TOO MUCH TO KNOW

Managing Scholarly Information before the Modern Age

Ann M. Blair

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For Jonathan,
Adam, and Zachary,
who have filled
my life with much joy

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EDITORIAL METHOD

FOOTNOTES

For reasons of space the originals of quotations in foreign languages have been omitted here and are available online at my Harvard Web site, keyed to the footnote numbers. Though the address is likely to change, it can be accessed from www.people.fas.harvard.edu/~amblair.

To reduce the number of footnotes, references to adjacent sentences have often been grouped together; in case of uncertainty please look ahead to the next note for a reference.

In the citations the numbers correspond to the various divisions within each text by descending order of generality, ending with the page or folio number (without p. or f.). Section divisions are separated by periods and the page or folio number is preceded by a comma (thus Morhof I.1.21, sec. 50, 247 refers to part 1, book 1, chapter 21, section 50, p. 247). Signatures printed on the lower right of many pages of early printed books are used to designate pages on which no pagination or foliation is present (marked "sig."). Numbers in brackets indicate numbering I have supplied when none is present on a particular page.

SPELLINGS

I have used the spellings conventional in English for the various foreign names. For example, I have preferred Conrad Gesner, which is the norm in English (from Conradus Gesnerus), over Konrad Gessner, which is now preferred in German. For Chinese and Arabic names where multiple transliterations have been standard over time, I have followed current standards in my own prose, but in citing secondary sources I follow the usages present there. Theodor Zwinger changed the title of his *Theatrum* from *Theatrum vitae humanae* (in 1565, 1571, and 1575) to *Theatrum humanae vitae* (in 1586); except when referring to the earlier editions specifically, I have preferred the latter as the author's final choice of title.

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INTRODUCTION

We describe ourselves as living in an information age as if this were something completely new. In fact, many of our current ways of thinking about and handling information descend from patterns of thought and practices that extend back for centuries. This book explores the history of one of the longest-running traditions of information management—the collection and arrangement of textual excerpts designed for consultation in what I call, as a convenient shorthand, "reference books."[1] Large collections of textual material, consisting typically of quotations, examples, or bibliographical references, were used in many times and places as a way of facilitating access to a mass of texts considered authoritative. Reference books have sometimes been mined for evidence about commonly held views on specific topics or the meanings of words, and some (encyclopedias especially) have been studied for the genre they formed.[2] My purpose in studying reference tools in early modern Europe, and how they were conceived, produced, and used by contemporaries, is to gain insight into the ideals and practices of what one can anachronistically call "information management" in a period prior to our own. To that end I have combined a wide contextual net, spanning multiple periods, places, and reference genres, with a specific focus on several exemplary general reference books in Latin that were in print between 1500 and 1700.

The term "information" has a long history, attested in English from the fourteenth century in the sense of "instruction" and from the fifteenth century in the sense of "knowledge concerning some particular fact."[3] We use it today in many contexts, from biology, which studies the transmission of information at many levels, from DNA to neural processes, to computer science, which analyzes information mathematically without attention to its semantic content.[4] More colloquially, the notion of an "information age" (a term coined in 1962) is premised on the idea that computers radically changed the availability and methods of producing and using higher-order information (e.g., as recorded in language or numbers).[5] I use the term "information" in a nontechnical way, as distinct from data (which requires further processing before it can be meaningful) and from knowledge (which implies an individual knower). We speak of storing, retrieving, selecting, and organizing information, with the implication that it can be stored and shared for use and reuse in different ways by many people—a kind of public property distinct from personal knowledge. Furthermore, information typically takes the form of discrete and small-sized items that have been removed from their original contexts and made available as "morsels" ready to be rearticulated.[6]

I follow other scholars in applying the term to premodern contexts, cautiously due to the risk of anachronism, because it is effective in describing how authors and readers of early reference books handled their material, even though they themselves articulated their goals in terms not of information but of knowledge and edification. To use actors' categories, that is, the terms most commonly used at the time, early reference books were designed to store and make accessible words and things (*verba et res*).[7] These ranged from definitions and descriptions from the natural world (e.g., this plant has that property or that phenomenon has this cause) to human actions and sayings (X wrote this book, Y said that in these circumstances, this happened to Z). The authors of reference books presented themselves as compilers, responsible for the accurate reporting of what others had written elsewhere but not for the veracity of those statements themselves. Compilers were therefore conveyors of information rather than of their own opinions or positions (as I discuss in chapter 4). As such they would also boast of the many and diverse sources from which they had gathered material; they might name and list their sources, but they did not discuss them or offer a contextual interpretation of the material they selected. Instead readers were exhorted to use their own judgment and to pick and choose from among these treasuries something to suit their needs, a nugget to integrate into their own knowledge production, whether oral or written—typically a composition of some kind (e.g., oration, letter, or treatise). For these reasons I argue that the authors and users of premodern reference tools were indeed engaged in "information management" before either term had been coined.

These days we are particularly aware of the challenges of information management given the unprecedented explosion of information associated with computers and computer networking. One study has estimated that 5 exabytes of new information (an exabyte is 10^{18} bytes) was produced in 2002, 92 percent of it stored on magnetic media, and that "new stored information grew about 30 percent per year between 1999 and 2002."[8] We complain about overload in almost every field, from hardware-store stocking to library holdings to Internet searches.[9] A Google search for "information overload" itself generates more than 1.5 million hits, with the promise of solutions from office supply stores, management consultants, and stress relief services, among many others. But the perception of and complaints about overload are not unique to our period. Ancient, medieval, and early modern authors and authors working in non-Western contexts articulated similar concerns, notably about the overabundance of books and the frailty of human resources for mastering them (such as memory and time).

The perception of overload is best explained, therefore, not simply as the result of an objective state, but rather as the result of a coincidence of causal factors, including existing tools, cultural or personal expectations, and changes in the quantity or quality of information to be absorbed and managed. It is also a plausible and interesting suggestion (but not one that I have the expertise or the method to assess) that what we take to be innate human capacities, say, of memory and recollection, change over time under the impact both of cultural expectations and of the technologies with which we operate.[10] But the feeling of overload is often lived by those who experience it as if it were an utterly new phenomenon, as is perhaps characteristic of feelings more generally or of self-perceptions in the modern or postmodern periods especially. Certainly the perception of experiencing overload as unprecedented is dominant today.[11] No doubt we have access to and must cope with a much greater quantity of information than earlier generations on almost every issue, and we use technologies that are subject to frequent change and hence often new. Nonetheless, the basic methods we deploy are largely similar to those devised centuries ago in early reference books. Early compilations involved various combinations of four crucial operations: storing, sorting, selecting, and summarizing, which I think of as the four S's of text management. We too store, sort, select, and summarize information, but now we rely not only on human memory, manuscript, and print, as in earlier centuries, but also on computer chips, search functions, data mining, and Wikipedia, along with other electronic techniques.

Of course reference books constitute only one form of information management, trained on textual information—words or sentences or bibliographical details, which were selected, collected, and made accessible in some kind of order. Information of many other kinds was also stored, transmitted, and managed in pre- and early modern cultures—in collections of objects, natural and artificial (in cabinets of curiosities, museums, botanical and zoological gardens), in the records of commercial or administrative transactions (archives), or in the oral or experiential transmission of skills and speech in all kinds of settings (home, marketplace, or workshop). Recent scholarship has in many cases begun to examine these forms of accumulation as sites of information management, each of which posed distinctive practical, intellectual, and political challenges. In due course, by drawing on many specific studies, we can hope to identify parallels and lines of exchange in methods of working and organization, over time and across different areas, for example, between the treatment of words and of things and among scholarly, mercantile, and administrative practices.[12] In this book I focus on two areas of especially active accumulation in the Renaissance: manuscript notes and printed reference books inspired by the humanist study of ancient language and culture. I find that the two are closely connected: reference books were initially formed from the reading notes taken by their compilers, and in turn they offered buyers a stockpile of notes ready for use without the difficulties of taking them directly.

Developed from medieval and ancient models, early modern reference tools spanned a wide range of genres that can be difficult to distinguish from one another by hard and fast criteria. Setting aside the specialized reference books in theology, law, and medicine, I focus on the genres that offered access to information that was considered essential for the educated in any occupation. These comprised principally (using current category terms): dictionaries of words (mono- and polyglot) and of things (e.g., biographical and geographical dictionaries), collections of quotations or of historical anecdotes, and miscellaneously arranged commentaries designed for consultation through an index. In addition I consider various kinds of "books about books," such as bibliographies and library and booksellers' catalogs, which guided readers toward other books. Depending on their arrangement (alphabetic, systematic, or miscellaneous), reference works typically deployed one or more finding aids, including tables of contents, alphabetical indexes, outlines, dichotomous diagrams, cross-references, and a hierarchy of sections and subsections made visible on the page through the use of layout, symbols, and different scripts or fonts. Of course many other kinds of early modern books were meant to be consulted, including how-to books or books of recipes and secrets, for example, and relied on the same range of finding devices, but I have focused on the major humanist reference genres because their exceptional size and broad scope offer especially good opportunities to study the methods by which they were composed, arranged, and used.[13]

The four S's approach to managing an ever-increasing accumulation of material was not the only response to the information explosion in the early modern period. Instead of methods that coped with ambitious accumulation of information, René Descartes (1596–1650), for example (among other seventeenth-century thinkers calling for an overhaul of received philosophy), recommended ignoring the accumulated stock of texts and starting afresh to ground philosophy from first principles: “Even if all knowledge could be found in books, where it is mixed in with so many useless things and confusingly heaped in such large volumes, it would take longer to read those books than we have to live in this life and more effort to select the useful things than to find them oneself.”[14] The accumulation of past authorities had become so great and so discordant that it seemed to Descartes simpler to do without them. Although others shared Descartes’ scorn for ancient authority (including Francis Bacon in some passages), a mastery of ancient culture and literature remained central to European education and the principal criterion of distinction between the educated and the uneducated. But the rejection and drastic culling of accumulated information always held intermittent appeal: mystics, for example, generally emphasized divine inspiration rather than the management of accumulated human knowledge; after Descartes, who reported that his new philosophy came to him in a dream, the rejection of received opinion became a stance common even among authors who were otherwise consumers and producers of information. In the eighteenth century a number of writers articulated fantasies of destroying useless books to stem the never-ending accumulation: for Gibbon the books to destroy included “the ponderous mass of Arian and Monophysite controversy”; for d’Alembert, “useless historical works.”[15] One critic has identified the articulation of the sublime as another kind of response to overabundance; Kant and Wordsworth are among the authors who described an experience of temporary mental blockage due to “sheer cognitive exhaustion,” whether triggered by sensory or mental overload.[16] In these cases as the moment passed (whether it was sublime or destructive), the philosopher would generally return to more traditional methods of work—including those that enabled him to access and use accumulated information. Reference books certainly do not represent the full range of responses to the challenges of managing overabundant information, but they offer some of the best sources we have from which to consider how textual information was managed in the early modern and premodern periods.

My purpose in this book is not just to offer some historical perspective on our current concerns but to shed new light on the intellectual culture of early modern Europe. Neither the perception of overabundance nor the basic methods of text management (the four S’s) were new or unique to the Renaissance. Furthermore, many of the features of the printed reference book, such as alphabetical ordering and indexing and consultation-friendly layouts were adapted to print from medieval manuscript practices. What was distinctive to the Renaissance was the large scale of accumulation of textual excerpts both in personal collections of manuscript notes and in printed compilations. Certainly printing facilitated the explosion in the number and size of printed reference works. Printing made it less expensive to produce books, including large ones, and aided large-scale compilation indirectly, for example, by increasing the number of books available for excerpting and by stimulating the production of paper, which was also the optimal medium for stockpiling manuscript notes. But printing and the availability of paper do not of themselves explain why the learned were willing to invest so much effort and money in amassing large collections of textual information in their manuscript notes and in printed reference books. Renaissance discoveries of ancient texts and distant places offered new material to sort and store, in addition to more traditional sources, but underlying the learned reaction to all this input was the most important causal factor of all: a newly invigorated info-lust that sought to gather and manage as much information as possible. The abundant note-takers and compilers who are the focus of my book articulated a new enthusiasm for attending to every book and every discipline in the search for potentially useful information. They hoped to safeguard the material they collected against a repetition of the traumatic loss of ancient learning of which they were keenly aware. The compilers also saw their work as a contribution to the public good that benefited from their catering to as many different themes and interests as possible.

My account focuses on large-scale compilations in manuscript and print and is not exhaustive. Some Renaissance authors advocated a restrictive canon of texts and excerpts rather than the expansive vision of those who amassed the biggest collections of excerpts.[17] But the largest reference books offer unique perspectives on both ordinary and extraordinary methods of working with texts, on the impact of printing, on the nature and spread of reference reading among the Latin-educated, and on the anxieties that this diffusion elicited. The large Latin reference works I study were designed to aid in reading and composing Latin texts, oral and written, and were used by students, teachers, and preachers and also by scholars, authors, and "men of action." Most early modern reference genres drew heavily in form and content from medieval models that originated in the thirteenth century. But by the early sixteenth century a number of new books were larger and more diverse than the medieval models on which they drew. The most successful of them went through dozens of editions, with frequent modifications and additions, down to the last decades of the seventeenth century, when most Latin reference works were printed for the last time.

These large folio books represent a tremendous collective investment of human and material resources on the part of authors and printers who produced them (ranging from the 430,000 words of Domenico Nani Mirabelli's *Polyanthea* of 1503 to the 10 million words of the eight-volume *Magnum theatrum humanae vitae* of 1631 by Laurentius Beyerlinck). The institutions and individuals who purchased them also invested significantly. Of course, as one book historian wisely pointed out, most printed books have never been read, given that printers have always speculated on the numbers of copies they would sell.[18] But these large reference works sold well, especially considering their large size and cost, and I document how they were actually used despite the fact that few authors acknowledged using them. I argue that buyers sought in them the kinds of reading notes they wished they had taken themselves if they had had the resources (time, energy, money) to read the originals of the texts excerpted there. In wondering how these reference books were physically produced, from manuscript notes to final printed volume, I have uncovered some unusual methods devised by compilers to lessen their arduous task, including the manipulation of notes on slips of paper and the cutting and pasting from manuscripts and printed works to save the labor of copying.

The working methods studied here are those characteristic of humanist and late humanist ambitions, designed to produce and display mastery of ancient literature and culture. Attention to working methods has grown in recent years in other areas of intellectual history as well. For a long time the main group of scholars attending to manuscript notes and drafts in addition to finished works were literary scholars practicing "genetic criticism" and focused on those major authors of the nineteenth and twentieth centuries for whom abundant papers were available. Some medievalists have also investigated working methods and the terms for them, notably those distinctive to scholasticism.[19] But new interest in working methods has stemmed from recent work in the history of science, specifically in the early modern period, which emphasizes the interdependence of ideas with the social and material contexts of their formation. Some studies have focused on places peculiar to scientific work, such as the laboratory, the anatomy theater, the botanical garden, or the observatory. Other studies originating in the history of science have explored contexts relevant to intellectual work more generally, including the domestic setting in which intellectuals often worked and the economy of manuscript and print in which ideas were formed and diffused. Careful attention to the work performed in various contexts has also pointed to the presence of many helpers, from wives and children to laboratory assistants and amanuenses, who were often treated as "invisible" and are difficult to identify precisely.[20] Reference books shed light on how compilers worked, in collaborations both across time and at one time, as well as how those who used them worked.

To understand the work of those who operated in the humanist mode broadly conceived—who strove to produce knowledge principally from the study of ancient texts—it is particularly helpful to learn more about the kinds of books and of reading with which they engaged. We have studies of the furniture and rooms where humanists worked and of how the best-known humanists read and annotated ancient texts.[21] But humanists and those less learned among the Latin literate had increasing opportunities between 1500 and 1700 to engage in consultation reading, accessing a text in parts thanks to finding devices, with or without pen in hand.[22] Although any book with an index or for which one had a precise reference could be read by consultation, we can learn about methods of consultation especially well by examining those genres that were designed to be consulted rather than read through. The large Latin reference works I examine here accumulated myriad small units of information (quotations, definitions, or examples) from which readers were invited to select items of interest by consulting the text itself and the accompanying finding devices. Given the compilers' promises of the accuracy of their material, reference books offered a repository of textual facts akin to the facts increasingly invoked in many areas of early modern culture, especially in England.[23] Reference books could substitute for reading or rereading, or they complemented other kinds of reading depending on the circumstances. We have a more complete picture of the reading methods used by the learned and the broader public of the Latin literate by including the kinds of books that were taken for granted—omitted from citations or direct discussion but printed and owned in ever greater numbers between 1500 and 1700.

Reference books also offer a new angle from which to consider the impact of printing in early modern Europe. Since its beginnings as a subfield in the 1980s, the history of the book has generated much new work on the impact of printing and the notion of "print culture." Elizabeth Eisenstein has made the most extensive claims for the impact of printing, emphasizing the cumulative improvement across successive editions and the rapid and broad diffusion of books. Recent controversy surrounding her work has questioned whether handpress printing, with its artisanal variability and unscrupulous commercial practices, fostered the kind of standardization and reliability we associate with printing in the industrial age.[24] Another response to Eisenstein's claims has questioned the abruptness of the changes she associates with printing and suggested that late medieval manuscripts presented many of the features characteristic of the modern book, including, for example, indexes, page layout designed to facilitate consultation, and production on speculation rather than on commission in commercial scriptoria.[25] From my survey of reference works in a number of premodern settings, including ancient and medieval Europe and the worlds of Islam and China, I conclude that the central features of reference tools, including large-scale compilation, finding devices, and layouts to facilitate consultation reading, all developed independently of printing. But I also argue that in early modern Europe printing shaped in important ways the form, contents, and impact of these works.

The diffusion of printed reference books elicited a steady flow of complaints throughout the early modern period. The complaints became especially strident in the late seventeenth century, when Latin learning itself seemed threatened by the dominance of vernaculars (especially in England and France) and by the increasing sense that ancient authors and ideas should be abandoned in favor of more recent ones. I interpret these anxieties as additional evidence for the spread of consultation reading to ever-broader swaths of the educated. By the time the Latin reference books ceased being printed ca. 1700, they had spread familiarity with the methods of consultation reading, originally the purview of a narrow intellectual elite in the Middle Ages, to the much broader audience of the Latin-educated. The eighteenth century became known as the "age of dictionaries" because compilers and readers alike took for granted the justifications, tools, and methods of reference reading developed in the large Latin reference books of the sixteenth and seventeenth centuries, even though these works are little known today and had only an indirect impact on the "modern" and vernacular genres of the eighteenth century.

This book proceeds through increasingly focused layers of contextual analysis in chapters 1 to 3 before considering a few specific works in chapters 4 and 5. In chapter 1, I survey the reference genres produced in a variety of premodern contexts to highlight the remarkable similarities in the basic methods and problems of text management across many cultures and also the peculiarities of early modern Europe. In chapter 2, I argue that methods of note-taking in early modern Europe served as a more immediate context for the development of reference books in two ways: printed compilations typically originated in the collections of personal notes of one or more compilers, and they offered ready-made in print the kinds of notes readers wished to have available even if they had not taken them themselves. The accumulation of manuscript notes posed problems of management, collaboration, and sharing that also characterize printed compilations. In chapter 3, I survey the nonspecialist Latin reference genres in print between 1500 and 1700 and their finding devices, with careful attention to the terms contemporaries used to describe them and to those historians have deployed, including the notion of "encyclopedia." In chapter 4, I focus on the career and composition of several major reference works (especially the *Polyanthea* and the

Theatrum), drawing on the texts, on their printing histories, and on some extant working papers of Conrad Gesner of Zurich and Theodor Zwinger of Basel. In chapter 5, I document the reception of these reference works through surviving copies and their annotations, explicit citations and tacit use, and complaints about them. Though they were no longer in print after 1710 and were rarely acknowledged as models, the Latin reference works laid the groundwork for the explosion of vernacular reference works and encyclopedias in the eighteenth century. For some two centuries printed humanist reference genres spread the use of increasingly sophisticated methods and tools of information management among compilers, printers, and readers. These techniques were easily adapted to the modern languages and contents characteristic of Enlightenment reference works, and they are familiar enough today to remind us that many habits that we take for granted are indebted to the transmission of practices developed centuries ago in medieval and early modern Europe.

1

INFORMATION MANAGEMENT IN COMPARATIVE PERSPECTIVE

Early modernists, including myself, have argued that the Renaissance experienced information overload on a hitherto unprecedented scale, drawing a parallel with our experience today. Historians have pointed especially to three main sources of information explosion in the Renaissance: the discovery of new worlds, the recovery of ancient texts, and the proliferation of printed books.[1] In this chapter, I seek to refine our understanding of the early modern information explosion in two principal ways. First, the experience of overload was not new or unique to Renaissance Europe. Even a brief nonspecialist inquiry turns up multiple premodern contexts in which the learned articulated a perception akin to overload and devised methods of information management that are still recognizable today. In addition to ancient and medieval developments that had (or were perceived to have had) a direct impact on early modern ones, I will consider examples from cultures with limited or no contact with early modern Western Europe, notably from Byzantine, Islamic, and Chinese contexts, though others could be equally illuminating.[2]

Second, I will emphasize the role of cultural factors in explaining the preoccupation with accumulating and managing information among the learned in the Renaissance. The accumulation of new species, new texts, and new books in the Renaissance was not a necessary consequence of new travel and new technologies but was motivated by a set of cultural attitudes, some of them new and some of them well represented in earlier centuries, that can be summed up as "info-lust" or information obsession. For example, Brian Ogilvie describes the explosion in known plant species from the 500 described by Dioscorides, which represented the height of botanical learning in 1550, to the 6,000 plant species listed by Caspar Bauhin in his *Pinax theatri botanici* (1623). But Ogilvie points out that New World plant specimens were not what drove the botanical explosion; instead the Renaissance naturalists' desire to describe plants with careful attention to detail made them newly attentive to vast numbers of unidentified plants in Europe (including eastern and northern Europe) and long-known exotic locations like the Levant.[3] In examining textual compilations I have come to a similar observation: it was not the newly recovered ancient texts (Lucretius or Sextus Empiricus) that accounted for the ever-increasing size of collections of quotations in florilegia, but rather increased attention to long-familiar ancient authors central to humanist education (like Ovid, Horace, and Cicero) and a large number of recent works generated by reflection on the classics (e.g., Petrarch or the emblems of Alciati and Camerarius). A new attitude toward seeking out and stockpiling information was the crucial cause of the information explosion, more significant than any particular new discovery.

The ambition to encompass all knowledge and the technique of juxtaposing excerpts from authoritative sources to achieve universal scope were not new to the Renaissance. Various ancient and medieval works were similar in form and scope, which historians have traditionally called encyclopedias, though the term was not an actors' category (i.e., it did not exist at the time these works were composed). The word "encyclopedia" was coined in the sixteenth century from a misinterpretation of a Greek expression held to mean the "circle of learning" (as if from *kyklos* for circle). Modern scholars have shown that the Greek expression involved was actually *enkuklios paideia*, which designated "common knowledge" or "general education," but the circle image has proved long-lived and is still invoked in modern encyclopedias.[4] "Encyclopedia" in the sixteenth and seventeenth centuries mostly designated the relations between the disciplines and was not associated with a kind of reference book until the eighteenth century when Ephraim Chambers's *Cyclopaedia* (1728) and the French *Encyclopédie* it inspired triggered the popularity of the title and of the new genre of the dictionary of arts and sciences. In modern parlance, however, it is reasonable to speak of encyclopedic ambition as a central ingredient of the Renaissance obsession with accumulating information. Though this ambition was not new, it drove some Renaissance figures (like Theodor Zwinger) to new heights of megalomania.

Distinctively new to the Renaissance was the awareness of the great cultural trauma suffered through the loss of ancient learning during what Petrarch was the first to call the Middle Ages. Although humanists were proud to have recovered many lost texts, notably through careful research in Byzantine and European libraries followed by philological emendation, they were acutely aware that the bulk of ancient literature remained lost.[5] A number of early modern authors articulated the hope that with proper storage and management the information accumulated henceforth would be safe from another catastrophic loss. The obsession with avoiding loss may be linked to another feature I find unique—the desire to save every note taken, to rescue and use every text. Although this position was of course not universally shared (some authors focused instead on drawing up more or less restrictive lists of acceptable books), those engaged in large-scale compiling repeated the line attributed to Pliny, "There is no book so bad that some good cannot be gotten from it." As a result Renaissance compilations rapidly surpassed in size medieval works of the same kind. Authors of printed compilations declared that they contributed to the common good by pooling together information on many topics to meet the interests of a public, which they described as legitimately varied. The increased scale of compilation and range of sources in turn inspired new methods of working and new kinds of finding devices, to be examined in later chapters.

Printing also created new possibilities and constraints for the production and diffusion of information. Printing had the principal effect of reducing the cost and the time necessary to produce books. This impact has especially been highlighted in the production of widely distributed genres. Indulgences, for example, were produced in massive quantities quite cheaply as small single-sided flyers, but they survive in very small numbers. For example, of the 200,000 indulgences printed between 1498 and 1500 at the behest of the Benedictines of Montserrat in Catalonia, only 6 survive.[6] The impact of printing on the production of big books has been discussed less often, but it was significant in both obvious and surprising ways. Given the especially high cost of producing very large manuscripts in any great number, printing made possible the diffusion and preservation of large books on an unprecedented scale. At the same time printing created distinctive constraints: those large books had to sell in hundreds of copies for the printer to recover the costs of production. Compilers of large and expensive books, like reference tools, therefore worked hard to appeal to as wide and varied an audience as possible by broadening the range of sources used and the range of topics addressed.

The requirement that printed books find buyers constrained the maximal sale price and size of a printed book, although the maximum size rose over time from one folio volume of 1,500 pages in the incunabular period to multiple much larger folios by the mid-seventeenth century.[7] But the largest books of all to be produced before the modern era were not commercially viable. They were commissioned by Chinese emperors, often in manuscript, for their own rather than commercial purposes. Printing shaped both the nature of the information explosion, by making more books on more topics available to more readers, and the methods for coping with it, including a wide range of printed reference tools.

Printing diffused more broadly than ever before existing techniques for managing information and encouraged experimentation with new ones, including new layouts, finding devices, and methods of composition.

INFORMATION MANAGEMENT IN ANTIQUITY

Granted a liberal interpretation of the expression, forms of information management can be identified from the earliest times. The invention of writing was certainly one of them. The earliest forms of writing were designed to keep records of commercial transactions or grain stored—information that it was useful to preserve, sometimes over long periods of time, given the lapses of individual memory and the biases of self-interest. Early documents were often archived and some surviving documents (on clay tablets, for example) comprise lists up to one hundred items long, but these lists offered no discernible finding devices; they most likely had to be browsed when searching for something.[8] Oral cultures also engaged in information management, notably through the telling and retelling of traditional narratives and the recall of complex commercial transactions. The once widespread view that literacy first made possible certain kinds of thought (historical and logical among others) is now much contested.[9] But only once writing spread beyond utilitarian texts can we glean evidence of attitudes toward the process of managing information, and these attitudes were often contradictory.

Plato's famous critique of writing offers an early example of the ambivalence that has often accompanied the adoption of a new technology. As the practice of writing spread in fourth-century Athens, Plato (ca. 428–348 BCE) used writing (the invention of which he praised elsewhere) to articulate the fear that written words, in circulating beyond the author's control, were more readily misunderstood and misused than words spoken to an interlocutor.[10] Around the same time a much-longer-lived complaint articulated a kind of feeling of overload, but without blaming writing or books especially. Best known in its abbreviated Latin form as *ars longa, vita brevis*, the first of the aphorisms attributed to Hippocrates (ca. 460–370 BCE) observed: "Life is short, art is long, opportunity fleeting, experiment treacherous, judgment difficult. The physician must be ready not only to do his duty himself, but also to secure the co-operation of the patient, of the attendants and of externals."[11] But Hippocrates' practical advice about success in medicine became divorced from the pithy tag about life and art that is still well known today in the Latin form coined by the Roman moralist Seneca (4–65 CE). "Ars longa, vita brevis" has proved an especially versatile tag, invoked by both optimists and pessimists about the accumulation of knowledge.[12]

Seneca's point was that that life is long enough, but it seems short because we waste so much of it in luxury and carelessness. Seneca complained in particular that his well-to-do contemporaries wasted time and money accumulating too many books. He coined a tag of his own to decry their indiscriminate and superficial way of reading: "the abundance of books is distraction" (*distringit librorum multitudo*). Instead Seneca recommended focusing on a limited number of good books to read thoroughly and repeatedly: "You should always read the standard authors; and when you crave change, fall back upon those whom you read before."[13] This position exemplifies an effective and often dominant method of information management—to limit the quantity and nature of information to an established canon of works deemed acceptable, usually on moral grounds. Seneca's advice and negative assessment of the *multitudo librorum* found favor with a number of authors in early modern Europe, including the Jesuit pedagogue Francesco Sacchini (1570–1625) discussed in chapter 2.[14]

In contrast, "ars longa, vita brevis" motivated others to envision alternatives to the focus on a narrow canon. Francis Bacon (1561–1626), for example, invoked Hippocrates' tag to explain the need for a new science that would "abridge the infinity of individual experience as much as the conception of truth will permit, and to remedy the complaint of vita brevis, ars longa, which is performed by uniting the notions and conceptions of science."[15] Bacon called for generalizations from particulars to manage the excess data accumulated through experience and offered in his *Sylva sylvarum* an example of such accumulation in progress, which integrated direct observations along with information gained from books.[16] For Bacon, sheer bulk of accumulation was a valuable step on the path toward mastery and knowledge of nature.

The Hellenistic period contributed further exemplary arguments both for and against accumulation: a biblical condemnation, on the one hand, and models of collecting books and texts on an unprecedented scale, on the other. The verse in Ecclesiastes 12:12 "Of making books there is no end" (in the Vulgate: *faciendi plures libros nullus est finis*) is probably the oldest condemnation of overabundance, likely dating from the fourth or third century BCE, though agreement on the date of composition of this book of the Bible has proved particularly difficult.[17] In it the wise man dismisses books and studiousness amid the many vanities of human life. While the role of the passage in discouraging authors cannot be assessed, its impact on those who did write seems limited. The passage did not attract much Christian or Jewish commentary in the Middle Ages,[18] though several authors cited the passage without adopting its tone of condemnation. In 1255 the great compiler Vincent of Beauvais pointed out, for example, that the endless making of books was matched by the endless curiosity of readers and listeners; and Richard de Bury (1281–1345) ignored any pejorative message in citing the passage in his chapter entitled "that it is meritorious to write new books and to renew the old."[19] Only in recent decades has the book of Ecclesiastes become well known (notably thanks to a song by Pete Seeger), and today this verse is widely cited as ancient wisdom that speaks to our current concerns about overload.[20]

Certainly this message did not hamper the enthusiasm for accumulation, which is evident, though no literary articulation of it survives, in the activities at the Library of Alexandria around the same time. Shortly after the foundation of Alexandria in 331 BCE, the Egyptian pharaohs of the Ptolemy family pursued the ideal of gathering copies of all works ever composed in Greek in a royal library; the library principally served the scholars whom the pharaohs employed at the nearby Mouseion. The pharaohs resorted to such aggressive methods of acquisition as confiscating manuscripts found on incoming ships, then returning a hasty copy to the owner instead of the original, which would remain in the library. The Library of Alexandria was legendary in antiquity as the largest in the world, though other major libraries were founded on its model. Estimates about the size of its collections have varied but now stand around 500,000 papyrus rolls; the total number of works was lower, since rolls did not hold as much text as the later codex form and many works required multiple rolls (or volumes). The library's destruction became equally legendary; it was complete by the fifth century CE, more likely due to a succession of degradations than to a single catastrophe. Although most of the works produced there have been lost, the scholars active in the library and Mouseion at Alexandria produced editions of and commentaries on Homer and other Greek authors, studies in astronomy and medicine, and lexicographical works of various kinds (focused variously, for example, on rare words, local words, or Hippocratic terms).[21]

The collecting of such great numbers of books occasioned the development of what was probably the first large-scale reference tool: a bio-bibliography of Greek literature based on the library's extensive holdings. The *Pinakes* (from the Greek *pinax* for list, register, or board) originally comprised about 120 rolls, but the text survives only in fragments quoted by other ancient authors. From these we learn that the entries offered biographical and sophisticated bibliographical information, including title, incipit, and number of lines for each work, sorted by literary form or scholarly discipline; authors within a category and the titles of works by a given author were likely alphabetized.[22] The *Pinakes* were neither an inventory nor an exhaustive catalog of the works in the library: they did not list all the copies of a work that the library owned and did not give any indication of how to locate a book in the library—actual access would have required consulting the librarian. The *Pinakes* built on preexisting practices of list making (including Aristotle's *pinakes* of poets), sorting (such as Theophrastus's doxographies sorted topically and chronologically), and alphabetizing, the principles of which were likely already understood although they had never been put to such extensive use before.[23]

The *Pinakes* required multiple preparatory stages, starting with a library inventory and using intermediate drafts to sort the entries topically and alphabetically.[24] The result is attributed to one man, Callimachus, who was active at Alexandria ca. 280–240 BCE, but no doubt involved the collective labor of many working at the Mouseion where scholars were supported by many secretaries who took dictation and made copies.[25] Callimachus is best known today for his quip that a "big book is a great evil" (*mega biblion*, *mega kakon*), but he likely coined that expression as a defense of the short lyric and elegiac poems he composed and favored over the traditionally more prestigious and much longer epic poems.[26] That preference did not prevent Callimachus from producing (as editor in chief, we might say today) one of the largest works of his time as a tool for mastering the texts that the library accumulated on a vast scale. In Alexandria, far from complaining about overload, scholars seem to have thrived on the challenges of mastering increasing numbers of books.

A similar enthusiasm for the accumulation of information is evident in the activities of Hellenistic *polygraphoi* or abundant writers. The most abundant of all, Didymus the Brazen-Gutted or Book-Forgetting, reportedly wrote more than 3,500 books in Alexandria in the first century BCE. Even bearing in mind the ambiguities of the term "book," which could refer to a single roll or to a whole work comprising many rolls, we can assume that writing on such massive scales consisted primarily of copying and compiling—with what organizational tools we do not know.[27] Since very few of the polygraphers' works survive, we must rely principally on ancient doxographies, which collected the lives and opinions of philosophers. Diogenes Laertius, for example (third century CE), reported that Theophrastus wrote 300 books totaling 232,808 lines; Chrysippus, 75; and Varro, 74 works in 620 books. Early modern pedagogues recycled these reports, notably to encourage students to take notes that would help them, too, write abundantly.[28]

The one well-transmitted example of ancient polygraphy, on the more modest scale of thirty-eight books, is the *Natural History*, in which Pliny the Elder (23–79 CE) boasted that he had gathered some 20,000 *res* (things), drawn from 2,000 volumes by one hundred authors. Pliny's work was known in parts in the early Middle Ages (through summaries of the medical sections by Serenus and of the geographical ones by Solinus) and circulated complete and more widely starting in the twelfth century.[29] Pliny's *Natural History* offered a powerful counterpart to Seneca in celebrating the abundance of accumulation and was long a model for encyclopedic compilation. In the Renaissance enthusiasts for the accumulation of books and their contents frequently cited the aphorism that Pliny the Younger attributed to his uncle who "used to say that there is no book so bad that some good cannot be got from it."[30] Although the nephew described Pliny's working habits with some bemusement, humanists and early modern pedagogues embraced Pliny as the consummate model of abundant reading and note-taking.

Pliny's *Natural History* is remarkable among surviving ancient works in that the first book consists of a detailed table of contents. Pliny likely composed it to facilitate retrieval of specific items of information, even while he generally arranged his material associatively, in a way that invited sequential reading. Pliny's table of contents was probably not as unique in its day as it is today, given that finding devices at the beginning of a book, stored in the outermost layers of a papyrus roll, would have been particularly vulnerable to damage and loss.[31] Another extant table of contents from antiquity is that of Aulus Gellius's *Attic Nights* (ca. 180), which makes the text searchable in such a way as to undermine the author's claim to offer only a haphazard collection of reading notes. Recent analysis has emphasized that Gellius's miscellany was carefully constructed to serve as an entry into the accumulated mass of Greek and Latin literature, the mastery of which every educated Roman wanted to display. Even without tables of contents, many texts from antiquity and late antiquity were transmitted with headings (*tituli*) and summaries (*capitula*) for each book or section, facilitating access to a particular part. Although we cannot be sure when these were added or if they were modified in the process of transmission, recent attention to them has uncovered their presence in some papyri.[32]

The difficulties of transmission seriously hamper our understanding of other ancient tools for managing an increasing abundance of texts. Under normal circumstances, papyrus naturally degenerated within less than two hundred years.[33] For a text to be transmitted, therefore, it often had to be copied more than once within antiquity, and ultimately onto more durable parchment, which came into common use with the transition to the codex from the second to fourth centuries. Unlike a papyrus roll, a parchment manuscript could survive centuries of benign neglect and come back into circulation much later. Humanists of the fifteenth and sixteenth centuries were thus thrilled to find parchment manuscripts of ancient texts long forgotten in monastic libraries, but at the same time they remained keenly aware of the great many ancient texts for which they found no surviving manuscripts. Indeed, the copyists of the early Christian period preserved only a small fraction of ancient literature. Of course they could copy only texts that were available to them, and many earlier texts that had not been copied in the intervening centuries had already become lost. In addition, many copyists worked in monastic settings and typically copied works that seemed useful to them, either for teaching or study, or worth preserving due to their reputation among the pagans. Given those criteria, the copyists were unlikely to choose writings that they perceived to be mere working tools rather than polished works.

