Paul M. Dover – "Coping with *copia*"

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One of the more popular printed texts of the sixteenth century was the *De Copia verborum*, written by one of that century's most prolific authors, the Dutch humanist and critic Desiderius Erasmus (1466-1536). There were an astounding 150 editions of the text published in the six decades after its first appearance in 1512. A guidebook to effective rhetoric and composition, the treatise follows closely the approach of Quintilian in offering a twofold picture of *copia*, relating it both to the variety of words and turns of phrase desirable for effective expression, and to their abundance, which resulted from the piling up of arguments, *exempla* and parallels. Variety and abundance operated hand in hand in the crafting of eloquence: one, of course, had to vary speech while drawing upon great reservoirs of examples. In the construction of rhetorical *copia*, neither abundance nor variety should be pursued for their own sake, but rather in the service of elegant and effective expression. Erasmus thus offers a warning against sheer stockpiling of words, to guard against a "futile and amorphous loquacity" that instead of revealing the riches of abundance, betrayed poverty of thought. In this iteration, more is less. And variety, too, pursued without thought, was ineffective: "I want the furnishings of a rich house to exhibit the greatest variety; but I want it to be altogether in good taste, not with every corner crammed with willow and fig and Samian ware."[1] Linguistic diversity unguided by rhetorical function was a recipe for confusion.

[1] Desiderius Erasmus, *On* Copia *of Words and Ideas*, trans. Donald King and H. David Rix (Milwaukee, WI: Marquette University Press, c1999), 11, 19.

Breadth and depth, therefore, were the twin dimensions of the world of words inhabited by rhetoricians. Erasmus insisted that students of rhetoric, in order to employ *copia* in their speech and writing profitably, had to create categories for the expansion of their rhetorical capacity, in order to organize their learning and commit better the particulars to memory. It was thus necessary to taxonomize the words, turns of phrase, and *exempla* at their disposal. Unlike their medieval predecessors, whose studies focused on a small number of manuscript texts from which they would draw familiar patterns, tropes and illustrations, students in the sixteenth century had access to the abundance and variety of printed texts. This was for them a boon, to be sure, but it also created new challenges of distillation, classification and selection. An abundance of information, therefore, was not an entirely unalloyed good, something we know all too well today.

Erasmus explored this tension elsewhere in his writings. We see similar dynamics in evidence, for example, in *De ratione studii* (published in the same year as *De copia*), Erasmus' broad but brief exposition of the materials and methodology of his curriculum for the *studia humanititas*. In this work, often printed together with *De copia*, Erasmus offers guidelines for *loci communes*, or 'pigeonholes' as Erasmus calls them, by which to organize knowledge gained in one's study of the humanities. Given the enormous volume of literary and historical examples readily available to scholars and students with the advent of print, Erasmus is describing tools that would serve as coping mechanisms amid the great profusion of words now appearing on the printed page. This was an early example of the practice of 'commonplacing', organizing information by themes, categories or catchwords, in order to bolster the compiler's memory and counter the potential confusion arising from *copia*. Commonplacing emerged as but one of the great many tools that Europeans devised and deployed to navigate the unprecedented quantities

of information generated by early modern society. Over the subsequent two centuries, it was a practice applied to a great variety of disciplines and pursuits, and one that achieved a level of complexity that belied its origins as a method to negotiate complexity in the first place.

Variety and abundance, the facets of *copia* highlighted by Erasmus in the pursuit of rhetorical excellence and in humanistic learning and pedagogy, were in fact recurring features of early modern society and a regular source of organizational, epistemological and taxonomic anxiety for early modern people. In this article, and in a forthcoming book, I offer two contentions. First, that an altogether new abundance of information is a recurring theme of early modern European history, and one that shows up in a multiplicity of circumstances, arenas, and institutions. Second, that, as a matter of course, information management became a paramount concern for a great many. 'Coping with *copia*', it turns out, was a concern for a great many European people in these centuries, from scholars to merchants to natural philosophers to chancery secretaries. And as Erasmus stressed in relation to rhetoric, while *copia* might be regarded as a blessing, opening up new opportunities for knowledge, wonder, and political control, it also had to be managed, requiring material and cognitive tools to navigate both abundance and variety. There was a widespread need for the triage of information and the compartmentalization of particulars, to make the new information legible to the individuals and institutions who sought to use it effectively. Early modern Europe became a society in need of regular information management, and it devoted significant time, resources and personnel to its pursuit.

The sources of early modern *copiae* were manifold: the rise of regular or even daily paperwork among institutions and individuals, the widespread adoption of accounting techniques, the output of the printing press, the prevailing impulse to preserve and archive

documents, the rise of modern states and bureaucracies, the influx of particulars from the New World, the observational and descriptive ethic of natural philosophy, the great expansion in exchange of correspondence, and the invention and circulation of 'news.' The material expression of this enormous expansion of information was chiefly inscribed paper, the product of an early modern culture full of secretaries, scribblers, copiers, and letter writers.

The emergence of this *copia* of information and the great diversity of efforts made to cope with it are thus the twin themes of my forthcoming book, *The Information Revolution of Early Modern Europe*. It explores the various mechanisms by which the enormous expansion of information came into being, a repercussion of the creation of the first information-rich society, and the steps taken to pursue profits, knowledge, power and personal fulfilment amid this new reality. As I have already suggested, the material expression of these transformations was paper, a substance that was, for the first time, widely produced within Europe itself and thus affordable and abundant; paper insinuated itself into a central role in European life. Paper had been in regular use among merchants and the secretariats of certain governments, especially in Mediterranean regimes, as early as the thirteenth century. Chanceries across the city-states of Italy and in select monarchical regimes, such as the crown of Aragon, were paper-based by 1300 and produced large quantities of documentation on a daily basis. Domestic European paper manufacture, originally confined to Italy and the Iberian peninsula, by the fifteenth century expanded northward, and with it, the domestication of paper as a regular feature of European life. Early modern Europe was, to an extent completely unlike the medieval culture that preceded it, a culture of paper, which came to mediate many facets of everyday life. Paper came to mediate life in unprecedented ways, serving as an essential recording mechanism and, through its preservation of written information, encoder of reality. Europeans found that they could not live

without it, and, in many cases, came to depend on writing on paper to confirm the passage of an event or the existence of an object. We are now accustomed to hearing that we are entering a paperless age, where the familiar modes of interface modulated by paper are being phased out in favor of digital simulacra. Given how paper doggedly hangs on as a vessel of information storage and exchange and as a medium of social interface, this characterization of our current day is one that is certainly subject to challenge. But if we are in fact witnessing the beginning of the end of the age of paper, my book is an exploration of the opposing bookend, the story of how the age of paper in the West began.

If my book project presents a story of historical genesis that presages a cloture in our own day, I also suggest that early modern Europeans were forced to engage in tasks that are all too familiar to us today. In an age in which writing was widespread and large-scale and the deployment of paper quotidian and obligatory, information management became essential. There was a great expansion in these "processes on paper", as Christophe Hoffman has called them. These processes generated and preserved a flood of particulars, pointing to an essential feature of early modern Europe, and one that is all too familiar in our own day: the sheer accumulation of information, a process both inadvertent and the result of deliberate choices. A Dutch proverb of the age declared that "the spoken word flees, but the written word remains." And remain it did, accruing in the form of letters, institutional records of state and church, accounts of companies and individuals, books and a bewildering diversity of other printed material, notes (both bound and loose-leaf), descriptions of observations and experiments, legal and medical case histories, and a great variety of other items. The communication and exchange of oral information remained very important, essential to the conduct of politics, commerce and scholarship, but even in these cases, there was a waxing urge to represent and preserve such exchanges in written

form as well, to generate an inscribed duplicate on paper that could stand as a record. Such actions reflected an increasingly widespread acknowledgment that the oral was fundamentally transitory, as opposed to the relative definitiveness and inalterability of the written.

The generation of documents, which represented daily activity, in addition to periodic or statutory occasions for inscription, was thus met by a corresponding waxing commitment to keeping them. The gathering and preservation of records were symptomatic of a broader 'culture of collection' that prevailed in early modern Europe. The expansion of political, institutional and scientific archives, the growth of libraries fed by the abundance of printed books, the accumulation of large and varied personal 'papers', the advent and stocking of museums, the proliferation of cabinets of curiosities and *Wunderkammern*, the creation of botanical gardens reflecting the expanded knowledge of the world's flora, and even the early modern encyclopedias that sought to embrace in full the new learning: all of these reflect a commitment to gathering particulars into one place. Thus merchants, financiers, secretaries, statesmen, scholars, naturalists, and even everyday citizens also sought to record their lives for family and posterity, demonstrated a desire to have a reservoir of information about past events, transactions, experiments, and lives lived. Their records were for them the empirical markers of profit, political power and sovereignty, of human and natural knowledge, and of individual achievement.

This array of examples reveals that the instinct to preserve was not discipline-specific, but instead a practice that was shared by a broad spectrum of individuals and institutions. The move toward the preservation of paper instruments meant that they lived two lives, first in the real time of their production and deployment and then gathered in a bewildering array of files, archives, collections and account books. This preservative instinct was an essential prerequisite

for the development of the bureaucracies that begin to grow like mushrooms across the early modern landscape. Bureaucracies emerge when institutions make the dual commitment to generate and keep documents in profusion, and then adopt an institutional attitude that the mediation and management of this material are among its chief tasks, and that they are absolutely essential to the daily conduct of the organization of which it is a part. In 1565, Pope Paul IV issued a decree that the Vatican archive should collect "everything pertaining to the Holy See," an instruction that is suggestive of a conviction (and, perhaps, delusion) that a paper trail can encompass, in inscription, the entirety of an institution.[2]

In commerce, politics, scholarship, and science, practitioners gathered and referenced paper that existed as both short-term and long-term information. The widespread and varied efforts to collect and keep hold of paper instruments (and, in some cases, material objects) created what me might today describe as databases, records of past and present activities liable to consultation and use in the future. There was an increasingly widely shared understanding that the collection of information about subjects and members in the present was essential for the effective functioning of institutions moving forward. In short, information retained allowed planning for the future.

The twin commitment to acquisition and preservation thus expanded the information available for forecasting and problem-solving, but it also simultaneously magnified the requirements of information management. The demands for effective tools and practices for "coping with *copia*" was in large measure driven by the generation of documents relied upon to inscribe reality, and the determination to preserve them (in bound books, files, archives and

[2] Olivier Poncet, 'Les Archives de la papauté (XVIe-milieu XVIIe siècle), la genèse d'un instrument de pouvoir,' in Armand Jamme and Poncet, eds. *Offices, écrit et papauté (XIIIe-XVIIe siècle)* (Rome: École française de Rome, 2007), 737-762.

personal "papers"). As is the case today, such information management comprised the storage and organization of both the information itself (what we might call today the data) and the medial form that contained it (chiefly of paper in the early modern setting). This is not to say that early modern Europeans were inundated with anything like the tidal waves of information that we encounter in the digital age, but, as is the case for us, it was the novelty of the emerging state of affairs that posed challenges and forced new brands of accommodation, with the advent of new media, new praxes, new institutions, and new anxieties.

