used as handles without injuring the worker or becoming unreadable. By 1920, most filing equipment companies had moved towards celluloid tabs with a slot in the back for removable labels; a more expensive option was metal tip tabs.

As the filing cabinet made tabs more common, file equipment companies sought to standardize the position of tabs to allow for the more effective presentation of subdivisions within an index system. On a basic manila folder, the initial attempt to provide a tab by making the back a half inch higher than the front was soon complicated in the name of increased precision and visibility. Manufacturers began to envision the back of a folder or guide as a horizontal plane that could be divided into five or six equal lengths. Tabs were then cut from, or attached along, the top of a folder or guide card in one or more of those positions. These tabs were intended to be complementary so tabs on guides and folders would not obscure other tabs when placed in a drawer. A common arrangement had guides tabbed at the left or first cut and folders tabbed from the right, starting at the last cut; if it was a multi-tabbed folder, the tabs would go into the third or fourth cut.

Filing equipment companies placed tabs on folders and guide cards to produce a range of different indexes tailored to specific kinds of documents and the quantity of each type of document a business might need to store. An alphabetical index was sold based on the number of divisions it created in the alphabet, for example, a 40-division index used combinations of two or three letters to breakdown the 26-letter division of the alphabet into 40 divisions (Fig. 3). The American Mills Co. used four »Automatic Indexes«: a 160 division for general correspondence, a 40-division for credit information,

and two 20-division indexes for open orders and paid invoices.⁵¹ A hardware company in Louisville, KY replaced its binder system with two filing collections. The company's City Department file used two 20-division indexes for correspondence and three 60-division indexes for orders and claims. The Foreign Department file used two 320-division indexes for correspondence and three more for orders. A 125-division index guided the factory invoices and received bills.⁵² A bond house in St. Louis, MI used a »direct alphabet index«: a 250-division index for a general file, a 40-division index for a municipal file, a 125-division legal size index for a circular file, and 60-division indexes for its corporation file and offerings file.⁵³

An »Ideal Index«

More complex index systems based on subdivisions in multiple categories used tabs differentiated by colour and position to divide the horizontal plane of a file drawer into three different coloured folder sections: an alphabetical guide for customer folders, miscellaneous folders, and folders for high-volume correspondents. Office-equipment company Shaw-Walker labelled its version the »Ideal Index« and described it as »the old, simple alphabetical method made mechanically perfect«.⁵⁴ Other companies echoed the reliability and accuracy conveyed in the claim to mechanical perfection: Library Bureau's »Automatic Index«, Globe-Wernicke's »Safe-Guard«, and Yawman and Erbe's »Direct Name« (Fig. 4).

These indexes were identical in the ways in which they sought to increase certainty by reducing discretion and thought in the act of filing, hence the claim to be mechanically perfect. However, on first glance the indexes looked complicated and salesmen often found it confusing to explain (something I will illustrate). The claim to increased precision and specificity was based on a combination of alphabetical and numerical classification systems. Advertisements asserted that the alphabetical guides would help a clerk find a folder and that the numbered guides would help a clerk file a folder in the correct place (the numbering system came from the consecutive numbering of guide cards and, occasionally, an index chart).



Figure 3: Shaw-Walker: How to File Letters and Cards (Muskegon, MI), 1920, p. 12. Reproduced with permission of Hagley Museum and Library.