We are left to deduce the existence of such tools from the nature of some surviving texts. One scholar has argued, for example, that Athenaeus relied on collections of literary references in composing his *Deipnosophistae* (or "Learned Banquet") (ca. 192 CE). Its fifteen (perhaps originally thirty) books are full of complex literary allusions and wordplay larded with precise and often accurate citations unlikely to have been recalled from memory alone. Scholars like Athenaeus and those whose learned conversation he portrays probably relied on working tools such as glossaries and lexica, which grouped passages and word commentaries thematically. Some of these aids to learning would have remained in the state of private notes, others would have circulated among a small group of friends; Athenaeus cites a few that were apparently published (i.e., released for circulation by their author), though none of these are extant.[34] We can also deduce the existence of Greek collections of excerpts in late antiquity from the survival of later compilations, such as the four books of Stobaeus's "Selections" and "Anthology," composed in the early fifth century and probably heavily indebted to existing compilations.[35] One of the great feats of information management in late antiquity was the composition of ten books of ecclesiastical history by Eusebius (260–339 CE), who worked with the support of a large staff to excerpt from the abundant holdings of the Library of Caesarea. This work was transmitted entire, including its chronological tables, but many other works of scholarship produced at Caesarea were transmitted only in part or not at all. For example, the great polyglot Bible of the early Christian period, the *Hexapla* of Origen (185–255 CE), which laid out in six columns different versions of the Old Testament (in Hebrew and in various Greek translations), survives only in fragments.[36]

Large books fared especially poorly in the process of transmission, since each copy required more resources to make than shorter books. Pliny's *Natural History*, for example, was one of a number of encyclopedic works published around the turn of the Common Era, alongside those of Varro and Celsus, among others. But only Pliny's survives, aided crucially, one scholar has argued, by the support of the emperor Vespasian, whom Pliny managed to please in his carefully crafted dedication.[37] Humanists commented on the loss of large works of ancient history, which some blamed on the existence of epitomes in antiquity that circulated instead of the originals. Erasmus especially bemoaned the loss of the greater part of Livy's history of Rome, *Ab urbe condita* (of which only 36 of the original 142 books survive), which he attributed to the circulation of the *Epitome* of Lucius Annaeus Florus (in mid-second century).[38] Erasmus claimed to draw this assessment from "some Latin scholars," whom I have not been able to identify. In 1685 one writer dismissed the notion that an insignificant summary like Florus's could be responsible for the neglect of such an important original as Livy, but in one case modern scholars have found this phenomenon plausible.[39]

The techniques of text management that ancient authors developed most effectively and bequeathed to the Latin Middle Ages directly were those of summarizing and compiling. The summary was used throughout the period as a method for reducing the material to be mastered, from plot summaries for Attic plays (fourth century BCE) to epitomes and summaries of long prose works. Large-scale compiling emerged as a dominant form of literary activity, especially from the second century, both in Latin (Pliny and Valerius Maximus already in the first century, Aulus Gellius) and in Greek (Aelian, Athenaeus, and, much later, Stobaeus), and among Christians (e.g., the *Stromateis* or "miscellanies" of Clement of Alexandria, ca. 200 CE).[40] Literary miscellanies appealed to a cultivated elite at a time when the "volume of Greek and Latin writing had swollen far beyond the capacity of any normal person to read (let alone remember)."[41] Collecting was also central to other genres, such as collections of lives (Diogenes Laertius, Eusebius, Jerome) and collections of wonders or paradoxographies, pagan and Christian. Compiling and summarizing were central to the formation of Jewish and Christian religious texts, from Deuteronomy to the use that Matthew and Luke made of the Gospel of Mark and other sources.[42] Similarly, the codification of Roman law commissioned by the emperor Justinian (527–65 CE) involved condensing some 1,500 existing works of Roman law into fifty books topically arranged: the *Digesta* or *Pandectae*. Thirty-nine scholars worked over four years, first to collect the sources, often fragmentary, then to select and summarize what they found of value, eliminating repetition and contradictions and arranging the selections systematically. Justinian's *Digest* had the result of preserving much of earlier Roman law but also of destroying what it did not include, since Justinian banned all other law codes.[43] Even when the Latin West lost awareness of most Greek collections and summaries, given the decline of education in an empire increasingly overrun by invaders and sharply separated into East and West, the accumulative and summarizing forms were already so well established in Latin that their continuity was assured.

In sum, scholars in various ancient settings, such as Callimachus's Alexandria, Pliny's Rome, and Eusebius's Caesarea, accumulated information on a large scale and devised new methods for managing an abundance of books and of texts. For a variety of reasons (difficulties of transmission especially of large works, loss of mastery of Greek) many examples of ancient information management were not transmitted directly to the Latin West. The *Pinakes* were imitated in the major libraries of the Eastern Roman Empire in the Hellenistic period and helped to spread the use of alphabetical order in Byzantine lexicographical collections.[44] While one of these later lexica, the *Suda*, was well known to the humanists, the memory of the *Pinakes* themselves was lost in the West, even after the humanist recoveries: Conrad Gesner made no mention of them in his attempt at a universal bibliography in 1545, citing only Callimachus's poetic works.[45] Similarly, whatever compilations and glossaries were devised by the scholars in Athenaeus's context (and possibly others), they can be known only through later compilations for which they probably served as sources and models. Among these, Stobaeus was rediscovered by the humanists, and Gesner hailed Stobaeus as a model for the orderly collection of excerpts in the translation of his work that he first published in 1543.[46] The most basic techniques of compiling and summarizing were directly transmitted through the Middle Ages from Latin works of antiquity and late antiquity, including Pliny, but also the textbooks of Boethius (480–524) and the encyclopedic compendia of Cassiodorus (490–585) and Isidore of Seville (600–636). Only one ancient work, Aulus Gellius's *Attic Nights*, directly inspired a new genre of reference tool in the Renaissance, the miscellaneously arranged commentary, which included in its early modern form one or more indexes as finding devices (as I will discuss in chapter 3). This genre inspired a long-lived exemplar in Erasmus's *Adages* but did not have a lasting impact on forms of information management after the sixteenth century.

Even if many ancient reference tools were lost to later periods, the heritage of antiquity—that is, what scholastics and humanists felt they had inherited from the classical past—was a powerful and versatile set of precedents and aphorisms that could be invoked to justify two different kinds of response to the explosion of knowledge.[47] On one hand, Seneca (and Hippocrates whom he cited) could be invoked to advocate focusing on a few books intensively and ignoring the mass of presumably "bad books." On the other hand, Pliny and his enthusiasm for gathering information, the memory of the Library of Alexandria, and a new interpretation of Hippocrates' tag were used even more often to justify pursuing large-scale accumulation and note-taking, occasionally in the Middle Ages and especially in the Renaissance. Humanists could thus look to antiquity to justify their approach to the explosion of knowledge, even if in practice they relied heavily on techniques of information management that were first developed in the thirteenth century. But at the same time as humanists recovered a new abundance of ancient literature in the Renaissance, they also drew new conclusions about the fragility of the transmission of learning, which so often had resulted in corruptions and permanent losses. As a result, I argue, early modern scholars were especially eager to safeguard information: by stockpiling it, by sharing it with others in manuscript and in print, and by encouraging the foundation of great libraries by wealthy princes and patrons.

A COMPARATIVE INTERLUDE: BYZANTIUM, ISLAM, AND CHINA

In many cultures the transmission of ancient authorities fueled an increasing accumulation of texts both old and new, and effective ways of sorting, storing, selecting, and summarizing them. By considering forms of textual abundance and management outside the Latin West I seek to highlight the complexity and diversity of interactions between cultural factors and technologies like oral transmission, writing, paper, and printing in shaping methods of information management. Neither textual abundance nor reference tools were unique to the Latin West. We can better understand what developments were peculiar to early modern Europe—most famously the impact of commercial, moveable type printing—by examining reference tools in other contexts. Byzantium, Islam, and China offer prime areas for comparison, not only because of a long-standing historiography on the encyclopedic tradition in those cultures, but also because recent book historical work enables us to study the multiple factors that shaped attitudes toward textual technologies there. Most visibly, printing began early if fitfully in China (eighth century) and was adopted much later (in 1795) in Islam (which had by then subsumed Byzantium), but in each case multiple technologies (including manuscript and oral transmission) were involved in the formation and transmission of texts and reference tools. A comparative look at reference tools in other cultures belies any claim that effective information management required printing or any other peculiarly "modern" or "Western" feature.

BYZANTIUM

While the Latin West lost contact with its Greek sources, fostering an abiding sense of loss, the Eastern or Byzantine Empire never did, and it produced a steady stream of commentaries on Greek classics like Homer. In the Islamic world contact with the Byzantine Empire fueled a movement of translation of Greek philosophy into Arabic in the ninth and tenth centuries, which shaped the development of Islamic philosophy and institutions of higher learning. Furthermore, paper spread in the reverse direction around the same time, from China to Islam starting in the late eighth century, replacing both the more fragile papyrus and the more expensive parchment and facilitating an explosion of manuscripts. In Byzantium paper was imported rather than produced locally. It therefore remained an expensive commodity and coexisted with parchment through the twelfth century.[48]

Despite linguistic continuity, learning in Byzantium suffered a relative lull from the seventh to the ninth centuries, which coincided with pressures generated by the expansion of Islam and by internal conflicts over iconoclasm. Starting in the late ninth century, a Byzantine renaissance of learning fueled the study of old texts and the writing of new ones, perpetuating, for example, a long tradition of commentaries or scholia on Homer.[49] The emperor Constantine VII Porphyrogennetos (905–59), one of the patrons of this renaissance and the author of a variety of treatises (on the history of his family, military campaigning, and imperial administration), envisioned seeking out all the Greek works that had accumulated since antiquity and across the inhabited world (*oikoumene*) to select the useful parts from them: "In the course of so many centuries the number of events has become infinite, as has the number of books that have been composed. . . . This is why Constantine . . . has decided that for the utility of all and the advantage of practical life, it would be best actively to seek out and gather from all corners of the *oikoumene* books of all kinds, full of varied science. Then the enormousness of these writings, which is tiring just to think about, should be divided and fragmented to make available to all what they contain which is useful; in making a choice one will draw the more sustained attention of students of letters."[50] For Constantine, abundance was the result of a steady accumulation of works over centuries. The best remedy was to compile selections, as he did in his "eclogues" arranged in fifty-three thematic sections, which could then be studied more closely.[51]

A more unusual work produced in response to the abundance of Greek literature was the *Bibliotheca* of Photius (810–93), a high-ranking official of Constantinople who, before going on a dangerous diplomatic mission, wrote up at his brother's request his comments on some 280 books he had read. Photius provided author, title, a summary, and some personal judgments on each book in a form that has been compared to the book reviews that first appeared in literary periodicals in the late seventeenth century. The entries varied in length from a few lines to seventy pages, for a total size of ca. 500,000 words. Photius reported composing in haste and from memory, with the help of a secretary and with no attempt at ordering, though he may have relied on notes taken earlier, notably on books that he did not own. The *Bibliotheca* discusses many Hellenistic and Byzantine works that have since been lost, including a few books that could be considered reference works—a dictionary of dates by Phlegon of Tralles (second century CE) and the “Historical Notes” of Pamphila, a female scholar under the reign of Nero (first century CE).[52]

Of even greater proportions and clearly designed for consultation, the *Suda* lexicon was composed anonymously in the late tenth century, drawing on multiple lexicographical and historical compilations of the Byzantine renaissance (including the eclogues of Constantine VII). The *Suda* was an encyclopedic dictionary of massive proportions—31,342 entries and more than 1.5 million words—that combined historical, biographical, and lexicographical information under alphabetical entries comprising common and proper nouns. Possibly the work of a group of authors, the *Suda* offered information and assessments from an orthodox Christian perspective on Greek and Roman literature from antiquity to the mid-ninth century.[53] A Greek concordance of the whole Bible was reportedly compiled by the Basilian monk Euthalius of Rhodes ca. 1300 but was never printed (and unknown to Gesner).[54] The availability of Byzantine works has likely been underestimated in the Latin Middle Ages: for example Robert Grosseteste (1175–1253) translated substantial selections from the *Suda* in a manuscript for his personal use. Nonetheless, the humanists were responsible for the wider circulation of Byzantine reference works. The *Suda* was first printed in 1499, and Photius’s *Bibliotheca* in 1601, though Gesner, who praised both works highly, expressed the hope of having the latter printed some fifty years before that.[55]

ISLAM

Islam also experienced an abundance of texts, fueled by the translation of Greek works and by the growth of disciplines devoted to the study of the Koran. Religious texts were transmitted primarily through oral instruction in mosques (starting in the seventh century) and in numerous madrasahs (especially from the eleventh century). Oral transmission was considered essential to a correct understanding of religious texts, given the potential ambiguities of a script without vowels. Students would travel far and pay high fees to learn a text from an authoritative master; the “certificate of audition” the student received authorized him to teach the text in turn. Teachers and students first relied only on informal written notes to support their teaching and learning of recited texts, but pressure from caliphs and then a growing audience of cultured readers prompted the publication of “books” containing religious and secular literature starting in the ninth century.[56] For example, the extensive collection of hadiths, authoritative sayings that were recited along with the (progressively longer) list of authoritative transmitters of the saying, were published in the ninth century with an ordering by content, which made a saying easier to find in case memory failed.[57]

Secular topics included *falsafa*, focused on ancient Greek natural philosophy and astronomy, and *adab*, or the humanistic disciplines of grammar, rhetoric, and poetry in classical Arabic. Many genres offered access to these fields for a cultured elite, including topically arranged compilations of stories and facts, manuals of many kinds, and various works, called "encyclopedias" in the Western historiography for convenience, which explained the relations between the disciplines and outlined their contents.[58] One motivation for these compilations, as in the Latin West, was a fear of the loss of knowledge, as articulated for example by one early collector of *adab*, al-Jāhiz (781–869).[59]

The great number and variety of books produced in classical Islamic culture centered in Baghdad is visible in the *Fihrist* published in 938 by Ibn al-Nadīm, a bookseller in Baghdad. This first attempt at a complete bibliography of works in Arabic was organized into ten sections defined by discipline or topic (writers on the scriptures, grammarians, historians, poets, philosophers, and so on), indebted to the classification of disciplines of al-Farabi (872–951). Ibn al-Nadīm's goal was to be exhaustive: he described more than 3,500 authors, listing all their works, including light and ephemeral texts by obscure authors and books that he was not able to see himself and about which he solicited information from his readers. Ibn al-Nadīm may have been aware of Byzantine bibliographical efforts, notably through an abridgement of the *Onomatologus* of Hesychius of Miletus of the late eighth or early ninth century, which is cited as a source for the *Suda.* Most of the works listed in the *Fihrist* are no longer extant, but the *Fihrist* survived in more than one partial copy and first became known to European scholars in the late seventeenth century.[60]

Among the genres specially designed for consultation in the Islamic world, bibliographies and biographical dictionaries made use of alphabetical order, often within thematic or other systematic categories; alphabetization in dictionaries often followed final rather than first root letter (presumably to aid in finding rhymes). Alphabetization was typically not strict (involving only the first few letters) and might place the Mohammeds first in a list of names for symbolic reasons.[61] Alphabetical indexing occurred principally in the collections of hadith; indexing was not much used beyond that genre in classical Islam—possibly due to the focus on memorization as the ideal form of learning—but tables of contents were more common.[62]

Experienced readers could engage in consultation reading even without an index or a table of contents, given the predictable order in which topics were generally treated in various genres. For example, al-Juzajani, the biographer of the great medical scholar Ibn Sina (Avicenna, 980–1037), reported on the reading habits of this autodidact: "One of the remarkable things about the Master was that for the twenty-five years that I was his companion and servant, I did not once see him, when he came across a new book, examine it from beginning to end. Rather he would go directly to its difficult passages and intricate problems and look at what its author had to say about them."[63] Whereas al-Juzajani described Avicenna's skill in approaching any book in this way as exceptional, many works traditionally called "encyclopedias" offered surveys of knowledge that could fairly readily be consulted because they followed an explicit or predictable thematic or systematic arrangement.

Encyclopedias from the classical period (ninth to eleventh centuries) generally did not exceed one volume (a few hundred pages in later printed editions), but during the second period of encyclopedic activity (thirteenth to fifteenth centuries) the compilations could be much longer and relied on new forms of layout to facilitate consultation.[64] Arabic manuscripts from early on used different colors of ink for headings and proper names among other special terms. Starting in thirteenth-century Egypt new features of manuscript layout included hierarchical and numbered divisions of the text, running heads, lettering of differing sizes and colors, and tables of contents. For example, a fourteen-volume instructional treatise for clerks by Ahmad al-Qalqashqandi (1355–1418) in Mamluk Egypt used a detailed table of contents and cross-references to facilitate retrieval from its mass of 6,500 large pages, even though it had no alphabetical index; in some manuscripts the structure of the textual divisions was highlighted using color, blank space, and changes in font.[65] The possibility that contact with Arabic manuscripts inspired the development of similar features of manuscript layout in thirteenth-century Europe would be well worth careful study.[66]

Islamic books were produced exclusively in manuscript until the gradual introduction of printing after 1795. Fears of inaccurate printing of the Koran (which was banned from printing until much later), along with the special value placed on writing and calligraphy and the powerful position of scribes, help to explain the long persistence of the manuscript production of books, into the twentieth century.[67] Just as in the ancient and the Byzantine contexts, but with better surviving textual and contextual evidence, in the Islamic world manuscript production was no bar to polygraphy and the authoring of both very large and very many works. For example, the religious scholar Ibn Asakir (1105–76) is credited with one hundred books, many of them multivolume, including an eighty-volume *History of Damascus*, a copy of which was produced by ten scribes working for two years.[68] When Haji Khalifa, also known as Kâtip Çelebi (1609–57), composed the first complete bibliography of Arabic literature since the tenth-century *Fihrist*, the work comprised 15,007 alphabetized entries for a total of more than 800,000 words in Latin translation.[69] Analysis of the surviving drafts of the bibliography (*Kashf*) and accompanying biographical dictionary (*Sullam*) shows that Çelebi wrote some of the draft on smaller sheets of paper glued together and added insertions by gluing in more such slips. Historians suppose that he also used slips to alphabetize the material in his books, which are unusual in being strictly alphabetized rather than alphabetized only by first letter or two.[70] No other examples of the use of slips have yet been identified in the Islamic world, and Kâtip Çelebi had no reason to be aware of the use of slips in early modern Europe, so he may have invented this technique himself.

As in the Latin West, the accumulation of textual abundance and of summaries and textbooks in particular elicited concerns from scholars. The physician Ali Ibn Ridwan (988–1061) complained that compilations caused the "disappearance and destruction of the really valuable aspects of medical science" among Muslim physicians. Similarly, but with a different target, the account of the transmission of medicine by Ibn Jumay, physician at the Fatimid court in Egypt in the twelfth century, criticized early Christians for relying on manuals and compendia, to the detriment of the study of ancient originals to which Islamic physicians alone were still committed.[71] Ibn Khaldūn (1332–1406), who was himself a prolific scholar and historian, commented most insistently on the negative consequences of the "great number of scholarly books" available in every field that could not be read even in a lifetime. He noted that one of the consequences of this condition of overload was an increased reliance on textbooks, which was detrimental to scholarship and to the acquisition of good study habits by students.[72] As in early modern Europe, the abundance formed by accumulation over time did not preclude complaints about a lack of copies of particular works. In the Ottoman Empire in the seventeenth century, for example, the fear of a dearth of books, notably on nonreligious topics, led to a prohibition on exporting manuscripts.[73]

Islamic methods of information management included methods widespread in the ancient and Byzantine contexts—compilations and summaries, and the use of tables of contents and predictable topical arrangements. They also included alphabetical ordering in bibliographies and biographical dictionaries and features of manuscript layout to facilitate consultation. These tools were well developed in particular cases and contexts but remained the purview of specialists rather than becoming increasingly widespread over time.[74] The value placed on memorization and the transmission of personal authority from master to student limited the utility of indexes. Since manuscripts circulated mostly through personal contacts, among those already initiated into the methods of reading the books they needed, finding devices were not essential for expert users. In an exclusively scribal culture until the end of the eighteenth century, large reference books were unlikely to have been copied often, given the great expenditure of money and effort involved.[75] Nonetheless the motivation of scholars and the interest of specialized readers produced a remarkable range of reference works in the medieval and early modern Islamic world, a few of them of massive proportions. Due to impressive cultural and linguistic continuities, a number of these works, not only bibliographies like the *Fihrist* and the *Kashf* but also encyclopedic compendia, are available in print and in active use today.[76]

CHINA

The Chinese tradition of textual accumulation and aids to learning developed without contact with the Latin, Greek, or Islamic traditions (even while technologies like paper and gunpowder spread to those cultures from China) but offers a valuable point of comparison featuring similarities as well as contrasts.[77] As in those other cultures, learned culture in China was focused on the study of authoritative texts—Confucian classics as codified in the second century BCE—and generated a great accumulation of anthologies, commentaries, and compilations. As in other cultures, these genres rested on a combination of selecting from and summarizing existing texts, then sorting the gathered material, most often according to a traditional topical order. But these common methods of information management were shaped by a number of institutions unique to China. On one hand, emperors commissioned vast collective projects to anthologize and organize the whole tradition, which reached sizes unparalleled elsewhere. On the other hand, the pressures to prepare for civil service exams fueled the production of large numbers of commercial *leishu*, which gathered quotations for candidates to use in their answers. Woodblock printing, the most common form of printing in China (and well suited to logographic writing, though movable type was occasionally used starting in the eleventh century), facilitated the production of books in small print runs and later reprints and in decentralized locations.[78] Printing spread gradually and fitfully in China, from its origins in the eighth century in the reproduction of Buddhist texts, to a broad range of popular genres and some governmental use in the eleventh to thirteenth centuries. Despite major expansion in printing in the twelfth to thirteenth and sixteenth to seventeenth centuries, scholarly elites never abandoned their admiration for fine calligraphy and carefully produced manuscript notes (*biji*).[79]

Chinese emperors sponsored scholarship at least as early as the Han dynasty (206 BCE–220 CE), including a list of books to be retained in the imperial library. The fact that 153 of the 677 texts listed there survive today attests to the great care given to the transmission of texts by regular copying, first on bamboo strips, then on paper starting in the second century CE.[80] The oldest surviving books date only from the ninth century, and most ancient Chinese texts are known through woodblock imprints produced in the Song (960–1279) or later periods. A keen sense of the fragility of books in both manuscript and print, which were easily destroyed by natural forces but especially during wars, motivated many emperors to commission large compilations of texts. These anthologies ensured the availability of the selected texts in the imperial library for the use of the emperor and his court; they also testified to the greatness of the emperor and gave him a measure of control over the works that would remain in circulation since those omitted from imperial compilations were at greater risk of being lost to posterity.[81]

One of the earliest extant collections on a very large scale was commissioned by the emperor Taizong (976–97) of the Northern Song dynasty to mark the end of a period of wars with an anthology of extant literary and scientific knowledge. A team of imperial officials worked on the project from 977 to 983, drawing on histories and encyclopedias from the preceding Tang dynasty, among other sources. The resulting *Taiping Yulan* (Imperial Digest of the Reign of Great Tranquillity) comprised 1,000 *juan* or volume-like divisions, with the material sorted under more than 5,000 headings distributed in 55 categories. The work was not printed until the eleventh century but was present in manuscript in good private libraries. Taizong's son and successor, Zhenzong (998–1022), also supervised a compilation of his own that included topics his father had ignored.[82] The next record for the largest compilation was set by the *Yongle Dadian* (Great Handbook of Eternal Joy), commissioned by the Ming emperor Zhu Di, known as the Yongle emperor (1402–24), at a whopping 370 million characters. Compiled by more than 2,000 imperial officials under the leadership of select literati, this vast work drew on the accumulation of texts during the preceding centuries, 400 of which are known only because they were reproduced in it. With 22,877 chapters in more than 10,000 volumes, it proved too costly to print, even for the emperor; it remained in manuscript, from which two further copies were made in the sixteenth century in an attempt to preserve it. But due to losses in the intervening centuries only 865 chapters, less than 4 percent of the original, are extant today.[83] In the eighteenth century it was surpassed in size by the *Siku Quanshu* commissioned by the Qianlong emperor, of the Manchu dynasty, who instructed his officials to destroy anti-Manchu works at the same time as they gathered manuscripts and books from the many libraries they examined for inclusion in the compilation. The *Siku Quanshu* comprised 79,000 chapters in 36,000 volumes and was produced in seven manuscript copies between 1773 and 1782 (by more than 3,800 copyists); of these, one copy survived intact in the Forbidden City, from which the work was photolithographically reprinted in the 1980s and is now available online. At 800 million words it has been only recently surpassed by the English Wikipedia (over 1 billion words as of June 2010), but in the eighteenth century it far surpassed the 40 million words in the fifteenth edition of the *Encyclopedia Britannica*.[84]

As these three record-setting works attest, manuscript was the medium of choice for the largest compilations produced under imperial patronage. But other massive imperial compilations were printed, the longest of which was the *Ku-chin t'u-shu chi-ch'eng* (Collection of Texts and Illustrations Old and New), printed in 1729, unusually in copper movable type (possibly under Jesuit influence), and totaling 750,000 pages. Only some sixty-four copies were produced at the time. Such a low print run was a financially sound strategy in the case of woodblock printing because the blocks, once carved, could be saved and used for more impressions later, but when movable type was involved (as in this case), it was imperative to print as many copies as were necessary to recover the investment involved in production—once the type was distributed any reprint would require as much labor as the initial typesetting had. But in this case imperial funding presumably allayed the need to recoup the investment with sales.[85] In these massive compilations the principal finding device was a table of contents, itself very long (comprising 60 chapters, for example, in the *Yongle Dadian*, 40 in the *Ku-chin t'u-shu chi-ch'eng*). Classification schemes ranged from various topical arrangements (e.g., heavens, earth, man, ceremonies, and so on) to phonetic ones (like the *Yongle Dadian* in which the headings were sorted by rhyme and initial syllable) or graphical ones (by the order of brushstrokes or the radicals in a character, which became the norm for dictionaries in the eighteenth century).[86]

Another distinctively Chinese impetus to the development of aids to learning was the institution under the T'ang dynasty (618–907) of a system of civil service exams to select government officials at both national and local levels. The clear social and financial rewards for success on these exams fueled a large and increasing market for printed aids in preparing for them, including collections of authoritative quotations, summaries of subjects to master, and model essays. The success of these genres only exacerbated the problem they were designed to solve and fueled their own further success: as they helped more candidates prepare for the exams, the exams became more difficult and selective and required still more texts to be memorized (up to 500,000 characters) and new and better aids to be purchased and studied. Exam preparation aids were produced and sold in massive quantities down to the nineteenth century, when these genres were discredited and banned on the grounds that they encouraged cheating.[87]

One of the dominant genres designed for exam preparation was the *leishu*, or book of classification, which first appeared as a category in a bibliography finished in 945.[88] *Leishu* compiled quotations, anecdotes, and information from a wide array of sources, sorted under topical headings and subheadings, so that the exam candidate could learn them efficiently and cite them in his compositions. They could be read through but also consulted. The development of *leishu* and other works for consultation in the ninth century (e.g., dictionaries of rhymes) coincided with a shift in book format, from the ancient roll to the butterfly binding akin to the codex and better suited to consultation reading.[89] By the twelfth century the codex format included many features of layout that facilitated consultation, including headings and notes in the margins, running information about book title or chapter along the outside edge of the page (or center strip), the use of two registers to separate a text above from commentary or annotations below (or vice versa), and different sizes and colors of font. By the sixteenth century concern for readability of the page and legibility of each character had led to increasingly standard practices of printing of characters in a horizontal as well as a vertical grid and in a regular, more square style.[90]

Leishu followed various thematic classifications and often offered cross-references; within a topic they cited authors in descending order of authority, with the Confucian classics in first place. As a result *leishu* could be consulted fairly efficiently by a reader who had mastered enough cultural cues. Most *leishu* were commercial ventures funded by printers on the promise of sales in the marketplace and ranged in size from one to many volumes. They were written by scholars, often working in teams, who declared that they offered moral edification as well as literary instruction.[91] *Leishu* were frequently repetitive and borrowed from one another and from other works without acknowledgment. Given the ease of reprinting from old woodblocks, but also of introducing variations to them, and given the low and unpredictable survival rates for old imprints, no attempts have been made to estimate the numbers of editions of *leishu* or of books overall that were printed in premodern China; estimates of print runs are also difficult—100 to 600 is considered typical for Song imprints, when demand was not yet strong, but a woodblock could probably produce 10,000 copies before requiring repair.[92] Printing developed rapidly in Europe between 1450 and 1500, whereas it took centuries to spread thoroughly in China (from the eighth to the sixteenth), but once it had become established, woodblock printing facilitated the development of a myriad of print shops throughout the hinterlands, so that one historian has estimated that "more items [were printed] in China than anywhere else in the world between 1600 and 1800."[93]

Chinese scholars certainly faced an unusually long and continuous tradition of textual accumulation and were instrumental in devising tools for managing it, from large imperial compilations and collected editions, on one hand, to the shortcuts to learning promised in the *leishu*, on the other. Both kinds of solutions prompted complaints, especially as printing first entered the arena of scholarship in the Song period. Ye Mengde (1077–1148) lamented the consequences of imperial editions of the classics in 990–994 in much the same terms as some humanists would in fifteenth-century Europe: "As it was so easy [now] for scholars to get [printed] books, their reciting them from memory also deteriorated. And yet, the woodblocks were not correct to begin with, there was not one without errors. But this [and the following generations] altogether accepted wood-block texts as correct, while the manuscripts of collectors have been lost with every passing day. And so the errors can never be corrected. What a pity!"[94] Ye Mengde feared that the easy availability of printed texts would undermine traditional modes of scholarship involving the collection, memorization, and correction of manuscripts and consign to oblivion manuscript variants or texts omitted from the imperial editions. Although I am aware of no complaints about the manuscript compilations commissioned by the emperors, they too likely stemmed the tide of textual accumulation in China by impairing the survival of works not included in them, even if only one compilation project (the *Siku Quanshu* of the Manchu dynasty) directly destroyed some of the texts encountered in the process of gathering material.

Leishu were also the object of regular complaints. Following Ye Mengde on many points, Zhu Xi (1130–1200) argued that *leishu* encouraged fragmented, careless, and cursory reading whereas true learning required slow reading and deep understanding of the classics and memorization of passages with attention to their original context. Zhu Xi recommended the kind of reading that historians have called intensive and opposed habits associated with extensive reading: "Read little but become intimately familiar with what you read; experience the text over and over again. . . . Don't strive for quantity. . . . I especially don't want people to skip around as they read. . . . The reason people today read sloppily is that there are a great many printed texts."[95] Zhu Xi blamed bad reading habits on the abundance books in his time and offered his own educational program as a remedy. But, just like early modern European critics of overabundance, Zhu Xi relied on print to spread his message and his reputation as broadly as possible. Printing continued to expand after Zhu Xi's time and with it the production both of *leishu* and of complaints about them as shortcuts that encouraged the neglect of true study. Five hundred years later Gu Yanwu (1617–82) raised familiar concerns: because of exam handbooks, scholars "were reducing themselves to perusing ready-made books" and were thus cut off from the tradition of scholarly debate that preceded them.[96] In premodern China as in early modern Europe the complaints of scholars about aids to learning offer indirect evidence for the use of these reference tools that was rarely openly acknowledged.

Textual abundance and complaints of overload can be traced in any number of times and places—wherever the study of texts generated a succession of further texts considered worth studying. The great variety of aids to learning devised in different contexts typically involved combinations of a few basic methods of managing texts that are still central today—sorting and storing selections from and summaries of them. But the results in each case were shaped by many contextual factors, including political, educational, and religious institutions; technologies for the reproduction of texts; and cultural traditions ranging from language and script to ideals of learning. No single factor, neither a technology nor an institution nor a cultural tradition, is sufficient to explain the nature and fortune of aids to learning in different contexts, as I hope these few elements of comparison have illustrated. I expect also that continued reflection on these comparisons will introduce further factors of complexity.

REFERENCE TOOLS IN THE LATIN MIDDLE AGES

Renaissance scholars are famous for looking back to antiquity for models to imitate and sources to study. A number of ancient compilations, like those of Pliny, Diogenes Laertius, and Stobaeus, were indeed valued as both sources and models in the Renaissance, and authors of miscellaneously arranged compilations invoked Aulus Gellius as the founder of that genre. Ecclesiastical historians motivated by religious schism in the sixteenth century also saw in Eusebius a model for collective historical projects and chronological tables. But the most important sources for early modern methods of information management were medieval, though the humanists were perhaps not conscious of and certainly did not acknowledge this debt. Most of the reference tools produced in early modern Europe were based on tools developed before or during the thirteenth century, including florilegia and dictionaries alphabetically arranged; compendia and encyclopedias systematically arranged; tables of contents; biblical concordances and alphabetical indexes; precise citations by book and chapter number (e.g., for the Bible) or other textual subdivisions; and page layouts that facilitated consultation with running heads, numbered sections, lettering of different sizes and colors, and margins for annotations. Even foliation and pagination can be found in some late medieval manuscripts.[97] I will discuss in more detail later the ways in which medieval models and sources were transformed and put to new uses by early modern compilers operating both in manuscript and in print, but we must first understand how so many information management techniques we consider modern originated in the Middle Ages.

During the shift from late antiquity to the early Middle Ages the compendium remained the principal genre for transmitting ancient learning, both for pagans (e.g., Macrobius or Martianus Capella in the fifth century) and for Christians (Cassiodorus and Isidore of Seville). Cassiodorus wrote his *Institutions of Divine and Secular Learning* (early sixth century) for the monks at the monastery that he founded after retiring from public office under the Ostrogoths, and Isidore, bishop of Seville, addressed his *Etymologies* principally to the priests in his diocese (early seventh century). Both works were designed to spread the knowledge of books that had become scarce and difficult to access following the fragmentation of the Roman Empire and the decline of its educational system.[98] First composed for the use of a specific community, they were spread through frequent copying to readers in many different contexts.

Isidore described compiling his *Etymologies* "from [his] recollections of readings from antiquity"; he may also have had help from assistants in excerpting from and summarizing available works on liberal arts, natural history, and human affairs. Isidore's junior colleague Braulio, who prepared the manuscript for circulation, explained that since the book was "enormous" he divided it into twenty books; he also added a table of contents listing the rather unsystematic order of topics treated. Isidore's *Etymologies* circulated throughout the Middle Ages: copies were present in every major European cultural center by 800 and continued to be made through the fifteenth century, including in ten printed editions before 1500. One thousand manuscripts survive, but given the substantial size of the work (ca. 250,000 words in English translation), only sixty of them include the complete work.[99] Later authors recycled from it liberally, especially Hrabanus Maurus (*De naturis rerum*, in the ninth century) but also Alexander Neckham (*De naturis rerum libri duo*, ca. 1195) and Thomas of Cantimpré (*De natura rerum*, ca. 1245). The *Etymologies* offered a long-influential model for information management based on summarizing books, notably those difficult of access, and following a topical order that was not always predictable but that could be navigated through a table of contents listing book and chapter headings.[100]

The other genre that served to palliate the scarcity of books in the early Middle Ages was the florilegium, which, rather than summarizing, selected the best passages or "flowers" from authoritative sources. The term "florilegium" (from *flores* for flowers and *legere* in the sense of "select") dates from the early modern period, likely first used by Aldus Manutius for a Latin translation of a collection of Greek epigrams, but the practice of gathering the memorable elements of a text or a disputation certainly existed in antiquity.[101] Judging from the lack of medieval copies of ancient collections of sayings, these did not play a significant role as sources for medieval ones.[102]

The earliest medieval florilegium is probably the *Liber scintillarum* composed by Defensor of Ligugé at the end of the seventh century, which arranged extracts under topical chapters in descending order of the authority of their sources—Gospels first, then St. Paul and other apostles, other books of the Bible, and the doctors of the church.[103] Under the impact of the Carolingian Renaissance, florilegia included classical authors as well, often arranged haphazardly in the order in which they were read. Some florilegia focused on poetic excerpts and were used to teach prosody, others specialized in prose. Both kinds were likely used in teaching at many levels—from the young boys (*pueri*) mentioned in the *Opus prosodiacum* of Micon Centulensis in the mid-ninth century to the twenty-year-old Heiric who wrote under dictation from Lupus of Ferrières, ca. 859–62, a *Collectanea* comprising excerpts from Valerius Maximus and Suetonius, followed by philosophical and theological *sententiae*.[104]

On one hand, florilegia diffused selections from and helped to reinforce a canon of authors who were otherwise well known in the Middle Ages, starting with the Bible and church fathers and emphasizing ancients like Ovid, Virgil, Horace, Cicero, Juvenal, Lucan, and Seneca (in descending order of citations).[105] On the other hand, florilegia could include excerpts from authors who were otherwise hardly known in the period. The twelfth-century *Florilegium Gallicum*, for example, extant in many copies, was the "main vehicle through which Tibullus was read in the Middle Ages," and its excerpts were further diffused by being copied in later florilegia and by Vincent of Beauvais.[106] Similarly, the *Anthologia Valerio-Gelliana* announced its utility in offering passages from Valerius Maximus and Aulus Gellius because those texts were hard to find.[107] Medieval florilegia have thus long been valued by classical scholars, from Joseph Justus Scaliger and Janus Dousa in the seventeenth century down to the present day, as witnesses to rare or unique ancient passages, although current assessments do not consider them faithful records of the ancient originals.[108] Whether the authors cited were relatively well known or not, early florilegia made the material more widely available and easier to access in a period when libraries were few, small, and generally closed to all but privileged members of a monastic community. Florilegia likely first originated as personal notes of items worthy of memory taken on the occasion of access to a text and then shared with others who would not otherwise have access to it, as a remedy against "underload."

During the High Middle Ages many social and political developments contributed to an increased use of writing in legal and administrative as well as religious and intellectual activities.[109] Starting in the twelfth century, overload rather than the scarcity of texts was the condition that compendia and florilegia increasingly addressed. The prologue of the *Libri deflorationum* (Book of Flower Pluckings), better known as the *Florilegium Duacense* from its twelfth-century Douai manuscript, expained that it was useful in sparing the user the distraction of too many books, which would impair proper retention: "Indeed the multitude of books is distracting and no one can have the memory of all of them. Even more, whoever tries to retain everything will retain nothing well."[110] Tacitly invoking Seneca's dictum, this and other florilegia promised to offer only those passages worthy of retention—compilers also silently Christianized passages from ancient works when this seemed necessary.[111] Florilegia also spared their owners the expense and inconvenience of buying and storing these bulky items, as the early thirteenth-century Cistercian *Flores paradysi* (Flowers of Paradise) boasted: "Here you have at your fingertips briefly and in summary all that you could find in many bookchests full of large volumes." Indeed, florilegia manuscripts were often of small format to facilitate portability in contrast with the manuscripts of the texts that they excerpted.[112]

Florilegia formed an integral part of the explosion of information management tools in the thirteenth century: they were produced in much greater numbers and were more carefully ordered than in earlier centuries. Of the 1,000 extant manuscripts of florilegia, only 10 percent date from before the thirteenth century. Starting in the thirteenth century the quotations in florilegia were generally sorted for easy retrieval, whereas previously readers had to look through the whole text in order to find a specific item. Following the use of alphabetical order in the biblical concordance, the quotations in florilegia were increasingly either arranged alphabetically by incipit or grouped under topical or thematic headings that were arranged alphabetically or systematically. Some florilegia were even indexed, presumably to facilitate their use by preachers in search of material on a theme for a sermon.[113]

Among the most striking achievements of the period were three massive collective projects: the biblical concordances that indexed every word in the Holy Scriptures (the first one completed ca. 1247); Vincent of Beauvais's *Speculum maius* (1255), which compiled summaries and excerpts on the unprecedented scale (in the Latin West) of some 4.5 million words; and a union catalog of the holdings in Franciscan libraries across Ireland, England, and Scotland produced in the early fourteenth century. Richard and Mary Rouse have pioneered the study of these innovations in information management and the factors that explain them.[114] First, these and other new works built on earlier, less formalized, and "unpublished" tools devised during the eleventh and twelfth centuries. Second, new institutions favored a significant expansion in preaching and teaching, the two principal activities served by these tools. The mendicant orders were founded (Franciscans in 1210 and Dominicans in 1216) for the purpose of combating religious heterodoxy by diligent preaching. Whereas the Cistercian Bernard of Clairvaux (1090–1153) offered an example for the abundant production of sermons (some 377 have come down to us), the mendicants launched thousands of preachers throughout Europe. At the same time, in major intellectual centers throughout Europe informal cathedral schools became incorporated as universities, starting with Bologna, Oxford, and Paris in the late twelfth century and followed by others in the thirteenth. Universities rapidly accelerated the accumulation of texts by requiring teachers and students to comment on, cite, and debate authoritative sources as well as one another's arguments.[115] In both settings (and at their intersection, since mendicants formed a strong presence in many universities) preachers and teachers were motivated to locate relevant passages on a theme more systematically and directly than florilegia allowed.