This focus on the "new" is apt. It has been recently suggested that had early modern Europeans been asked to label their own age, they would have called it *aetas nova*, for there was so much that they considered new, or what Lorraine Daston and Katherine Park have rather memorably called a "gusher of novelty."[3] The liminal nature of the period is evident from the number of revolutions that historians have located in it – among them, the "military revolution", the "print revolution", the "correspondence revolution", the "scientific revolution" and the "communications revolution." There have even been claims for a "knowledge revolution", bringing together the shift to empiricism and emphasis on observational data, the influx of novel information from the New World, and the disjunctures associated with the advent of print. It is striking that there are a number of themes that straddle these various revolutions (if we choose to label them as such) and which coalesce around a concern for information. For many Europeans, the *aetas nova* meant an evidently untamable amount of information, and they needed new strategies to cope. In the same way that we have adapted Boolean searches, algorithms, and digital storage manifolds to seek to stay on top of the hoards of digital data, Europeans introduced new paper technologies to confront the growing volumes of paper in their offices,

[3] Katherine Park and Lorraine Daston, 'Introduction: the Age of the New', in Park and Daston, eds., *The Cambridge History of Science. Volume 3: Early Modern Science* (Cambridge: Cambridge University Press, 2006), 6.

chanceries, archives and residences. New means of storing, searching, categorizing and sorting, became imperative. The associated challenges were spatial, logistical, organizational, and in some cases epistemological. They were also temporal, as these tasks consumed enormous amounts of time, and were cause for widespread exasperation and complaint. Taken together, after all, these various tasks are what we call "paperwork." Our associations with paperwork are rarely happy ones: it is boring, confusing, and intellectually unsatisfying. But paperwork was adopted in this period both because it was deemed necessary and because it was fundamentally useful. In an age faced with unprecedented volumes of information, recourse to paperwork conferred on that information mobility, immutability, and scalability. These features of paperwork also allowed for the recombination and reordering of parcels of information. And while they might (and did) accumulate in unwieldly quantities that presented spatial and logistical headaches, paper instruments were relatively easy to store, reproduce and disseminate. Paperwork also offers the distinct advantage of representing in a two-dimensional manifold things, events and relationships that exist in time and three-dimensional space. Paperwork was thus one of the most important tools that emerged in the early modern period for coping with *copia*. Of course, paperwork, in the medium- and long-term, ends up creating its own sets of *copia*, which in turn require their own coping mechanisms. These were, and remain, fundamental realities of a society that engaged in daily or near-daily writing on paper and adopted paperwork as a utilitarian necessity, in the emergence of a "scriptural economy" (in the phrase of Michel de Certeau).[4]

I recognize that I am making sweeping claims here, which necessarily file down rough edges, leave abundant outlying examples, and may understate continuities from the Middle Ages.

[4] Michel de Certeau, *The Practices of Everyday Life* (Berkeley, CA: University of California Press, 1984), 137-156.

But I believe that if we look across the broad swathe of human experience of early modern Europe, we see information and paper shaping lives in unprecedented ways. With this new focus on the mediatory power of documents, we see the dawn of documentary modernity. Aleida Assmann has called writing "conserved energy", and in early modern Europe the varieties of writing and the tasks associated with documentary generation and management consumed the energies of a broadening swath of individuals.[5] Perhaps precisely because we historians rely on this documentary output as the evidence for seeking understanding of the period, we may have neglected the extent to which the unprecedented production of paper documents was representative of profound changes in cultural outlook and social practices, which, taken together, constitute nothing less than a revolution in information.

Rethinking Early Modern Information

The early modern period in European history has long carried an association with the printing press. Ever since the seminal work of first Marshal McLuhan and then Elizabeth Eisenstein, there has been widespread acknowledgment of the broad and deep impact of print. Invariably, when I describe my book project, people assume that my book is chiefly concerned with the changes wrought by print. While the wide-ranging impacts of print must be part of any consideration of the informational transformations of the period, they are not even close to the sum of them. In fact, the early modern period is marked by a huge increase in the generation of manuscript material, one that dwarfed the output of print. Most of my book focuses on these various nodes of manuscript production, the most important sources of information. This effluence of handwritten documents must dissuade us from depicting the informational

[5] Aleida Assmann, *Errinerungsräume: Formen und Wandlungen des kulterellen Gedächtnisses* (Munich: C.H. Beck, c1999), 179.

transformations of this period as a function of a typographic age forged by Gutenberg's invention. I wish to insist that we move away from thinking of this period as an "age of print." This is a misleading, if not meaningless label, especially if we juxtapose it with a supposed preceding medieval "age of manuscript." This is a bifurcation that simply does not hold up to historical scrutiny, for the early modern period was in fact a new age of manuscript completely without precedent. Instead of ushering out the scribal culture of the Middle Ages, the early modern period transformed it and was lousy with those producing manuscript writing. In fact, the availability of paper and the broad range of practices that entailed the filling of blank spaces on paper with ink meant that more manuscript was produced than ever before. In this great "age of scribbling" (as Robert Burton called it in 1621[6]), Europeans persisted with, and expanded, writing practices that had been prominent in the Middle Ages, and developed a host of new techniques and documentary technologies. In this climate, and as has always been the case, writing abetted more writing: the production of documents frequently generated yet more writing to keep track of it all.

Nor was writing confined to institutions and elites. It is striking just how many individuals, extending even to humble burghers, who adopted writing as a regular practice, seeking to represent themselves, their families, or their households. In early modern Europe there was a veritable explosion, for example, in the production of what the Dutch historian Jacob Presser first coined "ego-documents", that is, self-referential and personalized manuscript products that often include ruminations on his or her personal life, fortune and feelings. Ego-document is a catch-all for a very wide range of paper technologies, including personal letters (which proliferated in abundance), memoirs, dairies, wills, travel accounts, spiritual writings,

[6] Robert Burton, *Anatomy of Melancholy*, ed. By Floyd Dell and Paul Jordan-Smith (New York: Tudor Publishing Company, 1955), 17.

personal commonplace notebooks, family books, and even the extended reflections appended to the margins of almanacs, calendars, bibles and the books in one's personal libraries. "Writings of the private sphere," Madeleine Foisil has called these.[7] Their form and content often straddled the categories just listed, and stretched from a few pieces of scrap paper tied together to works on the scale of the 5,000-page diary of Rijklof Michael van Goens.[8] Their authors were equally as varied: male and female, noble and commoner, rural and urban. They were most likely to be the product of those whose roles involved frequent writing, such as clerics, merchants, teachers, and lawyers, but even those from the lower socioeconomic orders might create such items.[9] The domestication of paper provided a ready-made surface to accommodate the inclination to record the reflective and quotidian. Even in burgher and artisanal households, writing was a customary activity, increasingly so with literacy rates on the rise. An especially important category of such items was the so-called "family books", going by the names *libres de raison* in French, *ricordanze* in Italian, *Tägebücher* and *Familienbücher* in German, *dietaris* and *llibres de pages* in Catalan.[10] Many of these originated as account books, meant to track the family holdings, which would then be augmented by personal reflections and non-financial information about the family. Others had their genesis as memoirs, designed to pass on the recounting of important events in the writer's life. Such works might have legal as well as memorial functions, including copies of contracts, land deeds, along with lists of family office-holders, genealogies and chronicles. These books often spread across many generations, connecting past, present and

[7] Madeleine Foisil, 'L'écriture du for privé,' in Philippe Aries and Georges Duby, eds., *Histoire de la vie privée*, Vol. 3 : *De la Renaissance aux Lumières* (Paris, Éditions du Seuil, 1985), 319- 359.
[8] Rudolf Dekker, 'Ego-Documents in the Netherlands, 1500-1814.' *Dutch Crossings* 39.13 (1989), 61-71, here 64.
[9] James Amelang, *The Flight of Icarus. Artisan Autobiography on Early Modern Europe* (Stanford: Stanford University Press, 1998).
[10] Giovanni Capelli, 'Introduction: Memory, Family and Identity in Early Modern Italy and Europe,' in Capelli, ed., *Memory, Family and Self. Tuscan Family Books and Other European Egodocuments (14th-18th Century)* (Leiden: Brill, 2014), 1-11. See also the special issue of *Annales. Histoire, Sciences Sociales*, 59 (2004).

future. The authors of ego-documents displayed many of the same sensibilities that characterized institutional settings: the desire to preserve in writing, in order to provide a record of the past, to describe the present, and plan for the future. Many of these items had posterity in view.

In merchant houses, chanceries, churches, and in private residences, therefore, the quantities of paper inscribed with handwriting dwarfed those impressed with print. Manuscript writing possessed immediacy, flexibility and responsiveness that printing, which was slow, complicated and expensive, did not have. Print simply could not perform a great many of functions for which manuscript writing was deployed in this period. It was thus writing by hand on paper that was thus the primary source of early modern *copiae*. I can say with confidence, therefore, that there would have been a revolution in information resulting in the creation of documentary modernity in early modern Europe had the printing press never been invented. In the event, writing and printing bolstered one another: the choice to print was often made only once there was something written down deemed worthy of print publication, and the appearance of books and other printed items was occasion for multiple layers of manuscript writing. For early modern scholars and others, the printing press by no means rendered manuscript vestigial; in fact, scholars produced unprecedented amounts of manuscript material, in the form of loose notes, notebooks, letters, rough drafts, handwritten publications, catalogs, and many other brands of writing both systematic and unsystematic. Their habits were transformed by the sheer amount of printed knowledge at their disposal, to be sure, but, if anything, the shift was toward yet more writing. This is evidenced by the wealth of recent scholarship on note-taking and commonplacing practices of early modern humanists and natural philosophers.[11] Perhaps more

[11] Among many examples, Ann Moss, *Printed Commonplace Books and the Structuring of Renaissance Thought* (Oxford: Clarendon, 1996); Richard Yeo, *Notebooks, Virtuosi, and Early Modern Science* (Chicago: University of Chicago Press, 2014); David Cowling and Mette Bruun, eds., *Commonplace Culture in Western Europe in the Early Modern Period* (Leuven: Peeters, 2011); Urs Leu, ‘Aneignung und Speicherung enzyklopädischen Wissens. Die

than any other sector of early modern society, they were forced to perform triage on the information to which they were exposed, and create new categories of knowledge in which to accommodate it.