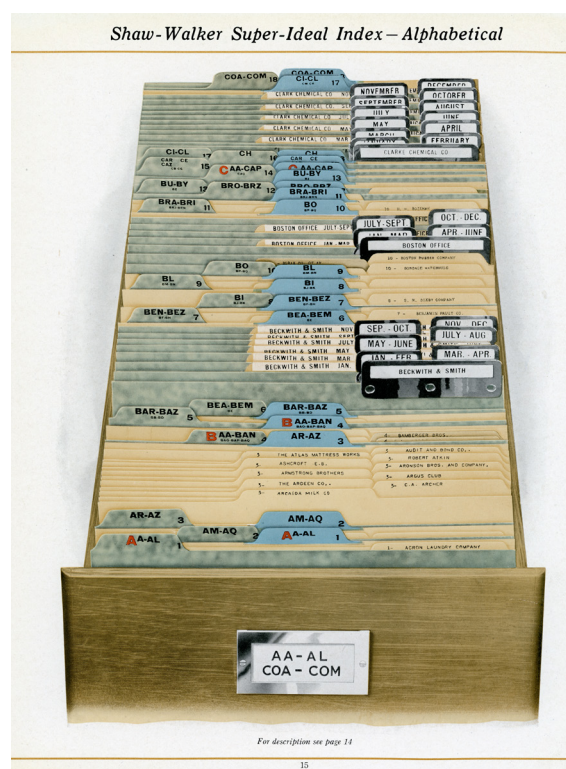


Figure 4: Shaw-Walker: How to File Letters and Cards (Muskegon, MI), 1920, p. 15. Reproduced with permission of Hagley Museum and Library.

Staggered tabs across guides made the alphabetical and numerical systems visible but kept the folders behind them invisible. The tabs for the alphabetical dividers for customer folders (tabbed on the left side of the drawer) usually had the first letter of the sequence in red with the following one or two letters in black. The miscellaneous folders were coloured (usually blue). Folders were numbered to correspond with the numbered guide cards, which were marked by tabs on the right side of the drawer.

As noted above, the basis for the assertion that the filing system was automatic rested on the belief that the combination of a numerical and alphabetical system meant that a person who filed did not have to memorize numbers or spend time consulting an index. That is, it was labelled automatic because it did not require a separate index and the numerical control was presented as a »self-checking« device.⁵⁵ The Library Bureau explained the merits of its »Automatic Index« with the following scenario: »The file clerk about to put the correspondence of Jones marked 113 carelessly in the files, sees that her hands rest on the folder marked 117. And naturally she is checked at once, and is reminded that Jones's correspondence should go into a folder marked 113. The LB Automatic actually makes it difficult to perform an error in filing«.⁵⁶

Filing sold as an automatic process, directed by the arrangement of a file drawer through the use of tabs, represented the granular certainty critical to the late 19th-century conception of efficiency. As implemented in the economy, in an attempt to lessen the possibility of error (i.e. deviation from a standardized procedure), efficiency made the specific steps of production visible to reduce an individual's responsibilities. By making specific actions visible and using that to constrain what a person could do, the faithful believed that it was possible to increase the certainty a task would be completed as needed because an object was understood in what was now revealed to be its component parts.

As I have argued elsewhere, so called automatic filing offered a distinct understanding of information labour, which redefined office work as machine work centred on the recording and circulation of information on paper. This conception of information labour depended on the feminization of office work that brought with it a perceived lessening of the skills

associated with clerical work. Equipment became the focus not the worker, a shift that allowed the work to be viewed as lacking in skill. With attention given to the »machine«, in promotional images for filing cabinets and other office equipment the worker as operator was often visible only as disembodied arms or hands. The worker's body was instrumentalized through the representation of a working relationship to information that did not require thought as hands guided by tabs grasped information by handling unbound paper.⁵⁷

Charge Cards

The use of the filing cabinet involved papers being removed from the cabinet. Although a tabbed manila folder prioritized the role of a file as a technology of gathering bringing together different documents it did so to provide a location such that information could be found and circulated. Therefore, in circulation it did not accumulate paper and authority as a case file did, instead someone should only add papers to the folder when it was in the vertical filing cabinet. However, the more limited circulation associated with a file of correspondence as it moved from cabinet to desk for consultation did introduce concerns that information could be lost if papers were misplaced either out in the office or on their return to the filing cabinet.

The response to concerns about lost papers was the introduction of more paper. »Charge«, »out«, or »substitution« cards took the place of papers when clerks removed them from a cabinet (Fig. 5). Larger in size and/or different in colour and thickness from the absent paper, the cards were intended to stand out and remind a clerk that papers were missing from the collection; again, while promotional literature offered the filing cabinet as a reliable memory, it was a memory that required a human operator.