Crucial to the development of scholasticism were the authoritative texts that inspired commentary and discussion. Scholastic teaching in canon law and theology focused on a few set texts composed for the use of cathedral schools in the twelfth century that used a combination of summary and selection to distill the material in those fields for students to master. Gratian's *Decretum* in law and in theology Peter Lombard's *Sentences* and the *Glossa ordinaria* with its commentary on the Vulgate compiled previous opinion and sorted it in a systematic order (following a standard order of legal or theological topics or the order of the Bible). Since students were expected to memorize the order of presentation, they could navigate these texts effectively even in the absence of finding devices.[116] By the thirteenth century the translation into Latin of previously unknown Aristotelian and Arabic texts (ca. 1130–1230) added to the range of authoritative sources and interpretations to be cited and to the scale of philosophical and theological argument. Scholastic works could reach massive proportions, most spectacular among them the *Summa theologica* of Thomas Aquinas at around 2.2 million words.[117]

To facilitate access, scholastic works typically included careful divisions of the text into books and chapters but also numbered questions, objections, and responses. The hallmark of scholastic manuscripts was a layout that invited precise citation and consultation: running heads on each opening announced the section of the text included, rubrication, numbering, and changes in the size and character of the script or in its layout (in the margins or with extra spacing) signaled distinctions between different parts of the text—objections and responses, or source, commentary, and commentary on the commentary. In this area too scholastic practice built on earlier models: in manuscripts produced in earlier monastic contexts, Mary Carruthers has emphasized that a distinctive look for each page, through the use of color and illumination, was considered a crucial aid to retaining the page in memory. Scholastic layouts similarly created a distinctive look for each page that offered cues to the memory but also facilitated locating a specific passage with numbering (including Arabic numerals, which became common in the thirteenth century) and clearly delineated divisions into sections.[118]

The biblical concordance was the single most important tool devised in the thirteenth century, and it encouraged further reference works based on collective work, precise citation, and alphabetical order. The biblical concordance too built on earlier efforts. In the twelfth century Peter Comestor and Alan of Lille had "published" *distinctiones*, which listed alphabetically some words found in the Bible (action words, abstract words, and concrete words), along with explanations of their various allegorical meanings, as an aid to preachers in search of appropriate biblical passages on a theme.[119] Judging from various surviving notebooks, students and masters also drew up lists for personal use of allegories and of unusual words in the Bible or partial indexes to works of interest. In a further sign that there was widespread interest in indexing the Bible, biblical concordances were developed independently in both Paris and England around the same time, although the English concordance was overshadowed by the Parisian one and survives only in a single, partial copy. Around 1230 the Dominicans of the house of St. Jacques in Paris started a project that was completed by 1247: each member of the team recorded the words he encountered in reading the Bible beginning with the letter (or first two letters) he had been assigned, along with a brief indication of the context and a precise location. This version survives in twenty-two manuscripts, most from the thirteenth century, all of them plain and of small size for portability. A later version of this concordance survives in eighty manuscripts made between 1280 and 1330—these are large, handsome volumes with rubrication to facilitate use, a few of which show signs of having been used as exemplars to be copied by university students according to the pecia system (in which students would rent from a stationer successive sections of the exemplar for copying, so that each student would end up with his own new copy of the exemplar).[120]

The method used to refer to the Bible had to be layout-independent, since each manuscript would vary in the amount of text included on each page. The division of the Bible into books had been established by the early church councils, but there was no standard numbering of the chapters in each book among Christians until the Dominican concordance, in using Stephen Langton's numbering of 1203, made it standard. Verse numbering was first introduced in printed editions of the Bible in the sixteenth century.[121] In the absence of verse numbering, in order to refer to a specific place within a chapter of the Bible, the Dominican concordance introduced a novel form of locating a passage, by subdividing each chapter into seven equal sections labeled A through G. These divisions never appeared in the written text, but the user was expected to make them mentally. Each lettered subsection represented one-seventh of a chapter and would vary in length with the size of the chapter, but users of the concordance, being already familiar with the Bible, would likely have had little difficulty making the requisite calculation to locate a passage.[122] This system of reference spread from the concordance to other manuscripts and was likely the source for the practice in some large printed books of adding letters in the margins of a folio page to which the references in the index would refer (e.g., in Erasmus's *Adages*); in print the finding letters were printed on each page and thus easier to use.

Christians were not the only ones engaged in close study and extensive commentary on the Bible. Yeshiva teaching in the modern period famously relied on memorization of the most important texts, but a few medieval Hebrew manuscripts from the twelfth or thirteenth centuries include examples of alphabetical lists of words with the biblical phrases in which they occurred, but without precise locations in the Bible—presumably because the learned would know them. At least one of these predated the Dominican concordance, which in turn triggered more such works in Hebrew in the fifteenth century.[123] In the preface to the first biblical concordance in Hebrew (*Me'ir nativ*), composed between 1437 and 1445, Yitshaq Nathan ben Kalonymos of Arles explained that he hoped to refute his Christian opponents by using their own tool against them. Indeed he had found that when he used the Christian concordance "there was no argument that I was not able to refute with the aid of this book." Rather than translating the Christian concordance, Nathan drew up a concordance from the Hebrew Bible directly but followed the Christian division into chapters, which then became standard in printed editions of the Hebrew Bible.[124] More generally, a number of Jewish encyclopedias were composed in the thirteenth and fourteenth centuries, in both Islamic and Christian environments (e.g., Toledo and Arles).[125]

Among Christians the verbal concordance to the Bible was soon followed by other similar tools. We have evidence for the existence of "real" concordances to the Bible starting in the 1240s, though the texts do not survive. These "concordances" (called so at the time) offered an alphabetical index not of the words themselves but of the theological concepts found in the Bible (*realia*); in modern parlance they were subject indexes.[126] In rapid succession there followed alphabetized subject indexes to major authors like Aristotle (indexed anonymously by 1250 in Paris), Augustine (by the Dominican Kilwardby at Oxford, 1256–61), or Aquinas (owner-indexed by Godfrey of Fontaines, then circulated more broadly). These indexes used a clear ordering system (the alphabet) and subject terms that were standard in scholastic circles, with the result that they could serve as a collective resource for students and scholars throughout Europe who had access to a copy, and they circulated separately from the works they indexed.[127] They offered a general solution to a problem that some had tackled more idiosyncratically in earlier decades. For example, Robert Grosseteste (1175–1253) annotated his copies of the Bible and of the works of church fathers with more than four hundred symbols (Greek letters and mathematical and other symbols) that stood for different themes according to a key that he also left in one of his manuscripts. Likely with the help of others (including another prominent English Franciscan, Adam Marsh, 1200–1259), Grosseteste was apparently working toward a theological subject index of many texts. The index remained unfinished; how usable it would have been for others would have depended on how the topical headings were displayed (by symbol or verbally) and arranged.[128]

Alphabetical order was not unknown prior to the concordance. A Latin herbal drawn from the Greek Dioscorides survives in alphabetized manuscripts as early as the late eleventh century. But the concordance inspired the broader use of alphabetical order: a florilegium of 1306, the *Manipulus florum* (Bundle of Flowers) in which the topical headings were ordered alphabetically, explained that it was arranged "after the fashion of a concordance [more concordantiae]."[129] Some draft pages of the first Paris concordance have been recovered because they were used in the bindings of manuscripts produced at St. Jacques in the fifteenth century. They show that the concordance was alphabetized in the way that scholars have identified as common in antiquity and the Middle Ages, which often resulted in partial alphabetization by first or first two letters: the compiler entered words on a sheet reserved for words beginning with that letter in the order in which he encountered them, and the terms could be alphabetized more carefully as the page was copied over a second time. Alphabetical order was already the norm in the first Latin dictionaries of the eleventh century—by first three letters in Papias's *Elementarium doctrine erudimentum* (ca. 1053) and by first letter only in the *Derivationes* attributed to Huguccio of Pisa (twelfth century). Huguccio's weak alphabetization hampered access to such an extent that more than one alphabetical index to the *Derivationes* was drawn up in the thirteenth century, the most widely circulated being that of Petrus de Alingio. But the *Catholicon* of 1286 by the Dominican Giovanni Balbi was the first Latin dictionary to be completely alphabetized. Balbi offered a detailed explanation of this order (e.g., *justicia* comes before *justus*), which suggests that he felt it was new to the dictionary genre.[130] Balbi described himself as writing for the use of other Dominicans, but the work survives in 190 manuscripts and was owned by many other ecclesiastical institutions, including five peciated copies showing use by university students; it was among the first books printed by Gutenberg in 1460.[131]

The alphabetical indexes of authoritative texts (from the Bible to major ecclesiastics) can be explained only in part as offering more expansive aids to preachers. For the average preacher, model sermons along with florilegia, *distinctiones*, and collections of exempla (anecdotes illustrating a moral point) were the basic tools, multiple copies of which were present in almost every clerical library.[132] The other factor motivating the use of more exhaustive and expensive tools was the scholastic context for preaching and arguing. In the university environment, the audience for sermons was experienced and demanding. Sermon writing was required of all masters and, once a year, of all students in theology; students also attended about one hundred sermons per year, not necessarily with pleasure.[133] In this context the reliance on florilegia and presorted excerpts was inadequate. One master at Paris in the 1270s, for example, owned an alphabetical dictionary of terms, a biblical concordance, and two collections of biblical distinctions in addition to indexes to various works that he purchased ready-made or devised himself. More generally, the term *originalia* was first coined in the thirteenth century to indicate the greater authority of original sources as opposed to excerpts, precisely as these became more widely diffused, in a case of conceptual "back formation."[134] At least one widely diffused florilegium responded to the complaint that the genre fostered an excessive reliance on excerpts. The *Manipulus florum* (1306) of Thomas of Ireland offered the usual excerpts but also exhorted readers to turn to the *originalia* after finding a quotation of interest and, to aid in that task, offered in an appendix a list of the authorities cited and their works. This list was also copied independently of the accompanying florilegium as a kind of bibliographical guide by those interested in following Thomas's advice to read the original texts.[135]

Alongside the biblical concordance the other massive work that originated in the training of mendicant preachers but far exceeded their needs is the largest and most famous of the medieval "encyclopedias"—Vincent of Beauvais's *Speculum maius* (composed 1244–55). Weighing in at some 4.5 million words in four parts (the last of which was composed and added after Vincent's death) and divided into a total of eighty books and 9,885 chapters, it is likely the largest reference work in the West before 1600. A complete manuscript required at least seven folio volumes of 500 pages each.[136] Vincent devoted an extensive prologue to explaining his work and began it with a vivid statement of the perception of overload: “Since the multitude of books, the shortness of time, and the slipperiness of memory do not allow all things which are written to be equally retained in the mind, it occurred to me, the least of all the brothers, as I pored over assiduously the books of very many [authors] and read studiously for a long time, finally (and on the advice of my superiors) to reduce in one volume in a kind of compendium and in summary order some flowers chosen according to my talent, from almost all those authors which I was able to read, whether our own, that is Catholic doctors, or gentiles, that is philosophers and poets, and from historians of both kinds [ecclesiastical and secular].”[137] Vincent articulated eloquently the constraints of time and memory in the face of overabundance. He then offered his *Speculum* as a solution of a classic kind: the selection of the best bits but on a scale of authors used and topics covered that was unprecedented. Vincent drew on a range of well-known ancient and patristic sources, and also on newly available sources like Aristotle and Avicenna, and on other encyclopedias, from Isidore’s *Etymologies* to the recent *De natura rerum* of the Dominican Thomas of Cantimpré.[138] But Vincent was not content to compile what was readily available—he also sought out sources to fill what he perceived as gaps in his principal sources. Arno Borst describes that Vincent of Beauvais had his assistants prepare a “subject index to Pliny” so that he could assess the lacunae in Pliny’s treatment of the natural world and turn to other authors to fill these gaps (for example, he used Isidore for his treatment of Vesuvius, which was not discussed in Pliny).[139]

Like the reference tools studied by the Rouses, the *Speculum maius* was designed as an aid to preachers. Vincent only alluded in his prologue to the institutional origins of the work, but specialists have elucidated it in good detail. The mendicant orders prescribed the training of the friars by a lector in each convent; many of these authored collections of notes, which they shared with others within the order and beyond. Vincent was asked by his superiors in the Dominican order to write an *opus universale* for the lectors, particularly for those working in monasteries with no or inadequate libraries.[140] The *Speculum maius* went through at least five different states, by successive enlargements, probably due in part to Vincent’s (and his collaborators’) access to new books. In addition to the libraries of the Dominican abbeys of St. Victor in Paris, of Royaumont where Vincent was a lector, and of Beauvais, where he was from, Vincent may have had access to the royal library of Louis IX.[141] Vincent announced the utility of his massive work for lectors like himself but also for a whole range of pious activities: “But I am certain and trust in God, that this work is of no small use not only to me, but to every studious reader, not only to know God himself and his creatures visible and invisible, and through this knowledge to love God and to excite his heart to devotion by the sayings and examples of the charity of many doctors, but also to preach, to read, to dispute, to resolve, and generally to explain clearly almost any kind of art."[142] Vincent's *Speculum* included much more than the average lector or preacher needed and was designed as a multipurpose resource for users in many occupations. Vincent acknowledged that he also hoped to satisfy "others who, perhaps out of some curiosity to know and laboring on things unknown to them, would be pleased by the knowledge of such things."[143]

Anticipating accusations of excessive prolixity and novelty, Vincent emphasized that his work was in fact brief and ancient: "This new work is at the same time old, and it is also equally both brief and prolix. Indeed it is ancient by its authority and material, but new by the compilation and arrangement of its parts. And it is brief because of the reduction of many sayings to brevity. Nonetheless it is long because of the enormous multitude of material."[144] Vincent's scope was indeed universal: his purpose was to bring to light the presence of God throughout nature (in part 1, *Speculum naturale*), the arts and sciences (part 2, *Speculum doctrinale*), and, at greatest length and in the most widely read part of the whole, in an account of universal history (part 4, *Speculum historiale*). Part 3, the *Speculum morale*, was added posthumously, lending a more philosophical dimension to the otherwise historically oriented project.[145] At one point Vincent accused himself of the sin of curiosity and of exceeding the bounds of what was necessary for the salvation of souls, but even while doing so he insisted that "all the things which are contained in this work . . . are good in themselves and useful to the studious."[146] In fact Vincent seems mostly to regret having read too little rather than too much: "I know that I was not able to find or read everything that has been written. And I do not claim that I expressed everything which was noteworthy even from what I was able to read, otherwise I would have had to add an enormous volume. But of good things I gathered, I think, the better ones and certainly of the better things, a few of them."[147] Vincent's ambition was to cover as much material as thoroughly as possible toward a goal of exhaustive encyclopedic mastery.

Research into the medieval reception of Vincent's *Speculum* has turned up only two extant copies of the whole work from a handful that were made in the Middle Ages. The *Speculum* circulated mostly in partial copies, three hundred of which survive, most of them focused on the *Speculum historiale*. But even the *Speculum historiale* survives in only thirty-seven complete copies. Given its massive size, the *Speculum* was prohibitively expensive to copy except partially. Printing was the key to its circulation either as complete parts during the incunabular period or as a complete set of four in 1591 and 1624.[148] But Vincent of Beauvais was widely known and used as a source in shorter, more portable and affordable encyclopedic compilations. Among these the *Libri de proprietatibus* by Bartholomaeus Anglicus was widely copied in the Middle Ages and printed nine times down to 1491 and in English as late as 1582.[149] A study of preachers' reactions to the three principal encyclopedias of the thirteenth century, those of Thomas of Cantimpré, Vincent of Beauvais, and Bartholomaeus Anglicus, suggests that none of them in fact was much used by preachers. The encyclopedic ambitions and the assumptions of harmony in these works did not match the experience of hardship and strife that preachers mostly addressed in their sermons.[150] These works, initially justified as aids to preachers, thus formed their own genre with distinctive ambitions and tone. Nonetheless, a majority of surviving copies were the property of monastic (often Cistercian and Benedictine) libraries, where they offered new access to a wide range of topics and texts.

The *Speculum maius* was consultable although it did not include an index. Only the most frequently used part, the *Speculum historiale*, was indexed some seventy years after its composition, ca. 1320–23, by Jean de Hautfuney (later bishop of Avranches).[151] But the text was arranged systematically, as Vincent explained, so that the reader could find his way. The *Speculum naturale* followed the hexameral order of creation as described in the Bible, and the *Speculum historiale* the order of chronology; material in some sections (on minerals, plants, and animals) was alphabetized (and strictly so). Vincent indicated that he had consultability in mind in dividing the work into many short chapters: "So that each of the parts of this work will appear more easily to the reader, I wanted to divide the whole work into books and chapters."[152] Manuscripts of the *Speculum* typically included a list of chapter titles at the front or the back of the manuscript or at the beginning of each book. In addition, Vincent included summaries for each book. Only with the printed editions did the text circulate with an index attached.[153]

Explaining the appearance in the thirteenth century of new large-scale reference tools, like the concordance to the Bible and Vincent of Beauvais's *Speculum maius*, is complex. From a practical perspective the institutional context of a religious order, in both of those cases the Dominicans, was crucial in providing a team of educated men with the time and resources to engage in the painstaking work of a decade or more of excerpting, sorting, and compiling textual material.[154] The investment was justified by hailing the value of the results to preachers among other pious purposes. From an intellectual perspective, factors beyond a desire to improve the quality and ease of preaching were also at work. Concordances and indexes to authoritative texts are evidence of a new sense of the limitations of the florilegium, which seemed increasingly inadequate to the complexity of university teaching and preaching. Vincent of Beauvais complained that existing compilations silently removed, added to, or changed the words of their sources and corrupted their meaning.[155] The reception of Aristotle added to the awareness of philosophical complexity and of the risks of faulty transmission, even if the "vast majority of students in the late Middle Ages knew the philosophers only in extracts," such as the *Parvi flores* (Little Flowers).[156] But the motivation behind the concordance clearly antedated the reception of Aristotle, and the most recent assessments of Vincent of Beauvais emphasize the extent to which he too steered clear of Aristotle and the controversies surrounding him.[157]

Even before the reception of the new texts of Aristotle, Hugh of St. Victor (1078–1142) advocated an encyclopedic approach to the Holy Scriptures—"learn everything; you will see afterwards that nothing is superfluous"—and to knowledge in general—"hold no learning in contempt, for all learning is good." Further such variations on Pliny's "no book so bad . . . " appeared in the prologues of other medieval encyclopedias.[158] This new attitude more than any objective case of overload was the most important factor, I would argue, driving the appearance of the exhaustive and universalist ambitions of the largest reference books of the thirteenth century.[159] Although the Rouses emphasize that early indexes enforced a narrow canon of authoritative positions and topics, the tool itself could easily be applied to an increasing diversity of material.[160] Even if the *Speculum* was copied only in parts, Vincent of Beauvais exposed the reader to multiple opinions on any topic he discussed. Neither the concordance nor the encyclopedic compendium resolved the textual difficulties or contradictions that they helped bring to light. Vincent explicitly left to the reader the task of reaching a final conclusion amid the diversity of authoritative opinions that might exist on a question: "I am not unaware of the fact that philosophers have said many contradictory things, especially about the nature of things. . . . I warn the reader, lest he perhaps be horrified, if he finds some contradictions of this kind among the names of diverse authors in many places of this work, especially since I have acted in this work not as an author, but as an excerptor, that I did not try to reduce the sayings of the philosophers to agreement but report what each said or wrote on each thing; leaving to the judgment of the reader to decide which opinion to prefer."[161] In this way the pressures of the multitude and diversity of authoritative opinion, already articulated in the previous century by Peter Abelard (1079–1142), were heightened by the development of reference books, from indexes and concordances that made *originalia* searchable and to the large compilations that excerpted and summarized from diverse sources.

By the middle of the thirteenth century, the principal ingredients both of a perception of overload and of solutions to it were in place. Even before the reception of Aristotle and his Arab commentators, but all the more so after it, an elite of scholars cultivated access to a vast and continuously increasing corpus of biblical, patristic, ancient, Arabic, and scholastic opinion and commentary. They devised new tools of text management, such as alphabetical indexing, systematic sorting, logical divisions of a text, and the visual cues for navigating them, and cultivated a new universalist ambition to accumulate material beyond the requirements of a particular profession. During the later Middle Ages a staggering growth in the production of manuscripts, facilitated by the use of paper, accompanied a great expansion of readers outside the monastic and scholastic contexts.[162] The rhetoric of overload, of "infinite volumes," of the "variety of writers and of books," and of the "infinite deeds of history" spread to other genres, such as historical compendia.[163] Judging from the copies now extant, the number of compilations, especially florilegia and encyclopedic compendia, continued to grow as more writers engaged in selecting and summarizing for their own use and that of others.[164] Together with the techniques of summarizing and selecting inherited from antiquity, the new methods devised by the mid-thirteenth century formed an effective and sophisticated set of tools that remained central to information management into the early modern and the modern periods.

IMPACTS OF PRINTING

This brief survey reveals that many features we associate with early modern and modern reference works were present in scribal contexts, including compilation, even on a large scale (e.g., Vincent of Beauvais, the *Suda*, al-Qalqashqandi, or the *Yongle Dadian*), and various forms of order (systematic, alphabetical, or miscellaneous) typically made visible in the page layout and subdivisions of the text. With these examples in mind we can resist any simple causal claims between the invention of printing in Europe and the nature of early modern reference genres. For example, it is not the case that alphabetical indexing, or large-scale compiling, or consultation/extensive reading first appeared with printing. Printing spread familiarity with the trappings of consultation reading to larger and more diverse audiences and facilitated the production of larger and more numerous books, but only a few features of the early printed book were innovations: the title page, which became necessary to market books produced on speculation rather than mostly on commission, and new methods for signaling section breaks and hierarchies given the greater inconvenience of introducing red (or other colors), whether by hand or in two-tone printing.

Historians of the book have debated the impact of printing at different levels, from broad cultural trends to narrow technical ones. The more general cultural consequences of printing are particularly hard to disentangle from those of multiple other cultural changes under way during precisely the same time.[165] In Western Europe, unlike in China, for example, the invention of printing coincided with multiple challenges to received opinion that originated from other causes (the recovery of new ancient authorities, travel and the discovery of a new world, and religious schism) and that spawned new habits of critical thinking and new philosophical systems founded on empirical and rational argument. Just as these various movements would have developed differently without the presence of print, so too the impact of the technology would have been different if it had not coincided with these movements. Instead of trying to reduce the complex causal nexus behind the transition from Renaissance to Enlightenment to the impact of a technology or of any particular set of ideas, we can examine how contemporaries responded to an increasingly abundant and varied range of sources of information, both in theory and in practice.

Initially, the dominant reaction to printing was one of great admiration for it as a "divine invention."[166] Contemporaries were impressed with the labor that printing saved, although quantitative estimates of the savings varied and are probably more rhetorical than reliable: one contemporary marveled that "as much can be printed by one man in a day as could be written in a whole year by many scribes."[167] With more realistic attention to the infrastructure involved in a print shop (where more than one person was generally employed), an Englishman in 1630 estimated that four men could print in a day what it used to take ten men a whole year to write by quill.[168] Another noted that the printers did not even need to be learned in letters.[169] Contemporaries also noted a great drop in book prices due to printing. Printing made books affordable to greater numbers than before, as various humanist observers noted, whether they felt this was for the better (Andrea de Bussi, Ludovico Carbone) or for the worse (e.g., Hieronymo Squarciafico).[170] Finally, printing promised preservation: if the ancients had had printing, their works would not have been lost—this comment by Ludovico Domenichi was so appealing that it was plagiarized by his rival Anton Francesco Doni.[171]

Alongside the praise contemporaries also voiced complaints. The earliest kind of complaint concerned the quality of the books printed and the errors they contained, whether because the books were hastily composed and corrected or because they were based on poorly chosen manuscripts. In either case the profit motive was perceived to threaten the quality of the final product, just as similar concerns are raised today about projects to digitize books. Some humanists advocated regulations to guarantee the quality of printed editions. One of the first edicts of censorship, issued by the archbishop of Mainz in 1485, was issued to guard against faulty printing and false attribution of authorship as well as affronts to the church.[172] But these efforts had little impact and were soon overshadowed by more strenuous religious censorship established in the wake of the Reformation in both Protestant and Catholic places. By mid-sixteenth century comments on the impact of printing often focused on the vast and cumulative increase in the number of books being written and printed. The multitude of books became a refrain that authors used to motivate their own diverse projects, whether in the abundant spirit of Pliny or the restrictive spirit of Seneca, because they could expect their readers to be swayed by this argument from common experience, as I will discuss in more detail below.

The most easily identified consequences of printing are ones on which contemporaries did not comment but that created the trappings of the book with which we are still familiar, including title page, pagination, and finding devices. The earliest printed books consisted of texts already available in the Middle Ages and printed to mimic medieval manuscripts. Among reference works the *Catholicon*, the carefully alphabetized large Latin dictionary composed in 1286, was the first to be printed, by Gutenberg in 1460 and again in 1469. In these first years of working with movable type, Gutenberg used his second edition of the *Catholicon* to experiment with casting type not letter by letter but in two-line slugs that could be reused in later printings, saving the labor of distributing then resetting the type letter by letter. The technique was a kind of linotype, two lines at a time, which played a central role in the mass production of cheap print in the nineteenth century, along with its full-page equivalent, the stereotype, used in setting type for newspapers, for example. But in 1469 the experiment was not repeated.[173] Nonetheless it shows that Gutenberg anticipated reprinting the *Catholicon* even beyond the second edition for which he cast the two-line slugs. Indeed, the *Catholicon* was printed at least nine more times before 1500 (though not again by Gutenberg) and offered a good example of the strong commercial viability of the printed reference book from the very beginning. The dictionary remained the best selling of the reference genres. Ambrogio Calepino's *Dictionarium* of 1503 rapidly pushed the *Catholicon* off the market and performed even better, with one edition every two years on average (compared to one every four years for the *Catholicon*) until 1700.[174]

The earliest printed books looked just like their manuscript counterparts, but by 1500 or so printing had caused a number of changes in the look of reference works, as in other genres, including the use of white space rather than color on the page to guide the reader through the text, a title page, and folio or page numbers, which then served as the principal locators in additional features like indexes or lists of errata.[175] In medieval manuscripts of reference works color was especially valuable in making a text or finding device more easily consultable.

Rubrication typically highlighted each new entry in a dictionary or florilegium; it played an essential role in manuscripts in which entries followed one another with no line break, to maximize text on a page. Rubrication involved the extra expense of hiring a rubricator in addition to the scribe who copied the text. As a result a number of manuscripts of reference tools were plain though they seem considerably more difficult to use as a result.

Printing produced a text in black. Two-tone printing in red and black was occasionally used in the early modern period, notably for title pages and some calendars, but it required considerable extra work and expense to run each page through the press a second time to apply the red ink. During the incunabular period (to 1500) owners of early printed books could pay a rubricator to apply color to their texts. But that profession, dependent on commissions to rubricate manuscripts as well, soon dwindled.[176] Printing encouraged other ways of enhancing the legibility of the page, through the use of blank space, varied fonts, and typographical symbols or woodblock decorations or illustrations. Reference works in particular were often the site of such innovations, which facilitated consultation. By contrast, other long works shunned such devices. For example, Montaigne's *Essays* (1580) did not even include paragraphs within chapters, some of which spanned up to one hundred pages of continuous prose.

Reference books were also the site of innovations in textual locators. From the beginning printing prompted the numbering of sheets in the form of signatures to aid printers and binders. Folio numbers on each leaf were the first numbers provided to aid readers; in printed editions folio or page numbers were almost always preferred over layout-independent forms of reference for tools, such as tables of contents, indexes, and errata lists, even though the numbering had to be redone in every new edition as a result.[177] Pagination with Arabic numerals on both sides of a page was probably first used in a 1513 edition of Niccolò Perotti's *Cornucopiae*. This commentary on Martial's epigrams offered a wide-ranging commentary on every word that Martial used and was valued as the most sophisticated Latin dictionary of its time. But since the words were discussed in the order in which they appeared in Martial's poems, a powerful alphabetical index was essential. The printer Aldus Manutius of Venice explained the novelty of using page numbers in his index: "a very copious index in which each word that is sought can most easily be found, since each half page throughout the whole work is numbered . . . with arithmetical numbers." Not coincidentally, Aldus was also a learned humanist himself and maintained a reputation for high-quality imprints. Another great humanist printer, Johannes Froben of Basel, introduced further refinements in textual locators. The errata sheets of the 1528 edition of Erasmus's *Adages* by Froben referred to passages by page and line number, prob-

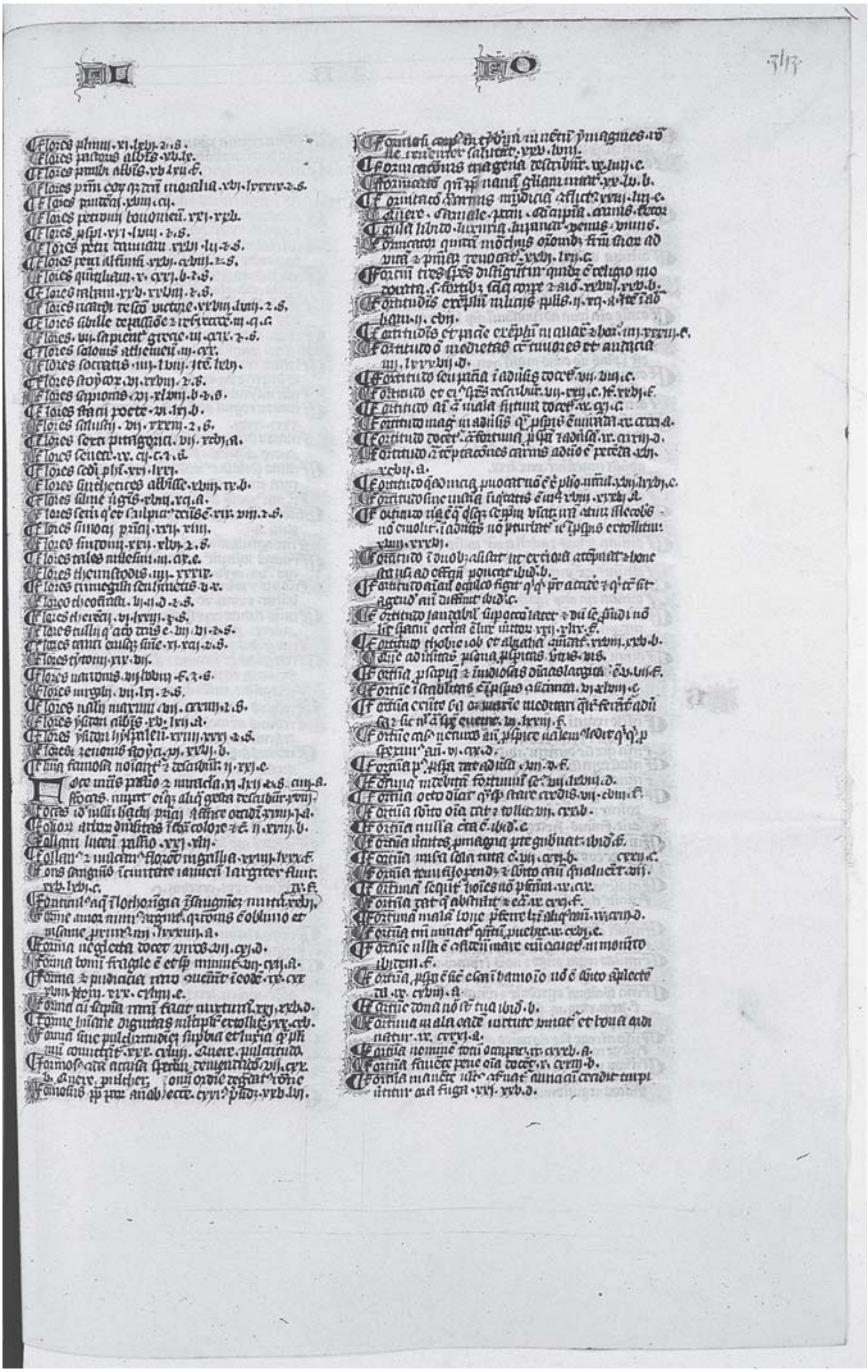


Figure 1.1
A fourteenth-century manuscript of Jean de Hautfuney's index to Vincent of Beauvais's *Speculum historiale* (1255). The red and blue rubrication added to the expense of producing this manuscript but also made it easier to consult. Reproduced with permission from the Bibliothèque nationale de France, Paris, MS Lat 14355, f. 353r.

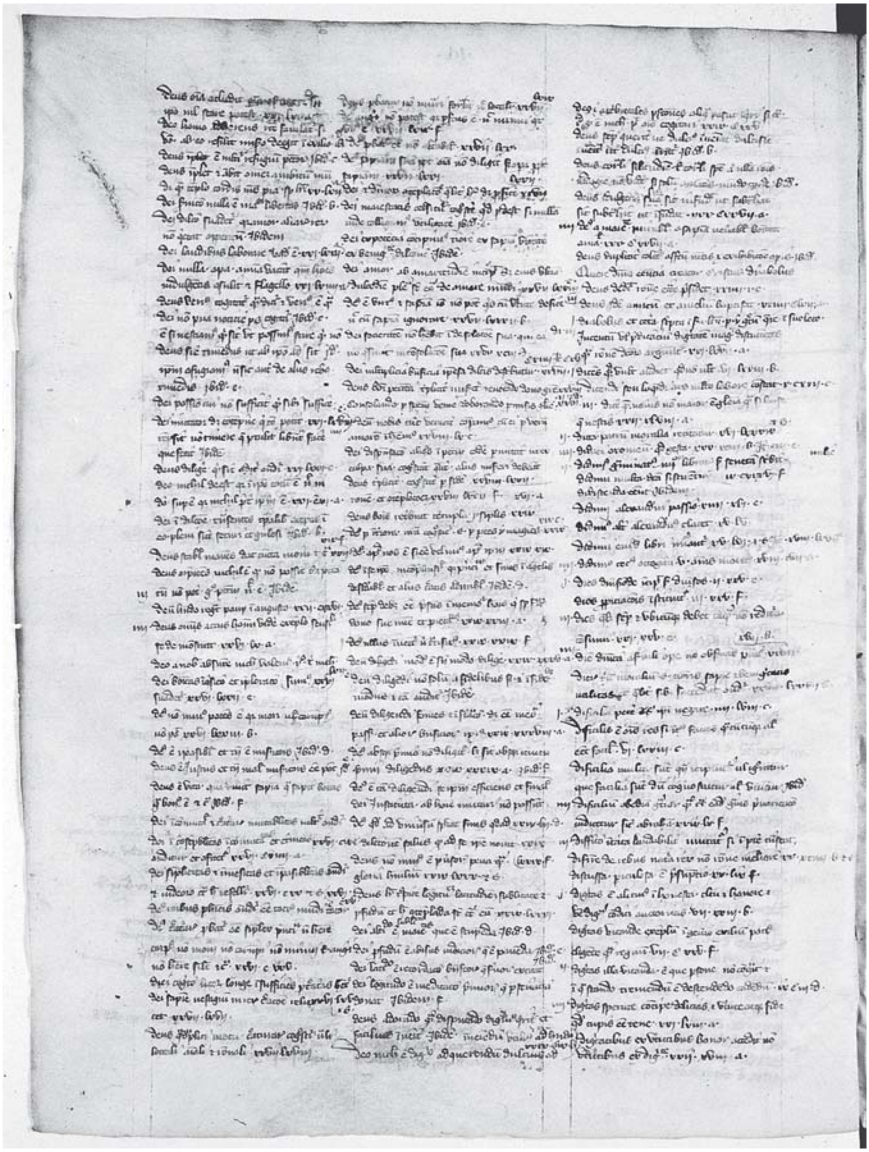


Figure 1.2
Another fourteenth-century manuscript of Hautfuney's index to Vincent of Beauvais's *Speculum historiale.* The absence of rubrication and the narrower columns make the entries harder to identify although the two indexes contain the same information. Reproduced with permission from the Bibliothèque nationale de France, Paris, MS Lat 14356, f. 17v.

ably for the first time; the index in that edition referred to page numbers and specified beginning, middle, or end (p, m, f, respectively), and in later editions of the *Adages*, passages were identified by page number supplemented by a capital letter A through F printed alongside the columns of text.[178]

Above all, printing changed the economic dynamics of book production. Manuscripts were most often produced on commission, with payment or a promise to pay preceding the requisite investment of materials and time. By contrast, printers did much of their work on speculation. They invested considerable capital in the metal type, the paper, and the labor required to print a book and then needed to recover expenses and make a profit by selling the copies. The printer would profit only if enough copies were sold and could easily fall into debt and bankruptcy if not. Scholarly books especially sold slowly, and printers traded their stock of unsold printed sheets to help reach new markets and diversify their offerings.[179] To mitigate the risks involved and to generate revenue to fund the capital outlay required to print a large book, printers also took on small jobs, often paid for in advance (government decrees and forms or indulgences), or short works (pamphlets or almanacs) that could be finished and sold rapidly.[180] We have little firm evidence for the print runs common in the fifteenth and sixteenth centuries—they varied according to the kind of book and its estimated salability, but the economics of printing created a threshold for a print run below which it was not commercially viable to invest in printing the book. A number of incunabula mention that 300 copies were printed, though this figure may have become formulaic. Most scholars assume that despite contextual variations, print runs generally increased during the sixteenth century—1,000 is often used as a ballpark estimate.[181]

Expensive books (illustrated or very large) required a larger print run to create the possibility of a profit, given the greater expenses involved in producing them. Sebastian Münster's heavily illustrated *Cosmographia* was a particularly costly production for the printer, despite the voluntary contributions made by some of the cities featured in the book; we know that the edition of 1550 was printed in 3,600 copies.[182] Although I do not have any evidence for particular print runs of the printed reference books I have studied, we can reasonably assume that since these books were large, they were printed in numbers at the higher end of the scale—at least in 500 to 1,000 copies per edition. Despite the existence of commercial scriptoria (which produced manuscripts in bulk and on speculation) in certain university centers like Paris, printing multiplied books on a completely different scale from that of a manuscript economy.[183] The differences between manuscript and print production were especially acute in the case of large books. In a manuscript economy large books were very expensive to copy entire and were often copied only in parts selected to suit the commissioner's interests.[184] By contrast, printers had incentive to produce large books in more copies than smaller ones to allow the possibility of a profit, and generally entire, since to sell as many copies as possible required appealing to as many different readers and sets of individual interests as possible.