The sheer abundance and the dizzying variety of particulars, and their description and preservation on paper, however, created cognitive and epistemological stresses. Humans learn by categorizing knowledge and relating it to things already known. We are instinctively sorters and categorizers, something that Aristotle recognized two and a half millennia ago, when rooting his epistemology in premises. So as the particulars amassed in early modern Europe, there were accompanying concerns about how to organize, classify and categorize them. Across history, in eras of informational transformation (including our own), human communities have engaged in efforts of taxonomical recalibration. Classifying information is essential in order to make it legible and, ultimately, usable. In every age, humankind has sought to organize information into discreet parcels in a process of speciation. These packets are then placed in categories, for the most basic of reasons: this makes it easier on our brains.

Early modern Europe was what I describe in my book as a "taxonomic age", in which individuals and institutions generated new categories and typologies in which to place the abundance and variety with which they were faced. When particulars accumulated or were gathered in great quantities, as many of the emerging practices of the period led them to, in account books, ledgers, state chanceries, the notebooks of naturalists, or the commonplace books of scholars, they became what we would call "information" or "data." Amassed in this manner,

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Loci-Methode,' in Christine Christ von Wedel and Leu, eds., *Erasmus in Zürich: eine verschwiegene Autorität* (Zurich: Verlag, Neue Zürcher Zeitung, 2007), 327-342; Albert Cevolini, De Arte Excerpendi. *Imparare a dimenticare nella modernità* (Florence: Olschki, 2006); Alberto Cevolini, ed., *Forgetting Machines: Knowledge Management Evolution in Early Modern Europe* (Leiden: Brill, 2016); Ann Blair, 'Note Taking as an Art of Transmission.' *Critical Inquiry* 31.3 (2004), 85-107; Howard Hotson, *Commonplace Learning: Ramism and its German Ramifications, 1543-1630* (Oxford: Oxford University Press, 2007).

they offered few opportunities for profitable use, and thus required distillation, sorting and recategorization. Among paper's many virtues was that it facilitated the movement, manipulation and recombination of facts, all urgent needs amid the surfeit of particulars. A good case has been made that this period invented the "fact" as a stand-alone, descriptive, and habitually mundane parcel of information. As the facts accumulated, there were attending pressures concerning how to organize, classify and categorize them.

Europeans were forced to figure out how all the new particulars fit in to preexisting frames of reference and epistemological schemata. These soon proved to be insufficient for the task, as the sheer volume of information overwhelmed the standing methods of organizing knowledge. This precipitated what has variably been called a "crisis of classification" and "rupture of classification."[12] Eventually the accumulation and compilation of data compelled new taxonomies.

When we think of taxonomical projects our minds likely go to biological speciation and indeed early modern naturalists made great strides in this area, culminating in the grand Linnean classifications of the eighteenth century. But parallel efforts at taxonomizing *copiae* are evident across a truly surprising array of human endeavors. All of these efforts betrayed a central tension, between the zeal for more information (what Ann Blair has called "info-lust"[13]) and the concomitant desire to employ it toward meaningful ends. It was a tension highlighted by the English philosopher and naturalist Francis Bacon (1561-1626) in his *Novum Organum* (1620), where he observed the waxing commitment of his contemporaries to observation and the

[12] Jean-Henri Martin, 'Classements et conjonctures', in Roger Chartier and Martin, *Histoire de l'édition française. Tome I: Le livre conquerant. Du moyen age au milieu du XVII siècle* (Paris: Fayard, 1989), 429-457; Michael Hobart and Zachary Schiffman, *Information Ages: Literacy, Numeracy and the Computer Revolution* (Baltimore, MD: Johns Hopkins University Press, 1998), 87-111.
[13] Ann Blair, *Too Much to Know: Managing Scholarly Information Before the Modern Age* (New Haven, CT: Yale University Press, 2010), 6.

recording of particulars about the natural world. “Natural and Experimental History is so various and scattered that it confounds and disturbs the understanding; unless it be limited and placed in the right order; therefore we must form some tables and ranks of instances in such a manner and order, that the understanding may work upon them.” Bacon’s remarks point to the ends in view in seeking to reconcile the twin desires of accumulation and taxonomy: “that the understanding may work upon them.”[14]

The new taxonomical categories and practices that Europeans devised as coping mechanisms are among the chief concerns of my book. These impulses were evident across a broad range of human activities in European society, making the urge to taxonomize a chief theme of the period’s history. It could certainly be seen in the natural sciences, where the inclination to observation demanded new categories into which to place newly described or discovered plants, animals, and phenomena. But similar patterns and novel responses could be seen elsewhere. In bureaucratic circles, new institutions and the professionals of the written word who staffed them introduced new systems of organization and documentary groupings to facilitate storage, finding, and access. Merchants, as a matter of course, accrued very large paper trails of their own, and developed practices to manage it in multiple notebooks, organized not only by incoming and outgoing revenue, but by components of their operations and the species of transactions. Humanists and other scholars were inundated both by the resources (in book form and otherwise) made available through print and regular recourse to scribbling and notetaking on paper, needed new mechanisms to navigate the forest of information. One of the truisms of the early modern compulsion to keep written records was that writing abetted yet

[14] Francis Bacon, *The Novum Organum of Sir Francis Bacon, Baron of Verulam*, trans. by M.D. London (London: Thomas Lee, 1676, first published 1620), 22.

more writing. The recourse to writing was thus an accelerant for the accumulation of paper records, and for the creation of new writing strategies and techniques.

Paper and profits

Pride of place, in this story, both in precedence and in influence, should be given to European merchants. Ever since the medium had become readily available, they had been pioneers in the use of paper instruments to record their affairs, not only in keeping notebooks and account books, but in the maintenance of correspondence with a range of partners: epistolary communication was essential to their flourishing. For them, often on the go and reliant on a variety of networks across which people, products and information moved, paper was grease for the wheels of commerce. This is how Domenico Peri, in his commercial treatise *Il negotiante* (1638), characterized the difference that paper made to the tasks of the merchant:

> It has been said that the invention of paper, because it is a material so thin and light, has allowed one to express the concepts of one's mind, and entrust them to a small sheet, enclosed and well-sealed, so that they can securely go to every corner of the world, until, arrived in the hands of whoever it was sent to, and opened by him, fulfills the task assigned to it; and in this manner friends who are separated by great distances can negotiate with one another, truly a great consolation to those people who love one another, but especially convenient for business.[15]

Much of his treatise is taken up with descriptions of the manifold habits and practices with which a man of commerce must familiarize himself, and a great many of these have to do with the mundane (in both senses of the word) tasks of keeping records on paper, deemed absolutely essential for effective commerce. Peri celebrated paper's lightness, pliability and portability, all

[15] *Il negotiante di Giovanni Domenico Peri Genovese* (Genoa: Pier Giovanni Calenzano, 1638), p. 32: "È stata accertata l'inventione della carta, perché in materia si sottile, e di così poco peso si possono commodamente spiegare i concetti d'animo, quali fidati à picciol foglio in se ristretto, e ben sigillato possono sicuramente caminare in ogni parte del Mondo, finche gionto quello alle mani di che è indirizzato, apertole il seno, compisca l'offitio commessoli; & in questa maniera ancorche allontanati da longhissimo spatio di cammino possono gli Amici trattar insieme, consolatione veramente grande delle persone, che s'amano, ma commodità grandissima della Mercatura."

of which made it favorable for us by peripatetic merchants. These material benefits were married to the almost magical capacity of paper to project the voice and being of the merchant across vast distances. Paper allowed the creation of multiple simultaneous realities: the projection of the sender's thoughts and desires to another, remote individual; the maintenance of communities of business and friendship unbound by the great distances that separated the constituents; and the sharing, abstracted in the form of inscribed ink, of exchanges of goods and specie. Most importantly for our consideration here, however, was that the ready recourse to paper by merchants meant that even in the late Middle Ages the paper accumulated in great volumes in the offices of merchants and their companies. These *copiae* were, literally, an occupational hazard.

The great virtues of paper trumpeted by Domenico Peri, so beneficial to the work of merchants, had paradoxical flip-sides. Portable and flexible it might well be, but paper also tended to accumulate in unmanageable piles that were difficult to transport. Yes, paper was light, but it became heavy when it accumulated in large volumes, as it inevitably did. It might serve to facilitate communication but it could also sow confusion because it could carry so much contradictory information. And the unceasing demand for documents in the service of commercial, governmental and scholarly decision-making could end up making resolution more difficult because the accruing information could not be quickly effectively turned into actionable knowledge. Finally, for all the benefits that came with the capacity to inscribe reality on paper, it did not, by any means, necessarily translate into the effective control of that reality.

The regular, often daily, writing engaged in by merchants created units of storable information, but ones that were relatively inflexible, and, gathered together in inchoate fashion, not particularly responsive to the demands of commerce in real time. So, along with their penchant for creating written records, merchants developed methods for record-keeping that

facilitated reuse and recombination, rendering those units of information more usable. These paper practices, which provided an indelible record of transactions and currency flow, also offered the benefit of portability, making the keeping of records possible while peripatetic merchants found themselves on the move. Perhaps more so than any other subset of the population, merchants evinced the "pragmatic literacy" that became a hallmark of many areas of early modern life. Writing (and paper) became essential to their everyday activity; by the latter Middle Ages, the merchant surrounded by stacks of sacks of paper had become proverbial. Seizing on the abstracting power of ink and paper, commerce, especially in the realm of international trade, came to be an affair of information, and merchants, managers of information. What is more, mercantile writing practices proved to be deeply influential in shaping the writing conventions of political and ecclesiastical administrations, and accounting techniques offered important examples of information sorting for diplomats, bureaucrats, and scholars. Like merchants, they often faced an abundance of particulars (increasingly in the form of numbers) and an accompanying need to consult the details of past events, agreements and transactions. In this way, a great many people in early modern Europe were making an accounting of themselves, their actions, and their institutions.

Merchants were early adopters of the *habitus* of everyday writing, and took to paper as a facilitator of this practice. This created, in a phrase coined by an agent of the Fugger firm to describe merchants in Genoa, a "reign of paper", in which the abundance of letters, bills of exchange and promissory notes had reduced the importance of face-to-face negotiation. That same Fugger agent described the Genoese merchants as "having more paper than hard cash", an impending reality in a world where paper served as a stand-in for reality. [16]

[16] Fernand Braudel, *Civilization and Capitalism, 15th-18th Century.* Volume II: *The Wheels of Commerce*, trans. Sian Reynolds (Berekely, CA: University of California Press, 1982), 360.