The cards were pre-printed forms with spaces for a clerk to briefly note the content of the absent papers, who had requested them, and the date they left the filing cabinet. If entire folders were removed, clerks used special guide cards with pre-printed tabs labelled »Out« with space to record the what, who, and when details. Another option was an »out folder«, which a clerk could

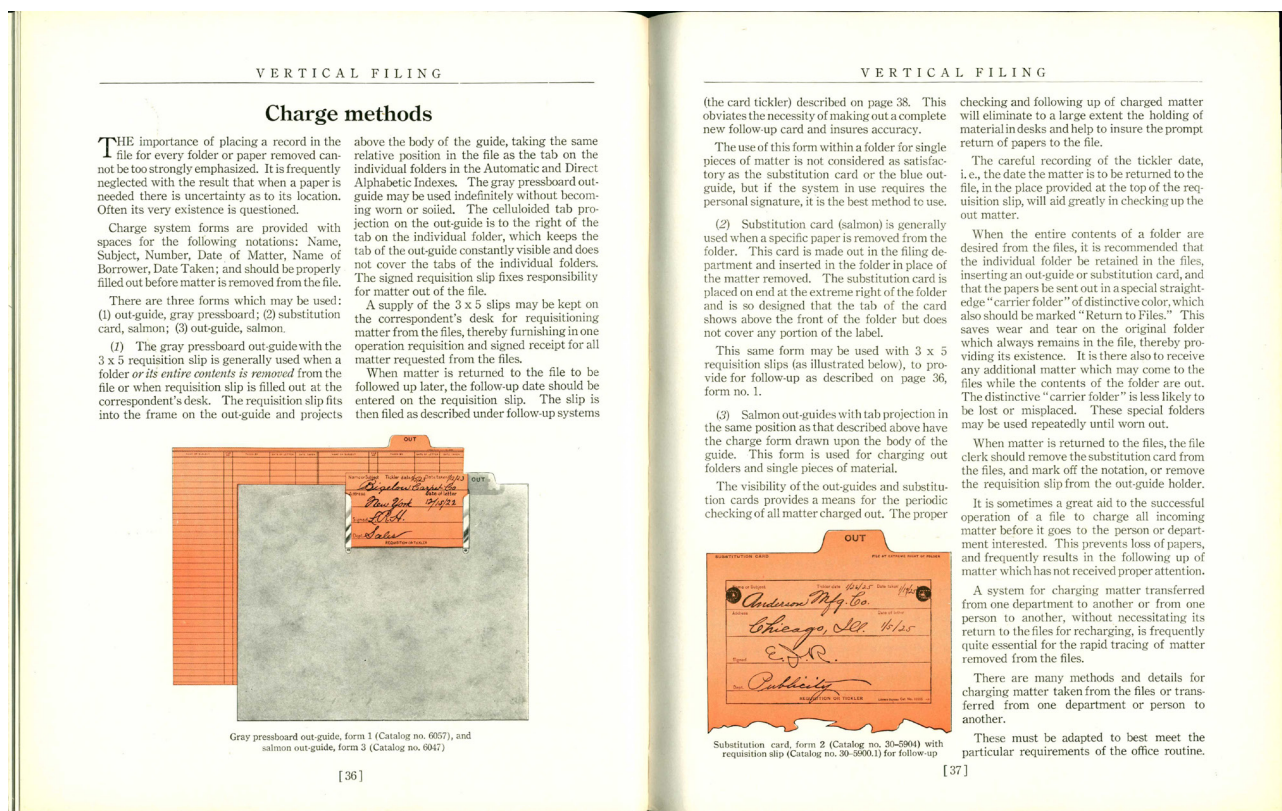


Figure 5: Library Bureau: Vertical Filing (Boston, 1924), p. 36 (Source: Author's collection).

use to file any relevant correspondence that arrived while the folder was absent.⁵⁸

Outside of the file drawer, an alternative or complimentary tracking system took the form of a ›route slip‹ attached to the folder or papers. Regardless of what it was attached to, a route slip was intended to ›prevent a paper wandering aimlessly around the office in the hope that it will eventually find someone to answer it‹.⁵⁹ Anthropomorphizing paper acknowledges the anxiety associated with misplacing loose paper. Circulating through the office, papers were expected to manifest the valuable attributes of information as a discrete unit but not to become disconnected from the oversight of the filing system. Not bound together, not restrained by the index system of a file drawer, the looseness of paper seemed to conjure up moral concerns more often associated with the young women who filed it; that removed from structures and system, not chaperoned by a file cabinet, paper would become unchaste and wanton.