The need to sell books once they were printed also accounts for the appearance of the title page among early printed books. Medieval manuscripts did not include title pages, and bibliographers identify them by incipit or opening words: no special markers were needed to recognize a book that one had commissioned and waited for while it was copied.[185] By contrast, a printed book needed to appeal to buyers who had no advance knowledge of the book, so the title page served as an advertisement, announcing title and author, printer and/or bookseller (where the book could be purchased), generally a date of publication, and also additional boasts about useful features—"very copious indexes" or a "corrected and much augmented" text. Title pages occasionally made deceptive claims, proclaiming novelty where there was little or none, for example.[186] The variation bibliographers have observed among copies of a hand-printed edition was not considered deceptive: when errors were corrected during a print run, the uncorrected sheets were used alongside the corrected ones, resulting in usually small differences between the copies within an edition.[187] To make a more radical correction, printers could also replace a whole page or quire with a new one (called a cancel). Occasionally printers introduced a new title page proclaiming a new and improved edition to dress up and help sell copies of an old book that remained unsold (in which case bibliographers speak of a new issue rather than a new edition of the work).[188]

Title pages reveal that indexes were a major selling point with sixteenth-century buyers. In the Middle Ages indexes were few in number and generally separate from the works they indexed. In a printed reference book each copy combined text and index, although indexes to major works (e.g., Bible, Galen, Aristotle) were sometimes printed separately. Medieval indexes used perfectly effective modes of reference by book, chapter, and section, which might have been copied into print and been usable across different editions as well as manuscripts, but printed indexes were generally made specifically for each edition by referring to page or folio number. It is possible that printers avoided layout-independent locators in their indexes in the hope of luring buyers to purchase a new edition for its new and improved index. Certainly printed books spread familiarity with indexes to a much broader readership than that reached by medieval indexes. Even vernacular works and "accessible" genres like dialogues featured indexes. Presumably printers invested the extra effort and expense because they expected the index would help sell the book, whether the index suggested gravitas or usefulness or both to potential buyers.[189]

While these changes in the presentation of the book were manifest within the first fifty to seventy years after Gutenberg, the cumulative impact of printing elicited comment starting in the sixteenth century in a refrain often repeated down to the present. Clearly the printing press vastly increased the number of books available for sale. To put specific numerical values on this growth has proven remarkably difficult, however, given the variability of print runs among other features of handpress printing. Estimates for the number of books printed before 1500 range from 8 million to 20 million copies, despite the existence of a near-exhaustive catalog of incunabula totaling some 27,000 imprints.[190] After the incunabular period we have no complete listing of European imprints. Estimates based on the holdings of libraries that were supposed to receive copies of all printed works, such as the French royal library, are problematic because the deposit system was not effective, with perhaps less than half of Paris imprints arriving in the royal collections, not to mention provincial production.[191] The Short-Title Catalog of extant British imprints 1475–1800 is also difficult to turn to careful statistical use because it does not distinguish first editions and reprints. Nonetheless, it shows impressive increases, from 416 titles in the incunabular period to 4,373 titles printed between 1500 and 1550. In the seventeenth century production spiked from some 500 imprints per year up to an average of 2,000 per year during the unregulated period of the civil war (1643–60), a level that was reached again only after 1685. Print production then rose steadily to an average yearly output of 4,000 by 1775 and more steeply to 8,000 titles by 1800.[192]

Even without satisfactory figures, we can conclude that the cumulative impact of printing was massive and constantly increasing printing production. New imprints tended to add themselves onto, rather than displace, earlier ones. Only ephemeral cheap imprints, like pamphlets and almanacs designed for short-term impact, were likely to be reused for the paper itself, for example, in wrapping goods. Some imprints were meant to supersede and replace older ones, but the latter could often find new owners through the market in used books.[193] Historians can most easily document the accumulation of books in the increasing sizes of libraries of all kinds from the fifteenth to eighteenth centuries. The largest private collections reached 3,000 or 4,500 volumes in the late sixteenth century and tens of thousands of volumes in the mid-eighteenth century. (Hans Sloan owned 45,000 books and 4,000 manuscripts at his death in 1753.)[194] There were certainly objective grounds for the perception of a new and increasing abundance of books in the Renaissance and beyond. But that perception was also heightened for many scholars by their ambition to read as widely as possible and to save and stockpile as much information as possible (as I will discuss in the next chapter). Other reactions, notably ignoring or minimizing the abundance, might have been plausible under different cultural circumstances, notably if humanists had not been so keenly aware of the catastrophic loss of ancient learning and anxious to prevent future losses.

THE THEME OF THE ABUNDANCE OF BOOKS

As noted above, references to the abundance of books appeared well before the early modern period, whether cast favorably (as cornucopian abundance) or unfavorably (as overabundance).[195] Given the rapid accumulation of printed matter by the sixteenth century, the *multitudo librorum* was treated as a matter of general experience and agreement and was invoked in support of a variety of arguments, both familiar and new. The moralist critique of ostentatious book owning articulated by Seneca in the first century CE was at the core of Sebastian Brant's complaints in his *Ship of Fools* (1494).[196] And in 1566 Jean Bodin echoed the authors of medieval historical compendia when he observed that "the life of a man, however prolonged, is hardly sufficient for reading" histories.[197] Authors of reference books (including compilations, bibliographies, and guides to libraries) typically invoked the *multitudo librorum* to justify their work in a tone that was often appreciative of abundant accumulation. Others complained of overabundance of books to target writings that struck them as bad in some way.

Humanist concerns about printing motivated one early appearance of the theme, in Erasmus's famous digressive commentary on the adage *festina lente* (make haste slowly), first published in 1525: "Is there anywhere on earth exempt from these swarms of new books? Even if, taken out one at a time, they offered something worth knowing, the very mass of them would be a serious impediment to learning from satiety if nothing else, which can do far more damage where good things are concerned or simply from the fact that men's minds are easily glutted and hungry for something new, and so these distractions call them away from the reading of ancient authors." Erasmus complained here about a flood of new books because these were of lesser value than ancient texts and distracted readers from true learning. Erasmus blamed the flood of bad new books on printing. In part in order to heighten his praise of Aldus as the ideal printer, Erasmus noted by contrast that most printers, given the absence of regulations, "fill the world with pamphlets and books [that are] . . . foolish, ignorant, malignant, libellous, mad, impious and subversive; and such is the flood that even things that might have done some good lose all their goodness."[198] The overabundance of bad books drowned out even any good bits that might be present among them.

Just as Erasmus sought to promote the publication and study of high-quality humanist texts, but with a different benchmark of goodness, the reformer John Calvin (1509–64) complained "of that confused forest of books" in order to recommend the writing of "grave commentaries, erudite and solid coming from pious and right-thinking men gifted with as much authority as judgment."[199] Each invoked the plethora of bad books around them to call for more of the kind of good book (humanist or pious) that he hoped to produce and promote.

A complaint more specific to the quantity of books was articulated in 1522 by the jurist Giovanni Nevizzano of Asti (d. 1540) who observed that the great number of available books made it hard to find the books one needed. Proper selection among the many books available was crucial because "if a scholar does not have the books required for his subject, he does not enjoy the privileges of a scholar."[200] Some new genres responded precisely to these concerns, offering guidance about choosing books in bibliographies and books on how to form libraries. The authors of these books about books often feigned frustration at the problem of abundance—in the first vernacular bibliography Anton Francesco Doni lauded the happiness of the illiterate who were spared the "malediction of books"—but they also relied on the theme of abundance to justify and create demand for their work.[201] In the massive *Bibliotheca universalis* (1545), spanning all known literature in learned languages (Latin, Greek, and Hebrew), Conrad Gesner (1516–65) also complained of the "silliness of useless writings in our time" and of the "harmful and confusing abundance of books," but he explicitly left the latter as a problem for kings and princes to solve. Citing Pliny's "no book so bad," Gesner made a point of accumulating information about all the texts he could learn about, barbarian and Christian, in manuscript and in print, extant and not, without separating the good from the bad: "We only wanted to list them, and we have left to others free selection and judgment."[202] In the associated *Pandectae* (1548) Gesner offered an ambitious thematic index to the books listed in the *Bibliotheca* (though the index to theological works appeared in 1549 and the index for medicine was never completed). These tools, he explained, would help readers identify more easily one or two books of use on a topic, amid a plethora of others, and forestall the production of further useless books.[203] Even as he was critical of overabundance, Gesner exulted in it, seeking exhaustiveness in his accumulation of both themes and works from which others could choose according to their judgment and interests.

In the early seventeenth century the new genre of guides to forming and arranging a library also cited overabundance as a justification: "In our time the multitude of books becomes an immensity, so that it is more effort to find and distinguish the books than it is to obtain/read the letters [one reader has added in manuscript at 'more': 'or at least no less']." In this way Francisco Araoz, a royal official in Seville, explained the utility of his guide to the selection and arrangement of good books for one's library (published in 1631).[204] In his book in the same genre, in 1627, Gabriel Naudé legitimated the practice of relying on the catalogs of other respected library owners to help make one's own selection "because we cannot through our labors alone come to know the qualities of all those books that we must have." For similar reasons both authors also recommended the purchase and use of reference books as aids to "indefatigable" study, since "the shortness of our life and the multitude of things that one must know today to count among the learned do not allow us to do everything ourselves."[205]

The problem of overabundance involved not only too many books, but books ferrying too many different, new, and conflicting authorities, opinions, and experiences. Books were of course only one of the media through which this diversity was diffused—letters, conversation (among other forms of orality and manuscript communication), and direct experience all contributed to the density of overload. Printed books served early on as sources of vicarious experience, diffusing travel reports to exotic places as well as to European destinations, including libraries and cabinets of curiosities. Furthermore, in a culture founded on the mastery of long-lived textual traditions, both in philosophy (centered on Aristotle) and religion (around the Bible and church fathers), the printing of new and newly recovered opinions posed with renewed intensity the difficult problem of reconciling conflicting authorities. Responses ranged from syncretism (which labored to present the diverse opinions as parts of a single truth), to arguments in favor of one authority over others (e.g., Aristotle, Plato, Epicureanism, Stoicism), to a more generalized skepticism, which questioned the possibility of reaching certainty based on any textual or human authority (a position that also had the warrant of ancient antecedent). Complaint about overabundance was often part of the skeptical stance. Francisco Sanchez, for example, exclaimed that 10 million years would not suffice to read all the books there were, in which nothing useful could be found in any case; his conclusion was explicit in his title, that "nothing is known" (*Quod nihil scitur*, 1581).[206]

References to overabundance were equally plentiful among the Moderns who responded to the skeptical crisis with calls to ignore the knowledge accumulated in textual authorities in favor of building a new philosophy from experience and rational principles. While René Descartes (1596–1650) dismissed as inefficient the consultation of so many books to gain knowledge, Francis Bacon warned against ceasing to write books on the grounds that there so many: "For the opinion of plenty is amongst the causes of want, and the great quantity of books maketh a show rather of superfluity than lack; which surcharge nevertheless is not to be remedied by making no more books, but by making more good books, which, as the serpent of Moses, might devour the serpents of the enchanters."[207] Similarly François de La Mothe Le Vayer (1588–1672) worried that "the great abundance of books which one sees accumulated in so many places" would discourage new authors from writing; on the contrary he hoped that modern authors would not be deterred by the abundance of extant writings from rivaling and surpassing the ancients.[208]

In the second half of the seventeenth century the Moderns (who maintained the superiority of recent work over ancient writings) generally prevailed in more and less explicit contests with the Ancients (who viewed the achievements of antiquity as superior), but this did not spell relief from overabundance. Even in fields like natural philosophy, where ancient authorities were cast aside (Aristotle and Ptolemy for Newton and the mechanical philosophy), there were already more than enough modern authorities and works to overwhelm. Reference books focused on the new philosophy proclaimed their utility in reducing the mass of material to manageable levels.[209] In other areas, like history, "modernity" spelled new archival and archeological research and the publication of massive collections of documents and manuscripts. Complaints about overload were a refrain throughout the activities of the Republic of Letters. Editors of collections of letters expressed the need to prune down the mass of documents, to make selections and extracts, and to work in haste.[210] Journals were often couched as a response to overabundance. Henri Basnage de Beauval (1656–1710), editor of the *Histoire des ouvrages des savants* from 1687 to 1709, spoke of the Republic of Letters being submerged by a "kind of flood and overflow of books" and proposed the book review as a remedy.[211] But periodicals, including weeklies, like the *Spectator* and the *Tatler*, and daily newspapers that originated in England in the early eighteenth century, further added to the mass of printed matter.

Warnings about overabundance became more alarmist than ever, typically in service of a solution offered by their author. In 1680 Gottfried Wilhelm Leibniz complained of "that horrible mass of books which keeps on growing . . . ; the indefinite multitude of authors will shortly expose them all to the danger of general oblivion." Leibniz concluded that "a return to barbarism" could be avoided only by coordinating energies, notably under the patronage of a great ruler like

Louis XIV. Though the circumstances of the composition of this manuscript are unknown, here as in other writings Leibniz was appealing for support for one of his many schemes for collaborative work.[212] The theme of impending barbarity was articulated in print by Adrien Baillet (1649–1706), author of a biography of Descartes, at the beginning of his multivolume *Jugemens des sçavans* (1685), designed as observations on books for the use of his son: "We have reason to fear that the multitude of books which grows every day in a prodigious fashion will make the following centuries fall into a state as barbarous as that of the centuries that followed the fall of the Roman Empire. Unless we try to prevent this danger by separating those books which we must throw or leave in oblivion from those which one should save and within the latter between what is useful and what is not."[213] The solution Baillet offered was his collection of "judgments" (akin to short book reviews) in nine volumes (and left unfinished). While Baillet was taken to task by contemporaries for many specific points in this work, his wonderfully dramatic sense of the gravity of the crisis due to the overabundance of books was not singled out for criticism.[214] This was evidently a point on which contemporaries could agree.

For a time historians spoke of a "reading revolution" in eighteenth-century Europe, a rapid shift from a predominantly intensive reading focused on a careful and repetitive reading of a small number of texts that carried authority, to extensive reading that involved skimming and browsing through a much larger quantity and range of material—especially the new periodicals and vernacular reference books that all offered indirect access to recently published books, through reviews, excerpts, debates, and cursory references. More detailed work in the history of reading has cast aside the strict periodization and the suddenness of change implied in the notion of a "reading revolution."[215] Rather than sudden shifts, I trace the development and spread of new methods of reading alongside the continuation of older options. Consultation reading existed among the learned in earlier centuries, and in an unbroken line of transmission at least as far back as the thirteenth century, so the most distinctively new kind of reading in the eighteenth century was not consultation reading but rather engrossment in the novels that were a new and successful genre. Conversely, "intensive reading," classically identified with repetitive meditation on the Bible, was also practiced in the eighteenth century, in religious circles at least, for example, among Pietists, Methodists, and in Catholic religious orders. (Witness the 1786 publication of Sacchini's recommendation for intensive reading, which I discuss in the next chapter.) Proficient readers engaged in different kinds of reading depending on the text and their purpose in reading it. This is true today and was no doubt true in the thirteenth century, though the range of options was not as broad then (without novels or periodicals); weaker readers, then as now, generally have fewer options about what and how they can read.

A study of Samuel Johnson (1709–84) has identified four different kinds of reading in which Johnson described himself engaging: "hard study" for learned books read with pen in hand, "perusal" for purposeful consultation in search of information, "curious reading" for engrossment in a novel, and "mere reading" for browsing and scanning "without the fatigue of close attention."[216] More cheerfully than those who foretold the decline of civilization from the overabundance of books, Samuel Johnson's friend James Boswell (1740–95) defended the state of learning in his day: "It has been maintained that this superfoetation, this teeming of the press in modern times, is prejudicial to good literature, because it obliges us to read so much of what is of inferiour value, in order to be in the fashion; so that better works are neglected for want of time, because a man will have more gratification of his vanity in conversation, from having read modern books, than from having read the best works of antiquity. But it must be considered that we now have more knowledge generally diffuse; all our ladies read now, which is a great extension." Boswell echoed some of Erasmus's complaints but concluded with satisfaction that standards of learning had improved: "Men in ancient times dared to stand forth with a degree of ignorance with which nobody would dare now to stand forth. . . . There is now a great deal more learning in the world than there was formerly; for it is universally diffused."[217] Whether by "ancient times" Boswell meant antiquity or the High Middle Ages or the Renaissance, his focus on the social diffusion of learning as the distinctive feature of the eighteenth century captures the main conclusion of my overview in this chapter.

References to the abundance of books occurred in many premodern contexts, mostly as moralist critique or as justification for a new work of some kind. But the abundance of texts was a perception limited to a narrow elite of the learned until the cumulative impact of printing, combined with various other factors, brought it to the experience of a substantial portion of the educated. Despite disagreement over the significance of abundance (its advantages or disadvantages and proposed solutions), there was no disagreement in Europe in the seventeenth and eighteenth centuries on the reality of the phenomenon, even if, as Richard Yeo has pointed out, individuals could still complain of lacking specific books (as we may indeed today, without denying the general phenomenon of overload).[218] The *multitudo librorum* was not an inevitable outcome of a new technology—the perception of abundance predated printing in Europe and elsewhere, and in China printing existed for centuries without being considered a cause of abundance. The invention of printing in Europe coincided with a renewed enthusiasm, visible in earlier centuries but revitalized by the humanists, for the accumulation of information. Large-scale compilations in print and in manuscript starting in the fifteenth century contributed to the abundance of information but also offered models for the management of it. In the next chapter I will consider the origins of these compilations in methods of note-taking by which the learned selected and sorted excerpts from their reading to store as a treasury of information, for their own benefit or that of others.

2

NOTE-TAKING AS INFORMATION MANAGEMENT

Printing helped make reference books bigger, more widely distributed at the time, and better preserved since. But the presence of printing cannot explain either the demand or the supply for these works. Why did compilers and authors generate so many large collections of quotations and textual material even before the commercial success of these genres was clearly established? Furthermore, why did these genres become so successful? Why were so many of the educated willing to buy such relatively expensive books? I have turned for some answers to a little-studied but pervasive element of context: practices of note-taking. These are closely related to the management of information in reference works in at least two ways. First, printed compilations would not have been possible without one and usually more than one author contributing large quantities of reading notes to the final product. Second, these books would not have found buyers unless they were perceived as offering something that readers wanted. Printed compilations offered ready-made the kind of reading notes that many students and scholars wanted to have but were unable to take themselves, for lack of time, energy, or access to books. Conrad Gesner, for example, observed in his edition of Stobaeus: “I ask you, who of the learned doesn’t either take commonplace notes or wish they did from their daily reading on moral matters?”[1] Reference books also typically offered a larger collection of excerpts than most individuals could amass in a lifetime. Practices of note-taking common in early modern Europe can thus help to explain the form and uses of printed reference books and shed light on the process by which reading was turned into something potentially useful for oral or written composition. Today note-taking takes many forms, from those that were standard in early modern Europe (ink on paper in the margins of books, in notebooks, or on loose sheets) to various electronic forms. Blogs enable the blogger to share his or her observations from readings or experience with others, just as some seventeenth-century pedagogues advocated sharing notes within a group. But modern note-taking is more idiosyncratic to each note-taker and no longer follows a set of subject headings that pedagogical practices and printed reference works helped to standardize.

My principal argument in this chapter is that a new attitude toward note-taking played an important role in explaining the formation of large collections of notes in the early modern period. Starting in the Renaissance notes were treated less as temporary tools than as long-term ones, worthy of considerable investment of time and effort, of being saved for reuse and in some cases shared with others (collaborators in a project or one's colleagues or heirs). Collections of notes were valued as treasuries or storehouses in which to accumulate information even if they did not serve an immediate purpose. This stockpiling approach to note-taking also required greater attention to organization and finding devices since the precise uses to which the notes might be put were not clear from the outset and the scale of accumulation hampered memorization.

A prerequisite to the practice of stockpiling abundant notes in the Renaissance was the availability of paper, which was less expensive than parchment and yet durable and easy to store, unlike the surfaces used for temporary note-taking, such as wax tablets. A recent study has argued that the spread of paper in Islam triggered an explosion of writing in many genres. In Europe the spread of paper manufacturing (which occurred later than the first use of paper), from Italy in the mid-thirteenth century to Germany in the late fourteenth century, made possible a rise in the production and preservation of materials not worth the expense of parchment—including more abundant personal and diplomatic correspondence, notarial and government documents, commercial records, student notes, and scholarly working papers.[2] Paper and parchment both remained in use in varying proportions depending on local circumstances for the circulation of published works until the mid-fifteenth century. At that point the spread of printing triggered an explosion in the production of paper to supply the presses.[3] The increased availability of paper (which typically also involved a drop in price) spelled the final decline of parchment, which was used henceforth principally for book bindings and a very few luxury manuscripts or imprints (e.g., when one copy of a work was printed on parchment for presentation to a princely patron). The general chronological correlation between the first large collections of manuscript notes by humanists and the beginnings of printing can thus be attributed in part to the role of printing in stimulating the production of paper. But the availability of paper as a new technology to facilitate the stockpiling of notes cannot alone explain the new practice.

The stockpiling of notes was part of a larger cultural phenomenon of collecting and accumulating in early modern Europe that generated not only textual compilations in manuscript and in print but also collections of natural and artificial objects, from plants and minerals to medals, paintings, and "curiosities."[4] It is not easy to explain the new level of care that many among the elite devoted to recording, saving, and managing information about places, objects, and authors both familiar and new. In the case of textual compilations, a renewed awareness of the loss of ancient learning and the desire to forestall future losses motivated some abundant compilers. Others may have accumulated manuscript materials in the hope of publishing them and thus acquiring reputation or financial gain. Printing, along with improvements in postal systems, likely heightened the sense scholars had of working toward the common good of an international Republic of Letters, notably through the formal and informal circulation of information. Whatever its complex roots, the motivation to form large collections of textual information stimulated the refinement of old techniques and the development of new ones for managing texts both in manuscript and in print. In this chapter I examine methods of early modern note-taking (with some attention to ancient and medieval note-taking by way of comparison) and argue that notes were often valued not only by those who took them but by others who hoped to put them to use.

TOWARD A HISTORY OF NOTE-TAKING

"Note-taking" is a general term that covers various kinds of writing in response to listening, reading, or thinking, often in more or less direct preparation for the production of a composition or report (oral or written). Only a minority of the notes taken in a given context survive for the historian to study. Many notes, today as in the past, were designed for short-term use and were not kept. Even notes designed to be saved were often destroyed either close to the time of their redaction or in the intervening centuries, whether intentionally or not. As a result, a history of note-taking requires piecing together evidence from surviving notes and also from contemporary advice about note-taking, accounts of working methods, and finished works.[5]

A central feature of premodern note-taking that is almost completely lost to view now is the use of erasable writing surfaces to take temporary notes. In many cases these notes were simply destroyed after use; in some cases neater, second-order notes were copied from them on more durable surfaces and saved. This technique was central to note-taking from oral events, such as lectures, sermons, or speeches, which are typically known to us only thanks to the notes taken by listeners. First-order notes taken in haste served as the basis for the polished texts put into circulation, often (but not always) as revised and authorized by the speaker. For example, the works of Aristotle that have come down to us likely originated in notes taken by students from Aristotle's oral teaching and authorized by the master before circulation. Similarly, to record the 300-odd sermons he delivered, the Cistercian Bernard of Clairvaux (1090–1153) relied on his secretaries to take notes during his sermons, which Bernard then revised and made public. But other listeners in attendance also came away with notes from the sermons, from which some circulated unauthorized versions.[6] Note-taking has thus played a central role in the composition of various kinds of texts, including large compilations, as I show in chapter 4.

Erasable writing surfaces were commonly used for temporary notes, leaving all but the last set of notes taken on them irretrievable—when these functional and lowly objects survive at all. Wax tablets were the standard erasable surface from antiquity to the Renaissance: one or more boards, often bound together in a codex form, were coated in wax to be inscribed with a stylus then erased for reuse.[7] In early modern England one could also purchase pocket-sized writing tablets featuring paper that had been treated so as to offer a rigid writing surface on which markings made with the accompanying metal stylus could be erased with a little moisture.[8] The slate blackboard is also attested in Europe in music instruction in the sixteenth century, sized either for group or for personal use (as is still the case today), and was used at least by the eighteenth century in the teaching of astronomy. The sand tray, a board or slab spread with a fine layer of sand that one inscribed with a stick and could easily erase, was another long-lived medium: used in ancient Babylon and medieval Islam for calculations and in Europe principally for children and artists learning to write or sketch down to the Victorian period.[9] None of these temporary notes have left any traces, except through extant higher-order notes made from them.

While the historian may bemoan the loss of evidence from these temporary notes, discarding has always been a central feature of effective note-taking. Discarding enhances the utility of the notes that are saved by removing materials that have been superseded. One Islamic scholar reported destroying his drafts lest the earlier versions of his work fall into the hands of copyists who would circulate them in competition with his authorized versions.[10] Today too, when it is technologically feasible to discard nothing and to keep a near-exhaustive record of one's experience, we still commonly overwrite earlier versions of files, discard paper and Post-its, and record experience only selectively.[11] Discarding and forgetting are crucial to effective information management. Forgetting is not trained or prompted in the way that remembering often is (perhaps it cannot be, e.g., in the case of powerful emotional experiences) but instead is achieved passively, by not recording and not trying to remember.[12] Discarding facilitates forgetting, whether that forgetting is useful to the note-taker's own working process or to the construction of his later reputation. Some note-takers anticipating the preservation of their notes after their death culled them first. Robert Boyle discarded the working papers that led to his publications and marked many other papers for destruction (though that instruction was clearly not always carried out), presumably because he felt they had been superseded by later work.[13]

In other cases, notes do not survive because they were physically integrated into (rather than copied into) a manuscript used for printing. This reuse of notes, which spared the labor of copying them, also caused their destruction, because the manuscripts used in printing were routinely marked up in the process and discarded. Large-scale compilers especially engaged in this kind of cannibalization of notes, as I describe in more detail in chapter 4. Pierre Bayle (1647–1706), for example, left behind notes extant from the period before he started writing his massive *Dictionnaire historique et critique* but not afterward. The notes he wrote down after he began writing were so purposeful that they went straight into the composition of the *Dictionnaire*. Bayle likely integrated them, as he did letters received from which he wanted to excerpt, directly into the manuscript he submitted to the printer.[14] Similarly, among the manuscripts of Samuel Johnson (1709–84), the only notes for his *Dictionary of the English Language* that survive are those that were prepared for the fourth edition but accidentally omitted from publication. They comprise manuscript notes on paper slips glued onto sheets in the appropriate order, ready for printing.[15]

In many cases, of course, loss occurred when notes that the note-taker had carefully husbanded were discarded by heirs who saw no value in them or, sometimes with equally devastating results, were dispersed through one or more auctions or sales.[16] Notes in the margins and flyleaves of books (printed or manuscript) have often survived accidentally by virtue of the preservation of the book. But bulk note-taking and working papers typically involved a combination of loose sheets of paper, often stored in bundles, and notebooks, bound or unbound, the survival of which depended on the good will of many intermediaries. Many conditions were necessary to make possible the transmission of a collection of working papers as a kind of personal archive. These include the durability of the papers themselves, the existence of institutions (libraries, academies like the Royal Society, and families) that provided preservation down to the present, and, at the outset, the will of the individual and the individual's immediate heirs to preserve the record of the work, usually because of a sense of its significance, to posterity or to an international community of scholars.

The study of personal papers was pioneered by a school of literary criticism ("genetic criticism") that focused on famous authors of the nineteenth and twentieth centuries who often deposited their papers in national libraries. Genetic criticism seeks to reconstruct the creative process of great authors by examining the succession of working papers from reading notes to drafts and editorial changes. This approach is especially practicable starting in the nineteenth century when literary figures, imbued with a sense of their own genius, would bequeath their papers to libraries as a contribution to the national patrimony.[17] From earlier periods the survival of authorial papers is less predictable. The earliest surviving author's manuscripts date from late eleventh-century Italy and include some manuscripts of Petrarch from the fourteenth century, but large collections of papers by scholars first survive from the fifteenth century and in increasing numbers from the sixteenth and seventeenth centuries. In most cases working papers have been studied to shed light on the evolution of an individual's thinking and writing process, but recent approaches have begun to attend to what these personal archives can tell us about working methods in various contexts.[18]

From antiquity, when papyrus was the durable medium of choice, working papers survive only in small fragments or under special conditions. We have, for example, some notes and drafts of treatises by the Epicurean philosopher Philodemus (110–40 BCE) preserved under seventy feet of volcanic ash at Herculaneum. Another papyrus, recovered in Toura, Egypt, contains notes taken on a polemical work by the church father Origen (185–254), including both faithful excerpts of varying lengths and notes made by abridgment from his *Against Celsus*.[19] Whereas many ancient texts were preserved when they were copied from papyrus onto parchment, no sets of notes were copied in this way. Discussions of ancient working methods therefore rely largely on analyses of the finished texts that have come down to us and on passing comments about working habits, such as the famous passage about Pliny's abundant reading and note-taking in one of his nephew's letters (which I discuss in more detail below).

From the Middle Ages, working papers on parchment could well have endured down to the present. But it is more difficult in a world of manuscripts than in the era of printing to evaluate what constitutes a note—that is, a piece of writing not meant for circulation but for private use, say, as preparatory toward a finished work. For example, the scholastic theologian Godfrey of Fontaines (before 1250–after 1305) left a collection of excerpts and summaries from his reading that could readily be considered a collection of notes. Other manuscripts that survive in single copies may well have been personal notebooks compiled as aids toward a project.[20] Manuscript miscellanies in particular, which combine pieces of different texts (often hard to identify and in combinations that are hard to explain), might in some cases be best understood as collections of notes kept on parchment for long-term use. Indeed, as in a collection of notes, the unity of the miscellany was provided by the individual sponsoring it, for reasons and according to criteria that were usually not articulated. Annotations on the Bible or on legal texts, accumulated over generations, could also be gathered up into works like a glossed text of the Bible and the *Decretum*.[21] Unfortunately, we have very few drafts or working papers that survive from the Middle Ages. Writers often worked on temporary writing surfaces—the twelfth-century poet Baudri de Bourgueil described composing on wax tablets, for example. Working papers kept on parchment could be reused for the parchment itself, as in the drafts of the biblical concordance that served in binding later manuscripts.[22] Authors often composed by dictation to a secretary, and when they composed by writing themselves, the surviving autographs (written in their own hand) did not include preparatory materials but offered final or near-final versions of a text.[23]

Medieval notes can be most readily identified in the margins of manuscripts, though the annotations in a single manuscript could involve a number of different hands and readings. An initial stage of annotation might be provided by a professional reader hired to add aids to reading for the owner, including especially mnemonic or meditative aids, or enhancements to the layout, but also occasionally self-reflexive or potentially dissenting observations.[24] A succession of owner-readers could then add further corrections and comments. In marginal annotations we can also catch glimpses of systems of note-taking that made possible concordances and scholastic practices of extensive citation, including cross-references to other passages or symbols or headings indicating the material under discussion (such as Robert Grosseteste's). We also have good studies of *reportationes*, or the notes taken from oral events, such as sermons or lectures.[25]

An alternative kind of note-taking was encouraged in the late Middle Ages among members of new lay spiritual movements, such as the Brethren of the Common Life (fl. 1380s–1500s). Their *rapiaria* combined personal notes and spiritual reflections with readings copied from devotional texts. The larger trajectory of the diary is distinct from but often intersects with that of the notebook containing reading notes.[26] Italian merchants of the fourteenth and fifteenth centuries are known for keeping *ricordanze* that combined personal and practical information. During the same period *zibaldone* designated notebooks kept by writers, artists, and merchants to record a wide variety of information: outgoing letters, copies of documents, indexes to books, lists of paintings, and excerpts copied from all kinds of texts, including poetry, prose, merchants' manuals, legal sources, and tables of weights and measures.[27]

Note-taking was clearly not the preserve of scholars alone. Commercial, medical, and legal activities (among others) generated distinctive methods of note-taking. Advice to doctors included taking notes on their observations and discoveries from treating patients as well as reading authorities. Legal note-taking would also warrant study as a distinctive practice, which made possible the large accumulations of references characteristic of law books from the Middle Ages on.[28] In seventeenth-century England, the desire to record proceedings in Parliament led to the spread of stenography, which was practiced according to many different systems. Most stenographic notes were used to make full transcriptions then discarded, but Samuel Pepys famously kept his diary in shorthand to preserve its privacy.[29]

Early modern scholars referred most often to merchants as exemplars for their habit of keeping two notebooks: a daybook (or journal) to record transactions in the order in which they occurred and a ledger in which these transactions were sorted into categories, as in double-entry bookkeeping. In addition, Francis Bacon compared one of his notebooks to a "merchant's waste book, where to enter all manner of remembrance of matter, form, business, study, touching myself, service, others; either sparsim or in schedules, without any manner of restraint."[30] An eighteenth-century manual of bookkeeping listed three stages of records a merchant should keep: waste book, journal (arranged in systematic order), and ledger (featuring an index to access all people, places, and merchandise). This three-layered note-taking appealed to the writer Georg Christoph Lichtenberg (1742–99), although his own notes published posthumously as his *Sudelbücher* exemplified especially the first of these stages with their disordered collection of aphoristic thoughts and excerpts.[31] The notion of the merchant as a model to imitate in note-taking (voiced by Cicero in one of his orations) recurred beyond the early modern period, through changes to new techniques: an advocate for the index card in the early twentieth century, for example, called for the use of index cards in imitation of "accountants of the modern school."[32]

Despite these references to the model of the notebooks of merchants, the principal impetus for the new attention to note-taking in the fifteenth and sixteenth centuries was humanist pedagogy. In their effort to lead a return to the purity of classical Latin, the humanists advocated the careful study of models of ancient rhetoric, notably by copying out the best passages from one's reading in a notebook, where they could be retrieved for emulation and citation. The notebook served as a ready source of elegant *copia*, highly valued in humanist compositions, both oral and written. Although humanists like Guarino da Verona (1370–1460), Desiderius Erasmus (1466–1536), and Juan Luis Vives (1492–1540) explained the principles of the commonplace book that collected phrases worthy of imitation under topical headings, they did not offer detailed practical advice in print.[33] The first manual solely devoted to excerpting, or note-taking from reading, was composed for students in the advanced or rhetoric class at Jesuit colleges by Francesco Sacchini (1570–1625), professor of rhetoric at the Collegio Romano. *De ratione libros cum profectu legendi libellus* (A Little Book on How to Read with Profit) was published in 1614 and in a further six editions, followed by a translation into French in 1786 (for the use of Calvinists, judging from the dedication to a pastor in Geneva) and into German in 1832.[34]

Equally long-lived and more frequently reprinted was the manual of Jeremias Drexel (1581–1638), also a Jesuit (born in Augsburg) and a noted preacher who composed more than two dozen moral treatises, many of which were abundantly reprinted. One of his last works, the *Aurifodina*, "The Mine of All Arts and Sciences, or the Habit of Excerpting," was printed in 1638 (in 2,000 copies) and in another fourteen editions down to 1695 and spawned abridgments in Latin (1658), German (1684), and English. The latter, a five-page abridgment attributed to "the late bishop Horne," was published at least twice, in 1795 and 1814 (in combination with some of Locke's advice on commonplacing).[35] In emphasizing the value of note-taking for princes and kings as well as poor scholars, Drexel portrayed note-taking as the best kind of mine, one that would never fail to reward diligent work.[36] In the last half of the seventeenth century, at least four other manuals were published by German (and generally Protestant) professors of rhetoric, many of them indebted to Drexel. Manuals on note-taking formed a subset of advice books on how to study that appeared in the mid-seventeenth century. The Latin genre crossed confessional lines but flourished especially in the broadly Germanic area, where a plethora of universities had been founded in the preceding centuries and competed for students and prestige. By the second half of the seventeenth century, vernacular advice was also available on the topic for readers outside the schools. One such manual was *De la connaissance des bons livres* (On the Knowledge of Good Books) by Charles Sorel (ca. 1602–74), royal historiographer and an abundant author, especially of satires on the literary fashions of his time.[37]

The explosion of manuals in the seventeenth century may derive in part from extracurricular instruction, for which we have occasional evidence in the form of surviving lecture notes (for example, from seventeenth-century Helmstedt or Paris). Early modern professors earned extra income by teaching private courses on topics that held special appeal to students, typically because these were fashionable or practical, including courses on study methods and note-taking.[38] Study practices and note-taking had no doubt long been taught by personal contact with teachers and other students and, even when published manuals became available, ostension (or teaching by showing in person) likely continued to be an important method of transmission. Another factor militating against complete advice was the notion that methods should be kept secret to be most effective. One author of a university thesis on the topic noted that most scholars were unwilling to share their secrets on note-taking with others. A few advice givers recommended "keeping the secrets of your studies to yourself" on the grounds that people would be most impressed by achievements that they did not understand.[39] Pedagogical advice manuals on note-taking could thus never be complete, even in the eyes of their authors, and of course they shed light on the ideals rather than the realities of the practice, though some included sample pages of excerpts as models.[40]

For the early modern period, the manuals can be examined in combination with a relative abundance of surviving notes (compared to earlier periods), including marginalia and notes in separate manuscripts. The practice of annotating books is certainly not specific to the era of print: medieval manuscripts often featured wide margins left blank to accommodate annotations; we have evidence too that some users of papyrus rolls made marginal notes, notably introducing symbols to mark a passage for its content or for future editing.[41] Printing generated a new abundance of books with margins and flyleaves that could conveniently accommodate writing and a substantial percentage of surviving copies of early modern books contain annotations, or evidence of annotations that were subsequently washed away by collectors eager for a pristine look.[42] Not all the annotations found in early modern books were reading notes: in school editions (identifiable by the double-spacing that allowed for interlinear notes) pupils typically wrote down commentary dictated to them in class; and in books of all kinds one can find annotations that are irrelevant to the text, from family or other records entered in the flyleaf of a book for safekeeping, to doodles and penmanship practice, to recipes, prayers, or poetry written down in a book apparently for the convenience of the writing surface it offered.[43] In the main, however, especially in Latin books, early modern annotations in the margins and flyleaves were reading notes—not personal responses of the kind found in more recent periods, but notes primarily designed to facilitate retrieval and retention of interesting passages. Annotations might make corrections to the text, add cross-references to similar material in the same or different texts, or include occasional words of praise or criticism, but predominantly they flagged passages of interest, either nonverbally (through underlining or various kinds of marginal marks) or by highlighting with keywords the topics treated or examples or authorities cited in the passages deemed of special interest. Some heavy annotators produced a running index of the entire text through keywords added in the margins or a list of interesting passages with their page numbers on a flyleaf.

Pedagogues considered marginal annotations as the first, optional step toward the ultimate goal of forming a free-standing collection of excerpts from one's reading. In practice, of course, readers could annotate their books without taking the further step of copying excerpts into notebooks. In 1671, Charles Sorel recommended taking notes in notebooks for books one did not own and marking books one owned without transcribing from them, which eliminated the irksome interruptions to reading caused by copying excerpts. The Jesuit Francesco Sacchini, in contrast, commended the interruption in reading that resulted from stopping to copy a passage into one's notebook: it slowed down reading and aided retention.[44] Whether readers copied over excerpts while reading or after the fact, guided by their marginal notes, or had someone else do so, certainly the number and scale of surviving collections of notes (despite the losses due to the intervening centuries) stand as evidence for the enthusiasm with which many of the educated in early modern Europe accumulated free-standing reading notes.