This reign of paper was fed primarily by two streams: correspondence and record-keeping (including accounting). The nature of mercantile activity had long required regular letter writing, and the extant collections of correspondence of some medieval merchant houses extend into the tens of thousands of documents. Thus we have the likes of Francesco Datini, a fifteenth-century merchant from Prato plugged into European and Mediterranean markets, whose extant business records include over 126,000 distinct pieces of commercial correspondence associated with nearly 300 distinct locales. Of these remaining letters, nearly 11,000 were to and from his wife. There are few comparable commercial documentary collections that survive, but there is little reason to believe that Datini's dedication to record-keeping and the exchange of correspondence as essential to his flourishing was not commonplace among late medieval and early modern merchants. The Castilian merchant and financier, Simon Ruiz of Medina del Campo (1525-1597) received over 50,000 letters in the three decades after 1558, a rate of nearly five letters a day, and he appears to have kept nearly every one.[17] In one of the more popular treatises on business of the seventeenth century, *Le Parfait Negociant* (1675), Jacques Savary advised merchants to hold on to copies of all the letters that they sent and received, both to provide a record of their activities but also to protect themselves in the event of a lawsuit.[18]

European merchants dedicated considerable time to the deliberate copying and rearranging of their records, in order to create a usable informational resource available for future consultation. The various accounting techniques that they developed, including double-entry bookkeeping, were partly designed to provide an accurate view of profit and loss, something that was not discernible from the undifferentiated written residue of day-to-day

[17] Henri Lapeyre, *Une famille de marchands: Les Ruiz* (Paris: Librairie Armand Colin, 1955); Felipe Ruiz Martin, *Pequeño capitalismo, gran capitalismo: Simón Ruiz y sus negocios en Florencia* (Barcelona: Critica, 1990).
[18] Jacques Savary, *Le Parfait Négociant* (1675), ed. Édouard Richard (Geneva: Droz, 2011).

activity. They also served legal and moral functions, protecting the merchant in case of lawsuits, but also acting as a tool to establish the moral probity of the merchant, providing a reckoning of his activity at a time when there was significant residual suspicion of the profession. And, most importantly, for our purposes here, it was a method to cope with the *copiae* of commercial and mercantile paper, providing a repository for externalizing memory that would then be accessible for future retrieval. Thus accounting is one of the many examples we see in early modern Europe of second-order reprocessing of information, something that the availability of paper simultaneously made absolutely necessary and immeasurably easier. Merchant journals and account books recorded an enormous variety of information: details on their transactions, to be sure, but also tariff and exchange rates, price lists, transport schedules and costs, the rates and terms of maritime insurance, the rates for customs and tolls, the contents of catalogs. Recording the many details of one's business activity on paper preserved an inscribed memory of it, but also rendered this information subject to subsequent reordering, which was almost always necessary to make it clear, legible and usable.

The paper records kept by merchants were diverse, in both intent and in format. The most basic were the *ricordanze*, generally a roughly chronological list of transactions, and the *memoriale*, which usually resembled a ledger, divided between inflows and outflows. In practice, merchants often supplemented these two basic books with additional record-keeping mechanisms. These might include a cashbook, an inventory of product, secret books (*libri segreti*) tracking the details of contracts and the affairs of associates, and the waste book recording miscellaneous information. Such books tended to be chronological and numbered with a new book picking up where the last one left off. While it had been typical for medieval merchants to keep their accounts and maintain their records on loose-leaf quires of paper, which

they would subsequently bind together, by the sixteenth century it became common for merchants to purchase pre-bound, blank notebooks, which could be purchased at apothecaries and stationers' offices.

All of this scribbling amounted to an enormous volumes of paperwork. Come the sixteenth century, the demands of trade, and especially trade with international dimensions, demanded the recording of, and recourse to, a great range and volume of information: tariffs, exchange rates, price lists, transport costs and schedules, the rates and terms of maritime insurance, customs and toll costs and procedures – these are the particulars that made their way into the account books and merchant journals. All the incumbent writing was tiring and tiresome. It was thus the youthful apprentices in merchant companies and banking offices who were often assigned the writing tasks. In 1509, Giovanni di Francesco Morelli, a Florentine merchant recently arrived in Lisbon wrote home that 'one spends all day and half the night writing in the writing room, so much work is required…I am buried in work, yet I shall go on doing the best I can.'[19]

The admonition to keep ample records was a commonplace in the many financial manuals published in this period. In his wildly popular seventeenth-century *Le Parfait Negociant*, Jacques Savary insists on the importance of keeping one's books in good order; he actually advises that a vigilant merchant should keep as many as nine separate books "in order to have always one's affairs before one's eyes." [20] Implicit here is the widely shared attitude that more records should be kept rather than fewer. Erring on the side of greater volumes of paper was expressly recommended by Peri in *Il negotiante*: "one does not want to be too brief in one's

[19] Quoted in Marco Spallanzani, *Mercanti fiorentini nell'Asia portoghese (1500-1525)* (Florence, Edizioni SPES, 1997), 42-3.
[20] Jacques Savary, *Le Parfait Négociant*. 1675. Ed. Édouard Richard. (Geneva: Droz, 2011), 297: 'pour avoir toujours leurs affaires devant les yeux.'

entries, it being better to add a few extra words than to omit every necessary thing, and it appears to me that one can adapt for the scribe that which they say about notaries: *Notarius verbosus non est reprehendendus*."[21] It was a maxim that found general application across early modern Europe and this 'verbose' recordkeeping meant that merchants, like so many others in this age, found themselves engaged in vast record-keeping operations, forcing them to be information managers, among their other tasks.

From notaries to secretaries

The *notarius verbosus* became a paradigmatic figure of this age of obsessive scribbling, appearing in all sorts of contexts. In some cases, he occupied a formal office within an institution that had embraced constant writing as an essential feature of its operation. Bureaucracies (literally "rule by the desk", another invention of the early modern period), along with an assortment of institutions and the notaries, secretaries and chancellors who staffed them, introduced methods of filing, systems of documentary classification, and finding aids such as indices, keywords, and chronological and geographical tags. Documents were often bound with like documents, according to a great range of identifiers, and, in some chanceries, were copied so that they could be categorized according to multiple identifying elements. Of course, the spaces dedicated to these purposes also expanded, as the archives of early modern states, churches and trading houses expanded to meet the increased volume of documentation.

The "paper state", Peter Burke has suggested, was an invention of early modern Europe.[22] The emergence of the modern state is one of the staples of the historiography of the

[21] Peri, *Il negotiante*, 79.
[22] Peter Burke, 'Communication,' in Ulinka Rublack, ed., *A Concise Companion to History* (Oxford: Oxford University Press, 2011), 157-176, here 165.

early modern period, and one of the most obvious measures of its emergence was the amount of paper that early modern states produced. The institutional transactions and processes of daily governance were increasingly mediated by through the circulation of paper instruments, above all in the form of correspondence among the agents of state authority. Modern forms of government are impossible without writing, and government chanceries were among the early modern world's most voracious consumers of paper. Of course the Middle Ages had accorded authority to the written word and we can point to examples of medieval polities in which the identity and exercise of political power were deeply linked to the production and employment of written documents: the extensive bureaucracy of the medieval papal curia and the written government of post-Norman Conquest England certainly come to mind.[23] But these entities did not betray the ready recourse to writing and paper that we can see in the late medieval city-states of Italy and the Low Countries. The records of a "written state" like England in the High Middle Ages would be dwarfed by those produced by even a small Italian state in the Renaissance.

The emergence of the "paper state" in early modern Europe meant that sovereign bodies became preoccupied with the mechanisms by which their authority was projected on paper and with oversight of the institutions that generated this documentary flow. In addition to being rooted in the soundness of their claims to sovereignty and their capacity to project violence, the effective authority of these "paper princes", as Meghan Williams has recently labeled them, was also premised on the comprehensiveness with which the state could be expressed in and encompassed by paper instruments.[24]

[23] See Michael Clanchy, *From Memory to Written Record. England, 1066-1307*, 3rd ed. (Oxford: Blackwell, 2013, c1979).
[24] See Williams' project at https://www.paperprinces.org/.

The commitment to daily writing as an essential facet of everyday governance and the corresponding employment of what Isabella Lazzarini has called "professionals of written communication", along with the compulsion to preserve documentation that recorded the daily tasks of government and not just statutory material such as treaties, land grants, and privileges, made the state a bureaucratic entity, perhaps the bureaucracy *par excellence*.[25] This meant that individuals with a new skill set were required for the business of government. This is why I have elsewhere called the early modern period an "age of secretaries" in the realm of statecraft.[26] It witnessed a shift from the notarial culture of the Middle Ages, where a premium was placed on the recording and copying of relatively small numbers of written instruments and where an essential political and social role, to a secretarial culture, where the production, storing and circulation of large volumes of paper documents required the intervention of secretaries.[27] Secretaries were responsible both for the generation of documentary *copia*, and then subsequently for coping with it; in this regard, they were the early modern information managers *par excellence*. The many early modern treatises on the figure and role of the secretary defined him by his relationship with the "papers" of state and the proper functioning of the state depended on his careful supervision of them. The *arte* of the secretary was his shepherding of the records of state and other institutions, and the most valuable and effective secretaries were those who were the virtuosi of this world of paper. Angelo Ingegneri, in a 1592 treatise on the secretary, wrote that the responsibilities of the secretary comprised not only the ability to

[25] Isabella Lazzarini, *Communication and Conflict. Italian Diplomacy in the Early Renaissance, 1350-1520* (Oxford: Oxford University Press, 2015), 51.
[26] Paul Dover, "Introduction: the Age of Secretaries", in Dover, ed., *Secretaries and Statecraft in the Early Modern World* (Edinburgh: Edinburgh University Press, 2016).
[27] This bifurcation is not, of course, always a neat one. See, for example, the excellent treatment of the many roles assumed by notaries in early modern Rome by Laurie Nussdorfer: *Brokers of Public Trust: Notaries in Early Modern Rome* (Baltimore: Johns Hopkins University Press, 2009).

compose letters of many sorts (according to the demands of the prince), but also extended to overseeing their preservation. Ingegneri thus includes example of the sorts of letters the secretary might be expected to write but also detailed instructions on how to maintain a register of letters, on how to store these letters, and how to construct alphabetical indices so that he can subsequently search through the records that have accumulated. All of this second-order handling of documents became essential when the secretary insists on systematic documentary preservation: "I consider it better to preserve every piece of writing, no matter how useless, than to throw away anything about which one had a shred of doubt, which might at one time appear a trifle, rather than a necessity."[28] It is not difficult to envision how such an approach would soon lead to untamable masses of paper, and compel attendant attempts to store and organize them.