Another form of vertical file was intentionally designed to improve the flow of information in offices and downplay concerns about looseness. This form of loose-leaf binder was intended for papers gathered not simply to be stored, but also to circulate as a small collection. In her history of legal case files, media historian Cornelia Vismann shows how vertical file binders function as a form of administrative writing. The importance of these particular vertical files to Vismann's legal history underscores their value in a history of the case file – a file that transmits papers to facilitate decision-making about a specific event or action. Unlike a manila folder circulating outside of a cabinet, the binder is intended to function as a self-contained storage system including some form of index. Vismann argues that the binder file steers its own path through an office care of address, location, and hold-file notes and index cards with the name of people who need to read and comment on the papers. She compares this version of a file to a list, arguing

that both function as technologies to control »transfer operations«.⁶⁰

Conclusion

In analysing the filing cabinet, I have shown that it is not a singular technology. Rather, it is comprised of a number of storage technologies. The fact these technologies were brought together at a particular time has been the object of this article. As scholars like Glenn Adamson and Anke te Hessen have shown, furniture has long been used to order collections of objects and papers.⁶¹ However, the use of manila folders, tabs, charge cards, and colour to make papers more visible within a classification system in a cabinet articulated storage and retrieval in a novel way.

The novelty of the vertical filing cabinet and tabbed manila folder derived from a faith in granular certainty. The belief that breaking things down into small components would increase the possibility that a desired outcome would happen shaped the discourse of efficiency and a historically specific conception of information. The filing cabinet developed in the overlap between efficiency and information that granular certainty makes visible.

In the early-20th-century business imagination, the functions of (and the problems associated with) the office in corporate capitalism were understood as information needs. Filing, in the form of the vertical filing cabinet and manila folders, became an important solution to these problems. That is, granular certainty in filing became a faith that increasing the number of subdivisions would increase the certainty that papers would be located and their content would be found in a timely fashion.

Critically, the articulation of classification and efficiency made using the filing cabinet an encounter with an instrumentalized conception of knowledge. To retrieve a folder and to select specific papers from a folder, a user handled a particular and specific unit that was sufficiently distinct from knowledge that it needed a different label – »information« increasingly became that label.

As a storage technology that allowed individual units to maintain their original identity, the vertical filing

cabinet fused loose paper and the modern conception of information. This was particularly apparent when proponents sought to explain the utility of the vertical file through a contrast with the book.⁶² The use of a press book or copybook in offices meant that correspondence that had once been an individual unit was bound into a singular material object. In contrast, the storage of correspondence (and other papers) in a manila folder in a file drawer allowed papers to be categorized in more specific ways within a system and accessed as discrete items (as Secretary of State Root wished).

The articulation of discrete information and files was continued through the 20th century even though information moved away from a reliance on the materiality of paper to the digital realm. The use of file and filing cabinet icons on early desktop computers made this particularly visible. This observation is not new. One version of it appears in the conclusion to Vismann's book, a version that media scholar Wolfgang Ernst uses in a critique of digital archives.⁶³ Ernst argues that the prolonged life of the »archival spatial order« hinders the move to temporal organization inherent in the continual processing of data and memory in digital media. This fits into the critique that paper simulations prevented the rethinking of digital storage on its own terms.⁶⁴

However, it is important to note that the »file-like icons« Ernst alludes to in his argument are not the files of »old European times and secretaries and offices«⁶⁵ that he invokes from Vismann's arguments. They are manila folders, usually a tabbed manila folder. These files, along with the vertical filing cabinet that accompanied their debut on the screens of desktop computers, are the product of a very different historical moment. As this article has shown, they are the files of early-20th-century American times and file clerks and offices. This conception of the file appeared as part of a spatial order of storage that had distinct temporal concerns (albeit in a different register from Ernst's arguments). These files are the files of system and efficiency shaped by the logic of granular certainty. The addition of a tab signalled the importance of retrieval, as did the reorientation of the file to its long edge. This is the conception of information and mode of thinking that the file as an icon on a screen represents (as distinct from the file as abstraction used by programmers and engineers, which Vismann shows

can be connected to earlier moments in the history of files and registers). The ›file‹ that people encounter on their personal computer, which they can store in a ›tabbed folder‹, provides a sense of order through boundaries. It allows a user to visualize information and a place for that information. As I have argued in this article, this mediated encounter with information initially occurred through the use of tabbed manila folders in a vertical filing cabinet shaped by efficiency and capitalism.