"Adversaria" was an actor's term for reading notes, which highlighted the fact that reading notes stood in relationship to another text (without any connotation of that relationship being adversarial).[45] Francis Bacon explained succinctly that notes could be made either "by epitome or abridgement" (that is, by summarizing the source) or "by heads or commonplaces" (that is, by copying a passage verbatim or nearly so and storing it in a notebook under a commonplace heading for later retrieval and use). Bacon considered the latter method "of far more profit and use," and most note-taking advice focused on this practice of excerpting.[46] Early modern pedagogues taught their pupils to copy choice passages they encountered in their reading into notebooks, sorted under topical headings called commonplaces (*loci* or *topoi*), and enjoined them to continue the practice as adults. Some recommended taking notes on things "seen and heard" as well as read; note-taking on "things seen," notably while traveling, helped to generate new genres of travel reports and instructions for recording one's experience most effectively.[47] Notes could also focus on original thoughts, as in the *Pensées* of Blaise Pascal, the "commonplace book" of George Berkeley, or the *Sudelbücher* of Georg Lichtenberg, which were devoted to original reflections rather than to excerpts from the writings of other authors. Scholars have noted a general trend toward an increased emphasis on personal reflections in note-taking starting especially in the eighteenth century.[48] Nonetheless, recording excerpts from one's reading remained a widespread practice among students, scholars, and a variety of literary figures through the nineteenth century and even beyond; for a late example, see W. H. Auden's publication of his commonplace book of reading excerpts in 1970.[49]

We should not attribute the spread of commonplacing and related forms of excerpting in the early modern period to the peculiar success of these pedagogues. Instead we can assume that their advice was widely followed because it adapted methods of note-taking already in existence (and visible, for example, in the structure of florilegia) and responded effectively to the new conditions of the Renaissance as they were experienced by a broad educated elite, including: the widespread availability of paper; a new abundance of printed texts, both ancient and modern; a desire to emulate classical rhetoric and culture; and a special enthusiasm for recovering lost material and guarding against future losses of information. Forming a durable collection of excerpts of the best bits from all the works one read, as the pedagogues advocated, promised a viable method for managing and benefiting from all the newly available information.

Surviving from the late fourteenth and fifteenth centuries and in growing numbers from the following centuries, we have collections of notes and working papers by a variety of educated men—humanists engaged in philological study, natural historians, antiquarians, natural philosophers, and the occasional theologian, but also, in the seventeenth century, ordinary gentlemen who engaged in abundant reading and note-taking. At his death the great Italian humanist Angelo Poliziano (1454–94), for example, left many volumes of notes and papers. These were rapidly dispersed among students and peers, who variously wished to own, read, or publish them, under Poliziano's name but sometimes also without attributing them. Today dozens of volumes of Poliziano's manuscripts are scattered across many European libraries, and an important manuscript of his *Miscellanea* was rediscovered as recently as a few decades ago. For the leading French humanist Guillaume Budé (1468–1540), seven volumes of notes are extant, just a fraction of his original output, replete with color-coded inks and marginal symbols that remain unexplained; from the abundant notes of Joseph Justus Scaliger (1540–1609) a few dozen volumes of notes. Among natural historians, Ulisse Aldrovandi (1522–1605) left more than 400 volumes of manuscripts that attest to his efforts at collecting and sorting a vast abundance of information. Historians and antiquarians, like the French nobleman Nicolas Fabri de Peiresc (1580–1637), also amassed abundant notes.[50]

Note-taking often flourished in particular environments, spread by a teacher to his students, sometimes practiced in groups. Joachim Jungius (1584–1657), professor of mathematics, medicine, logic, and natural philosophy at various German universities, amassed one of the largest collections of notes of his day, estimated at 150,000 pages, of which 45,000 are extant.[51] A cluster of his students—Martin Fogel, Michael Kirsten, and Vincent Placcius, all based in Hamburg—spread his legacy by publishing manuals on note-taking and leaving abundant notes of their own. The auction catalog describing the library of Michael Kirsten listed his manuscripts under some forty headings, including indexes and summaries of books, lists of queries, and "arguments or material for writing." The preface observed that "there was no field in which Kirsten had not read, taken notes, and written commentaries" and suggested, evidently to no avail, that a son or a friend with abundant leisure should publish them.[52] Similarly, a remarkable cluster of personal archives survive from the ambit of the Royal Society, which helped to preserve them, including the papers of Samuel Hartlib and of Royal Society members Robert Boyle, John Evelyn, Robert Hooke, John Locke, and Isaac Newton.[53]

Recent studies of the notebooks compiled by the merchant Clement Draper (c. 1541–1620) during his thirteen years of incarceration for debt or the twenty surviving volumes of notes of Sir William Drake (1606–69), an otherwise unremarkable English gentleman grappling with the stresses of the civil war, suggest that collections of notes can be studied well beyond the famous few who have been the focus of most attention so far.[54] Finally, we can also learn about note-taking from notes that ended up in print (with editorial interventions that must be taken into account): Pascal's *Pensées* (first published in 1670) and Aubrey's *Brief Lives* (first published only in 1898) are among the most famous.[55] In both of these cases, the original notes survive; in others they do not. The notes from which early modern reference works were compiled rarely survive, given the techniques used by large-scale compilers for turning notes directly into manuscript suitable for printing (as I discuss in chapter 4).

Until recently these collections of manuscripts were studied primarily as a way of tracking the intellectual development of significant figures. Unpublished papers are often presumed to offer a more honest view of their authors' thought and development. Michel Foucault, for example, considered reading notes and copybooks of quotations as works "oriented to the care of oneself," which promised to give quasi-psychoanalytic insight into the thinking of the individual reader free to choose what was worthy of attention.[56] Without denying the interest of notebooks for insights into individuals, the cultural historian can also study note-taking not as peculiarly unconstrained but rather as the product of practices of reading and writing taught in school and reinforced by various cultural models. Theories of note-taking can tell us about how memory and writing were understood, and practices of note-taking, about the tools that proved most useful in managing textual information in early modern Europe. These ranged from topical headings and alphabetical indexing to reliance on the help of colleagues and amanuenses and on printed reference works.

NOTE-TAKING AS AN AID TO MEMORY

From antiquity through the early modern period, a capacious and prompt memory was highly regarded as a sign not only of intellectual ability but also of moral worth.[57] Like their ancient and medieval counterparts, early modern scholars were frequently praised for their memory, and remarkable feats of memory were attributed to them: for example, the legal scholar Antoine Muret reportedly memorized 36,000 names in order, J. J. Scaliger "learned" the *Iliad* and *Odyssey* in twenty-one days, and Erasmus was said to have learned as a child all the lines of Horace and Terence.[58] Although some of these reports may be exaggerated or apocryphal, we should also acknowledge that mnemonic capacities may vary by historical context, under the impact of cultural values and memory training, so that we should not simply dismiss them as impossible based on our ordinary experience of memory today. Remarkable feats of memory are still being performed (e.g., remembering the order of fifty-two shuffled cards or many digits of pi), but in the modern system of knowledge memory is no longer the most highly valued skill of a scholar.[59] By the late seventeenth century increasing weight was given to the concern (which was voiced occasionally in earlier centuries) that memory might be detrimental to the understanding. As a Cartesian, the oratorian Nicolas Malebranche (1638–1715), for example, condemned the sciences of memory for confusing the mind and disturbing clear ideas but also for inducing pride in the multitude of facts one had stuffed in one's head.[60] Around the same time Robert Hooke described as "almost proverbial" the saying that "good wits have ill memories," which combined favorably with Hooke's presentation of himself as having a poor memory.[61] The downgrading of memory was one aspect of a broader critique of both erudition and false erudition that motivated a number of satirical portrayals of the learned.[62] Memory never returned to the primacy of place that it held before the seventeenth century. In the early twentieth century, for example, a French pedagogue could state categorically (even in an educational system that favored memorization more than others): "Too much memorizing can be harmful to the higher intellectual qualities."[63]

Frances Yates first called attention to memory practices as an object of historical inquiry with her pathbreaking study of the long reception of the ancient arts of memory. The art of memory was designed to facilitate recall by associating the items to be remembered with vivid imagery, often related to the places in a building. Arisotle and Cicero explained the origins of this method from the story of Simonides who remembered all the guests who were killed at a banquet by the places they had occupied around the table. Today, still, advice books on improving memory recommend similar techniques of association with vivid images and places.[64] Yates's book has left the impression that place memory was the main method of recall used from antiquity through the Renaissance. Without denying that place memory was used, especially for short-term recall to memorize a speech or perform a feat of memory, I emphasize that for the long-term retention and accumulation of information, note-taking was the more common aid to memory. Note-taking is documented in antiquity (with Pliny) and can be surmised as the principal means of composition of florilegia and large compilations in the Middle Ages. Starting in the Renaissance, note-taking can be studied from abundant surviving sources. Images were valued as mnemonic aids in manuscript and print, but repetition and copying out were the keystones of Renaissance pedagogy.[65]

As Yates herself noted, European pedagogues and scholars in the sixteenth and seventeenth centuries were increasingly critical of place memory. Though he conceded that places could help, Erasmus maintained that "the best memory is based on three things above all: understanding, system, and care." The natural historian Ulisse Aldrovandi (1522–1605) complained that the investment required to learn the system of places was greater than the reward, and Gabriel Naudé (1600–53) saw it as positively pernicious because "artificial memory spoils and perverts the natural [memory]." In the German academic world Bartholomaeus Keckermann (1571–1608) considered the arts of memory "confused philosophically and blasphemous theologically."[66] Instead, these and other pedagogues in the wake of humanism advocated note-taking, which they portrayed as the best aid to memory.

Note-taking manuals and treatises on the arts of memory formed two quite distinct traditions that made no explicit reference to one another.[67] In practice, however, note-taking certainly did not preclude reliance on images or visual elements as mnemonic aids. For example, the abundant note-taker Conrad Gesner used an image of the hand as a mnemonic for the five Latin declensions; the hand was a widespread mnemonic image, the use of which did not involve elaborate place memory.[68] Page layout in both manuscript and print could also facilitate recall of material from the look of the page on which it appeared. Contemporaries hardly ever commented on these considerations, but in the eighteenth century Isaac Watts (1674–1748) made a few explicit observations about the value of visual cues in aiding recall: "In such Cases wherein it may be done, seek after a local memory or a remembrance of what you have read by the Side or Page where it is written or printed." Watts also recommended that printers mimic the layout of earlier editions in the new ones they printed to aid readers familiar with the old editions: "This is also a great conveniency to be observed by Printers in the new Editions of Grammars, Psalms, Testaments etc to print every Chapter, Paragraph or Verse in the same Part of the Page as the former, so that it may yield an happy Assistance to those young Learners who find and even feel the Advantage of a local Memory." Watts's notion of "local memory," quite different from Yates's place memory, involved recalling a passage from its place on a page (rather as Carruthers described of recalling medieval manuscripts).[69] We may still experience such recall today for items read on paper, but the effect is often lost in electronic media given the variability of display on a screen or a printout. The effect is also deliberately undermined by textbook publishers today who change the layout and pagination between editions, to minimize sales of used copies, as instructors assign from the latest edition and students seek to follow the assignments exactly.

Early modern pedagogues were in general agreement on the theory of note-taking, though they varied in the points they emphasized. I will focus on the manuals of the Jesuits Francesco Sacchini and Jeremias Drexel, which were the most widely reprinted works in the genre from 1614 and 1638 down to vernacular translations or abridgments in the early nineteenth century. For Sacchini and Drexel note-taking aided memory in two ways. In the first place, the process of writing out the passage itself helped to retain what was copied. Sacchini recommended copying out each passage twice: first in a notebook that accumulated passages in the order in which they were encountered, second as sorted under commonplace headings in a separate notebook. Drexel recommended copying out passages only once, in the order in which they were encountered, but then indexing them by commonplace headings. Both agreed that "what is copied is impressed on the mind more thoroughly": specifically, taking notes prevented one from rushing while reading and thus aided retention and understanding. Sacchini cited the model of Demosthenes who reportedly copied Thucydides eight times, and St. Jerome who wrote many volumes in his own hand, "not due to the weakness of his library but out of desire to profit from the exercise."[70] Notes also aided the memory by providing a record of the material to which to return and study. "After some time [you will have] a brief volume of select things in lieu of a library, which you can have at hand where the books themselves are not present, and which you can easily carry around with you wherever you like." Given the portable size of the notebook, Sacchini recommended carrying it everywhere and studying it whenever more serious study was impossible, due to excessive heat or cold or fatigue or during the odd moments of the day (*horae subsecivae*) spent traveling or eating or waiting. The notebook thus guarded doubly against the ills of idleness: to make it required diligence and perseverance (on the model of ants and bees), and once made it provided the opportunity for study under almost any circumstances. Less demanding pedagogues recommended frequent rereading of the headings at least, to "excite and irritate our cold and languishing memories."[71]

The manuals made the case for note-taking by refuting objections that the pedagogues perceived to be common. In the dialogue format used by Drexel, the reluctant pupil Faustinus asks, "But I don't want to write books . . . what do I need with excerpts?" The teacher Eulogius (a name that suggests "fine speaking") replies that notes are necessary not only for writing books but also for speaking and any kind of composition. "It is no waste of time to take notes, but rather to read without taking notes. . . . Unless you read Thomas à Kempis or similar authors. Although I would like even that reading to involve some note-taking." So devotional reading too, notably of *The Imitation of Christ*, would involve note-taking of some kind, though Drexel never specified how it would differ from the method he described for books read for their facts or citations.[72] Sacchini dismissed as lazy those who read, even during leisure time, without retaining anything in their mind or in their notebooks. The Jesuit pedagogues had no place for reading without writing; in short, *excerpendum est.*[73]

The most serious objection was the argument that note-taking destroyed the memory. Drexel and Sacchini discussed the claim that Plato, the Pythagoreans, and the druids of ancient Gaul had shunned writing in their teaching as detrimental to memory. Sacchini acknowledged Plato's critique of writing and noted that the disadvantages were increased by printing, which multiplied the number of those who (falsely) claimed wisdom far more than the number of the truly wise. Sacchini's solution was to emphasize that the contents of the notebooks were to be memorized, so that students filled not only their notebooks but also their minds. Drexel challenged the objection more deeply, by questioning the reports of oral transmission of the *prisca sapientia*: "How then do their writings survive to us?" The ancients wrote on all kinds of surfaces, "on wax, wood, bark, leaves, lead, skins, and palimpsests," but with difficulty and great expense. By contrast, Drexel extolled the convenience and ease of relying on paper, printers, and a "most unfettered [*expeditissima*]" method of writing.[74]

Finally, both Sacchini and Drexel responded to the objection that notes were subject to loss and destruction, by fire, water, theft, moths, roaches, and even dogs (the cliché of the dog making off with one's work may start here!).[75] Sacchini first responded with the quip attributed to Antisthenes, a follower of Socrates, who replied to a student bemoaning the loss of his notes: "You would have done better to commit them to your mind than to your papers." Sacchini thus reiterated his emphasis on entering notes not only into notebooks but also into live memory. But he also replied more directly to the objection that in all human affairs advantages come with disadvantages. Without conceding anything to the objection, as Sacchini did, Drexel observed that all of our possessions are subject to loss and destruction, which is not a reason not to have them.[76] Both warned against taking exceptional examples of mnemonic prowess as a model for one's own abilities. They emphasized, on the contrary, the weakness of human memory, which they described as narrow, volatile, and unfaithful unless it relied on aids; prone to error when overburdened; and subject to loss from old age or illness.[77]

Despite many points of agreement, Sacchini and Drexel operated with different visions of the scale of reading and note-taking and corresponding emphases on memorization versus finding devices. Sacchini recommended reading a few books all the way through, copying each selection twice, once in a notebook arranged in the order of reading and a second time sorted by commonplace heading, then memorizing the contents of the second notebook through constant study.[78] By contrast Drexel boasted of taking notes from 100 or even 600 authors in a day, which indicates (even allowing for some exaggeration) a different kind of reading than the slow and thorough reading that Sacchini advocated. Drexel recommended maintaining at least three quarto-sized notebooks—one for bibliographical references, another for passages of rhetorical interest, and a third for historical exempla—each provided with an alphabetical index in a separate, smaller notebook. Drexel also suggested drawing up two indexes per notebook in order to separate the profane from the sacred topics and keeping separate notebooks for different fields, including medicine, law, mathematics, philosophy, or theology.[79] On this scale of multiple volumes of notes taken from hundreds of authors, the index played a crucial role in effective "memory." Drexel's method involved one less round of copying (sacrificing the additional opportunity for retention) and relied on indexes rather than memorization of one's notebook to retrieve items when useful.

Drexel did not emphasize his divergence from Sacchini whom he cited approvingly, and he portrayed his method as a stimulus rather than a crutch for memory: "No one has such a good memory as to embrace and retain everything he reads. Therefore one must seek help in excerpts, not in order to exercise memory less, but in order to encourage it more happily in its task. No one makes excerpts with indexes who does not want to exercise his memory; it is not enough to excerpt, without remembering what you excerpted."[80] Despite this reiteration of the ideal of retaining one's notes in memory, Drexel envisioned notes generated and stored on such a large scale that an index was included to enable one to retrieve notes that one might no longer remember having taken. More generally, Sacchini represented a traditional pedagogical position, by emphasizing memorization, copying out, and reading a narrow canon of books thoroughly, while Drexel addressed the interests of a more voracious and "extensive" reader, by minimizing memorization and copying out in favor of multiple notebooks and written aids to retrieval. If we call Drexel's approach "modern," we should acknowledge that his was not the only approach advocated and practiced during the modern period. Sacchini's book remained in print into the nineteenth century, and his call for intensive reading and study has continuously found respected advocates down to the present. Drexel's book was equally long-lived; above all his model of extensive reading and note-taking was shared by many others who contributed to its predominance. John Locke described in 1686 a system of indexing one's notes that was frequently used and widely reprinted throughout the eighteenth century, in at least one case in conjunction with Drexel's advice.[81]

Drexel did not abandon the notion that one should remember one's notes, but later authors sometimes viewed notes as relieving the memory by offering storage and systematic retrievability without any need for retention. In an extreme formulation, Edgar Allan Poe attributed to the eighteenth-century writer Bernardin de Saint-Pierre this quip: "What I put on paper, I put out of my memory and thus forget it."[82] Today, too, notes are often seen as relieving the memory of an obligation to remember, since they are stored in written or electronic media; the problem then becomes one of remembering to retrieve the notes, or how to do so, when they might prove useful. Experts on personal information management today report that office workers often focus their efforts not so much on remembering the material they process and file directly, but rather on remembering what to do and where to find the tools that offer access to the material they have stored.[83] For all the changes in media and in types of things to remember, live memory remains a crucial agent of intellectual productivity and often relies on the retrieval of items stored for the long term in various media. One of the achievements of early modern pedagogues and scholars was to experiment for the first time in considerable numbers with the bulk storage of notes and with the methods of sorting and retrieving them that made them usable.

NOTE-TAKING AS AN AID TO WRITING

In motivating his readers to accumulate notes in multiple indexed notebooks, Jeremias Drexel proclaimed the utility of excerpts in aiding composition and asserted that all abundant writers relied on collections of excerpts gathered over years of reading. The polygraphs of antiquity like Didymus the Brazen-Gutted and all the most famous authors, including Virgil, Pliny, and Aquinas, and many recent authors, must have excerpted. Drexel offered no empirical evidence to support his claim about past authors but reasoned by rational reconstruction—

how could they have written so much if not by relying on excerpts? Contra Drexel, it seems likely that a number of abundant writers before and during the early modern period did not compose from a stockpile of long-term notes but instead from short-term memory (with or without temporary notes) and good access to books. Conversely, some abundant note-takers in the early modern period did not publish anything from all the notes they accumulated. Therefore, though note-taking was justified as an aid to composition by early modern pedagogues, in practice abundant note-taking and abundant writing did not always proceed hand in hand. Two cases offer rich examples of the range of methods of composition before the early modern period. Pliny is the epitome of the abundant note-taker, though none of his notes survive and we must rely largely on a description of his working methods by his nephew. On the other hand, Thomas Aquinas, whose working methods can be studied in more detail than is common for medieval authors thanks to the preservation of autographs and of the manuscripts written under his dictation, seems not to have relied on abundant notes.

Despite the survival of only slight physical specimens of ancient texts, through the careful analysis of terms and extant texts, classicists have succeeded in drawing a detailed picture of the methods of scholarship exemplified by Pliny in the first century CE. While Pliny read or was read to, he flagged (by dictation or by writing himself) passages of interest (*adnotationes*); these passages were copied in haste onto wax tablets (*pugillares*), most often by dictation to a slave/secretary (*notarius*). The same passages (*excerpta*) were later transcribed more neatly and permanently onto papyrus rolls under headings; these sorted notes were called *commentarii* and presumably formed the material from which Pliny would compose his works.[84] The elder Pliny was no doubt an exceptional figure. He reportedly devoted every possible moment to study, sleeping only a minimum and arranging to be read to while eating, traveling, or bathing. He took notes on every book that he read and bequeathed to his nephew 160 *commentarii*, or volumes of sorted notes, "written in a minute hand on both sides of the page, so that their number is really doubled."[85]

An abundant note-taker, Pliny also composed abundantly, not only his *Natural History* in thirty-seven books (which alone is extant) but also, by his nephew's account, six other works totaling sixty-five books.[86] How exactly Pliny used his notes in composing is not clear. The *commentarii* were likely organized under headings or annotated with headings in the margins. Study of the text itself reveals passages where Pliny used materials from some texts in the order in which they appeared there, but in other cases he distributed passages from one source under different sections, illustrating his ability to follow both a source and a topical heading.[87]

Pliny the Younger commented on his uncle's practices because they exemplified an extreme of diligence, but Pliny's basic working methods were likely representative of much scholarly work in antiquity. Dictation to a secretary or slave was a common method of composing in antiquity and late antiquity, though some composed treatises in their own hand, as Porphyry reported of his teacher, the third-century pagan philosopher Plotinus, and many complained of the pitfalls of dictation.[88] Similarly, reading aloud coexisted in antiquity with silent reading, though the balance between the two is currently a matter of debate among specialists.[89] In any case, oral methods of reading and writing were no impediment to note-taking and composing from accumulated notes, as the case of Pliny illustrates. From Cicero (106–43 BCE), who boasted that he had excerpted the best passages from all authors, to Plutarch (50–120 CE), whose notes (*hypomnemata*) were likely crucial to the many quotations in his work, ancient authors made excerpts for reuse in their own compositions. Analysis of Diogenes Laertius's *Lives* suggests that, like Pliny, he relied on notes taken from different sources on themes of interest.[90]

Although the process of composition from notes has not been studied, in two cases at least we have works that claimed to be or were collected notes. Aulus Gellius calls his *Attic Nights* (published c. 180 CE) *commentarii* assembled from the initial notes (*annotationes*) he made from books that he read or what he heard that seemed worthy of remembering. "I used to jot down [*annotabam*] whatever took my fancy, of any and every kind, without any definite order or plan; and such notes I would lay away as an aid to the memory, like a kind of literary storehouse." Whether or not one takes these protestations literally, Gellius's claim suggests at least that it was plausible to contemporaries for an author to have gathered a collection of notes spanning twenty books of anecdotes and observations about language and customs.[91] The many literary miscellanies of late antiquity indicate that note-taking was common among their authors and probably their readers. In the case of the text known as the *Meditations* of Marcus Aurelius, emperor from 161 to 180 CE, we have a set of personal notes that were not circulated until well after his death (likely in the fourth century). Marcus Aurelius gathered personal reflections, maxims, and exhortations to virtue both original and excerpted from other authors, illustrating the range of material that notes (*commentarii* or *hypomnemata*) could encompass. Although their transmission down to us was exceptional, the making of these notes at the time was probably not.[92] From antiquity we can thus reconstruct various examples of note-taking fueling writing.

From the Middle Ages, surprisingly given the durability of parchment, we have no clearly marked large-scale collections of notes equivalent, say, to the 160 rolls of Pliny's notes. No studies exist at the moment to correlate a medieval work with manuscripts that may have served as preparatory notes (including texts or excerpts gathered in miscellanies or florilegia, or indexes or other tools). In one case, however, we have an unusually good range of evidence about the working methods of one scholastic author, including autograph and dictated manuscripts and contemporary accounts of working methods. The unusually high profile of Thomas Aquinas (1225–74), in his day and since, enables us to make plausible arguments not only from what has been preserved but also from what has not. Drexel lists Aquinas among those who "must have excerpted." But a close analysis of the extant manuscripts (four autograph manuscripts from early in his career and the later dictated manuscripts) and contemporary reports of his methods of working suggest that Aquinas worked not from a stockpile of notes like Pliny but rather from memory and direct access to books.[93]

Aquinas composed his first works by writing himself, but his handwriting (dubbed unintelligible or illegible at the time) proved so difficult to read that copies made from his autograph were faulty and Aquinas dictated the final version of these works from his autographs and thereafter composed directly by dictation.[94] The argument for composition by dictation rests on the absence of surviving autographs from his mature period. Any autographs, for example, of the *Summa theologica*, would very likely have been preserved, given the value attached to the other extant autographs of less significant works; these were preserved with reverence, but in being revered almost like relics they also suffered the removal of some fragments, which are now preserved separately (a practice that also increased the odds of our being aware of their existence).[95] If Aquinas had composed from notes kept on parchment, one could expect those too to have survived, at least in fragments. Instead, the reconstruction by Antoine Dondaine suggests that Aquinas consulted books as needed while composing and could rely on the constant presence of more than one secretary. Aquinas's ability to dictate simultaneously on different topics to three or four different secretaries was considered miraculous at the time, but this feat has also been attributed to Winston Churchill. Aquinas composed whenever he was ready, including in the middle of the night, in one instance waking his companion Raynald to write for him. Aquinas also worked with many books ready at hand—his secretaries in particular were responsible for making copies of the texts he required.[96]

Like Pliny, Aquinas represents not the norm but a figure exceptional in the quality and quantity of his output, and in the attentiveness of the help he received from his secretaries in his mature years. But the absence of a stockpile of long-term personal notes from which to compose, deducible from the reverence with which other Aquinas manuscripts have been treated, is less likely to have been exceptional. Although the working methods of scholastics have not been thoroughly studied, the explosion of reference tools starting in the thirteenth century suggests that the best-appointed scholars consulted books when they needed to and used tools of various kinds (concordances, subject indexes, or systems of symbolic annotations like Grosseteste's) to point to the passages they sought and to generate lists of citations. Beyond the compiling of florilegia and other preachers' aids, medieval scholars apparently did not often practice the kind of bulk copying out of passages that Pliny and so many early modern readers engaged in.

Starting in the fifteenth century and especially thereafter, by contrast, we have hitherto unparalleled quantities of extant notes. But even then not all abundant writers were note-takers. In some cases the accumulation of notes was a young man's activity, fueled by the pressures of teachers and by reading without specific authorial goals, which ceased when the note-takers became authors. One such example is Michel de Montaigne (1533–92), although he too was exceptional in many ways. He annotated books early in his literary career—the notes in his copy of Lucretius date from 1564, when Montaigne was thirty-one—and later his own copies of the *Essays* in preparing revised editions; but no freestanding notes are extant. He portrayed himself as someone who dipped into books, never reading for more than one hour at a stretch, and who wrote surrounded by the books in his library (about a thousand according to him).[97] Montaigne emphasized how little he relied on excerpting and expressed scorn for authors who strung together excerpts in a "concoction of commonplaces."[98] Montaigne's self-portrayals are not necessarily reliable, but scholars agree that Montaigne substantially recast what he read in new and often surprising ways. His method of doing so, Villey surmises, both in the initial composition and in later additions of the *Essays*, was to rely on the short-term recall of recent readings rather than on abundant notes.[99] Similarly, Caspar Barthius (1587–1658), a late humanist who published by "barrowfuls," in the words of one contemporary, including a voluminous *Adversaria*, boasted of writing from memory alone, without keeping excerpts and without making corrections or revisions. In reporting these claims Pierre Bayle also criticized Barthius for being disrespectful to his readers, ostensibly for admitting to such shoddy working methods.[100]

Drexel's claim that all abundant writers relied on excerpts is not valid as a historical assessment of earlier or contemporary working methods, given the counterexamples of Aquinas, Montaigne, and Barthius, among others, but it is a valuable indicator of Drexel's vision of note-taking. Drexel advocated the long-term retention and accumulation of notes as a treasury from which one could compose abundantly at some point, even without having a specific topic in mind at the moment of note-taking. The index would enable the user to retrieve items on demand. Drexel was proud, for example, to offer six pages of material from his own notebooks on the theme of tears, and shorter entries on bacchanalia and dancing as examples of notes stored up that can come in handy unexpectedly. "You won't find that in any [printed] index!" Drexel quipped. Drexel boasted too that thanks to his note-taking he could write two books per year on any subject.[101]

Humanists and late humanists valued the ability to produce citations and exempla on a wide and unpredictable range of topics in both rhetoric and scholarship, hence the utility of storing interesting material though one might have no clear use for it in the immediate future.[102] Similarly, but with a narrower set of goals, medieval aids to preachers collected passages that would supply the material for writing sermons on a variety of topics without any further reading. But unlike the medieval aids, and Sacchini's call to focus only on a few carefully chosen sources, Drexel envisioned note-taking on a large scale, beyond a pedagogical or religious canon of texts. Drexel's principle of selection was to avoid what was "obvious, quotidian, very trite, and a thousand times repeated." Both Drexel and Sacchini warned against the risks of mindless accumulation of abundance—"an unhappy diligence which collects trifles and silliness that will never be of use." Just as Gellius mocked a friend who brought him a bulky book of notes that were mere curiosities, so too Drexel mocked one Thomas Haselbach who spent twenty-two years commenting on the first book of Isaiah: this was "learned vanity and idle diligence."[103] Sacchini wondered whether it was worse to excerpt too much or too little; to find a middle way, he recommended matching the quantity of notes to take to the quality of the author, thus privileging a trusted canon of authorities, but he also noted that one could omit the sayings of famous men that everyone cited. Drexel preferred excerpting too much to not excerpting at all but advocated exercising judgment. Drexel also acknowledged that note-takers could develop their own individual techniques, straying from his advice: "If these precepts and rules of note-taking do not please you, draw up other precepts for yourself, fewer in number, shorter, suited to your studies, just as long as you take notes."[104] Many note-takers indeed devised their own ways of managing extensive notes.

MANAGING ABUNDANT NOTES

Surviving notes indicate that the advice of pedagogues like Sacchini and Drexel corresponded in a general way to existing practices. Sacchini's method of note-taking was precisely illustrated, for example, by an unusually complete set of annotated books and student notebooks owned by Duke Augustus of

Brunswick (1579–1666), who went on to found what is now the Herzog August Bibliothek in Wolfenbüttel, with his own books at the core of the collection. No direct influence of the Jesuit manual on a Lutheran milieu is necessary to explain the correspondence. Sacchini articulated advice that was likely standard in sixteenth-century pedagogical settings across confessional and regional divides. Augustus started his note-taking at the age of eleven under the direction of his private tutor, Martin Fabricius. The future duke underlined passages of interest in his books and then copied these marked passages into a notebook in the order in which they appeared in the text; this first notebook was the 435-page *Sentenzensammlung*. In a later phase of note-taking, Augustus copied the same passages again under headings in a second manuscript entitled "loci communes," with some passages recopied under multiple headings. Over five years, Augustus accumulated 2,915 *sententiae* from classical authors in this way; in 1591, he started a similar notebook devoted to sentences from the Bible, which reached 645 entries.[105]

Drexel's advice by contrast was best suited to adult readers with access to many books rather than to younger readers under a tutor's supervision. Beyond the school context note-taking was motivated less by a teacher's advice than by the various factors that inspired the pedagogues themselves. The abundance of books combined with the principle that there was "no book so bad" that it did not contain something worth retaining were broad causal factors. More specific motivations have been identified too. Some scholars have suggested that note-taking among English gentlemen without publishing ambitions (like William Drake or the younger Robert Sidney) served as a kind of therapy during the tensions of the English civil war, as a way to work out one's personal values and positions.[106] For somewhat different reasons, the classical scholar Adrien Turnèbe (1512–65) compiled his philological observations on ancient literature during the French civil wars because "the unpleasantnesses of the time and the country's fall into decline" made it impossible for him to focus on "serious studies."[107] Many stockpiled notes with the idea of helping not only themselves but also contemporaries and descendants. Commonplace books especially were meant to be passed on within a family. The elder Robert Sidney hoped his would help prepare his son for public life; in the *Spectator* Addison and Steele described commonplaces reaching beyond the next generation "as presents to the posterity of those who are yet unborn."[108]

A prime example of stockpiling motivated by a notion of service to the common good is offered by Nicolas Fabri de Peiresc (1580–1637), a nobleman of Aix-en-Provence and an abundant note-taker though he published virtually nothing. His biographer, Pierre Gassendi (1592–1655), reported that Peiresc always read with pen in hand and "had Scribes in readiness [to] have any thing transcribed." "For he could never endure that the least invention or observation of any man should be lost, being alwayes in hopes that either himself, or some other, would be advantaged thereby." Therefore "he wrote things down in his memorials because he then judged they were out of danger of being forgotten." Peiresc then diffused the material in his notes through abundant letter writing, serving as a clearinghouse for information for the Republic of Letters. Peiresc took notes on loose leaves, taking a blank sheet for each new item in order to allow plenty of space for later additions because he particularly resented the waste of time and effort (even if it was not his own but that of an amanuensis) involved in copying over material for lack of sufficient space. He assigned to each sheet the relevant heading in the upper left, then distributed the leaves in registers (i.e., bound volumes), in bundles, on shelves, and on the floor. He also kept copies of all his correspondence, in bundles on the outside of which he listed the contents and drew up a catalog of his papers, all of which he bequeathed to his brother on his death.[109]

Peiresc's papers may have appeared messy, but he could find his way around them, according to Gassendi: "For though he would frequently excuse himself that all in his House was nothing but a confused and indigested Masse, or heap, yet was he never long in seeking anything in so great an heap, provided that none meddled with his Rarities, Books or Papers but himself; and that some body else, being commanded to fetch this or that, had not put them out of order."[110] Peiresc acted as a clearinghouse for all kinds of information, antiquarian and natural philosophical, and regularly entered and retrieved information in his papers to share with others who requested it. Peiresc relied on amanuenses for copying but was apparently alone responsible for the arrangement of and retrieval from his papers. As a paragon of organization by early modern standards, Peiresc relied principally on his memory in managing his notes. For those less fastidious in their note-taking, memory played an even more central role. The classical scholar Isaac Casaubon (1559–1614) whose notes were "bare references . . . not to the places in books but to the thing or word to which he intended to recur" reportedly used memory as the only key "to this vast mass of material."[111]

Some scholars did not in fact succeed in retrieving items from their own papers. Although he devised many an organizational scheme in the abstract, Gottfried Wilhelm Leibniz (1646–1716) reported being unable to find things among his mass of unsorted notes: "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." Leibniz took notes on sheets or slips, reportedly according to the method of Martin Fogel (1634–75), a student of Joachim Jungius.[112] Robert Boyle, too, was notoriously messy with his papers. Despite Boyle's purchases of color-coded stationery products, he apparently did not put any consistent system of ordering into practice. Surviving papers include literary commonplace books from the 1640s, collections of recipes from the 1650s, and records of experiments and processes after 1662, along with excerpts from these work diaries made to prepare publications on particular topics.[113] Scholars working through Boyle's papers after his death did not have the advantage of personal memory to guide them and called them "a Chaos, rude & indigested many times God know's [*sic*]."[114] Boyle also composed on loose sheets, which could be rearranged within and between the various treatises he was working on at any given time, but the sheets were "often lost or mislaid, by himself or his amanuenses," and the order between them was indicated only by catchwords to the next sheet. As a result, Boyle had to apologize in print for one instance in which parts of a work were published in the wrong order because of a "transposition of loose sheets where the copy was sent to the press."[115]

Although honored in the breach by scholars like Leibniz and Boyle, the principal tool of note management in early modern note-taking was the heading, under which notes would be stored and later retrieved. Assigning headings to each item among his notes was precisely what Leibniz complained he could not find the time to do, with the result that his notes were useless even to himself. Given the central importance of the process, it is remarkable how rarely pedagogues or note-takers discussed heading choice. Choosing what to excerpt and under which heading to enter it was a matter of judgment (*judicium*), which was universally considered crucial to effective note-taking, but this was more often taught through personal contact with a teacher than in a book. Charles Sorel, for example, did not offer to teach judgment itself, which he explained is acquired "from precepts learned in person and from one's ability to notice what skilled people value."[116] But large-scale compilers were no doubt well aware of the potential arbitrariness of heading assignments. In one case, Pierre Bayle manipulated the headings in his *Dictionnaire historique et critique* in an attempt to reduce the size of his overlarge "A" section; thus his discussion of Alexander the Great figured under "Macedonia" with only a cross-reference at "Alexander."[117] Nonetheless, contemporaries discussed only a few difficulties specific to heading choice, notably cases where there were multiple relevant headings or none at all.

In the case of multiple relevant headings, cross-references would spare the work of copying the passage twice. Cross-referencing was used in the thirteenth century in Grosseteste's personal system of topical indexing and, for broader distribution, in Thomas of Ireland's *Manipulus florum* (1306). But only in a manual on note-taking in 1689 by Vincent Placcius have I found an explicit description of the practice, in a roundabout explanation, for lack of a specific term to designate it.[118] One could also copy out the item multiple times under different headings, as Augustus of Brunswick did in a few instances in his notebooks. On the contrary, when no one heading seemed suitable, either because too many headings might be used or none offered the right fit, the advice was generally to place the item in a miscellaneous category. To his French readers Charles Sorel advised: "When items could accord with different headings and that one fears confusing them, it will be more useful to place them under no single heading, but to have a notebook for items which are vague and of uncertain heading." In this miscellaneous notebook, which would be large, Sorel recommended following an alphabetical order and remaining familiar with its contents by frequent rereading. Thomas Bartholinus recommended against placing an item under a heading with which it did not fit well and instead keeping those items in a section without headings in the order in which they were read.[119] The risk of making a poor choice of heading for a passage jeopardized the utility of the excerpt, if one were not be able to find it again.

Heading choice happened either at the moment of reading, if one entered the passage directly into a sorted commonplace book, or at a later stage, in the case of notes arranged in the order of reading and later sorted by heading, whether by copying the passage over again (as Sacchini recommended) or by adding headings in the margin of the first notebook (as discussed below) or by drawing up an index to the notebook (as Drexel advocated). Hesitation at the moment of assigning a heading can occasionally be observed in manuscript notes, for example when Montaigne crossed out one heading for another in his marginal annotations.[120] Montaigne's originality often consisted in using a passage to unexpected purposes, notably by assigning an unusual heading to it, thus creating an original rather than a standard "lesson" out of an unpredictable set of examples. For example, to illustrate the power of false assumptions Montaigne ranged from the fears associated with the change in calendar (from Julian to Gregorian in 1582) to the persecution of witches and the notion that the lame are better in bed.[121] Since Montaigne likely worked immediately from his readings rather than from a stockpile of notes, annotations experimenting with headings may well have served as an immediate stimulus to creativity.

Just as entering an item under a heading required judgment, so too did retrieving it. Charles Sorel commented on the difficulties of making such judgments precisely as one accumulated more notes: "What a strange misfortune is it to have so many goods that, not knowing which to use, one uses none at all.