The age of secretaries came about in part because of a fundamental change in the sorts of documents that the state produced and oversaw. To generalize grossly, the documents found in medieval archives were chiefly *Akten*: decrees, contracts or statutes. As Randy Head's forthcoming study of early modern archives has shown, medieval archives tended to be *Archivia*, treasuries that held a reasonably small number of important documents which chiefly intended to memorialize: to confirm ownership, office or legal standing.[29] *Archivia* were chiefly what archival historians call the sedimentation archives. It was not uncommon, well into the early modern period, for such *Akten* to be recorded on parchment, an indication of their importance and perceived timelessness. Such items were supplemented in the early modern archive with an effluence of *Urkunden*, documents that were constituents of active registers, accumulating in

[28] *Del Buon Segretario Libri Tre di Angelo Ingegneri* (Rome: Guglielmo Faciotto, 1594): "io stimerò sempre meglio il serbar tutte le scritture, quqntunque inutile, ch'el gettarne alcuna; della quale s'habbia punt di dubbio, che à qualche tempo ne possa venir capriccio, non che necessità."
[29] Randolph Head, *Making Archives in Early Modern Europe: Proof, Information and Political Record-Keeping, 1400-1700* (Cambridge: Cambridge University Press, forthcoming).

large volumes and representing not moments in time, records of ownership or moments of precedent, but the daily, active tasks of governing, usually in the form of epistolary correspondence.[30] They were a record of the quotidian, an ongoing snapshot of the business of government, and almost always in paper form. A large share of these *Urkunden* were epistolary, representing an ongoing record of the communication and flows of authority and sovereignty between the metropole and the peripheries. Such documents gathered in enormous quantities in the expanding archives of early modern states, one important (and measurable) manifestation of the much-talked-about "rise of the modern state." Their production involved the generation of intermediate or rough drafts of documents, as well as duplicates copied into multiple files and registers: a single act or epistle might involve the generation of much more paper than was needed for the final version of the document alone. To an unprecedented degree, early modern statesmen engaged in what I like to call "the politics of inscription", a commitment to written government that marked an intensification of trends that Jack Goody had identified for a far earlier period: "the capacity to communicate at a distance, to store information in files, and to…depersonalize interaction."[31] In a supposed "age of print", the historical evidence from political life evinces practices that invited and demanded the filling of blank paper spaces with ink, leading to a bewildering profusion of manuscript pages.

This documentary hoard, among other things, in time compelled the creation of archives (as opposed to *Archivia*) to accommodate it. These archival bodies transfigured the state in accumulating files, boxes, and bags of paper, forming a written core that was perhaps the ultimate expression of the emergent "paper princes." Randy Head has described the increasingly

[30] On this distinction, see Gian Maria Varanini, "Public Written Records", in Andrea Gamberini and Isabella Lazzarini (eds.), *The Italian Renaissance State* (Oxford: Oxford University Press, 2012), 385-40.
[31] Jack Goody, *The Logic of Writing and the Organization of Society*. (Cambridge: Cambridge University Press, 1986), 89.

prevalent commitment to an ethic of archiving as an essential element of "knowing like a state."[32] For the princes and governing bodies of European polities these burgeoning came to serve multiple ends: as institutional memory, bulwarks for political legitimacy, sources for planning for the future, and, increasingly, informational databases for the tasks of everyday governance. They were created and expanded as tools of information management, but, like many similar endeavors in early modern Europe, they not only sought to cope with *copia*, but also served as engines of their very creation.

As mentioned above, a large proportion of this documentation was in the form of letters. In my book, I suggest that one of the most important factors driving the great increase in written records, not just in government but across European society, was the eagerness to write letters; indeed, that Europe became what I have called a "letterocracy", a culture of letter-writing that was unprecedented in European history. Boutier, Landi and Rouchon have, in fact, argued that early modern Europe saw an "epistolary revolution."[33] Effective letter writing had been central the *ars dictaminis* and *ars mercatoria* of the Middle Ages. Merchants, in particular, had regarded effective letter-writing as essential to their business. But in early modern Europe, the scale of correspondence on paper ramped up exponentially. Letter-writing was a recurring concern of Renaissance humanism, and the likes of Erasmus and Justus Lipsius (1547-1606) in the sixteenth century wrote about the manifold social functions of epistles and the role they played in creating personal connections and forging virtual communities across long distances.

Gouvernement épistolaire, as it has been termed by Boutier, Dewerpe and Nordman, was pursued by early modern polities large and small. The enhanced role of the exchange of

[32] Randy Head, "Knowing Like a State: the Transformation of Political Knowledge in Swiss Archives, 1450-1770." *The Journal of Modern History* 75.4 (December 2003), 745-782.
[33] Jean Boutier, Sandro Landi and Olivier Rouchon, *Politique par correspondence. Les usages politiques de la lettre en Italie (XIVe-XVIIIe siècle)* (Rennes: Presses universitaires de Rennes, 2009).

correspondence between the core and agents on the peripheries coincided with, and was reinforced by, the establishment of across Europe of courts in fixed locales in what amounted to capital cities. In these locales, institutions tasked with managing this flow of paper, such as secretariats, chanceries and archives, took root or expanded their footprints. The most important medial form driving this culture of correspondence was the *littera clausa*, a dated letter from an identified sender and intended for a specific recipient, the form of which was based on the model of the Italian chancery letter. There was a shared feeling among literate men and women in Europe that such *litterae clausae*, containing news and information, spanning the private and public, the personal and the political, the minute and the general, were particularly effective means of keeping tabs on the surrounding reality They were a tool for understanding, acting in, and, ultimately, controlling the world in which they lived. The regular exchange of letters became an expectation, especially among certain communities, such as resident diplomats, whose office required that they write letters nearly daily. State chanceries became bee-hives of letter production and the great increase in state records accompanying the rise of the modern state was chiefly accounted for by this correspondence.

The copia *of description*

One of the most important factors in the generation of early modern *copia* was a general predilection among the writing classes toward description. This inclination, rooted in an expanding embrace of empirical attitudes, straddled many areas of human activity. The habits of mind and hands that encouraged the inscription of reality onto the blank space of paper were competencies and *mentalités* that spanned across the political, economic, and cultural spheres. As I have suggested already, the prominence of description in political documents, especially in

the huge quantities of letters written by early modern political actors, greatly increased the overall scope and volume of documentation. The letters that greased the wheels of early modern governance, and coursed through its expanded bureaucracies, were in large measure descriptive, recounting the day-to-day business of governing. Regular diplomatic dispatches providing situation reports from abroad, censuses carried out by agents of the state, land and tax assessments, surveys carried out to ascertain knowledge about one's realm or the New World, and the reports of provincial governors, *intendants*, and security officials: all of these supplied information that was essentially descriptive in nature. This commitment to inscribing descriptions on paper, reflected the widely shared commitment to preserve and thus establish data banks of precedent which could serve as a record of governance and a basis for subsequent decision-making.

But this inclination toward description in the practice of governance and statecraft was, in fact, widely shared among literate Europeans of many stripes. Similar dynamics, embracing a commitment to description and inscription, were evident in arenas outside politics: in the practice of natural philosophers, scholars, merchants, and others. For naturalists, both the boundless theater of nature and the new abundance of ancient texts now available in print provided a nearly bottomless reservoir of what in our age we would call data: natural philosophers in this period were both observers *and* philologers.[34] Brian Ogilvie has described the natural history of the sixteenth century as a 'science of describing', while Antonio Barrera-Osorio has suggested that the encounter with the Atlantic world fostered the development of one key element of modern

[34] See, especially, the essays in Gianna Pomata and Nancy Siraisi, eds., Historia. *Empiricism and Erudition in Early Modern Europe* (Cambridge, MA: MIT Press, 2005).

epistemological practices: empirical observation.[35] While we should not overstate the degree to which early modern natural philosophers embraced an experimental approach to establishing knowledge about the world, it is indisputable that a commitment to observation of reality and a corresponding desire to inscribe that reality became widespread. Knowledge of the particulars collected in this daily practice of observation and reading, which were recorded (and then often copied and shared) on paper, became a first principle in many areas of scientific inquiry: astronomy, botany, and zoology among them.

The foundational role of particulars as the raw material for understanding nature was paralleled in other areas of knowledge that privileged evidence. Practitioners of jurisprudence and medicine, for example, recorded enormous quantities of particulars in their case records, establishing what we would call "databases" of practice. The recourse to paper allowed the preservation of these observational particulars, and, as a matter of course, reams upon reams of paper accumulated. For lawyers and physicians, as for statesmen and naturalists, information management became an occupational necessity.

The promise and perils of such *copia* can be seen in developments in the field of medicine. Beginning the sixteenth century, physicians gathered empirical patient histories in enormous numbers, from the experience of their own practice, from interfaces with colleagues and correspondents, and from copious reading from medical literature ancient and contemporary. These *observationes*, as they were broadly known, were in most cases assembled by medical practitioners rather than by scholars of the medical arts in universities. These were men, after all, who were deeply concerned on a daily basis with particulars. *Observationes* were gathered in

[35] Brian Ogilvie, *The science of describing: natural history in Renaissance Europe* (Chicago: University of Chicago Press, 2005); Antonio Barrera-Osorio, *Experiencing Nature: The Spanish-American Empire and the Early Scientific Revolution* (Austin, TX: University of Texas Press, 2006), 1.

numbers that testify to how a commitment to empiricism could generate *copiae*. The early modern period saw the publication of numerous printed collections of these medical *observationes*. Theoretically, at least, there was no limit to how expansive such collections could become. By the mid-seventeenth century, we see their gargantuan proprtions. The 'father of German surgery', Wilhelm Fabry von Hilden (Latinized Fabricius Hildanus) (1560-1634), published some six *centuriae* of his *Observationes et curationes chirurgicae*, which brought together six decades-worth of medical particulars, gathered from 348 distinct named colleagues. Hildanus' *Observationes*, for all their pretensions to comprehensiveness, was also an exercise in commonplacing, organized into subjects chosen by Hildanus himself. It was a work, therefore, that aspired to full coverage but also provide shortcuts to medical knowledge. [36]

The Italian naturalist Ulisse Androvandi (1552-1605) pursued *copia* in both his writing about nature and in the accumulation of physical objects. In his collection, he gathered together over 11,000 distinct animals, plants and minerals, along with several thousand pressed specimens. These items included the everyday alongside the exotic. His compendium in effect sought to embody nature in its totality, and was the basis of Europe's first real public science museum, which opened in Bologna in 1617. Aldrovandi's writings betrayed similar pretensions toward comprehensiveness. He composed an alphabetic manuscript encyclopedia, based on his compulsive and complicated note taking and sorting practices, entitled the *Pandechion Epistemonicon*, which stretch out to an astonishing 83 volumes, the contents of which Adrovandi himself described as a forest.[37]

[36] On medical *observationes*, see the articles by Gianna Pomata: 'Sharing Cases: the *Observationes* in Early Modern Medicine.' *Early Science and Medicine* 15.3 (2010), 193-236; and 'Observation Rising: Birth of an Epistemic Genre, 1500-1650,' in Lorraine Daston and Elizabeth Lunbeck, eds., *Histories of Scientific Observation* (Chicago: University of Chicago Press, 2011), 45-80.
[37] Fabian Kraemer, 'Ulisse Aldrovandi's *Pandechion Epistemonicon* and the Use of Paper Technology in Renaisance Natural History.' *Science and Medicine* 19 (2014), 398-423.