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- 3 Max Weber: *Economy and Society*, Berkeley 1978, p. 957.
- 4 Geoffrey Nunberg: Farewell to the Information Age, in: Geoffrey Nunberg (ed.): *The Future of the Book*, Berkeley 1996, pp. 103–133.
- 5 Lisa Gitelman: *Paper Knowledge*, Durham 2013, p. 4. See also, Anke te Hessen: *The Newspaper Clipping. A Modern Paper Object*, Manchester 2014.
- 6 Morton Keller: *Affairs of State. Public Life in Late Nineteenth-Century America*, Cambridge MA 1977, p. 318.
- 7 JoAnne Yates: From Press Book and Pigeonhole to Vertical Filing. Revolution in Storage and Access Systems for Correspondence, in: *Journal of Business Communication* 19/3 (1982), pp. 5–26, at p. 8.
- 8 Milton Gustafson: State Department Records in The National Archives. A Profile, in: *Prologue* 2 (1970), pp. 175–184, at p. 179.
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- 13 JoAnne Yates: *Control Through Communication. The Rise of System in American Management*, Baltimore 1989; Joseph Litterer: Alexander Hamilton Church and the Development of Modern Management, in: *Business History Review* 35/2 (1961), pp. 211–225.
- 14 Paul Duguid: The Ageing of Information. From Particulate to Particulate, in: *Journal of the History of Ideas* 76/3 (2015), pp. 347–368; Nunberg: Farewell to the Information Age.
- 15 For newspapers see Nunberg: Farewell to the Information Age, pp. 115–116. For railway timetables see Mike Esbester: Designing Time. The Design and Use of Nineteenth-Century Transport Timetables, in: *Journal of Design History* 22/2 (2009), pp. 91–113.
- 16 Ronald E. Day: *Indexing it All. The Subject in the Age of Documentation and Information, and Data*, Cambridge MA 2014, p. 15.
- 17 Alex Csiszar: Bibliography as Anthropometry. Dreaming Scientific Order at the fin de siècle, in: *Library Trends* 62/2 (2013), pp. 442–443.
- 18 Christine von Oertzen: *Machineries of Data Power. Manual versus Mechanical Census Compilation in Nineteenth-Century Europe*, in: *OSIRIS* 32 (2017), pp. 129–150; Stefan Muller-Wille: Names and Numbers. ›Data‹ in Classical Natural History, 1758–1859, in: *OSIRIS* 32 (2017), pp. 109–132; David Sepkoski: The Database before the Computer?, in: *OSIRIS* 32 (2017), pp. 175–201.
- 19 Craig Robertson: Paper, Information and Identity, in: *Information and Culture* 50/3 (2015), pp. 392–416, at pp. 402–407; Karen Tice: Tales of Wayward Girls and Immoral Women. Case Records and the Professionalization of Social Work, Urbana 1998; Joel Howell: Technology in the Hospital. Transforming Patient Care in the Early Twentieth Century, Baltimore 1995, pp. 30–56. The use of techniques such as paragraphs and marginal comments has a long history outside of the business world. However, what is specific to turn of the century U.S. business imagination is the mobilization of these techniques within efficiency and via unbound paper stored in loose files. Peter Stallybrass: *Books and Scrolls. Navigating the Bible*, in: Jennifer Andersen / Elizabeth Sauer (ed.): *Books and Readers in Modern England. Material Studies*, Philadelphia 2011, pp. 42–77; Ann Blair: *Too Much to Know. Managing Scholarly Information Before the Modern Age*, New Haven 2011.
- 20 Forrest E. Cardullo: Industrial Administration and Scientific Management – 1, in: *Machinery*, July 1912, p. 846. While he introduced it as ›accurate information‹ Cardullo also labeled the content ›data‹ and the result ›knowledge‹, albeit making clear this was a very particular form of knowledge. This slippage was not unusual. However, information was a common label for this discrete unit. Therefore, following this usage, and drawing from Nunberg's argument, I label it ›information‹.
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- 22 Edward A. Cope: *Filing Systems, Their Principles and Their Application to Modern Office Requirements*, London 1913, p. 53.
- 23 Herkimer Historical Society (Herkimer, NY) [HHS], Library Bureau Papers. John F Arndt: Making a File Drawer Live, in: *The File*, February 1936.
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- 29 Library Bureau: Boston Salesmen's Periodical Meetings, p. 90 (Herkimer Historical Society).
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- 31 Matthew Hull: The File. Agency, Authority, and Autography in an Islamabad Bureaucracy, in: *Language & Communication* 23 (2003), pp. 295–296.
- 32 Glenn Adamson: The Labor of Division. Cabinetmaking and the Production of Knowledge, in: Pamela Smith / Amy Myers / Harold Cook (ed.): *Ways of Making and Knowing. The Material Culture of Empirical Knowledge*, Ann Arbor 2014, pp. 243–279, at pp. 247–248; Vismann: *Files*, p. 98. Shannon Mattern uses ›intellectual furnishings‹ to make a more direct connection between furniture and the production of knowledge. See Shannon Mattern: *Intellectual Furnishing. The Physical and Conceptual Architectures of our Knowledge Institutions*, online: <https://wordsin.space.net/shannon/2014/02/26/7542/> (25. 09. 2019).
- 33 John M. Hollingsworth / Lyman Hollingsworth: Improvement in Paper Making. U.S. Patent 3,362, December 4, 1843.
- 34 American Institute of Filing: *Course in Correspondence Filing*, p. 36.