Some will say that abundance is always better than dearth and that if everything one has amassed and offers up is of great value, it is always pleasant; nonetheless extravagant and irrelevant items should never be valued."[122] Sorel thus warned (as Sacchini and Drexel had) against the use of reading notes that were not relevant to one's purpose as an empty and noisome display of learning.

Contemporaries rarely discussed the scale on which headings were to be accumulated and subdivided, yet those decisions could prove important. Too many headings risked separating items that belonged together. Some such fault may have led Jean Bodin, for example, to claim in separate places of his book on natural philosophy (presumably from separate sections of the commonplace book he recommended keeping on the topic) that abundant sap made the fruit of grafted trees sweeter and yet that older trees yielded sweeter fruit precisely because they were less full of sap.[123] On the other hand, if too few headings were used, they would become too large and hard to consult effectively. The advice manuals give little in the way of numbers of headings. Erasmus warned only in general terms against an "excessive subdivision" of topics, and recommended headings that would be most useful in oral and written composition, "arranged in whatever order you prefer." Erasmus noted the effectiveness of arrangements by vices and virtues, similars and opposites, and he followed his own advice in indexing his *Adages* according to 257 commonplace headings in the edition of 1508.[124] At the low end of the spectrum, Jesuit pedagogues recommended using only 40 general headings to avoid the confusion caused by too many loci, and at the high end Thomas Harrison devised a "note closet" with 3,000 headings and space for a further 300. But many were wary of introducing too many headings: Bacon advised using "farr fewer [heads] than you shall find in any Pattern," and John Locke, who devoted careful thought to his note-taking methods, recommended using about a hundred headings.[125]

Printed reference sources no doubt inspired headings in some cases. One advice book recommended compiling one's lists of headings from the headings of printed sources like Zwinger's *Theatrum* and Langius's *Polyanthea*, among other reference books. Charles Sorel explained that some of the learned chose their headings from entries in dictionaries on which they expected to gather notes of interest.[126] In drawing up the headings for his *Pandectae* or universal index of books (1548), Conrad Gesner relied on the indexes of the books he read and especially on the indexes of collections of commonplaces. In 1630 Johann Heinrich Alsted advised readers to use the headings of his encyclopedia as a guide to the collection and arrangement of their excerpts.[127] In a more unusual use of printed headings, the Zurich philologist Johann Caspar Hagenbuch formed notebooks by copying out the headings from books, even matching the layout of the headings in the printed book, and filling the blank space between them with excerpts from the book. Although this method of note-taking was very unusual, scholars have noted a general trend toward more idiosyncratic headings and forms of note-taking in the eighteenth century.[128]

Indexing notes raised the same kinds of questions as choosing headings, since each passage would be entered into the index under a keyword. In calling for an index to be drawn up for each notebook, Drexel recommended alphabetizing a passage under its principal thing (*caput rei*), for example, "the incredible growth of divine grace" under G for grace. Drexel explained that the index should be drawn up on sheets corresponding to each letter of the alphabet (with one sheet devoted to little-used letters like K, Q, X, and Z to save paper), with references to the notebooks that contained the excerpts (though Drexel does not specify the form of these references, possibly by page number).[129] Since the sheets would receive new headings over time, the index or list of headings would be alphabetized only by first letter. To find a given heading would therefore require browsing the headings beginning with the same letter to find a particular one. Despite this advice first published in 1638, I so far have found no one indexing their notes before the late seventeenth century. The extensive *Nachlass* of Joachim Jungius consisted of hundreds of bundles of octavo and quarto sheets but included no finding devices, page numbering, or cross-referencing, let alone indexing. The Italian natural historian Aldrovandi reported asking an amanuensis to index his collection of notes but complained that the work was greater than composing four or five natural histories, so he called it off.[130] Instead note-takers managed even large collections by assigning headings, then remembering those headings and their arrangement in notebooks, bundles, or other groupings—hence the wisdom of the advice to reread one's headings regularly to retain them in memory.

Short of indexing, some note-takers added headings in the margins of their notes (just as readers added headings in the margins of printed texts). Samuel Hartlib (d. 1662), who gathered and transmitted information among his many correspondents on all kinds of Baconian topics, left diaries totaling some 300,000 words, which contained marginal flags indicating contents and persons mentioned in them, in a kind of running index. Similarly, Charles Sorel commented that the symbols used to indicate certain kinds of material in printed books could be applied to the margins of one's manuscript notes just as easily.[131]

Locke's advice on indexing notes likely played a decisive role in spreading the practice. First published in French in 1686, then in English in 1706 and multiple subsequent editions, Locke advocated listing the headings used in a notebook at the front, sorted by initial consonant and vowel, and indicating the pages on which relevant material appeared in the notebook. Locke boasted especially that the method would avoid the common problem of wasting pages for some headings that were little used and running out of space under other headings that were heavily used. But by recommending recording each heading in the index with a reference to the pages on which it started and was continued Locke effectively taught readers to index their notes and supplied an alphabetical grid to serve as a model. Locke followed his own indexing method, although in some of his notebooks the initial index page is missing. John Evelyn (1620–1706), like Locke a member of the Royal Society, devoted a separate volume to an index of his elaborate three-volume commonplace books in which excerpts were arranged by keyword and subject.[132]

In the eighteenth century the indexing of notes became more common and sometimes quite elaborate. Samuel Johnson's notebooks included an index to a commonplace book on Locke's model (now lost). Especially remarkable achievements include the 1,200-page thematic index that the learned novelist Jean Paul (1763–1825) drew up to his collection of excerpts. In a related practice Johann Joachim Winckelmann (1717–68), the great Hellenist and theorist of neoclassicism, focused in his later years on making second-order excerpts from the abundant excerpts he had compiled earlier in life. Johann Caspar Hagenbuch (1700–1763), an idiosyncratic note-taker, also compiled twelve volumes of manuscript indexes to the twenty-four printed indexes of Gruterus's inscriptions, interspersed with his own observations keyed to the appropriate passages.[133]

The difficulties of indexing and assigning headings that early modern note-takers faced are still with us today, especially in library classification. Consistency in the application of headings is especially important in a library catalog because, unlike the index to an individual book or collection of notes, a library catalog is a collective project carried out over a long period of time through the work of countless individuals working both at the same time and at different times. In the late nineteenth century, training for catalogers was professionalized, and lists of the headings they were to use were standardized, at first within a single library (e.g., the New York Public Library and major university libraries), then more broadly with the adoption of Dewey decimal classifications, and finally with the regular publication by the Library of Congress of lists of subject headings (starting in 1898). Despite this vast effort to ensure consistent cataloging criteria, headings vary over time and by cultural context, and the choice of headings rests with an individual cataloger whose judgment (even when well trained) may differ from that of a colleague. Subject headings can also range from the excessively general to the excessively specific: a subject heading with only one item in it will not help you locate other items of interest, and too many results may prove unmanageable. The addition of keyword searching recently made possible by electronic media has added a complementary layer of search criteria and relieved some of the burden placed on subject headings, but the assignment of subject headings still remains a vital feature of library cataloging (now centralized at the Cataloging in Publication Program of the Library of Congress for some imprints). This will be true as long as language offers many terms for the same or similar concepts. A keyword search, defined by an individual term, cannot trace a concept as well as a cataloger who assigns subject headings based on an understanding of the material involved. Indeed, hierarchical subject headings still exist as one way of navigating the World Wide Web.[134]

From the perspective of the user, the optimal heading depends on the purposes to which the item will be put. Given the versatility of books and notes, these uses are impossible to predict when stockpiling items for the long term. In sum, as Leibniz observed at the turn of the eighteenth century: "A single truth can usually be put in different places, according to the various terms it contains, and even according to the middle terms or causes which it depends on . . . a single truth can have many places according to different matters to which it is relevant."[135] Leibniz's awareness of the multiplicity of headings relevant to an item predisposed him to enthusiasm for a high-tech device of his day designed to accommodate a vast quantity of notes that could be shifted between different headings over time. Although historians today are aware of no surviving exemplar of this device, a scholar reported in 1779 that the "note closet" that Leibniz had owned was then held in the royal library at Hanover.[136]

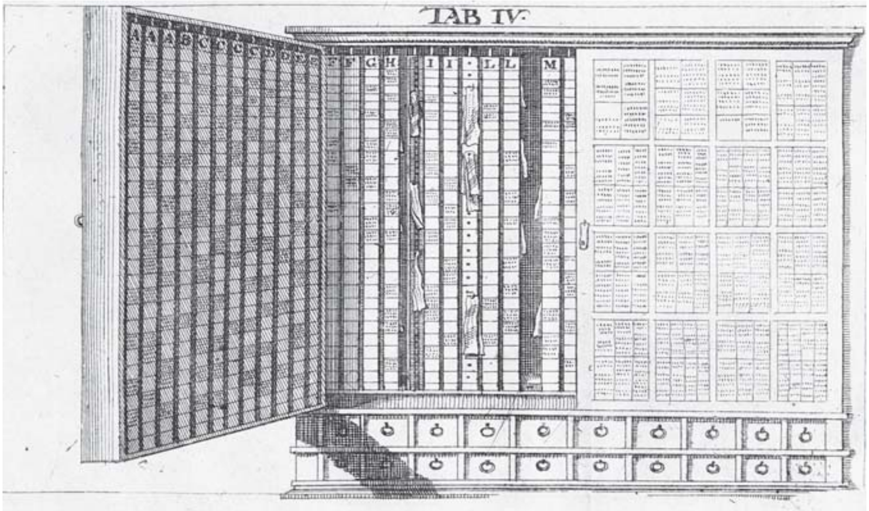
HARRISON'S NOTE CLOSET AND THE USE OF SLIPS IN NOTE-TAKING

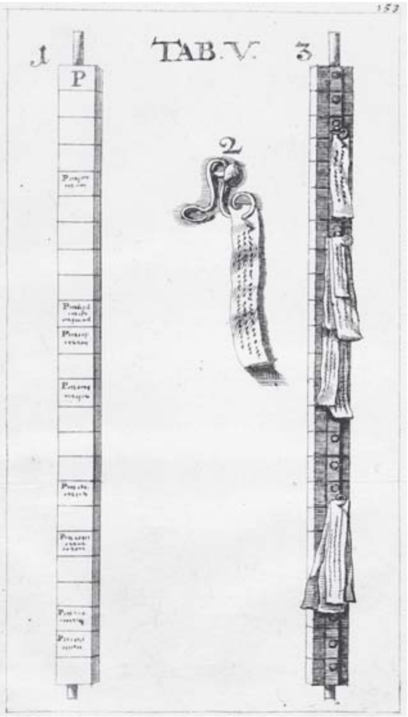
The item that Leibniz owned, though it apparently had little impact on the messiness of his papers, was a piece of furniture first described in an anonymous manuscript now at the British Library, which recent work has convincingly identified as the work of Thomas Harrison, active in the ambit of Samuel Hartlib. As Noel Malcolm has brought to light, Harrison described his "booke-invention" or "index" in a manuscript he composed while in prison in the 1640s, in the hope of eliciting a large reward. Parliament voted to publish Harrison's "tables," including a description of his device and some 100,000 observations that Harrison had accumulated in it, but no money was budgeted for the project and all that survived of the venture was Harrison's manuscript describing the "arca studiorum." This text came to Leibniz's attention through Vincent Placcius, who published it as the centerpiece of his *De arte excerpendi* of 1689, along with improvements, which he described implementing by having such a closet made for himself.[137] Placcius called this luxury piece of office furniture a "scrinium literatum" or literary closet.

The closet was designed to store slips of paper on hooks associated with commonplace headings that were inscribed alphabetically on little lead plaques. Placcius boasted that there was no limit to the number of slips that could be attached to a heading in this way. The metal bars bearing the headings on one side and the associated hooks on the other were lined up across the width of the closet, so that when opened, the closet would display all the headings, visible at a glance. The closet was designed with 3,000 headings and a further 300 slots left blank for additions—though Placcius did not acknowledge that these additions would likely disrupt the alphabetical arrangement of the headings. As Christoph Meinel has explained, the closet was unique in offering an organizational scheme for slips of paper used as the permanent medium for notes. But Placcius's enthusiasm for this tool was prepared by the methods of note-taking practiced (and taught) by Joachim Jungius who used loose sheets of paper and recorded just one observation or fact per sheet, so that they could easily be rearranged.[138]

The history of the use of slips and note cards (made of a stiffer paper and in standard sizes) has just begun to be written.[139] These small-format mobile media played an important role in many areas of modern information management. Library catalogs shifted from bound volumes to cards in the United States during the nineteenth century; Melvil Dewey's initiatives to reform library cataloging in 1877 included marketing a standard size of card for this purpose.[140] By the early twentieth century advice manuals on research methods recommended taking notes on index cards.[141] Before then cards were manufactured to be printed on, as in playing cards and business calling cards. The use of manufactured cards for note-taking began with the backs of playing cards, which were left blank until the early nineteenth century and offered a practical writing surface. Montesquieu (1689–1755), for example, occasionally took notes on playing cards. In 1775 abbé François Rozier, charged with drawing up an index to the publications of the Académie des Sciences, described using the backs of playing cards to do so.[142] The German jurist Johann Jacob Moser (1701–85) and the Swiss physiognomist Johann Kaspar Lavater (1741–1801) also kept their notes on cards stored in boxes.[143] Cards were probably first used for library cataloging at the court library in Vienna ca. 1780. A much larger size of card bearing multiple biblical images was marketed for religious instruction and sold in book form, from which the cards would be cut out then stored in a box.[144]

Before cards were used for writing in the eighteenth century, slats of wood could serve similar purposes, as used in the "cista mathematica" devised by the Jesuit polymath Athanasius Kircher and distributed to various German princes:



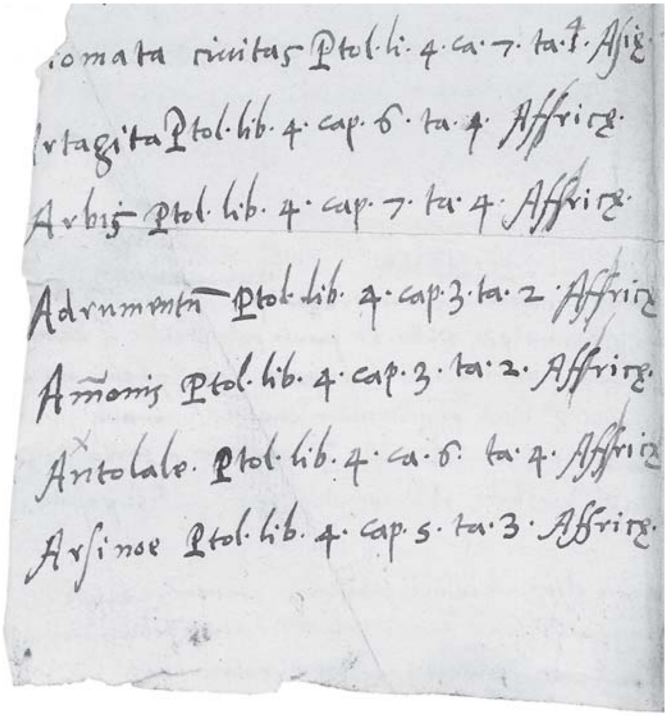


Figures 2.1 and 2.2
The note closet described in Vincent Placcius, *De arte excerpendi* (1689), based on a manuscript by Thomas Harrison from the 1640s. Notes taken on slips of paper were stored on the hooks attached to the metal bars; each hook was associated with a topical heading inscribed on the front of the bar. The closet could accommodate 3,000 to 3,300 headings. At least two such closets were built—Placcius and Leibniz each owned one—but no examples survive today. Reproduced with permission from Houghton Library, Harvard University, *GC6.P6904.689d, tabula IV and V after p. 153.

the box contained twenty-four slats inscribed with mathematical and musical information designed to facilitate calculations.[145] In 1653, in a treatise on mathematical curiosities, the poet Georg Philipp Harsdörffer advocated the use of a box with twenty-four sections to sort keywords to be alphabetized.[146] Most commonly slips of paper, typically cut up from full sheets, filled similar purposes. Various claims have been made about the use of slips in ordering material starting in the Middle Ages. But rational reconstructions from working methods that seem obvious to us are often historically inaccurate (as in Drexel's rational reconstructions about excerpting and abundant writing). Here and also in chapter 4, in my discussion of the use of slips in compiling early modern reference works, I focus on surviving evidence or contemporary descriptions.

The earliest manuscripts containing glued-in slips to come to my attention are the *rapiaria* or diaries among the Brethren of the Common Life, in the fifteenth century, in which the slips were not used for ordering material but as temporary notes made permanent by being glued into a notebook.[147] In the sixteenth century slips were used for alphabetizing indexes and forming compilations both alphabetically or systematically arranged. We find slips glued into place in library catalogs, collections of notes, and manuscripts destined for the printer. In 1545 the bibliographer Conrad Gesner was the first to recommend the use of slips to create an alphabetical index: each item to be alphabetized would be copied on a single side of paper that would be cut into slips. In a more radical procedure designed to save the time and effort of copying, Gesner recommended where possible cutting the passage directly from the printed book. In that case, Gesner noted, two copies were required, so as to be able to cut out items from both the verso and the recto of the page, but he seemed surprisingly unconcerned about keeping a third, undamaged copy. Gesner then described how to keep the slips in place on sheets but still movable, using a temporary glue (in a forerunner to the Post-it) until all the material had been gathered and the alphabetization was complete. At that point the slips were glued permanently onto the sheets for printing or use as a manuscript.[148] Gesner acknowledged a general debt to Conrad Pellikan, librarian of Zurich well known for his careful cataloging of the collection there, but we are not aware of any direct sources for Gesner's technique.[149]

This use of slips (manuscript, not cut from printed books) can be documented extensively soon thereafter.[150] Many volumes of Ulisse Aldrovandi's notes consisted of slips glued on to sheets or the pages of a notebook. The cartographer Abraham Ortelius (1527–98) kept a "Thesaurus geographicus" comprising notes on slips arranged in alphabetical order, with wide margins for further additions.[151] A number of alphabetized library catalogs from the seventeenth century were



omata ciuitas Ptol. li. 4. ca. 7. ta. 4. Afric.
rtagita Ptol. lib. 4. cap. 6. ta. 4. Affricę.
Arbis Ptol. lib. 4. cap. 7. ta. 4. Affricę.
Adrumentũ Ptol. lib. 4. cap. 3. ta. 2. Affricę
Am̃onis Ptol. lib. 4. cap. 3. ta. 2. Affricę.
Antolale. Ptol. lib. 4. ca. 6. ta. 4. Affricę
Arsinoe Ptol. lib. 4. cap. 5. ta. 3. Affricę.

Figure 2.3
From the manuscripts of Conrad Gesner, a list of references in preparation for alphabetization. This is a section from a single-sided sheet of paper on which Gesner copied African place names from Ptolemy's *Geography*, book 4, specifying chapter and map ("ta[bula]") numbers. At a later stage Gesner would cut out each item in order to merge these slips with those from other lists into a single alphabetical list. Gesner may have copied this list from an existing index, given its alphabetization by first letter; but the alphabetization on this page and in this section is not strict: see "Arbis" before "Adrumentum" for example. Reproduced with permission from Zentralbibliothek Zurich, MS C 50a f. 348v.

also constructed in this way.[152] In all these cases the mobility of the slips facilitated the process of drawing up the alphabetical list, index, or catalog but was lost once the work was considered complete and the slips were permanently glued into position. Library catalogs constructed in this way were just as doomed to obsolescence as those drawn up in a continuous manuscript and were similarly provided with wide margins to hold additions, pending the time when a new catalog would be necessary.

Blasij Hollerij Vivariensis medici annotatiuncula, in Hippocratis Jusiurandi singulas periodos. vide Hippocratem. 8°. medp.

E. 4. 27 Blasij Hollerij Vivariensis Doctoris Medici in Hippocratis jusiurandum commentarius. Basileæ p. Joannem Oporinum. Aº. 1558. 8°

Blasij Hollerij Medici Vivariensis Morborum curandorum brevis institutio, Medicis & chirurgis utilissima, iuxta Galeni potissimum sententiam. Basileæ Per Nicolaum Brylingerum. 1556. in 8° in compact.
Ejusdem in Hippocratis Jusjurandu Comentarius. Basileæ p. Jo. Oporinu. 1558. 8. medp.

Zu Boll im Hertzogthumb Würtemberg gelegenen Wunderbad vieler Kranckheiten heylung vom aº 1596 biß auf 99. beschrieben D. Joannis Bauhini Illustr. D. Wirtebergic. Medici, verteutschet durch D. Joh. Rentzium eigne Medicu. Mompelg. 1599. 4. teutsch.

C

Cœlij Apitij, summi adulatricis medicinæ artificis, de re culinaria libri X. recens e tenebris eruti, & a mendis vindicati, quorum de re popinali Iꝰ epimeles inscriptus, de conditis agit: IIꝰ artoptes: IIIꝰ Cepurica, de oleribus hortensibꝫ apparandis: IVꝰ Pandecter: Vꝰ Osprion, de leguminibꝫ: VIꝰ Trophetes: VIIꝰ Polyteles: sumptuosus: VIIIꝰ Tetrapus, de quadrupedu animaliu præparatione: IXꝰ Thalassa, de marinis: Xꝰ Halieus, de piscibꝫ. appendicula de condituris varijs ex Joanne Damasceno, Albano Torino paraphraste. Ex Paulo Aegineta, de alimentorum facultatibꝫ, eodem interprete. B. Platinæ Cremonensis de tuenda valetudine, Naturâ rerum, & popinæ scientiâ, libri X. ad imitationẽ C. Apitij ad unguẽ facti, ad ampliss. D.D.B. Roverellã S. Clemetis presbyteru Cardinalẽ. Basileæ apud Henricpetrinos. 1541. 4°.

Contra calculum remedia experta Euricij Cordi libellus. 8. in Stp.

Caroli Figuli Ἰχθυολογία, seu dialogus de Piscibus. Coloniæ p. Eucharium Cervicornu. 1540. 4°. medp.

Caroli Stephani de re hortensi, libellus, vulgaria herbarũ, florũ ac fruticu, qui in hortis conseri solent, nomina Latinis vocibꝫ efferre docens ex probatis autoribꝫ, in iuventu gratia locupletatus. Cui additus est alius libellus de cultu & satione hortorũ ex antiquorũ agricolarum sententiâ. Lutetiæ p. Rob. Stephanu. 1545. 8°.
Ejusdem Seminariu, & plantariu fructiferarum præsertim arborum quæ post hortos conseri solent, denuo auctius redditum. Huic accessit alter libellus de conserendis arboribꝫ in seminario: deque iis in plantarium transferendis atque inserendis. Paris. ex officina Roberti Stephani. 1540. 8°.

M. Caspari Brunnellei geistliche zu [illegible] weissagende Practic auff das 15.. 60. Jar der zukünfftigen und leidigen [illegible] übeln, sampt erklärung beider finsternuß der Sonnen, daß Mond sich [illegible] Jahrs zutragende: mit einem vorgesetzten Calender so viel alte bewegliche und unbewegliche Fest, auch andere tage und festtag und Sontag [illegible] belangend. Getruckt zu Pfortzheim bey Georg Raben 1559. 4°. in compacta

Slips are also occasionally extant in loose form in early modern manuscripts, containing items that were most likely meant to be entered for long-term storage into a commonplace book, as note-taking manualists recommended.[153] Some were included among the papers of Robert Sidney, the second earl of Leicester, tucked into the pages of books.[154] A surviving manuscript of a poem by John Donne includes slips on which excerpts had been copied along with a number corresponding to a commonplace heading, as if the excerpts were meant to be exported to a notebook (or possibly a note closet).[155] In these cases the slip was a form of temporary note (in the same medium as a permanent note), which was meant to be transformed into a permanent note by gluing (as in the *rapiaria*) or (more commonly) by copying over. How long notes might be kept on slips before gluing is unclear. In 1657–58 Blaise Pascal (1623–62) accumulated notes toward an apology of Christianity, which he never composed, on sheets that he later cut into slips—one for each pensée—and sewed into bundles under topical headings.[156] Pascal died before finishing the work, which presumably would have involved gluing the slips into the order of his choice. As a result editors from the seventeenth century on have proposed a variety of arrangements they consider optimal.

Given this general context, Thomas Harrison was indeed innovative in thinking in 1640 of the mobile slip as the end product of note-taking and the permanent form of the note. But similar methods were being experimented with concurrently in Germany, so it is not so surprising that a copy of Harrison's manuscript was discovered among the papers of Johann Adolph Tassius (1585–1654), professor of mathematics and natural philosophy in Hamburg. The manuscript was found there by Vincent Garmers, uncle of Vincent Placcius, who thus completed the transmission of the English manuscript to the German printed book.[157] Tassius was a close friend of Joachim Jungius, the massive note-taker. Jungius took notes on something akin to the slip—loose octavo sheets of 16 x 10 cm, each containing only one entry and one heading. Sheets on the same topic were gathered together and folded down the middle to form a bundle. At his death his student Martin Fogel identified 330 such bundles.[158] Peiresc too took his notes on loose sheets that he gathered together in bundles, though mostly in a larger quarto size. The slip was after all only a variant of the loose sheet, but in a smaller size.

Figure 2.4 (opposite)
A page from the catalog of the library of the Amerbach family, from Basel 1630, composed by gluing slips written in different hands in alphabetical order; some slips were likely cut out of an earlier catalog. See Roth (1935). Reproduced with permission from Universitätsbibliothek Basel, MS A R I 7.

Both were easy to rearrange, but Harrison noted that given their size, slips were easier to keep on hand at all times, so that he could take notes under almost any circumstances—"in the study, in a public library or another place, while reading, thinking or talking."[159]

But the small size of the slip also enhanced the principal drawback to note-taking on slips or loose leaves, which presumably discouraged others from the practice altogether—the risk of loss or misplacement, as Harrison acknowledged: "Only this one principal inconvenience remains, that we avoid a sad dispersion and confusion in using these Sibylline leaves (as they are called in contempt by a few). Which [dispersion] I have experienced a few times with great weariness, caused by [a draft from] a window or a door carelessly left open."[160] Placcius discussed the possibility of storing the slips in volumes from which they could still be removed and rearranged. But clearly Harrison's device solved the problem more elegantly. The literary closet promised to combine the advantages of flexibility with those of order safely maintained, keeping the slips pinned to the chosen headings but movable to other hooks as needed. Harrison also noted that the closet could be made to larger dimensions to accommodate larger slips or full pieces of paper.[161]

The closet could accommodate any order for the headings (though the illustration suggests an alphabetical arrangement); where multiple headings were appropriate Harrison called for the cross-reference to be indicated on a slip to spare the labor of copying the passage over again. As a professor of rhetoric at Hamburg, Placcius also praised the ease with which printed materials could be stored in the closet to help manage the flood of imprints stemming from German university life: "This is also a special advantage, that one can put in their place [in the closet] entire fragments of books or of programs or of the disputations of others to be cut up (in case they contain nothing notable except the passages to excerpt or they are owned in duplicate), or even better whole programs. . . . Which is especially useful for programs which are printed in large or as they say patent folio and are less suited to binding." Placcius envisioned intermixing manuscript notes with printed material, both complete short items or parts of larger items. Whether the "parts" were gotten by tearing out whole pages or by cutting out selected passages from a page, Placcius did not specify. Placcius complained about being surrounded with superfluous paper and recommended taking notes both *lemmatice* (by bibliographical reference only, as per Drexel's terminology) and *verbotenus* (word by word) for storage in the closet.[162]

Finally, both Harrison and Placcius emphasized the virtues of the closet for what they called "public use," that is, for sharing with others the burdens and the rewards of note-taking. Harrison eloquently described the difficulty of sharing one's notebook with friends desirous of drawing material from it: "How many times will some friend absent from you ask what you observed on some subject, and you would like to share it with him, but he would expect or ask to take the books [of excerpts] themselves which you cannot spare without grave inconvenience or some risk to your studies." By contrast the closet made it easy to share excerpts with others without parting with or jeopardizing one's entire collection of notes: "Without any delay or unpleasantness in finding or copying out, you can transmit the slips associated with the headings at the same time and put them back in the space left vacant when they are returned."[163] While the slips for particular headings were lent out, the bulk of the notes remained safe and available for continued use in the closet.

Harrison further envisioned group use of the closet: a group of students in a college or a literary society, say six or more, could distribute among themselves books to read or arguments to read for and keep the excerpted passages in common in the closet. At a moment's notice they could all and all at once examine and compare opinions and authorities on any topic, gathered from a great mass of books.[164] The closet seemed to make possible that complete index of all books that was a persistent ambition among early modern scholars across Europe from Gesner to Leibniz, and including Samuel Hartlib, whom Harrison praised warmly.[165] In using "the eyes and hands of many in reading authors and excerpting things," Harrison recommended following the "judgment and acumen of a few or only one person in recensing, judging, and composing by a just method," but he did not offer details on how multiple collaborators should implement one person's judgment.[166]

Placcius also praised "social excerpts" or group note-taking and its utility especially to the learned societies founded "in this century," including formal academies, informal literary societies, and learned journals. A few of these existed when Harrison wrote ca. 1640, like the Accademia della Crusca and Accademia dei Lincei in Italy and the Fruchtbringende Gesellschaft (in Germany, 1617–50), and in England Samuel Hartlib articulated plans for an "invisible college" that would bring about moral and philosophical progress through the circulation of new ideas and research. By the time Placcius was writing, the Royal Society and a number of French academies were well established, along with the first learned journals. The *Philosophical Transactions of the Royal Society* and the *Journal des sçavans* began in 1665, followed by the *Acta eruditorum* (1682–) and the *Nouvelles de la République des Lettres* published by Pierre Bayle as of 1684, among others.[167] Placcius hailed a number of collaborative works "begun mostly in this century": the biblical commentaries drawn up by the Jesuits of Coimbra in the 1590s, a 1657 poetry collection by the professors at the Academy of Giessen, the dictionaries of the Accademia della Crusca and the Académie française, and Bayle's journal. But Placcius also noted that "libri sociales" ("social books") written collaboratively were rare and often hindered by human envy and discord.[168] Placcius was thus especially enthusiastic about a hierarchical collaboration in using the closet: after taking notes on slips and assigning headings to them, one could delegate to another (and to any literate person) the task of filing the slips under the appropriate heading.[169] Presumably the same helpers could also be asked to retrieve items as necessary. The closet thus facilitated both collaborative projects among equals and the (less fraught) delegation of filing and retrieval to helpers who were subordinate to those whose judgment had created the notes and the headings.

FORMS OF COLLABORATIVE NOTE-TAKING

The considerable interest that Harrison and Placcius both displayed in the role of the closet as a tool for collaborative note-taking is a valuable reminder of the social aspects of intellectual work in general and of note-taking in particular in early modern Europe. Harrison and Placcius praised the closet as well suited to the collaboration of peers, and Placcius also invoked more hierarchical models of collaboration, in which certain tasks were delegated to the less skilled, to be performed quasi-mechanically. Both models of intellectual work challenge equally powerfully the common conception of scholars as working alone.

Early modern scholars often described themselves as working alone, with their books as sole company, as Montaigne did in describing his library in the *Essays*, even though recent work has highlighted that Montaigne worked amid a bustling household with a secretary in regular attendance. Early modern iconographical sources often portrayed scholars as working alone, in the presence of books and antiquities or symbolic animals. Insofar as we tend to project our own working methods backwards, we too envision scholarship and note-taking in particular as silent, solitary activities.[170] But in recent decades historians have looked beyond these representations and self-representations and brought to light the many kinds of help on which early modern scholars relied—from those they considered to be social or intellectual inferiors, such as amanuenses, servants, and family members, and from those considered as equals, such as colleagues and friends. The help received from those superior in social standing typically involved subvention and protection, some examples of which I discuss in chapter 4.

Historians of science have long focused on Francis Bacon's ideal of hierarchical group research (described in the *New Atlantis*, for example) as the inspiration for formal and informal scientific societies founded in the seventeenth century.[171] But recent studies have highlighted other models of collaborative intellectual work that may have inspired Bacon and Baconians or collective work independent of Bacon. Deborah Harkness has pointed to the cooperation (laced with competition) that characterized the interactions of artisans and merchants in late sixteenth-century London.[172] As in the time of Eusebius, ecclesiastical history was also an area of innovative group work in the sixteenth century. The Magdeburg Centuries, a Lutheran history designed to counter traditional Catholic accounts, were produced in thirteen volumes between 1559 and 1574 by a team of fifteen people working according to a hierarchical plan and with patronage secured by Matthias Flacius Illyricus. On the Catholic side, religious orders provided a natural institutional and intellectual setting for collaborative work, just as they had during the Middle Ages. During the seventeenth century, Jesuits, Bollandists, and other orders engaged in massive projects of compiling and editing church documents.[173] Clerical values encouraged a willingness to work together in a group, without individual recognition, for the utility of other brethren or of Christians at large and at no additional cost.

A source for collaborative intellectual work that has not yet been studied much is the role of group work among students. Placcius credited the first discussion of the topic to Bartholomaeus Keckermann (1573–1609), professor of physics, logic, and theology at Dantzig, who outlined these conditions for success:

> 1. If three students work together who are of similar ability and experience; 2. if all three have the same goal and are all studying theology or politics and law or in some other faculty; 3. if they are equally diligent and industrious; 4. if they are devoted to one another and friends, so that each wants to communicate his opinion without jealousy toward the other; 5. if they hire a reader, or if they cannot hire a reader, they take turns doing this task [of reading the text aloud]. 6. Let them have volumes already prepared in which to note what is noteworthy. 7. One of them can take notes in turn, but in dubious or obscure things, when it is not immediately clear to which heading something should be assigned, they should share their opinions among themselves. 8. These common volumes could then be copied by each, or they may find this more convenient, that the two who are not reading take notes in separate volumes, and the third who reads, takes notes afterwards, or if they hire a reader they can each take notes in separate volumes, briefly, if necessary, from the collected opinions.[174]

Keckermann envisioned the group discussing difficult decisions concerning the assignment of headings and generating notes collectively, of which each group member would have a copy. Johann Heinrich Alsted (1588–1638), professor at

Herborn, continued Keckermann's project on many fronts, including his advocacy of students working in groups of three to six called *collationes* or *collegia*.[175]

Group study was not only a German phenomenon. Jean-Cécile Frey of Paris recommended that "reading never be solitary, but always with a companion listening: he repeats to you what is worthy of note, just as you do when he is reading. It often happens when we study alone that we prove what did not need proving and we do not prove what does. Which does not happen when my precept is followed." In England the schoolmaster Charles Hoole (1610–67) recommended that students transcribe the commonplaces collected by other students each into their own notebooks, to pool excerpts just as Harrison proposed using the "ark of studies."[176] These scattered examples suggest that pedagogical practices likely played a role in the rise of ideals of collaborative work in the seventeenth century; Placcius in any case considered Keckermann's advice for group work innovative and related to the rise of learned societies. But sharing of notes did not require formal instructions or elaborate furniture. The presence of identical annotations in multiple extant copies of Copernicus's *De revolutionibus* (1543) attests to the circulation among mid-sixteenth-century astronomers of at least two sets of detailed annotations that provided helpful explanatory commentary on this difficult work.[177] Although we do not know the circumstances under which copies were made from the original annotations by Erasmus Reinhold and Jofrancus Offusius, this constitutes an early example of copying the notes of others, as Hoole recommended in his manual of 1660.

While few early modern scholars collaborated directly with peers, almost all relied on the help of others who were considered intellectual and social inferiors and were typically omitted from explicit mention. For example, Keckermann mentioned that a group of students might hire a reader to help in their studies. A seminal article by Steven Shapin pointed out that those people responsible for making, maintaining, and operating experimental equipment, notably at the Royal Society, were consistently erased from the accounts of experimental proceedings and from the images of the experiments in progress, which depicted putti turning handles and operating instruments instead of the human technicians who were actually involved but rendered "invisible."[178] Similarly, in working with texts, scholars relied on often invisible others to help in reading, summarizing, excerpting, sorting, and indexing and above all as scribes, taking dictation and making copies.