What is interesting about Aldrovandi's encyclopedic project for our purposes here is that, like the *Observationes* of Hildanus, it was designed to supply useful shortcuts for the reader to locate the information she or he was looking for, but over time, in an age that ended toward *copia*, it became tremendously unwieldy in its own right. The creation of *copia* rooted in practices of broad reading and empirical observation, was essential to early modern scholarship and natural philosophy. Early modern European scholars, naturalists, doctors and lawyers, among others, thus found themselves amid a paradox: the tension between *copia* and *brevitas*. The accumulation of texts, description, data and scholarly exchanges within the early modern *respublica litterae* created what Lars Ekedahl has described as "learned profusion."[38] In Renaissance scholarship, only *copia* could genuinely lead to advances in knowledge. But by itself and unmediated, this *copia* could be confusing and dislocating.

But for the sake of communicating knowledge and making it legible to oneself and to others, *brevitas* was often required. As the examples above suggest, this was often a difficult balance to achieve. Francis Bacon, in describing the notebooks that he kept, referenced on multiple occasions the tension he perceived between them. When using headings under which to organize the oceans of particulars, Bacon suggested 'infinity is at once cut off, and the memory has not so far to range.' Brevity may have been the soul of wit, but a modicum of brevity was also essential for navigating the early modern thicket of particulars.

The abundance of books

The *copia* of the early modern period familiar to most is the great abundance of printed material made possible by Gutenberg's invention. The enormous expansion in

[38] Nild Ekedahl, "Collecting flowers. Linnaean method and the humanist art of reading." *Acta Universitatis Upsaliensis Symbolae Botanicae Upsalienses* 33.3 (2005), 47-59.

the number of books readily available was far and away the most important change effected by the printing press. It was a boon, to be sure, but it was also generated an enduring sense of anxiety, prompting the adoption of new reading techniques, book formats, and classifications of knowledge. There has been significant recent debate about Elizabeth Eisenstein's claims for the impact of the print revolution, especially that print created 'fixity' by which textual stability and authorial attribution were made secure. This has been an interesting and salutary discussion, but it skirts one inescapable, and genuinely revolutionary, new reality ushered in by the printing press: a quantum leap in the quantity, diversity and availability of books in early modern European society. It was nothing less than a sea change.

The availability of printed books and written items of all sorts effected a shift toward extensive, rather than intensive, reading. The finite number of books available to medieval thinkers meant that intimate familiarity with a small number of texts, even to the point of committing them to memory, was commonplace. This limited menu of titles exploded with the advent of print. The sheer number and range of books available greatly exceeded the capacity of an individual to encompass. Books were now stacked away in cabinets and closets, or on the lengthening shelves of libraries, both personal and institutional. Books were *exempla* in the Middle Ages, with print they became constituents of *copia*.

For a medieval mind like that of Francesco Petrarch (1304-1374), an abundance of books might be an obstacle to learning, instead of a gateway. In his treatise *De remediis utriusque fortunae*, Petrarch imagines a conversation between his genius and

his critical reason in which they discuss the various implications of his having accumulated a great quantity of books:

> *Petrarch:* I have a great abundance of books.
>
> *Critical Reason:* Yes, and a great abundance of hard work and a great lack of repose. You have to keep your mind marching in all directions, and to overload your memory. Books have led some to learning, and others to madness, when they swallow more than they can digest. In the mind, as in the body, indigestion does more harm than hunger; food and books alike must be used according to the constitution, and what is little enough for one is too much for another…
>
> … *Pet:* I have books which help me in my studies.
>
> *Crit:* Take care that they do not prove a hindrance. Many a general has been beaten by having too many troops. If books came in like recruits one would not turn them away, but would stow them in proper quarters, and use the best of them, taking care not to bring up a force too soon which would be more useful on another occasion.
>
> *Pet:* I have a great variety of books.
>
> *Crit:* A variety of paths will often deceive the traveler.
>
> *Pet:* I have collected a number of fine books.
>
> *Crit:* To gain glory by means of books you must not only possess them but know them; their lodging must be in your brain and not on the book-shelf.[39]

Petrarch was expressing the fear that, given the number of books he had acquired (in a pre-print world), their abundance would prove a burden and preclude him from getting to know them intimately. With the advent of the printing press, anxious sentiments about the *copia librorum* were heard even more widely, but the calculus underlying the use of books gradually changed. All serious scholars in the early modern period were compelled to become bibliophiles, familiar with a great number and variety of books, rather than a select few to which they could assume regular access. Such bibliophilia required new tools and technologies to handle the resulting *copia*. More than ever before, scholars were textual wanderers rather than spelunkers,

[39] This translation from Charles Isaac Elton and Mary Augusta Elton, *The Great Book-Collectors* (London: Kegan Paul, 1893), 44-47.

moving across and between numerous texts rather than burrowing into a select, authoritative, few. They plundered texts, with a new premium placed on selection, navigation and excerption. The 'abundance of books' (or some familiar formulation) was often remarked upon by contemporaries. The English humanist Polydore Vergil (c. 1470-1555), was writing as early as the beginning of the sixteenth century that "Books in all disciplines have poured out to us so profusely from this invention that no work can possible remain wanting to anyone, however needy."[40] The prominent French humanist Henri Estienne (c. 1531-1598) in his work on the Frankfurt Book Fair, stressed how the printing press had made 'an abundance of books' (*copia librorum*) available 'to all the lands of the globe' and rescued the Muses from exile, giving them the strongest protection (*firmissimum praesidium*) against loss.[41] The Englishman Thomas Coryat (1577-1617), on visiting the Frankfurt Book Fair in 1611, similarly was struck by the "immeasurable wealth of books" that he found there. In his treatise of typography, published in 1608, Hieronymus Hornschuch declared that whereas before print only the rich could enjoy liberal studies, there was now 'such a great flood of books (*copia librorum*) on all subjects…that there will never in the future be any work that is out of the reach of even the most needy.'[42] The estimate provided in the British Library Incunabula Short Title catalog is of 9 million printed books in circulation before 1500. The output in the sixteenth century dwarfs this number – the Universal Short Title Catalog from the University of St. Andrews suggests at least 345,000 separate editions and over 180 million printed books. This was, without question, a quantitative revolution.

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[40] Polydore Vergil, *On Discovery*, ed. and trans. Brian P. Copenhaver. I Tatti Renaissance Library, 6 (Cambridge, MA: Harvard University Press, 2002), II.7.
[41] *The Frankfort Book Fair: The* Francofordiense Emporium *of Henri Estienne*, ed. James Westfall Thompson (Chicago: The Caxton Club, 1911), 172-173.
[42] Philip Gaskell and Patricia Bradford, eds., *Hornschuch's Orthotypographia* (Cambridge: The University Library, 1972), 4-5.

The flood of books, and the information that they contained, had repercussions that were practical, ergonomic and epistemological. This was a boon to many, but it also discomfited, and the abundance demanded responses. The shift to extensive, as opposed to intensive, reading, created the need for new categories of manuscript and printed items, and for what we might today call "search engines" to help readers located the books, and information within books, that they desired. One of the most tangible ways that the print revolution manifested itself was in expansion of both institutional and private libraries. Book ownership extended beyond university, monastic and princely collections, to offices, homes, and personal studies. The printing press made it possible, for the very first time, for a great many individuals to own their own books, but also to possess more books than they were able to read. The social profile of book owners also changed, with lawyers and doctors assembling collections as professional resources, nobles acquiring books as marks of prestige and learning, and princes growing their libraries as expressions of power and authority.

Countless examples of such libraries could be provided but here I will simply make reference to the vast personal library of the second son of Christopher Columbus, Don Hernando Colón (1488-1539). Hernando made the acquisition of a vast personal library his chief life concern and the so-called Biblioteca came to number over 15,000 volumes, and was staffed by full-time specialists. Hernando's library is especially interesting for our purposes because it was widely celebrated not only for its variety and expansiveness, but also for its systematic cataloging. Hernando personally took great interest in both of these aspects of his library, as evidenced by the extent, handwritten instructions he left for his compilers. His librarians compiled several different inventories of the contents of the library, organizing them according to a variety of mechanisms: by author, by subject, by place of publication, and a number of other

criteria. Hernando was deeply involved in the process of acquisition himself, traveling far and wide and drawing upon a network of acquaintances to build his collection. Fully 90% of his collection was printed. The full scale of his intent was laid out in a letter that he sent to the Holy Roman Emperor Charles V in 1536: "there should be in the kingdom a certain place where all the books of every branch of knowledge which treat of the Christian world and even outside of it should be collected…So that in time the library will come to possess all the books that can be obtained and all that is written can be reduced to alphabetical order in other books as states above to the end that each [visitor] may be easily instructed in what he wishes to know."[43] Hernando wanted both comprehensiveness, but also accessibility, through the provision of mechanisms that would help cope with the printed *copia*. It is telling that on his tomb, which he shares with his father in the cathedral in Seville, the escutcheon depicts four open books, each representing one of the four organizational categories in the chief catalog for his library: authors, subjects, epitomes and materials.

Library catalogs and inventories were thus a means of coping with the *copia* of books. But so too was the increasing number of print publications that sought to encompass the abundance, provide shortcuts to the reader, or distill the indigestible morass of books. The accretion of particulars led to the generation of works such as Conrad Gessner's *Bibliotheca universalis*, which was published in two volumes (of an envisioned three) in 1545 and 1548. His was an attempt to encompass all books in a single work, a sort of "Noah's Ark of the Renaissance."[44] The first volume described the format and content of over 10,000 distinct works,

[43] Quoted in William Sherman, 'A New World of Books: Hernando Colón and the *Biblioteca Colombina*', in Ann Blair and Anja-Silvia Goeing, eds., *For the Sake of Learning. Essays in Honor of Anthony Grafton* (Leiden: Brill, 2016), Vol I, 404-414, here 412. See also the recent biography of Hernando, which focuses especially on his library: Edward Wilson-Lee, *The Catalogue of Shipwrecked Books: Young Columbus and the Quest for a Universal Library* (London: William Collins, 2018).
[44] Laurent Pinon, *Livres de zoologie de la Renaissance: une anthologie (1450-1700)* (Paris: Klincksieck, 1995), 34.

presented in alphabetical order by author. In the second volume, Gessner (1516-1565) sought to organize the knowledge within these books, employing key words, akin to the *loci communes* of Erasmus, to do so. These *loci* he organized into a tree of 21 classifications. Gessner genuinely sought to include every book, scouring book repositories and consulting acquaintances to locate them. "I scorn no work", he declared. Among the resources he consulted were a range of manuscript and printed inventories and catalogs, making his *Bibliotheca* a sort of sixteenth-century union catalog. Gessner's project was thus an effort both to engage in the familiar twin impulses in response to abundance: encompassing and distillation.[45] It was an example of an increasingly common item in early modern culture, a "book about books." As a means of accommodation to a new world of abundant books, such books took a variety of forms: encyclopedias, printed commonplace books, reference books intended for both narrow and general audiences, epitomes that presented large works in shortened form, commonplace books published to provide shortcuts to knowledge drawn from disparate sources, as well as literature guides and how-to books that condensed information gathered from a large numbers of texts. Such genres did not exist in the Middle Ages, because there was no need for them. These various endeavors, undertaken in the face of "information overload", have been the subject of the exhaustive and insightful study by Ann Blair in her book *Too Much to Know*.