- 35 Sulfate folders were made from pulp produced from wood chips by cooking under pressure in a solution of caustic soda. No ground wood or other adulterant was present. According to promotional literature, this made for paper that resisted folds and tears, qualities that manufacturers claimed had to be present if a folder was to survive extended use. R.G. Beal: The Selection and Use of Filing Supplies, in: *Office Economist* (November–December 1949), p. 14.
- 36 Filing Newspaper Clippings, in: *Filing* (November–December 1918), p. 16; HHS, Library Bureau Papers, Movie' Morgue, in LB File Apri.
- 37 Filing Newspaper Clippings, p. 16.
- 38 Cope: Filing Systems, p. 23. In early filing literature classification and index tended to be used interchangeably.
- 39 National Museum of American History, (Washington, D.C.) [NMAH], Smithsonian Libraries' Trade Literature Collection SILNMAHTL_17618, Globe-Wernicke: Filing and Finding Papers. Safeguard Method of Vertical Filing (n.d.), p. 7.
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- 52 HHS, Library Bureau Papers. Belknap Hardware Company: *File Installation*, in LB File, December 1921, pp. 3–4.
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- 60 Vismann: *Files*, p. 7.
- 61 Adamson: *The Labor of Division*; Anke te Heesen: *The World in a Box. The Story of an Eighteenth-Century Picture Encyclopedia*, Chicago 2002.
- 62 For a similar use of book as foil in the history of the index card see Krajewski: *Paper Machines*, pp. 127–128, pp. 136–137.
- 63 Vismann: *Files*, pp. 161–164.
- 64 Wolfgang Ernst: *Digital Memory and the Archive*, Minneapolis 2013, pp. 81–101.
- 65 Ernst: *Digital Memory*, p. 120.

Abstract

This article provides a particular history of the file. It does not focus on the content of specific files or the development of filing systems. Instead it moves files from a history of administrative writing to a history of information storage technologies. My argument is that if we get ›under the hood‹ of the filing cabinet and manila folder to understand how they work we learn how information was conceptualized and understood such that it could contribute to the goals of efficiency critical to corporate capitalism. It is the contention of this article that information is a historically specific concept and the early 20th century emergence of the tabbed manila folder and the vertical filing cabinet offer insights into the development of a distinctly modern conception of information as impersonal, discrete, and therefore easily extracted. I offer the concept of ›granular certainty‹ to show how information was conceptualize, practically constituted and organized. This emphasizes the overlap between the importance of efficiency's embrace of standardization and the specific and a conception of information as something specific. The tabbed manila folder and the vertical filing cabinet emerged from this overlap between efficiency and information.

About the Author

Craig Robertson is Associate Professor of Communication Studies at Northeastern University. In his research he uses the issues and concerns of media history and media theory to explore the relationship between information and paper. He is currently working on a book on the emergence of the vertical filing cabinet. His previous publications include: *The Passport in America. The History of a Document* (New York 2010).