Who were these helpers? Some were members of the scholar's immediate family, notably wife and children. They are perhaps the hardest to track because there was no need to correspond with them or to engage their services formally. The clerical model of scholarly life as celibate started to erode in the fifteenth century on the Continent (although it was maintained at Oxford and Cambridge until the nineteenth century), as professors increasingly received salaries rather than relying on ecclesiastical benefices for income. As Gadi Algazi has studied, marriage involved scholars in new kinds of obligations and relationships; although the most common topos was to complain about the burdens of supporting wife and children, family members were occasionally also acknowledged for providing help in the scholarly activities of the head of household. Even when they were not mentioned, recent studies provide models for ferreting out the role of family members.[179]

The wife of the French philologist Adrien Turnèbe was thanked in a liminary ode for her "diligence" in the posthumous publication of her husband's *Adversaria*, which was edited by Adrien Turnèbe the son, with the help of his late father's secretary Joannes Furdinus.[180] Ulisse Aldrovandi was more specific in thanking his wife for "putting together" his five-volume *Lexicon of Inanimate Things*. Most likely this meant arranging and gluing in alphabetical order the notes he accumulated on slips of paper and kept in a heap in canvas bags (one for each letter). She probably also helped copy excerpts from ancient and modern authorities on natural historical topics onto slips, notably for her husband's sixty-four-volume manuscript "Pandechion epistemonicon."[181] In the nineteenth century, in the case of the dictionary by Emile Littré (printed 1859–72), the work of his wife and daughter was compensated not directly but by funds contributed by the publisher to pay for someone else to do the housework the women were unable to perform while they were working on the dictionary, checking quotations, and turning the slips contributed by readers into systematic entries.[182] No doubt the help of many a family member has gone unacknowledged and undetected.[183] Judicial proceedings occasionally bring to light unacknowledged help, as in the case of Amelot de la Houssaye, who produced many editions for the Parisian printer Léonard in the 1660s and 70s and would reside at the printer's house for weeks at a time. During those times Amelot relied on Léonard's daughter to copy texts for him, at the same time as he was having an adulterous affair with her (she was married).[184]

Most commonly the helpers were not family members but were paid for their services. Erasmus, who followed the celibate model of scholarly life, offers a good case study of the different levels of help one could hire, details of which have been traced through his correspondence.[185] Early in his career, when he lived modestly from precepting the sons of the well-to-do, Erasmus could not afford a servant and would rely on a *puer*, a boy between twelve and sixteen years old, who in exchange for room and board (often defrayed in part by a pension from the boy's parents) and the opportunity to learn by doing, would help with odd jobs and especially with copying. Starting in 1516, Erasmus was able to hire a proper *famulus* or servant (for an annual salary ranging from 20–24 to 32 florins at the end of his life, in addition to room and board with Erasmus); these were typically poor students aged twenty to twenty-four who would not only copy and take dictation but also correct proof, collate or translate texts, and travel to deliver messages or packages. In 1521 Erasmus hired a housekeeper, relieving the *famuli* of various domestic chores. Erasmus reserved for only three favorite *famuli* (Cannius, Talesius, and Cousin) the title of "amanuensis"; they would perform all the same tasks, including domestic ones if necessary, but benefited from the full confidence of the master and better wages. We know, for example, that Nicolas Cannius worked with Erasmus on improving the index of the *Adages* for the edition of 1526, thanks to surviving annotations on an earlier printed index in both their hands.[186]

Gilbert Cousin (or Cognatus in Latin) was the best known of Erasmus's amanuenses, and Erasmus tried unsuccessfully to lure him back when he left in 1535, after four years of service, upon receiving a church benefice in his hometown; along with a lighter workload Erasmus promised him a share of any gifts Erasmus might receive. Cousin wrote letters for Erasmus when the latter was incapacitated, drew up an inventory of his goods, and contributed to some of his commentaries. Cousin went on to publish works of his own, including advice on how to be a good servant, though he did not address in it the role of the amanuensis specifically.[187] After giving up on Cousin, Erasmus added a fidelity clause in hiring his next *famulus*, Coomans, promising a bonus of 200 florins if he stayed until Erasmus's death, which he did. We lack specific details about how scholars worked with their amanuenses, but an unusual contemporary representation pictures Erasmus and Cousin working face-to-face across a large table. The amanuensis, though paid for his work, could be treated as close to an equal; indeed, some of Erasmus's *famuli* may have been social equals, since working for another was often only a stage in the training of a student and future scholar. In some cases a scholar might treat his son at the appropriate age as a *famulus*, as the elder Scaliger did when he delegated secretarial tasks to his son J. J. Scaliger, such as taking down verses under dictation.[188]

Some relationships with amanuenses blossomed into trusting and close ones, as in the case of J. J. Scaliger who bequeathed all his movables (less 30 florins for his chambermaid) and most of his papers to his steward Jonas Rousse. Similarly William Drake's scribe, Thomas Ken, who learned to follow Drake's judgment so faithfully that the reading notes he took differ very little from those Drake took himself, became Drake's close friend and heir after many years of service. But that trust might have been misplaced in some cases. John Milton's manuscripts

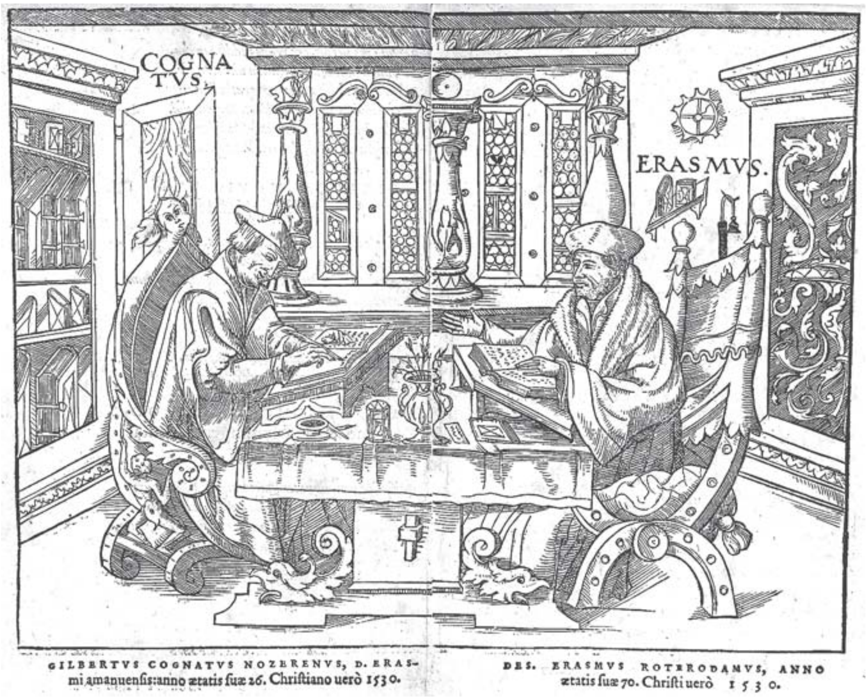


Figure 2.5
"Gilbert Cousin of Nozeroy [France], amanuensis of D. Erasmus, age 26 in the year 1530. Desiderius Erasmus of Rotterdam, age 70 in the year 1530," *Effigies Des. Erasmi Roterodami* (Basel: Oporinus, 1553). Reproduced with permission from Universitätsbibliothek Basel, AN VI 4a, pp. 7–8.

ended up in the hands of his amanuensis of one year, Daniel Skinner, who tried to advance his career by having some of them published, before deciding against it, after warnings about the heretical implications of some of them.[189]

These relationships could also be fraught with tensions. Many scholars complained of the errors and infelicities caused by amanuenses, or even of the burn marks they made to letters while working with laboratory equipment.[190] Some complained of servants making unauthorized additions to their texts and thieving. J. J. Scaliger had to pay a hefty ransom to recover an annotated edition of Plautus that a servant had stolen; one of Montaigne's secretaries absconded with part of the manuscript of the *Essays*, which was never recovered.[191] Erasmus reportedly discovered in print a draft he had dictated in haste to a student who published the manuscript under his own name. Erasmus also narrowly prevented a large theft of household goods by a *famulus* operating together with a servant girl.[192] These relationships were heavy with duties, dissatisfactions, and opportunities. They were not a new kind of relationship, but they became more common in the early modern period as personal secretaries, no longer the preserve of the nobility, became common in middling households. Given their particular needs, scholars might employ more than one amanuensis. Despite his advice to avoid excessive numbers of servants, Erasmus had up to eight people in his service at one time, in 1528.[193]

What did amanuenses do? Some took dictation, perpetuating practices of composition dating back to Pliny and Aquinas. Starting in the thirteenth century, increasing numbers of extant autographs and occasional comments indicate that some considered writing oneself to be preferable to dictation. Petrarch, for example, articulated the virtues of writing in one's own hand to aid in retaining the material, as the Jesuit pedagogues later emphasized for note-taking.[194] Nonetheless early modern scholars also composed by dictation, notably for health reasons, as in the case of Robert Boyle whose eyesight was poor and for whom eleven amanuenses have been identified to date, or out of personal preference, as in the case of Montaigne who seems to have dictated some parts of his *Essays*, judging from the aural mistakes that required correction in proof. John Calvin, who suffered from a variety of ailments, liked to dictate while lying in bed, using notes and a few books at his side; he would make revisions to the dictated text in his own hand but relied on others to draw up a clean copy for the printer.[195]

Most commonly amanuenses copied from written sources. They copied out whole texts, as scribes did in the Middle Ages, in cases of works that could not be found for purchase. They copied out notes, taken by others or by their master (or themselves), now needed in a new place or a new medium or a fresh copy.[196] They made copies of outgoing letters to keep as a record. Above all they made clean copies of compositions messy with revisions and additions. Scribal work had long been considered appropriate to delegate to others. As early as the thirteenth century "students were warned against wasting any of their time in writing out sermons other than their own; only one day a week might be spent in sermon writing," that is, copying out the sermons of others.[197] Gabriel Naudé, who served as a secretary/librarian to various grandees but had higher aspirations, was probably grateful that his poor handwriting spared him from being asked to copy manuscripts. Samuel Hartlib was exceptional in engaging in scribal work himself, amassing an impressive collection of manuscript books, but he also relied on amanuenses, and the manuscripts that he lent out to others were usually the work of one of them.[198] Although professional scribal work remained a trade of considerable skill and importance throughout the seventeenth century, and students in peripheral locales like Cambridge, Massachusetts, copied out the textbooks from which they studied down to 1735, most scholars sought to distinguish themselves from scribing by relying on others to do the copying, which they implicitly considered a mechanical task and a waste of time.[199] This attitude toward copying was noticeably different from that of Chinese scholars who prized their calligraphic skills and the manuscripts they had copied themselves.[200]

Pedagogues did not mention or complain about the delegation of copying per se, but many of them discouraged the reliance on others to perform tasks requiring judgment, such as reading and making excerpts, even while they acknowledged the existence of the practice. Taking Pliny's working methods as a model, Guarino da Verona (1374–1460) suggested that in studying, a young nobleman might hire a servant to copy excerpts into his notebook, but the master would select the excerpt and dictate it.[201] Sacchini, who valued copying as an aid to retention, did not address the possibility of delegating even the copying in note-taking. The more pragmatic Drexel addressed the issue but warned against delegating the selection of notes. "Notae propriae, notae optimae" (your own notes are the best notes), he explained, with one page of your own notes being worth "10, 20, 100 pages" of someone else's. Drexel's objection rested not on the mnemonic virtues of copying but on the importance of doing the reading and selecting oneself. "How many are the things which other scribes omit in studying or pass by for lack of curiosity, or neglect as they rush to other things, or, having found them, mutilate and break them? Which the attentive reader would pick up here and there to his great benefit."[202] Note-taking should not be delegated because no one else would devote the proper attention to the process. Similarly, Drexel dismissed as ignorant young men those who thought they could get everything they needed from indexes and reference books.[203]

Some fifty years later, however, Daniel Georg Morhof took a more lenient attitude toward delegation: "If you can afford it, you should employ learned amanuenses, to whom to assign the task [of taking notes]; but who use your judgment in collecting, as Saumaise and other very eminent men have done." An amanuensis of good judgment, and trained to replicate the master's judgment, could be trusted with note-taking, precisely as users of Placcius's note closet would depend on notes taken by trusted peers.[204] Although it is not always clear whether the notes taken in an amanuensis's hand resulted from his own judgment or that of his employer, some amanuenses clearly engaged in independent note-taking. For example, in the household of the learned antiquarian and collector Robert Cotton (1571–1631) a number of people were employed to collect and arrange more than 20,000 documents relevant to the history of the British Isles, including one amanuensis who "specialized in summarizing material and in listing and minuting treaties."[205]

Writing in the 1620s for an audience of gentlemen with political ambitions rather than specifically for students and scholars, Francis Bacon also cautioned against an excessive reliance on the reading of others: "Some books also may be read by deputy and extracts made of them by others, but that would be only in the less important arguments and the meaner sort of books." The criterion for delegation here was the quality of the book itself, so that only texts of less importance would be left to others to read. In private advice to his cousin, Bacon again recommended against relying on others to gather material from reading but then tacitly acknowledged the practice as he proceeded to offer advice on how to select "your gatherers" and "abridgers."[206] The practice of relying on such services was clearly widespread in these circles, however frowned on in theory. The example of Gabriel Harvey illustrates the kind of extensive note-taking that could be delegated to a professional reader in elite political circles in early seventeenth-century England. Harvey not only summarized but also reflected on the lessons to be drawn from the histories of Livy in his copy of the book annotated for the use of his patron, the earl of Leicester.[207]

Amanuenses also often engaged in the selection, purchase, and arrangement of books for their master. Gabriel Naudé, having avoided scribing tasks, published a library catalog for one of his employers. One eighteenth-century librarian, Wilhelm Heinse, not only selected books to purchase for the library of his master, the archbishop of Mainz, but also made excerpts from them and selected what the archbishop should read.[208] John Locke stayed in closer control of his library but worked with his servant Sylvester Brounower to draw up the catalog. Purchasing books for private libraries was deputized so regularly that seventeenth-century English auction catalogs boasted that they facilitated purchases by an agent.[209]

Decisions about which aspects of scholarly work to delegate to others and which to perform oneself were made by individuals based on many factors, including not only theoretical principles but also practical constraints of time, financial resources, help available, and the like. The criteria in play were rarely articulated, but during the seventeenth century a few authors identified tasks as "mechanical" that they thought should be delegated. In 1664, the Spanish theologian and abundant author Juan Caramuel described procedures very similar to Gesner's for indexing a book (but without the cutting and pasting from printed books): mark the passages to be indexed in the margins of the book, have an amanuensis copy out the passages using only one side of the sheet of paper, and "have someone cut up [the sheets] with scissors into slips. Have someone do this, I say, do not do it yourself: indeed this work is mechanical. . . . Then call four or six servants or friends and have them distribute the slips by letter and classes" on large tables.[210] After the first decision about what to index, Juan Caramuel considered it important to delegate most of the labor of indexing. Similarly, J. J. Scaliger said of his work indexing Gruter's large collection of ancient inscriptions, that he had done it "as a servant."[211]

We can glimpse indications of a shift in the ill-articulated boundaries of "mechanical" scholarly work during the sixteenth and seventeenth centuries. Whereas Erasmus and his amanuensis worked together to improve the alphabetical index to the *Adages* in 1526 and Gesner was proud to explain in fine logistical detail how to optimize the indexing process in 1548, by the seventeenth century indexing had become common, well-understood, and mechanical in the eyes of both the scholar J. J. Scaliger and the theologian Juan Caramuel. Of course their sense of the mechanical nature of indexing did not prevent others, like Vincent Placcius, from engaging himself in extensive indexing and list making still later in the century. But Placcius also sought to delineate activities that could be safely delegated, and he appreciated the note-closet in part because it isolated from other stages of note-taking the process of alphabetical filing, so that it could be safely left to unskilled servants.

Outside the realm of textual scholarship, Leibniz proudly described a calculating machine of his invention that would free astronomers from the "servile labor of calculating," by making it possible to delegate complex calculations to the lowest-ranking assistant: "It is unworthy of excellent men to lose hours like servants in the labor of calculation which could safely be relegated to anyone else if machines were used."[212] The concept did not catch on, however, and through the eighteenth century mathematicians frequently engaged in many tedious calculations. But the largest calculational projects, for example, the metric tables of Gaspard de Prony (1755–1839), involved a hierarchy of workers, "with a handful of mathematicians at the apex, then calculators and at the base 70–80 people who performed millions of additions and subractions."[213] As with the textual manipulations of the Magdeburg Centuries, these calculational manipulations were sorted into a hierarchy of tasks assigned to a hierarchy of people working collectively toward a final product.

In the nineteenth century social and professional distinctions became more clearly defined. By 1900 many of the menial tasks, such as copying, taking dictation, filing, and even routine calculating, had become feminized. In 1920 Chavigny explained to his readers that stenography was an "auxiliary task," not for the professional to master (though a professional might apparently be tempted to), and emphasized that machines for dictation, shorthand, and calculation were all essential to avoid wasting "intellectual strength" in the "secondary tasks" of office work. Women were employed as secretaries in offices and by literary authors and also as "computers" to perform complex and tedious calculations notably in astronomy.[214]

During the early modern period the boundaries between the tasks requiring judgment and those considered mechanical were fluid, and individuals made their own decisions about what to delegate to others. Some engaged in group note-taking and study with peers who were considered equals in judgment and ability. Others availed themselves of the help of family members—wives and children. Almost everyone who could afford it paid for the services of one or more helpers in a more hierarchical relationship, in which the nature of the tasks ranged from those considered mechanical to those requiring judgment, and the interactions from suspicious or even hostile to trusting and intimate. Across these variations, early modern scholars typically worked not alone but with others, adding further layers of complexity to the processes of heading choice and note management. Although few likely ever used a note closet as described by Harrison and Placcius, which would have been cumbersome and expensive in reality, its appeal rested in part in the ease with which it could be used by the different people who were typically involved in large-scale note-taking in early modern European contexts.

FROM PRIVATE TO PUBLIC: NOTES IN THE SERVICE OF OTHERS

Just as notes were often taken in collaboration with others, so too they were perceived as useful not just to their owners, but potentially to others. This notion was not unique to the early modern period. Pliny the Younger reported that his uncle "used to say that when he was serving as procurator in Spain he could have sold these notebooks to Larcius Licinus for 400,000 sesterces, and there were far fewer of them then." The anecdote, which Pliny evidently liked to tell, served to highlight the great value of the note collection, a point of honor for both Pliny's as the uncle subsequently bequeathed the treasured collection to his nephew (400,000 sesterces or 100,000 denarii was the property valuation required of the lower section of the equestrian class, a very small and wealthy nobility in Pliny's time).[215] Placcius reported another attempted purchase of notes ca. 1660, when someone offered a large sum for the notes of the famous legal scholar Hermann Conring, until it became known that Conring "did not rely so much on excerpts (which this great man wrote very hastily on paper and these only very few adversaria) as on memory and judgment and on the bulk and summary knowledge of books, to produce things which gave the appearance of relying on very vast collections of notes."[216] Though it cannot be corroborated, Placcius's report indicates at the very least that it seemed reasonable in his context to think of buying the notes of another, on the presumption that they would meet certain standards. The anecdote carried an implicit exhortation to take good notes, lest like Conring one lose the opportunity to sell them, however rare those opportunities probably were.

The reasons why authors did not want to sell their notes, even for impressive sums, are not hard to imagine. In many cases the authors were still actively using their notes and valued them as precious resources that they would rather bequeath to family members (as in the case of Pliny) than sell prematurely to strangers. But some were willing to lend out their notes, typically with great precautions, or books that might be useful not only for the printed text but also for manuscript annotations. Thus Erasmus requested of a friend that he allow Erasmus's servant to copy out the marginal notes in his copy of the *Suda*, which "meant a great deal of reading" that he hoped to spare himself.[217] Erasmus's procedure here was doubly vicarious, in that he relied on a secretary's copying out the notes made by another. Some also guarded their notes out of privacy. In the eighteenth century Jean-Jacques Rousseau, when in need of money, sold books from his collection, but he forbade the buyer (who was his publisher) from printing any of the marginal annotations in them.[218] Placcius noted that many authors of prudential literature recommended keeping one's notes secret lest they become stolen or the object of contempt. By contrast Placcius himself boasted that he always shared his notes openly with everyone.[219]

The only case I have found where a note-taker sold his own notes is that of Conrad Gesner, who on his deathbed formally sold his notes and drawings for a natural history of plants to his former student and collaborator Caspar Wolf for a nominal sum. Gesner made the sale with the intention of ensuring the transmission of the papers to someone who would publish them. But Wolf proved ineffective; he published nothing and sold the drawings of plants (with the consent of Gesner's heirs) to Joachim Camerarius, who used some of them to illustrate works of his own, without mentioning their origin, and in due course bequeathed them to his son. Three owners later, Gesner's *Historia plantarum* was finally published in 1753 and 1777 by Casimir Christoph Schmiedel, professor of botany at the University of Erlangen.[220] Gesner's unusual sale is consistent with the behavior of note-takers who valued their notes highly, for example, by instructing that their notes be saved before all else in case of fire and by attempting to ensure continued care of them after their death.[221]

The sale of notes was more successful when the authors of the notes were dead. Peiresc, for example, sought to buy the autograph manuscripts of learned men: "If he had received by gift or had bought Books which had belonged to learned men, he esteemed them so much the more highly by how much the fuller they were of such things as they had inserted with their own hand-writing." Peiresc also sought to "get into his Hands" autograph manuscripts to have them printed, if the heirs consented, or if not, at least to have a copy made for himself by one of his scribes.[222] Peiresc was perhaps in part seeking to own something by a famous scholar through his notes, especially given his reported interest in the autograph nature of the items. Nevertheless Peiresc's concern to publish or at least make a copy of the text also indicates his interest in the contents of the annotations.

Conversely, books annotated by J. J. Scaliger were highly valued by contemporaries. Nicolas Heinsius (1620–81) reportedly owned 200 books annotated by Scaliger, purchased at auction as well as privately; given that he too was a scholar of classical languages, it is likely that he sought to put the notes to good use for his own edification. Perhaps it is no coincidence, also, that the book a servant stole and that Scaliger recovered only six months later after paying a substantial ransom, was heavily annotated—the annotations increased the book's value both for potential buyers and for the author himself, who would be willing to pay more to recover it.[223] One seventeeth-century owner of books annotated by John Dee noted explicitly that they were "farre the more pretious" as a result.[224] Manuscript notes of the recently deceased also turned up in the catalogs of books for sale at auction: for example, a 1706 auction catalog of the library of the Bigot family (brothers Jean, Nicolas, and Luc and their son and nephew Emeric, 1626–89) included not only medieval manuscripts (advertised on the title page and reserved for purchase only once the rest of the books were sold) but also manuscript notes: such as, for Jean Bigot, three folio volumes of "excerpts, commonplaces and annotations pertaining to civil and canon law and practice," ten octavo volumes of "various commonplaces in many genres," and seven octavo volumes of "items collected from the sacred scriptures and sacred and profane writers."[225]

Despite these cases of purchases, bequests were the principal means by which the notes of one person were passed on to another. Even outside the ranks of scholars, notebooks were specifically mentioned in wills to ensure their safekeeping and bequest to a son or a grandson. These notebooks could be of value to descendants because they contained records of family property and business, like the notebook that Locke inherited from his father concerning the properties that he had managed.[226] In some cases it is likely that shared interests and habits of mind made it possible for an heir to make scholarly or professional use of inherited notes. The younger members of the various multigenerational scholarly families in the early modern period (such as the Scaligers, Zwingers, Vossii, Estiennes, or Casaubons, among others) may well have inherited not only (as one would expect) a *habitus* through family training and disposition, and books (which could include annotations), but also volumes of notes that could be put to continued use. Although I have little firm evidence from these multigenerational families of humanist scholars to support this hypothesis, some of the commonplace books that Robert Sidney (1563–1626), the first earl of Leicester, bequeathed to his son Robert (1595–1677) show that the son continued to use them by adding cross-references and material to them in his own hand.[227] The younger Sidney's building on and referring to the notes left him by his father is suggestive of the kind of cumulative intellectual project that could have happened in other families, particularly with multiple generations in the same profession. In some cases the student transcriptions of assigned texts made at colonial Harvard College were passed on to the next generation and contain additions by the son or the son of a friend of the first transcriber. Much later Benjamin Franklin described writing his autobiography using notes kept by his uncle who also offered to leave him "all his shorthand volumes of sermons, I suppose as a stock to set up with, if I would learn his Character."[228] But Franklin did not become a preacher.

Bequests outside family circles, to professional peers and colleagues, suggest even more strongly the expectation that the notebooks would prove of use to another member of the same profession (and perhaps serve the deceased's interests as well, as Gesner had clearly hoped). One English lawyer who died in Virginia bequeathed his "notes taken in the courts of Westminster and his commonplace book, in 8 folio volumes," to a colleague in England.[229] Naturalists in the circle of Luca Ghini (1490–1566) competed over his legacy, especially for control of his notes and specimens, which could boost any naturalist's standing and career, notably by facilitating publications that would not necessarily fully acknowledge the source. By contrast, however, some collectors of *naturalia* feared that their heirs would have no interest in maintaining their collections, particularly in bearing the expenses of doing so, and attached complex legal conditions to their wills to try to force them to keep the collection intact—usually with little or no success.[230] Bequests of scientific and scholarly material did not always fall into appreciative hands. On the other hand, some scholars into whose hands a dead colleague's notes might fall were all too appreciative and published from them without acknowledgment, as Raffaele Regio did in his 1493 commentary on Quintilian's *Institutio oratoria* drawn from the marginal annotations of Lorenzo Valla and Pomponio Leto (1407–57).[231] Similarly, in 1498 the great humanist printer Aldus Manutius articulated in print the suspicion that some contemporaries had absconded with manuscripts of Angelo Poliziano that had gone missing in order to publish them as their own.[232]

These cases of bequests and attempted purchases of notes were based on the hope that notes initially taken for the use of a single person, the note-taker, could be of use to others. But many obstacles militated against success: the note-taker was usually unwilling to sell, an heir was likely not to have the interest and ability to make use of them. Notes were more often effective in serving the needs of more than one person when they were initially designed, or modified by the note-taker, for the use of others. Large-scale collective projects (like the *Pinakes* or the biblical concordances of the thirteenth century) probably involved the pooling of notes by a group working together, though we know very little about the stages preceding the finished work. Less elaborately, the circulation of florilegia often involved, if one takes the prologues seriously, a decision by the original note-taker to share the results of his work with others in his order and beyond. Both these ways of making notes to serve multiple users had equivalents in the world of print. As contemporaries like Placcius noted, various collective projects resulted from forms of coordinated note-taking in the early modern period. Much more widespread, as I will elaborate in the following chapters, were the notes made available to others in printed reference books, which typically offered reading notes collected on a vast scale, often by multiple contributors, and accessible through finding devices.

3

REFERENCE GENRES AND THEIR FINDING DEVICES

The first new reference books to appear in print starting ca. 1500 were indebted to ancient and medieval sources and models, but they also initiated a period of new experimentation and explosive growth in methods of information management. Printed compilations were larger than their medieval counterparts and often grew larger still in successive editions, while remaining commercially viable; reference books were steady sellers despite their considerable size and expense and despite being accessible only to the Latin-literate.[1] The impressive size of many early modern reference books is a symptom of the same stockpiling mentality that motivated the large collections of reading notes. But while note-takers could rely on their memories to find their way around their notes, printed reference works needed to offer readers formalized finding devices with which to navigate materials they had not had a hand in preparing. These tools often came with instructions for use, which indicate that despite medieval precedents for some of them, readers of early printed books were not assumed to master them. For example, Conrad Gesner explained the reference function of his alphabetically arranged natural history of animals in five volumes (*Historia animalium*, 1551): the "utility of lexica [like this] comes not from reading it from beginning to end, which would be more tedious than useful, but from consulting it from time to time [ut consulat ea per intervalla]."[2] Here the classical Latin term *consulere*, usually applied to the consultation of people or oracles for advice, was applied to books; aware of introducing a new usage of the term Gesner added "per intervalla" to make clear the intermittent and nonsequential nature of the reading he had in mind. Before long such glosses and explanations were no longer necessary: the diffusion of reference works of many kinds, most of them in Latin, in the late sixteenth and early seventeenth centuries, familiarized a broad range of educated readers with the techniques of consultation reading and the use of alphabetical order and various finding devices.

In this chapter, I offer a portrait gallery of the major kinds of nonspecialist Latin reference works in print between 1500 and 1650. I have not included specialist reference books, for example, in law, medicine, and theology, though these featured many of the same and sometimes more complex finding devices because they reached a narrower readership with more specific professional needs.[3] The nonspecialist reference works, by contrast, offered access to the material that one had to master to be considered well-educated—Latin language and classical culture, and the wisdom accumulated in *sententiae* and historical examples (Christian and pagan) since antiquity. These were the best-selling learned genres of their day, yet they have attracted limited attention from scholars who have typically mined them for examples of commonly held beliefs rather than for evidence of methods of information management.

In grouping various genres together as reference books I am using a modern term, first attested in 1889, a few decades after "books of reference" had become current, as one author explains in 1859, to designate "Collections, Encyclopaedias, Lexicons, Dictionaries, etc."[4] The apparently similar term "book of references" is attested in 1612 but in a different sense, to designate the manuscript commonplace book that schoolchildren were enjoined to keep.[5] Given the diversity of related terms and concepts, it is useful to consider to what extent an equivalent to the modern concept of "reference book" existed during the early modern period.

Today (despite the recent explosion of online reference tools) we might define reference books as those books shelved in a reference room. Certainly there were no reference rooms in medieval or early modern libraries—the first ones date from the mid-nineteenth century.[6] Until the practice was abandoned (as early as 1615 at the Sorbonne, as late as 1757 at the Bodleian), many early modern libraries singled out certain books for chaining to desks, but chaining did not designate a reference book. Chaining was a security measure that prevented a book from being taken surreptitiously (in a few instances chained books were actually borrowed with their chains).[7] Some smaller libraries, for example in the Paris colleges, chained all their holdings. Frequently the books of most value were chained: all folios at the Bodleian Library, for example, or all manuscripts at the library of the Abbey of Saint-Victor in Paris. In Oxford colleges, books not chained (including second copies of chained books) would be available for fellows to "elect" or borrow for the year, and these might include reference books.[8] Due to their size, value, and desirability, reference books might often have been among the chained books, but they were not treated separately from other valuable books, and conversely, reference books (especially in second copies) could also be available for circulation. Thomas Hyde's 1674 catalog of the Bodleian reserved a section for "such books as lexica, concordances, law, councils: I display a greater abundance of books of this kind and that because of their very common use."[9] Frequent use was the main criterion here for singling out not only humanist reference genres (like lexica) but also major resources in the professional fields of law and theology.

There are few other examples of a category akin to reference books in library catalogs or other organized lists of books (e.g., auction catalogs). One medieval library catalog (c. 1389) approximated the category implicitly by devoting the last of its eight sections to schoolbooks, including classics, grammars, and dictionaries, but the category of "didactic" books appeared explicitly only starting in the seventeenth century.[10] Most early modern catalogs of books (in libraries or for sale at auctions) were sorted by format and language and by discipline (rhetoric, philosophy, poetry, etc.), though no standard definitions for these were applied. The works I call reference books were all Latin folios, variously listed under grammar, rhetoric, or philology (typical for dictionaries and florilegia), or as "mixed Latin works" (for miscellaneously arranged works discussed below), or histories (e.g., for Zwinger's *Theatrum humanae vitae*), but the precise categories and the placement of individual works within them varied in each listing.[11]

A category similar to our reference books is visible in the seventeenth century, especially in the new genre of books on how to form a library but also in complaints about the excessive reliance on reference books (discussed in more detail in chapter 5). One of the first and most influential books on forming a library was the *Advis pour dresser une bibliothèque* of 1627 by Gabriel Naudé (1600–1653), who served as secretary and librarian to various French grandees, including Mazarin. The work was reprinted in 1644, and in 1661 John Evelyn published an English translation of it entitled *Advice on Erecting a Library.* In his *Advice*, Naudé discussed the many kinds of books to collect in a library: including all the principal authors old and new, in the best editions, with their commentators; those who have offered the best treatment of a science or particular topic; but also those who have attacked the principal authors or written on little-known topics, and even the important heretics. Naudé then specified: "Neither must you forget all sorts of *Common places*, *Dictionaries*, *Mixtures*, several *Lections*, *Collections of Sentences*, and other like *Repertories*; seeing it is as so much way gone, and Matter ready prepared for those who have the industry to use them with due advantage. . . . In earnest, for my part, I esteem these Collections extreamly profitable and necessary, considering [that] the brevity of our life and the multitude of things which we are now obliged to know, e're one can be reckoned amongst the number of learned men, do not permit us to do all of ourselves."[12] Here Naudé's term "répertoire" and Evelyn's translation, "repertory," are category terms that match our notion of "reference books" quite well: they encompass kinds of books Naudé enumerated that were meant to be consulted for linguistic and cultural information.

"Repertory" and "répertoire" were directly formed from the medieval *repertorium*, from *reperire*, to find. "Repertorium" became common in the later Middle Ages to designate indexes, glossaries of words, or catalogs of books. Judging from definitions in early modern dictionaries, the Latin term and its vernacular equivalents retained the same range of meanings in the following centuries.[13] The term was polyvalent, but Naudé's use of it was well specified and was not idiosyncratic for his context. Around the same time the French Jesuit Etienne Molinier offered a substantially similar enumeration when he mocked the sources used to compile sermons that heaped together endless examples and references: "After all there is no lack of repertories, Calepinos [i.e., dictionaries], treasuries and commonplaces where minds feeble in invention or weak in knowledge can supplement their indigence."[14] Although reference books elicited criticism more often than praise, other authors of advice on forming libraries followed Naudé's favorable endorsement of the genres. In his manual of 1631, Francisco Araoz praised "dictionaries of things" as an aid in indefatigable study, that is, even for serious scholars, because they offered a "summary and substantial knowledge of things and sciences."[15] Similarly when Johannes Lomeier dedicated his *De bibliothecis* (On Libraries, 1669) to the town leaders of Zutphen in Holland (presumably to encourage them to invest in the library), Lomeier proposed a choice of organizational schemes, both of which involved a category for "universal books" or "encyclia," including "thesauri, instruments of the library, [and] dictionaries."[16] Lomeier's "universal books," like Naudé's repertories, were focused on the fields of grammar, rhetoric, and history that were of general rather than specialized appeal—they were doubly "universal" or "common" (as in *enkuklios*) in that they were encyclopedic in scope and appealed to a broad Latin readership.

Naudé's notion of "repertory" as reference book seems familiar because the category of reference book and the practice of consultation reading survived the transition to modernity relatively unchanged. But many of the genres Naudé enumerated as reference books in 1627 did not weather as well the transition from the pre- and early modern focus on ancient culture and language to vernacular genres and modern topics and questions. Gabriel Naudé's enumeration of repertories can serve as a useful guide to the genres that functioned as reference works in the sixteenth and seventeenth centuries. These large Latin books spread to a broad educated elite familiarity with many tools and methods of consultation that were crucial to the success of the modern reference works of the eighteenth century.

NAUDÉ'S REFERENCE GENRES

DICTIONARIES

The dictionary has proved a remarkably stable genre from its medieval origins down to the present and has generated a specialist bibliography that I do not seek to address. By comparison with other reference genres, dictionaries were typically the first genre (in Europe and in other cultures) to be self-indexing: the material was arranged so that the objects of one's search (the words being defined) could be easily located (e.g., alphabetically) without resorting to any additional finding aids. Not all alphabetically arranged works are as self-indexing as dictionaries: an alphabetical index can point to items that occur within an article but not as an article heading; thus many editions of the *Encyclopedia Britannica* have advised readers to "consult the index first."

"Dictionarium" is attested in the thirteenth century but was not commonly used until the fifteenth century. Instead, early dictionaries included Huguccio de Piso's nonalphabetical *Derivationes* (late twelfth century), William Brito's *Expositiones vocabulorum Bibliae* (Explanations of Words of the Bible, ca. 1248–67), or the *Catholicon* of Giovanni Balbi (1286), the latter two alphabetically arranged. A few medieval dictionaries were selected for printing in the fifteenth century, but dozens more survive in manuscript, some of them in hundreds of copies.[17]

In the early modern period, as in the Middle Ages, the dictionary was among the most widely available of the reference genres. One scholar has counted some 150 dictionaries in print between 1450 and 1650, many of which went through multiple editions.[18] Some were monolingual (in Latin or the major vernaculars), typically offering encyclopedic along with linguistic information. Others were multilingual, offering translations from or into one or more other languages; these were all Latin-to-vernacular until an English-to-Latin *Promptorium* was compiled in 1440 and printed in 1499. Subject dictionaries, focused on the terms specific to a given field, also multiplied between the sixteenth and eighteenth centuries. Printed dictionaries were more consistently than their medieval counterparts arranged alphabetically, though more or less rigorously so, as some dictionaries clustered words by root.[19] Because printing coincided generally with the spread of humanism, after 1500 medieval dictionaries (like the *Catholicon*) went out of print and were replaced by dictionaries focused on a humanist rather than a medieval conception of Latin.

The dominant dictionary and the single most widely reprinted reference book in the early modern period was Ambrogio Calepino's *Dictionarium* of 1502, which was followed by 165 editions in the sixteenth century, 32 in the seventeenth, and a further 13 in the eighteenth. An Augustinian monk from Bergamo, Ambrogio Calepino (1440–1510/11) received a thorough humanist training in Greek and in Latin philology. He devoted some thirty years to composing his dictionary, which focused on classical Latin usage and on encyclopedic information and literary examples from ancient culture.[20] In the years after his death many, mostly anonymous editors made modifications, corrections, and especially additions, often borrowing from other dictionaries (as Robert Estienne complained with acrimony, for example).[21] The Calepino started as a Latin-Latin encyclopedic dictionary, with a few Greek equivalents present from the beginning, and added a polyglot dimension, when Greek and one or more vernacular translations were added for each entry as of 1545: Italian in the Italian editions; French, German, and Flemish in the Flemish editions. Later editions included all those languages plus Spanish, Hebrew, Polish, Hungarian, and English in various combinations for a total of up to eleven languages, as the title pages boasted proudly. This association of the Calepino with multilingual Latin dictionaries persisted in the "Calepino" appellation present in Latin-Japanese and Latin-Magyar dictionaries as late as 1870 and 1912.[22] In the early modern period the Calepino not only became the most widely recognized brand of dictionary, still active in the early twentieth century, but it also came to stand for the entire dictionary genre, in the usage of the Jesuit Molinier (quoted above) among many others. One author coined the verb *calepinare*, and the *calepin* remains in French today in the somewhat different meaning of "appointment book."[23] At the same time the success of the Calepino solidified the association of the title "dictionarium" with the dictionary genre—only a few major dictionaries were called by another title, typically "treasuries" (a term still in use today).[24]

In 1685 Adrien Baillet noted that so many able hands had been involved in modifying and improving Calepino's original (which Baillet called "pitiful") that "today . . . there is almost nothing left by Calepino but the title and name of the book."[25] Given its fundamentally collective and changing authorship and multiple sources, the Calepino varied from one edition to the next and over time. Nonetheless, the general purpose of the Calepino was consistent across editions: to offer a fairly complete coverage of classical terms, often ignoring terms from medieval or early modern usage. Thus "typographia," though present in the front matter of almost every edition, first appeared among the words defined only in

1616, and "imprimere" was defined throughout as imprinting on wax (as in antiquity, ignoring the practice of printing on paper). In addition to grammatical information about the terms (genitive, verb forms), the Calepino included encyclopedic information drawn from and useful in understanding classical sources. Under "elephant," for example, the dictionary explained that they lived three hundred years and that Pyrrhus used them in battle. This information did not change rapidly in response to contemporary political or intellectual developments. Thus "Hollandia" first appeared in the Calepino 150 years after its political independence. And through the last editions in the eighteenth century, the definition of "terra" remained unchanged: "cold and dry element . . . Varro book 4. . . . The earth is surrounded by the universe, sitting at the center of the world, solid and spherical Cic. *Tusculans* 1."[26] Even in a reference work subject to regular changes and revisions, the recycling of existing material accounted for the largest part of each new edition. In addition to the practical advantages of this writerly inertia, in a work for Catholic consumption (such as the editions of the eighteenth century produced for the seminary in Padua) a traditional definition for "terra" was necessary to avoid potential censorship; it was in any case also an accurate description of what "terra" meant to the ancient authors whose works the Calepino was designed to help elucidate.

Starting in 1544, editions of the Calepino printed in Basel included a separate dictionary of proper names, Conrad Gesner's *Onomasticon*.[27] In an unusually detailed preface Gesner explained that with the help of friends he compiled his material mainly from the proper names included in other dictionaries, including the Calepino and the *Elucidarius carminum* (Elucidator of Poems) produced in 1541 by Robert Estienne; meanwhile, Robert's brother Charles Estienne (who also printed the *Elucidarius* in 1559) authored another important dictionary of proper names, the *Dictionarium historicum ac poeticum* (1553), much reprinted down to 1693. Even without attending in detail to the complex printing history of this genre, we can glimpse an intricate web of interconnections between the different dictionaries and the people involved in producing them who readily mined existing works in putting out a new edition.[28]

Like the Calepino from which it was explicitly a spin-off, the *Onomasticon* and other dictionaries of proper names explained names found in ancient literature in a wide range of categories: "men and women, peoples, idols, cities, rivers, mountains, and other places" but also pagan gods, regions, islands, plains, bays, hills, and ports, as found in both sacred and profane literature.[29] Gesner explained the utility of his work as threefold: it offered true and still current information about history and geography; it glossed proper names the ancients used that were no longer current (e.g., from their "fables and trifles"); finally, "authors, who write commentaries and scholia, can refer their readers here, as we did in our annotations on Tatian's oration against the Greeks, lest they have to repeat many things many times and the same things be said in each commentary on each author, so that this book is like a common commentary [*communis commentarius*] on most writers."[30] In hailing his proper name dictionary as "a common commentary on most writers," Gesner emphasized its wide scope and its value to many users who could be spared the effort of commenting on material that was already explained here. Gesner tacitly noted here the close relationship between dictionary and commentary (to which I shall return), though the two genres were arranged differently.