The combination of universality and classification recurs in the work of Gabriel Naudé (1600-1653), who oversaw the library of Cardinal Mazarin (1602-1661), which he hoped would become the envy of Europe, and was also the author of the treatise *Advis pour dresser une*

[45] On Gessner' *Bibliotheca universalis*, see Helmut Zedelmaier, "Suchen und Finden vor Google: Zur Metadatenproduktion im 16.Jahrhundert", in Blair and Goeing, eds.. *For the Sake of Learning*, Vol. I, 423-440; Hans Wellisch, "How to make an index – 16th century style: Conrad Gessner on Indexes and Catalogs." *International Classification* 8.1 (1981), 10-15; as well as Blair, *Too Much to Know*.

bibliothèque (1627), in which he imagined the library as a repository of all knowledge.[46] In both cases, the information in the library needed to be subjected to systematic organization – the library was thus a body that aimed for comprehensiveness, but that was equipped with tools for navigation that reflected the order of knowledge. Efforts like those of Gessner and Naudé underline the challenges of universalizing projects in the expansive world of print. Librarians, catalogers and scholars were compelled to organize and classify the knowledge that resided in the abundance of printed books. This was the beginning of the science of bibliography, a response to the role that books played in the general "crisis of classification" that afflicted early modern Europe amid its information explosion. Catalogs, book lists, bibliographies, and disciplinary categorizations were among the results. They were part of what Roger Chartier has called "the new order of books".[47] While what medieval catalogs there were chiefly acted as inventories, as one would expect them to when there were relatively few books to account for, early modern catalogs were designed for the purposes of search and recall. Print had expanded collections such that their contents could not be recalled by a single individual; catalogs were thus a response to the limits of human memory and a means of rendering printed knowledge accessible. As Thomas Hyde (1636-1703) declared in his preface to the catalog of Oxford's Bodleian Library (1674), after noting the great size of his undertaking: 'if they examine this catalogue they will see that diversity at once expressed and reconciled.'[48]

[46] Gabriel Naudé, *Advis pour dresser une bibliothèque* (Paris: Rolet le Duc, 1644). On Naudé's work as a librarian, see Estelle Boeuf, *La bibliothèque parisienne de Gabriel Naudé en 1630*. Geneva: Droz, 2007).
[47] Roger Chartier, *The Order of Books. Readers, Authors and Libraries in Europe Between the 14th and 18th Centuries* (Stanford, CA: Stanford University Press, 1994).
[48] E. de Rijk, "Thomas Hyde, Julia Pettee and the Development of Cataloging Principles; with a Translation of Hyde's 1674 Preface to the Reader." *Cataloging & Classification Quarterly* 14.2 (2010), 31-62, here 52. The first printed catalog of the Bodleian, published in 1605, was organized first according to subject matter, then by size, and only then by the names of the authors.

We can also draw parallels between the various efforts at cataloging books and the proliferation of paratextual features that appeared *within* books such as tables of content, indices, marginal commentaries and glossaries. As time passed, it was increasingly common for these to be organized alphabetically. There was some resistance to alphabetization (which for some time was rarely applied past the second letter), both because the sorting and indexing of information had long carried moral associations, something alphabetization was without; and because alphabetization requires a lot of work. But its utility ultimately won out inside books, including dictionaries, encyclopedias, and other works that aggregated information. Already in 1549, Gessner, in the *Bibliotheca universalis*, was claiming that the 'divine invention' of indexing was second only to printing as an aid to scholars. Gessner wrote that 'it seems to me that, life being so short, indexes to books should be considered as absolutely necessary by those who are engaged in a variety of studies.'[49] Alphabetization, as a means of information managing, was gradually embraced elsewhere, for example, by merchants in their record-keeping and by scholars in their commonplacing. It should be noted that alphabetization necessarily rejects hierarchies of knowledge as it organizes, implementing instead a morally neutral order. This tension, between efficient information retrieval on the one hand, and an integrated knowledge structure reflecting intellectual and moral priorities, is one that very much remains with us today.

Printed books were also far more likely to be systematically paginated, and divided into sections and chapters. We take such features in books for granted, but they were relatively rare before the mainstreaming of print. Many of these were designed to help navigate through the information inside the book, as well as facilitate nonlinear reading. Peter Stallybrass has provocatively suggested that we might well see the advent of the printing press as much as the

[49] Quoted in Hans Wellisch, "How to make an index", 10.

culmination of the navigable book as the dislodgment of a culture of manuscript.[50] But these steps in the organization of books are fundamentally steps in information management.

Exemplary of these changes is the organization of the Bible. Holy Scripture, given its length and need to consult it regularly, especially cried out for organization to facilitate its use, which nearly always took the form of non-continuous reading. Medieval friars applied numbering to its books and chapters but it was, tellingly, not until the sixteenth century that a broadly accepted scheme of book, chapter and verse emerged.[51] The first printed Bible to number its verses was the Latin translation by Santi Pagnini, published in 1528.[52] The French printer-scholar Robert Estienne (1503-1559) published a concordance in 1555 that introduced the current numbering system. Soon after, Jean Trebon in Lyons printed the Bible in paragraphs. The first English Bible with verse numbers was the Geneva Bible of 1560. The first mention of the term 'chapter and verse' was in Matthew Foxe's *Book of the Martyrs*, published in 1563. Such biblical segmentation, designed to allow easy and effective discontinuous reading of the Scriptures, was mirrored in the presentation of other texts, which were also subject to systematic organization. Publishers began to present the most popular works of antiquity in books and chapters – Robert Estienne's son, Henri, assigned the works of Plato and Plutarch pagination and numbering schemes that remain in use today.

The Abundance of News

[50] Peter Stallybrass, 'Books and Scrolls: Navigating the Bible', in Jennifer Andersen and Elizabeth Sauer, eds., *Books and Readers in Early Modern England: Material Studies* (Philadelphia: University of Pennsylvania Press, 2002), 42-79, here 44.
[51] M.T. Clanchy, 'Parchment and Paper,' 201.
[52] See Paul Grendler, 'Italian Biblical Humanism and the Papacy, 1515-1535' in Erika Rummell, ed., *Biblical Humanism and Scholasticism in the Age of Erasmus* (Leiden: Brill, 2008), 227-276, here 245.

Andrew Pettegree has recently suggested that the early modern period saw the "invention of news." Over the course of these centuries, the news in circulation was another brand of information that increased in both abundance and variety. One of the byproducts of the activities of the state revolving around the creation and circulation of paper instruments was the dissemination of political news, ideas and opinions among a broader public. We can see evidence of this in the enormous abundance and popularity of news pamphlets, first in manuscript and then in print. These products clearly had their roots in the descriptive letters of merchants and ambassadors. In fact, many of these early modern publications were sources in the letters of ambassadors or other eyewitnesses. In some cases, they contained transcriptions of actual diplomatic letters. At first, these were in manuscript form, but by the end of the second half of the sixteenth century, there was a growing market for print publication of news pamphlets, especially in Italy and in the Netherlands, coinciding with the beginning of the Dutch Revolt against Spain. It was becoming customary for major political events and military encounters to prompt printers to churn out rapidly produced, inexpensive news pamphlets providing readers with breathless accounts. Such items opened up a world of news to those who would otherwise not be privy to it, creating new circles of the "politically informed." At first, the clientele for such items was chiefly merchants, whose business invariably benefited from access to timely information. But by the second half of the sixteenth century, it is evident that an audience for political news had emerged beyond merely those involved in international commerce. The availability of news enhanced the appetite for the latest and most sensational reports. Such a pattern had already been evident in the mid-sixteenth century, in the wake of the revolt of Martin Luther (1483-1546), with the immense popularity and voluminous publication of *Flugschriften*. These brief, cheap installments of Lutheran agitprop circulated in the tens of thousands,

testifying to the great demand among the German public for the latest (admittedly slanted) news about Luther and his antagonists. By the beginning of the next century, there was a genuine market for the latest news in print. Such written instruments were especially effective vectors for spreading news about far-off events, as they were invariably shared among a circle of readers and acquaintances beyond the purchaser himself. They were often generators of further written and oral communication, and grist for the rumor mill. They served as accelerants, adding layers and voices to that occurred in Europe's streets, inns, homes, and fields. The creation of this "culture of news" bears much in common with the descriptive information gathering that came to typify Renaissance diplomacy. Resident ambassadors and other informants sought to satisfy the growing expectation among princes that they would be furnished with intelligence and news of the latest international developments. By the seventeenth century, there was a widely shared appetite among the reading public for news from afar. As Brian Dooley has suggested: "there is no denying that already in the early modern period people began to formulate in their minds a concept of the world shared with others, within the same time and space and within a basically secular context…The new means of communication made possible the sharing of a perceived present across small, medium and large distances, at the various levels of family, neighborhood, village and wider world, encouraging a critical apprehension of events."[53] The insistence on receiving the most recent *novelle*, *nouvelles*, or *zeitungen*, which had been of paramount importance in the practice of merchants and diplomats, expanded to a significant sector of the general public. Timeliness in news became a desideratum in *avvisi*, gazettes and newsletters, just as they had been in the letters of merchants and ambassadors. Newssheet producers often boasted that their publications included the "freshest" news. The circulation of printed news was an

[53] Brian Dooley, 'Introduction', in *The Dissemination*, pp. 2-3.

important factor in the creation of a politically informed reading public, eager for the very latest newssheets, pamphlets, and, by the end of the seventeenth century, newspapers.

It should be noted that the creation of these instruments was more than just an exercise in copying for those who compiled them. It also required discernment, selection and excerpting, for these newsletters were assembled from a much larger pool of news, gossip and written material. The thickening webs of communication and correspondence of the early modern world meant that for many there was "too much to know" about the news. The authors of the newsletters had to determine that which was newsworthy, timely, and appealing to their audience. These newssheets were, in many ways, an informed exercise in identifying what was worth noting from their 'reading' of the information before them. We might add, therefore, the humanistic tradition of *copia* to commercial writing and diplomatic information-gathering as formative influences in the creation of these newsletters. The abundance of news, like the abundance of books and of scientific observations, was subject to excerpting, with only the genuinely useful and interesting retained. Thus we have publications such as the *Mercurius gallobelgicus*, an agglomeration of international news published semi-annually in Frankfurt and Cologne by a Catholic refugee from Holland from 1592 to 1635. It was a successful model, and the *Mercurius* was circulated widely. Publications such as these were gateways to newspapers, which began to appear in the middle of the seventeenth century.

Newspapers were, among other things, attempts at getting on top of the abundance of news and presenting it to an eager public in digestible form on a predictably periodic basis. The first newspapers (the best current argument is that the first genuine newspapers was published in Strasbourg in the first decade of the seventeenth century) were essentially printed versions of manuscript predecessors, packed with political happenings, dry and generally serious.

Newspapers took off in conjunction with the political and military upheavals of the mid-seventeenth century, such as the Thirty Years' War. By 1700, there were upwards of 200 newspapers published regularly, originating in 80 different locales. In Germany alone, which had a particularly thriving newspaper scene, 70 million individual copies of newspapers had been printed by the end of the seventeenth century. Such numbers indicate an eager market for up-to-date news among the literate public. In 1685, Kaspar Stieler published Europe's first book dedicated to the subject of newspapers, *Zeitungs Lust und Nutz*. In it he described how newspapers satisfied the hankering for the latest and greatest among its readers:

> They run after the new papers and can hardly wait for the day when these sheets are printed and put in circulation. For that reason, they hurry to the postal bureaus and newsstands, and time drags for them until they find out what the King of France, the Emperor, the Pope and the Sultan of Constantinople have done…One learns such things out of the newspapers, and not out of books…We honest men who are living in the world as it is today, need to understand the world of today, and neither Alexander, nor Caesar, nor Mohammed will help us if we want to be well-informed.[54]

Stieler's observations suggest a genuine appreciation of what we would call 'current affairs.' Most areas of Western Europe had daily newspapers by the year 1700 (the first one in England appeared in 1702), although it would take several decades before they became baked into the fabric of everyday life. The appearance of the newspaper is an indication that many of the features of information processing in early modern Europe were now also being applied to the "news." Once the news started circulating in bulk through the printed press, and was available to a purchasing public, news genuinely resembled a commodity. Cobbling together a great variety of stories, often unrelated to one another, news became what we might call "information." This information became a component of the everyday, the object of everyday conversation, and a shaper of public opinion. The availability of news spawned the expectation

[54] Quoted in Jeremy Popkin, 'New Perspectives on the Early Modern European Press', in Joop Koopmans, ed., *News and Politics in Early Modern Europe (1500-1800)* (Leuven: Peeters, 2005), 4.

for more news, another example of information generating the desire for more information. The info-lust that we have seen among diplomats, scholars and natural philosophers spread to include a growing reading public. What is more, there was an expectation of timeliness. Just as merchants and statesmen had expressed an expectation that the news they received would be "fresh", now a corresponding anticipation existed among the readers of the printed news. News was now cumulative, and there was interest in how stories might develop over time – episodes did not merely happen; they unfolded. Certain stories, therefore, garnered particular interest, and readers anxiously awaited to hear the latest update. The provision of news from afar also meant that there was unprecedented awareness among the public of events occurring a long way from home. This development helped to generate a new sense of simultaneity. It became commonplace for people other than statesmen and international merchants to be aware of affairs and information of which they had no first-hand knowledge. The early modern public, over time, became consumers of news, inhabiting a space in which they could expect to hear the latest information from abroad, and regarded themselves as participants in a political culture that extended beyond the courts and chanceries of Europe's governments. Asking the question "What news?", was an indication of a desire to participate in political life. Abraham Verhoeven (1575-1652), the Antwerp publisher of the Habsburg Low Countries' first newspaper, *Nieuwe Tijdinghen*, which appeared two to three times a month starting in the 1620s, declared that he intended it "for the contentment of such as do not desire to be ignorant of the occasion of the public affairs of the world." [55] The demand for timely information, and for reading it in accessible form, was now widely shared. There was a perceived need to know, and to know now,

[55] Paul Arblaster, '"Dat de Boecken Vrij Sullen Wesen'. Private Profit, Public Utility and Secrets of State in the Seventeenth-Century Habsburg Netherlands', in Koopmans, *News and Politics*, 79-95, here 86.

the important information about the affairs of the broader world, from among all its abundance and variety. We might consider the practices, therefore, a form of commonplacing reality.

Conclusion – commonplacing reality

I end this discussion with a figure from the end of the period in questions whose life in paper reflects many of the themes I have emphasized in the preceding pages. The philosopher and mathematician Gottfreid Leibniz (1646-1716) was a figure whose daily life was mediated by paper, and his experience betrayed the incumbent promise and pitfalls. Leibniz was a prolific correspondent in a great age of letter writing, maintaining epistolary connections with hundreds of individuals. He regularly lamented that the sheer volume of letters that he sent and received prevented him from attending to other concerns that needed his attention. Leibniz was also a committed note-taker – as they came to him, he would write his ideas on whatever piece of paper happened to be available. He did this so that he would be able to recall his insights, but would often have trouble locating this information when he needed it, because he did not commit himself to organizing his noted in real time. His commitment to sharing and recording information on paper was the source of confusion:

> I believe that at present I have more than thirty letters waiting for a reply, in which it is always necessary to write something more than just compliments. And beyond the duties of my offices, one owes time to the court and to one's friends. Moreover, thoughts sometimes occur to me that I am pleased to preserve, new books need to be looked at, it is necessary to have some information on current affairs. And apart from the learned, if those who know me knew that on top of all this I also indulged in algebra, they would find it strange. After having done something, I forget it almost entirely within a few months, and rather than searching for it amid a chaos of jottings that I do not have the leisure to arrange and mark with headings, I am obliged to do the work all over again.[56]

[56] This from a letter of 24 February 1693 to Guillaume François de l'Hospital, quoted in James O'Hara, '"A chaos of jottings that I do not have the leisure to arrange and mark with headings": Leibniz's manuscript papers and their repository,' in Hunter, *Archives of the Scientific Revolution*, 159-170, here 160.

Ironically, for all of the disorder that attended his own paper trail, Leibniz can be counted as among the founders of library science and classification. The commitment he demonstrated to developing systems for organizing institutional book collections did not extend to his own books and papers. Leibniz was often traveling and he insisted on keeping copies of virtually all of his papers: letters sent and received, to be sure, but also memos, reading notes, scholarly paper finished and unfinished, and countless documents of an administrative nature, such as account statements, lists of expenses, bills, certificates of credit, prescriptions for medicines, and other records. Like many of his contemporaries, Leibniz appears to have been extremely reluctant to throw any piece of paper away: it might prove useful in his many ventures, or in subsequently documenting his life. Even today, his extent papers exceed more than 200,000 manuscript pages. All this paper is exclusive of the many printed books in his library, which had been seeded by his father, who had been a professor of moral philosophy at the University of Leipzig. This personal collection would eventually grow to number several thousand volumes, although, ironically, as with his manuscript papers, Leibniz never furnished it with a catalog or any other finding aids.

There were few, if any, lives ca. 1500 that were as well documented as that of Leibniz. He demonstrated the “mania for inscription” shared by many in early modern Europe, and this was wedded to an instinct to preserve what he wrote. At every stage of his search for knowledge, from taking notes from reading to exchanging insights with acquaintances via letter, he generated writing on paper. As a result, he was faced with challenges of storing, sorting and organizing. Even for one who was fundamentally interested in, and committed to, the speciation of books and the knowledge that they contained, the abundance of paper generated in his daily praxis proved a source of challenge and vexation. The man who invented calculus found himself

confounded by challenges of information management. As I have endeavored to show, he was far from alone.

In a popular eighteenth-century work on how to excerpt useful and valuable knowledge from the abundance of available books, *Del modo legendi et excerpendi* (1775), Ignatius Weitenauer wrote that a collection of disordered extracts taken from one's reading was akin to an army without ranks, a disordered confusion unsuitable for deployment for any meaningful end.[57] Hence the importance in organizing the information that one had garnered from one's studies. Without these efforts at information management, Weitenauer declared, *copia impedimento erit*: abundance ended up being an impediment:

Copia impedimento erit: this could be a by-line for our time. One of the inescapable realities of our current age is that we are floundering to cope with a surfeit of information. We are beset with "big data", "information overload", and the "cloud" – a cloud, we should remind ourselves, for all its pretensions to unity and sharing, is composed of billions of individual water droplets with diameters as small as a single micron. In today's marketplace, enormous resources are channeled toward individuals and institutions that can manage these oceans of information, and present us with digestible portions or canned summaries. Ever since the advent of Google, a very large percentage of the "killer apps" so beloved of Silicon Valley venture capitalists have as their primary selling point that they can provide short cuts to information desired by the user. What is prized in this current "information age" is a discerning filter, one that can distinguish the wheat from the chaff. We struggle to cope with our own *copiae*, and it is increasingly evident that we do so at best partially, leaving us at best uncertain that we can ascertain genuine truth and actionable knowledge from among the swirl of information.

[57] *Del modo legendi et excerpendi libri II* (Augsburg: Ignatius Eagner, 1775), 397.

Early modern Europeans did not have to confront the gargantuan quantities of information with which we struggle to cope with today; this simple fact must be acknowledged when seeking to draw parallels between ages. Nonetheless, the discomfiture and disjunctures experienced in this earlier age of informational transformation were real, and the efforts and energies dedicated to their resolution a major theme of the period's history. In the early sixteenth century, as he penned *De Copia*, Erasmus was becoming aware that his world of scholarship and learning was indeed entering an *aetas nova*, in part because of the varied impacts of print, but also because of the paper sodalities created by networks of correspondence and scholarly exchange. Erasmus could scarcely have imagined the worlds of paper, scholarly and otherwise, that would come into being across Europe in the centuries to follow: *copiae* beyond his imagination. Erasmus' recommendations to readers and students for choosing words and phrases with which to bolster their rhetoric from amid the abundance of books were but a modest example of the broad array of mechanisms that Europeans would develop, refine and adopt to cope with abundance and variety in their own bailiwicks. A great assortment of items, practices and institutions that rose to prominence in early modern Europe were related to the management of unprecedented amounts of information, the bulk of it inscribed on paper. Thus account registers, commonplace notebooks, encyclopedias, almanacs, library catalogs, censuses, archives, newspapers, and cabinets of curiosities, all had at the core of their functionality information management. Early modern Europeans dedicated an enormous amount of time, energy and specie to handling the worlds of paper that they created. Their *copiae* were not our *copiae*, but their successes and failures in coping with them, surely hold lessons for us today, as we, often unwillingly, are forced to be information managers in our own right.