Early modern dictionaries, due to their self-indexing arrangement, were the only early modern genres not to offer further finding devices.[31] Readability was fostered by paragraphing and variations in font and font size; the principal difference over medieval dictionaries was the consistent use of line breaks (rather than rubrication) to signal new entries.

FLORILEGIA OR "COLLECTIONS OF SENTENCES"

The florilegium was another reference genre that was well defined in the Middle Ages and became very broadly diffused with printing. Florilegia more than other reference genres ranged widely in size, expense, and the presence of finding devices. I focus principally on the Latin folio examples because they deployed the most sophisticated organizational and finding devices and clearly functioned as reference books to be consulted rather than read through. But many florilegia were also published in Latin and in the vernaculars as much less expensive octavo books that offered mostly moral and theological sayings organized under topical headings. The headings were alphabetized, but the octavo florilegia typically offered no other finding devices; the shorter ones might also have been read in other ways than by consultation as sources for devotional or moral reflection. Trying to quantify printed florilegia is unusually difficult given the broad range of works to include and the fluid boundaries with neighboring genres that collected quotations or historical examples. Following Naudé's enumeration, I treat separately below both the miscellaneously arranged collections of sayings and commentaries, like Erasmus's *Adages*, and systematically arranged commonplace books, like Theodor Zwinger's *Theatrum humanae vitae*. A recent study has suggested that up to 1 million collections of sayings and exempla of various kinds were available for purchase during the sixteenth century. Despite the difficulties of any such estimate, collections of quotations were without doubt very successful.[32]

The shift from manuscript to print did not coincide as neatly as in the case of dictionaries with humanist florilegia replacing medieval ones. Medieval florilegia focused on spiritually and morally uplifting passages in the Bible and doctors of the church, and this genre continued in print. In particular, two florilegia attributed to Thomas of Ireland (author of the *Manipulus florum* of 1306) were abundantly reprinted between mid-sixteenth and mid-eighteenth century; the "Flowers of almost all the doctors who have distinguished themselves until now in theology as well as philosophy" and "Flowers from the Bible" contained far more in 800-page octavos than Thomas himself compiled, but the attribution to a medieval author was presumably perceived as a selling point.[33] At the same time humanists published collections of ancient sayings, such as the *Disticha moralia* of Cato, also in a widely reprinted octavo (ca. 136 pages).[34] The market was also replete with newly composed florilegia, which often specialized in a certain kind of quotation: for example, poetic ones in the *Margarita poetica* (Poetic Pearl) of Albert de Eyb (1472, in-folio) or the *Viridarium illustrium poetarum* (The Pleasure Garden of Illustrious Poets) by Octavianus Mirandula (1507, in-quarto).[35] *Adagia*, *apophthegmata*, *parabolae*, *proverbia*, *sententiae*, *similia* were specialized terms that appeared in many titles, though they were not always clearly distinguished in practice: *parabolae* and *similia* focused on comparisons; adages and proverbs on statements considered authoritative by dint of antiquity and/or repetition; *sententiae* was a broad category term for "saying," and the "apophthegm" designated a witticism best understood in light of a particular anecdote.[36] Hence Naudé embraced all these kinds of works with his "collections of sentences."

The most successful of the folio florilegia was also the largest and most wide-ranging: the *Polyanthea* of Domenico Nani Mirabelli, first published in 1503, and in at least forty-four editions down to 1686, with successive additions that increased the size of the work sixfold from some 430,000 words in 1503 to more than 2.5 million by 1619.[37] Domenico Nani Mirabelli (or Nani, b. ca. 1455, d. after 1528) was rector of schools, archpriest of the cathedral in Savona (Liguria), and also served as papal secretary.[38] He explained the origins of the work in his liking to collect "flowers from such a great heap" while studying Greek and Latin humanities as a young man. These grew with contributions from daily conversation and from the study of philosophy until he decided to put them in order and to publish them, later in life, "for the common utility."[39] In addition to organizing his own selections accumulated over years of study and conversation, Nani also relied on the *Manipulus florum* of Thomas of Ireland, from which he drew most of his topical headings and about half of the contents for them, though he does not mention this source.[40] More than other contemporary florilegia Nani combined traditional religious authorities and themes used by preachers with new and newly valued authorities that appealed to humanist teachers and students. Nani also signaled his humanist intentions in choosing for his title the Greek term for "many flowers" instead of the usual Latin terms.[41] Additions starting in the mid-sixteenth century, from other collections both published and unpublished, contributed much new material, such as emblems, fables, and exempla, making it the largest and most wide-ranging of all the collections of quotations. The material under many headings had become so abundant that in 1604 one editor, Joseph Lange, produced a major revision of the work by sorting the material under each heading by type of quotation (Bible, church fathers, poets, philosophers, fables, emblems, and so on). Although the *Polyanthea* may not have been as dominant as the Calepino, it served as a benchmark for collections of sayings arranged by alphabetized headings. For example, the title page of the *Magnum theatrum vitae humanae* (first published in 1631) explained its alphabetical rearrangement of Zwinger's systematic order as "following the norm of the polyanthea."[42]

Although a work arranged by alphabetized headings could be considered self-indexing, the *Polyanthea* included three additional enhancements, each of which I will discuss below: an alphabetical list of authors cited (present in the early editions but not all later ones); an alphabetical list of the headings under which the material was arranged, including the numbers of the pages on which the entry began (which became increasingly long as the *Polyanthea* acquired new entries); and, for a dozen of the longest articles, a branching diagram offering a conceptual ordering of the topic (which remained unchanged throughout the editions).

"MIXTURES" AND "SEVERAL LECTIONS"

Naudé included in his list of repertories books that (until very recently at least) might have seemed automatically disqualified as reference books because they were explicitly arranged without order, as miscellanies. The miscellaneous order has been largely ignored in studies of early modern organizational schemes, which have usually portrayed a contest between systematic order and alphabetical order, gradually resolved in favor of the latter. But miscellaneously arranged collections could serve equally effectively as reference works as long as they were equipped with a good alphabetical index to serve as finding aid. We can appreciate this better today than even a decade ago, given our increasing reliance on electronic reference tools that are typically not alphabetized but consulted through a search engine. The World Wide Web itself is a vast miscellany that we access through search engines applying a variety of (often secret) algorithms.[43]

In the early modern period alphabetical order itself was perceived as a kind of miscellaneous order, since the arbitrary order of letters and of the words assigned to concepts and things resulted in items positioned side by side that had no conceptual relevance to one another. In the alphabetized *Polyanthea*, for example, topics succeeded one another with no underlying logic: "admiration," "admonition," "adolescence," "adoption," "adoration," and so on. By contrast, systematic orders were valued because they claimed to match the natural relationships between things, by treating related topics in one section (e.g., adoration with other virtues or adolescence with others stages of life). In practice, of course, there was little agreement on how best to represent those relationships or on the optimal systematic order. One historian has counted nineteen different systematic orders present in early modern encyclopedic works, including the order of creation, of the Decalogue, of the biblical narrative or the catechism; various chronological and geographical orders; and hierarchical orders of the disciplines or of the chain of being.[44] But in case their order seemed opaque to readers, systematically arranged reference books generally featured one or more alphabetical indexes to facilitate access. Indeed, one eminent contemporary reported finding the elaborate systematic arrangement of Theodor Zwinger's *Theatrum humanae vitae* impenetrable and relying on the index to use it.[45] The distinctions between different ordering systems were thus eroded in practice by the generalized use of alphabetical indexes in early printed reference works. Nonetheless, compilers continued to explain their order of presentation with care and earnestness.

Unique to the Renaissance were reference books that were explicitly designed as miscellanies (as opposed to those that have seemed miscellaneous to users, at the time or since, for lack of appreciation of the compiler's plan). Unlike dictionaries and florilegia, the works Naudé called "mixtures" or "several lections" did not draw on medieval models but invoked ancient precedents, especially the *Attic Nights* of Aulus Gellius, who claimed to have followed the "haphazard order" of his reading notes.[46] This clear embrace of the miscellaneous order inspired humanist imitators who hailed the virtues of the *ordo fortuitus*, or random order.

Like the florilegia, miscellanies ranged from small-format vernacular works to large Latin folios. Among the former, the *Silva de varia lección* by the Spanish historian Pedro Mexía (1496?–1552?) was widely known across Europe, thanks to translations, imitations, and continuations—typically in chunky small format volumes with no index.[47] Given the other items on his list, Naudé was more likely referring to a number of large Latin works entitled *variae lectiones* (the Latin equivalent of *diverses leçons*) or *commentarii* or variants on these terms, which consisted of miscellaneously arranged discussions of Latin or Greek language and usage. Some fifty years later Adrien Baillet used the same term, *diverses leçons* (though with somewhat less enthusiasm for the genre), when discussing the *Adversaria* of Adrien Turnèbe. These consisted of short miscellaneously arranged chapters offering philological commentary on clusters of Latin terms, purportedly taken unadorned from his reading notes, as the title suggests.[48] While the title was common to vernacular works, *diverses leçons* were also a learned Latin genre characterized by miscellaneously arranged commentary on ancient language and culture.[49]

One of the leading examples in this genre, which no doubt helped to coin "lections" to describe the genre, was the *Lectiones antiquae* ("ancient readings") of Caelius Rhodiginus, also known as Ludovico Ricchieri (1469–1525), a professor of rhetoric at Ferrara.[50] Rhodiginus reported starting the project in 1491 as a commentary on ancient proverbs. But the appearance of Erasmus's *Adages*, first in a small book in 1500, then in a much expanded folio edition of 1508, prompted him to recast his material more broadly as a collective commentary on ancient literature. His title referred to a work by Caesellius Vindex cited by Aulus Gellius, which was no longer extant even by the Renaissance.[51] Invoking Gellius's model, Rhodiginus explained that "he had reduced in one body whatever he had gathered in his reading" and had "mingled wonderfully diverse libations into one draught just as the bees make nectar from the varied saps of the flowers."[52] The variety promised in the preface took the form of a massive collection of short chapters each devoted to ancient expressions and the customs or *res* behind them. The chapters were either completely unrelated to one another or at most followed a loose association of ideas (e.g., a cluster of chapters on odors followed by chapters on the nose and sneezing).[53] Rhodiginus's *Lectiones* first appeared in 1516 (and again in 1517) as a folio of 860 pages with an index of 80 pages, and in 1542, in a much-augmented version prepared posthumously by his nephew that totaled 1,182 pages with a much longer index of 260 pages. This expanded version appeared in seven more editions without further modification down to 1666.[54]

In the first edition Rhodiginus boasted of including three indexes: a list of chapter titles in the order of appearance (not an index by modern standards); a list of authors for whom Rhodiginus offered emendations complete with page references to the relevant book and chapter of the *Lectiones*; and a general subject index entitled "list of things worthy of notice which are contained in these *lectiones*, so that each can find without inconvenience what he desires." Editions after 1542 also included an alphabetical list of authors cited, but without specific references, as distinct from the list of authors for whom Rhodiginus proposed emendations, with the locations in the text.[55] Rhodiginus appreciated the importance of tools that would facilitate access to his massive work and offered indexes both for specialists hungry for new emendations to ancient texts and for nonspecialist readers seeking an expert discussion of ancient lore. One such reader consulted Rhodiginus when he encountered a reference to Taraxippos, the spirit that reportedly frightened horses in ancient chariot races; the reader recorded the correct passage in Rhodiginus in the margin of the book in which the term appeared, presumably after finding the passage in the index.[56] Rhodiginus's *Lectiones* were broader in scope and appeal (given its mass of general information) than a number of other "lectiones variae" that were smaller in size and targeted a more specialized audience of scholars focused on emendations.[57]

Naudé included under the term "mixtures" other miscellaneously arranged reference works that did not carry the title "lectiones." The humanist use of miscellaneous order was first advertised clearly by Angelo Poliziano when he published his philological commentary under the title *Miscellanea* in 1489.[58] The *Cornucopiae* of Niccolò Perotti (1430–80), published posthumously by his nephew in 1489, was not randomly ordered since it offered commentary on the words of the twenty-eight epigrams of Martial's *De spectaculis* in the order in which they appeared there. But the scale of Perotti's commentary completely dwarfed the text commented on, with its 389 folio pages, including 48 pages addressing the 8 lines of the first epigram. The single term *ferant* of verse six elicited 700 examples of usages of the verb *fero* (to carry) from across Latin literature.[59] Perotti's *Cornucopiae* appeared from the first edition on with an alphabetical index of 100 pages (at 200 entries per page), which made the book usable on a consultation basis, as the equivalent of a dictionary with 20,000 entries. In his *Pandectae* (1548) Conrad Gesner included the *Cornucopiae* along with other dictionaries in the section on "authors who wrote miscellanies" because "most Greek and Latin dictionaries, which follow the order of letters do not follow any order of things (or they do not even follow the order of letters, as in Perotti's *Cornucopiae* and Budé's *Commentaries on Greek language*)."[60] Perotti's status as a dictionary is also evident in the extent to which later dictionaries, including those of Calepino, Robert Estienne, and the eighteenth-century Forcellini (*Lexicon totius latinitatis*), tacitly borrowed from it.[61] The success of Calepino's dictionary and of Robert Estienne's *Thesaurus linguae latinae* (1531), which appeared five years before the last edition of the *Cornucopiae*, may also have played a role in eclipsing Perotti from the market after a very successful run of at least twenty-four editions to 1536.

The similarity of the commentary and the dictionary was made explicit by authors in both genres: in the preface to a late edition of Perotti, the printer noted the superiority of the *Cornucopiae* over Calepino's dictionary in discussing together words in the same family and avoiding the dispersal caused by Calepino's alphabetical listing of words. Conversely, the prefaces to dictionaries like the Calepino or Estienne's *Dictionarium* referred to these works as a "kind of commentary," just as Gesner had called his *Onomasticon* "like a common commentary."[62] The difference between the dictionary and the commentary was not one of method or purpose but of exhaustiveness and system. Whereas Latin dictionaries were committed to an entry for almost every term of classical Latin, authors of the miscellaneous commentaries or *variae lectiones* made no such effort but rather exploited the format of the miscellany to comment on terms and passages of their choice, shunning words that were too difficult or too banal for their taste. *Variae lectiones* were a fine place to gather brief observations or isolated emendations on short or fragmentary texts that did not warrant a freestanding edition or a commentary.[63] Perotti attached his commentary to the epigrams of Martial but strayed far from them, just as other authors of miscellaneous commentaries felt free to digress and boasted of the increased pleasure afforded by an unpredictable presentation of topics. One such work even offered among the finding devices a list of digressions, in anticipation of readers especially interested in those passages.[64]

One of the best-selling books of the early modern period (for its size and expense), with 163 editions down to 1696, can be considered a "collective commentary" though it also straddles the genre of the "collection of sentences": Erasmus's *Adages* offered not only a collection of more than 4,300 sayings or expressions taken from Latin and Greek literature, miscellaneously arranged, but also commentary with wide-ranging linguistic and cultural explanations and famous digressions.[65] Its remarkable success was no doubt in large part due to Erasmus's exceptional skill as a witty Latin stylist and to his towering reputation, but the genre of the work itself, strange as it seems today, clearly appealed to contemporaries—indeed Rhodiginus had planned to publish a very similar work himself. Erasmus's choice of a miscellaneous order has been taken as a sign of his shunning utilitarian purposes in favor of aesthetic and literary ones. In fact, Erasmus also accommodated utilitarian consultation reading of his work, by providing high-quality indexes of multiple kinds (by adage, by commonplace heading, and of "other words and things") to ensure that the large volume could also serve as a reference work.[66]

Not all consultation-ready miscellanies were devoted to commentary on ancient literature and culture. Miscellaneous order was also common in Renaissance compilations of historical, natural historical, and natural philosophical material. Two of these for example tacitly played off Gellius's title: the *Dies geniales* (Festive Days) by Alexander ab Alexandro (1522) and the *Dies caniculares* (Dog Days, because the work comprised dialogues set during the heat of the summer) by Simone Maioli, an Italian bishop (1597). Maioli explained that he had "gathered these writings from almost all the authors that have written on these topics and woven them with the greatest order into . . . one body"—this took the form of a conversation that meandered within broad chapters defined by subject over 1,000 folio pages. Alexander ab Alexandro's *Dies geniales*, organized into short chapters loosely clustered by topic, was especially widely printed and cited.[67] Both were equipped with an extensive index.

Although many miscellanies were designed as reference books, others, a few of them very large, did not invite consultation by providing an index. Montaigne's *Essays*, for example, which featured in many early modern library and auction catalogs under the category of "mélanges" did not appear with an index until some fifty years after its initial publication.[68]

COMMONPLACE BOOKS

Naudé and Molinier both singled out "commonplaces" for separate mention in their enumeration of reference genres, indicating a distinction from "collections of sentences" that might seem surprising, given that florilegia were most often arranged under commonplace headings. While most florilegia can be classed as commonplace books, "commonplaces" were also used to organize material that did not consist of authoritative quotations but, for example, of precepts or examples. Thus works entitled *Loci communes theologici*, for example, by Philip Melanchthon or Johann Heinrich Alsted, consisted of a mix of definitions and precepts, quotations and examples, and philosophical argumentation under large headings such as "de dei providentia" (on the providence of God), arranged systematically or alphabetically.[69]

One of the earliest printed commonplace books was the *Officina* (Workshop) of Johannes Ravisius Textor (1520, in-quarto), which offered lists of examples of many kinds but without any indexes or headings; later editions supplied both. One of the largest and most elaborately arranged works in the genre of "commonplaces" was the *Theatrum vitae humanae* (1565) of Theodor Zwinger (1533–88), who was professor at the University of Basel first in rhetoric, then in ethics, and finally in theoretical medicine. In new editions of 1571 and 1586, Zwinger vastly enlarged and reorganized his material so that the work grew from 1,500 to 4,500 folio pages. Unlike florilegia, the *Theatrum* focused on examples of human behavior drawn from ancient but also medieval and even contemporary history, sorted in an elaborate hierarchical system of headings. The stated purpose of the compilation was to guide readers in their behavior in any situation by providing examples both good and bad. Each entry comprised a short narrative exemplifying some kind of human behavior, from forgetfulness to strength, and all the vices and virtues. In practice the *Theatrum* also heaped together a mass of information only loosely related to ethical reasoning, including lists of emperors, saints, and popes, of plants that grow in different places, or of more than 200 ways of dying.[70] Quotations were included mostly as apophthegms, that is, as a punch line prepared by a short anecdote (e.g., demonstrating cruelty or stupidity or wit). Zwinger presented his "theater" as a display of the full range of human experience following an ambitious organizational scheme that was uniquely his and that he revised substantially in each edition. To articulate that scheme, Zwinger developed the branching diagram to new levels of complexity, spanning up to a dozen pages linked to one another by symbols.

Though Zwinger nowhere acknowledged that his system might seem little better than a miscellany to some readers, he also provided more conventional finding devices. The first edition supplied both a table of contents listing the section headings in the order of their appearance in the text and an alphabetized index of those headings. But Zwinger and his printer were aware of the limitations of an index that covered only the headings, not the contents of the headings, and the first edition carried an apology for the absence of a more substantial index; it explained that such an index could not be completed in time for the Frankfurt fair given the difficulties caused by a "very serious plague."[71] In the second edition Zwinger supplied an additional "index exemplorum" focused on the proper names that featured in almost every example or anecdote. The following two editions in 1586 and in 1604 (the latter posthumously prepared by his son Jacob) added respectively to the paratext an alphabetical list of authorities and an alphabetical index of "memorable words and things." In 1631 the *Theatrum* formed the core of a massive sequel, the *Magnum theatrum vitae humanae*, compiled by the Flemish cleric Laurentius Beyerlinck in seven folio volumes totaling 7,400 pages and more than 10 million words, plus an eighth index volume. This largest of all enyclopedic compilations before the eighteenth century featured long articles (up to 100 folio pages in some cases) under topical headings arranged alphabetically; but within each heading much of Zwinger's hierarchical arrangement of subsections was preserved. In addition to a sophisticated list of headings in order of appearance, a massive single alphabetical index combining proper names and "memorable words and things" was an important point of access to a work that was only partially self-indexing.

EARLY MODERN FINDING DEVICES

The reference genres enumerated by Naudé typically featured multiple elements of paratext (front or back matter) designed to help the reader appreciate the qualities and uses of each book.[72] These devices often followed medieval models, but they were larger, more numerous, more complex, and usually easier to use than their equivalents in manuscripts. Printers and authors invested considerable creative and financial resources in these features. which were meant both to attract readers and, judging from the accompanying blurbs, to instruct them in the methods of consultation reading.

THE LIST OF AUTHORITIES (*CATALOGUS AUCTORUM*)

The oldest paratext to accompany compilations was probably the list of authorities. These existed in antiquity and were transmitted to the Middle Ages notably in legal genres. Justinian had mandated in the sixth century that the *Digest* include a list of the authors from whom the extracts were made in order to legitimate the compilation made from them. Medieval manuscripts of the *Digest* generally included such a list, with thirty-eight authors and the titles of their works.[73] Authorities were often listed in the margins of manuscripts starting in the twelfth century, though Vincent of Beauvais preferred to cite them directly in the text lest they be ignored by a later copyist.[74] Once highlighted in some way, the names of authorities could easily be gathered into a list. Manuscripts of the *Catholicon* dictionary in the fourteenth century included lists of the authors and of some of the titles cited. These lists might serve to vouch for the value of the excerpts or to encourage readers to consult the original sources. This was the purpose highlighted in the preface to the *Manipulus florum*, which ended with a list of twenty-four authors and their 376 works; unusually, that list also circulated separately from the florilegium as a basic bibliography of authoritative works.[75]

The printed *Polyanthea* followed its medieval source in including an alphabetical list of authors used but without including the titles of works. As in many early modern lists of authors, the names are sometimes difficult to identify—these are not precise references to follow up in a library, but lists designed to impress and create respect for a work composed from so many different authorities; the compilers probably cited some of them only through intermediate sources, which they did not mention. The list of authorities was dropped in the *Polyanthea* of 1539 and a number of subsequent editions. This change coincided with the rapid expansion in size of the *Polyanthea*, but the move may also be a sign that the reputation of the *Polyanthea* was well established enough to do without this claim to authoritative status; practical considerations, such as the availability of unused pages in a quire, may also have played a role in whether such a list was included or not. In the heavily revised *Polyanthea* of 1604, the list was reinstated, now comprising 630 authors.

The most common form of the list of authorities was that found in the *Polyan-*

thea—an alphabetical list of names with no further leads either to the works used or to the passages in which they appeared. These lists were not finding devices but a form of advertisement for the quality of the work. Aware of the potential abuses, Theodor Zwinger prefaced his *catalogus auctorum* with a justification in 1571 and 1586: "It is ostentation to adduce the names of authors whose writings you have never seen and although you are not ashamed to learn those same things from more recent authors, you are ashamed to admit having learned anything from them. But it is honest candor to preserve and celebrate gratefully the memory of those you found useful. Therefore we have briefly listed a catalog of those authors on whose authority we relied in good faith in this *Theatrum* either because the method of indexes called for it or certainly lest we appear to be the first to abandon a habit practiced by all."[76] Zwinger sought to distance himself from those who masked the sources they had actually used in favor of citing ancient authors whose writings might not even be accessible. What Zwinger meant by "method of indexes" is unclear—his surviving notes attribute almost every quotation he compiles with a source. But Zwinger also seemed to fall back on a sense that such a list was expected of a massive compilation like his.

Occasionally lists of authorities deviated from the standard simple alphabetical listing to serve additional functions. Two editions of the *Adages* offer examples. On one hand, an abridged octavo edition of 1530 offered a catalog of the principal authors cited, sorted into types of authors: historians, poets, orators, and the like.[77] This list with categories would aid the less well-heeled and well-educated reader of a small format abridgment to make some sense of the range of ancient authorities. On the other hand, at the learned end of the spectrum, in the 1551 edition of the *Adages* the printer Froben featured an unusual index listing all the authors "explicated or emended" in the work with specific page numbers. This new "fourth" index, of which the title page boasted, was a real finding device unlike any other list of authorities.[78] It was so exceptional that it was reprinted only once by Froben in 1559 and not (to my knowledge) ever again, even though the bulk of the work of making that index was readily available for others to copy. Less scholarly printers than Froben were evidently unwilling to invest the further time and expense of adapting that existing index to their own editions. Only the *lectiones antiquae* genre regularly featured indexes of authors cited with page numbers, and they included only those ancient authors for whom the humanist proposed emendations—a contribution of which humanists were especially proud. In his edition of Rhodiginus's *Lectiones* of 1542, Froben, for example, offered such a list of authors emended with page numbers alongside a classic alphabetical list of the authors used by Rhodiginus without page references.[79]

In most kinds of compilations, the list of authors without page references served to display the range and authority of the compilation. But the custom declined, perhaps under the pressures of having so many authors to name, no longer ancient authorities only but contemporary ones too, among whom omissions risked causing offense. Alsted offered a list of authors cited in 1630, but Beyerlinck did not (1631); neither did such major eighteenth-century compilers as Chambers, Zedler, or Diderot. Alphabetical lists of authors resumed in modern reference genres but for a different purpose—to list the abbreviations used for authors of articles (*Encyclopedia Britannica*) or the authors cited as examples (*Oxford English Dictionary*).

THE LIST OF HEADINGS (*ELENCHUS* OR *SERIES TITULORUM*)

Alongside the list of authors, the other list most commonly found in early modern compilations was a list of headings in the order in which they appeared in the book. These lists were often called indexes, though they are not indexes by modern standards and I will not call them such; counting the list of headings as an index often accounts for discrepancies between the number of indexes mentioned on the title page of a work and the number of indexes a modern reader sees there. These lists served as tables of contents and often provided page numbers for the different headings. When page references were not provided in print, a reader might add them in manuscript.[80] But even without page numbers, these lists of *tituli* offered a useful tool for browsing in a short compass all the topics covered in a compilation, so that the reader could select the most appropriate headings to pursue in the volume. Given the number of possible terms under which material could be collected, these lists of headings enabled readers to become familiar with a reference work just as note-takers were enjoined to read over regularly the lists of headings in their commonplace books.

Lists of contents are generally thought to have been rare in antiquity and the early Middle Ages, though they were present in some early compilations like Pliny's *Natural History* and Isidore's *Etymologies*. The major works of the twelfth century, notably Gratian's *Decretum* and Peter Lombard's *Sentences*, featured lists of contents and these became standard as of 1250 especially in stationery-produced manuscripts. Vincent of Beauvais's *Speculum maius* opened with a list of *tituli*, which then appeared throughout the text as headings for different sections.[81] This technique of announcing the contents of a work was justified by one compiler, Godfrey of Viterbo, at the turn of the thirteenth century, as "guiding to the desired port readers rowing through the seas" of a large work.[82] In the thirteenth century lists of chapters were frequently added to older manuscripts which had none.[83]

Domenico Nani Mirabelli thus followed medieval antecedents in offering a list of headings with no page numbers in the first edition of the *Polyanthea*. But Nani's list also indicated (with a single or a double asterisk) whether a heading received a long or a short treatment and if it included a branching diagram (marked "cum arbore"). The list of headings also included some terms that did not warrant treatment themselves, either because they appeared in a neighboring article (e.g., "abominor" under "abominatio") or because a cross-reference was provided to another relevant heading (e.g., "absolvere": see "perfectio"). In the second and many subsequent editions, the list included page numbers, though some sixteenth-century editions omitted the list of headings and substituted a section of six pages of prose entitled "definitiones" in which terms of vice and virtue (many of them present as headings) were defined in relation to one another.[84] In editions after the revision of 1604, the list of headings had expanded to some 840 entries.

In the *Adages*, self-consciously miscellaneously arranged, Erasmus himself drew up an index of commonplace headings, listing the various adages (with their page numbers) relevant to some 257 different topics. This was obviously a precious finding device for readers interested in mining Erasmus's collection of more than 4,300 sayings on a theme of special interest. But at its first appearance, Erasmus's list of headings was itself miscellaneous; it could be browsed but not consulted. One reader in frustration added in manuscript in his copy his own alphabetized list of these headings, complete with a form of reference (by numbering each heading) to the miscellaneously arranged printed list of headings. In the following edition (in 1515) the printer in fact supplied an alphabetized index to the miscellaneous list of headings, but his form of reference was not as elegant, since it sent readers back to the numbered columns in which the miscellaneous headings were printed.[85]

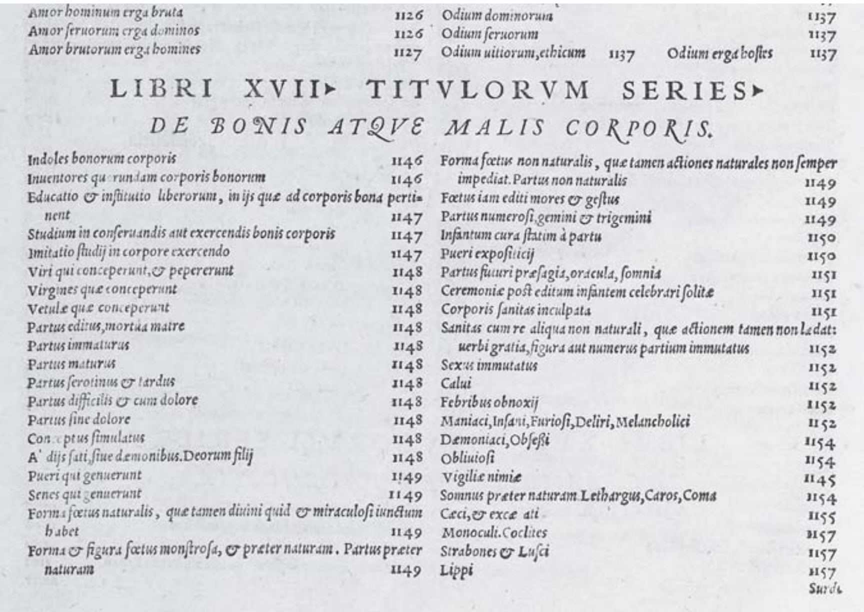
Theodor Zwinger introduced a powerful variant on the list of headings of 1565, by introducing in later editions indentations up to three layers deep to outline the subsections into which his systematically arranged headings were divided. This *series* or *catalogus titulorum* complete with page numbers proved a lasting mode of access to the text, which Beyerlinck perpetuated in the *Magnum theatrum*. Even though he replaced Zwinger's systematic arrangement with an alphabetical one, Beyerlinck maintained subdivisions within the headings that were often indebted to Zwinger, and he opened each book of the *Magnum theatrum* with a detailed outline of the headings beginning with that letter of the alphabet with their subdivisions, up to five layers deep. The resulting *elenchus* or *index titulorum* became quite long, but it was also the place to view most easily the intellectual structure of articles that could run for 100 folio pages. In both Zwinger's systematic and Beyerlinck's alphabetical arrangements the indentations offered an effective overview of the subdivisions of a heading comparable to Microsoft PowerPoint without the bullet points. With the addition of page references to the text these *elenchi* served simultaneously as finding device and outline.[86]

THE ALPHABETICAL INDEX OF HEADINGS

The list of headings in order of appearance sufficed as an alphabetical index of headings in the case of books arranged in alphabetical order, such as the *Polyanthea* or the *Magnum theatrum*. But when the headings were arranged systematically, a further alphabetical listing of the headings was useful as an alternative to browsing the systematic list from beginning to end to find the best fit to one's interests. Vincent of Beauvais may have been the first to offer an alphabetical index of headings, just for the first eight books of his *Speculum historiale*.[87] This kind of index was the easiest to make, since it involved only rearranging material that was present in the list of headings in order of appearance. (Hence this was the index that was mustered under pressures of time and plague for the first edition of the *Theatrum*). Nevertheless, like any other use of headings, this index suffered from the absence of any systematic set of terms by which to describe many concepts and themes. One of the appeals of Latin as the language of scholarship was that it was presumed to offer a more stable and precise set of category terms than any vernacular. Nonetheless, even in Latin the potential headings (*tituli*) were numerous and varied, including not only classical Latin terms but also terms developed by medieval Christian theology and recent pedagogical practice with little or no classical antecedent.

Zwinger was well aware that different headings could be used for the same or closely similar concepts and things. In a preface to his alphabetical index of headings, Zwinger warned readers not to expect every synonym of a heading to be included:

> If things do not occur under one heading, look for them under a synonym. Thus glory and honor, wealth and riches, magistrate and prince, guile and fraud and cunning and shrewdness, . . . while they agree in reality, differ in terminology, so that frequently things will escape the notice of the one studying them, unless help is sought from a synonymous heading. We have not pursued the small divisions scrupulously, lest by excessive diligence we should favor the negligence of others or rather their inaction. There will be those who will complain of many superfluous things, of many defects. Which I do not deny. But while we think nothing human is alien to our project, nonetheless we frankly confess: that men in turn remember that they are men and they exhibit no less equanimity in forgiving than dexterity in knowing.[88]



Amor hominum erga bruta	1126
Amor ſeruorum erga dominos	1126
Amor brutorum erga homines	1127

Odium dominorum	1137
Odium ſeruorum	1137
Odium uitiorum, ethicum	1137
Odium erga hoſtes	1137

LIBRI XVII. TITVLORVM SERIES.

DE BONIS ATQVE MALIS CORPORIS.

Indoles bonorum corporis	1146
Inuentores quorundam corporis bonorum	1146
Educatio & inſtitutio liberorum, in ijs quæ ad corporis bona pertinent	1147
Studium in conſeruandis aut exercendis bonis corporis	1147
Imitatio ſtudij in corpore exercendo	1147
Viri qui conceperunt, & pepererunt	1148
Virgines quæ conceperunt	1148
Vetulæ quæ conceperunt	1148
Partus editus, mortua matre	1148
Partus immaturus	1148
Partus maturus	1148
Partus ſerotinus & tardus	1148
Partus difficilis & cum dolore	1148
Partus ſine dolore	1148
Conceptus ſimulatus	1148
A' dijs ſati, ſiue dæmonibus. Deorum filij	1148
Pueri qui genuerunt	1149
Senes qui genuerunt	1149
Forma fœtus naturalis, quæ tamen diuini quid & miraculoſi iunctum habet	1149
Forma & figura fœtus monſtroſa, & præter naturam. Partus præter naturam	1149
Forma fœtus non naturalis, quæ tamen actiones naturales non ſemper impediat. Partus non naturalis	1149
Fœtus iam editi mores & geſtus	1149
Partus numeroſi, gemini & trigemini	1149
Infantum cura ſtatim à partu	1150
Pueri expoſiticij	1150
Partus futuri præſagia, oracula, ſomnia	1151
Ceremoniæ poſt editum infantem celebrari ſolitæ	1151
Corporis ſanitas inculpata	1151
Sanitas cum re aliqua non naturali, quæ actionem tamen non lædat: uerbi gratia, figura aut numerus partium immutatus	1152
Sexus immutatus	1152
Calui	1152
Febribus obnoxij	1152
Maniaci, Inſani, Furioſi, Deliri, Melancholici	1152
Dæmoniaci, Obſeſſi	1154
Obliuioſi	1154
Vigiliæ nimiæ	1145
Somnus præter naturam. Lethargus, Caros, Coma	1154
Cæci, & excæcati	1155
Monoculi. Coclites	1157
Strabones & Luſci	1157
Lippi	1157

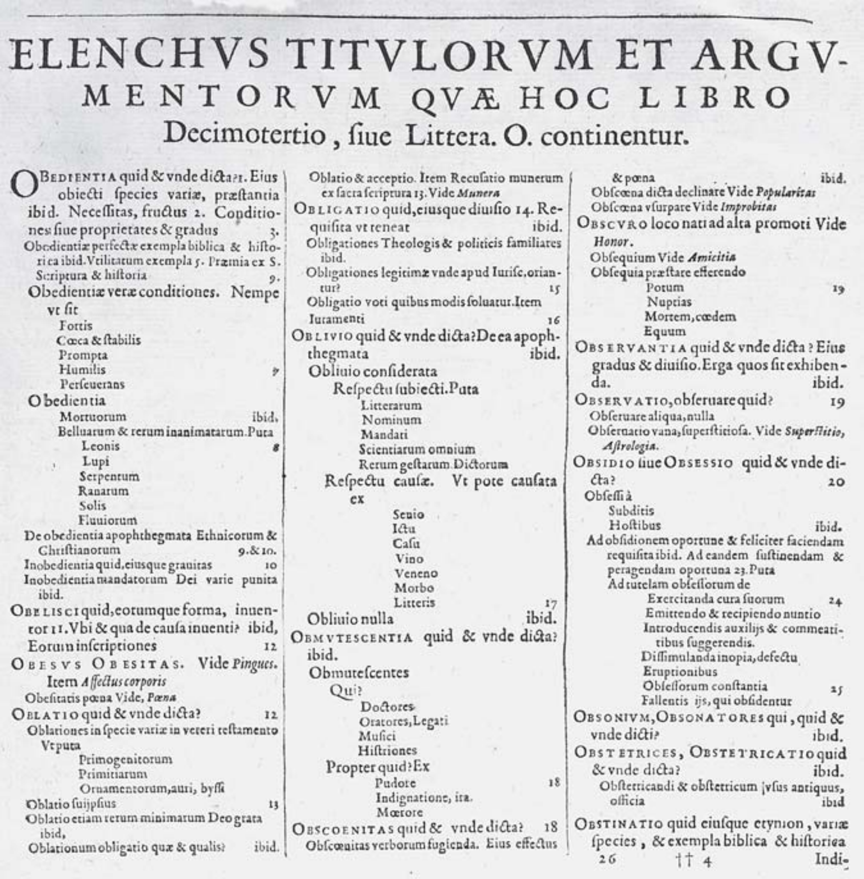
Surdi

Figure 3.1

From the *series titlulorum* or list of headings in order of appearance in Theodor Zwinger, *Theatrum vitae humanae* (Basel, 1565). This section includes the heading for "obliviosi" (those suffering from lack of memory) at p. 1154. Reproduced with permission from Houghton Library, Harvard University, *2000-512F.

Zwinger sought here to forestall criticism of those who, like Drexel a few decades later, would complain that they could not find what they were looking for in indexes despite a great mass of useless other things.[89] In apologizing for the inadequacies of the index, Zwinger even made a virtue of them: readers could not be lazy but would need to exercise diligence and intelligence to use the index effectively, pursuing synonyms and related terms when one search proved fruitless.

Zwinger offered further explicit instruction to the reader about how to exploit together the two finding devices provided in the first edition—the *series titulorum* and the alphabetical index of headings. "We will repeat here what we said at the beginning: we have not pursued the smaller subdivisions exactly in this index. Nonetheless if someone requires one, so as not to be forced to read the whole mass of the work, let him consult the series of titles [in order of appearance] using the [page] number as guide. For example, if he requires 'medici legati' [medical ambassadors] and sees that there is no mention of them under 'medici,' let him consult the *titulus* 'ambassadors' and he will find what



ELENCHVS TITVLORVM ET ARGVMENTORVM QVÆ HOC LIBRO
Decimotertio, ſiue Littera. O. continentur.

- OBEDIENTIA quid & vnde dicta? 1. Eius obiecti ſpecies variæ, præſtantia ibid. Neceſſitas, fructus 2. Conditiones ſiue proprietates & gradus 3.
- Obedientiæ perfectæ exempla biblica & hiſtorica ibid. Vtilitatum exempla 5. Præmia ex S. Scriptura & hiſtoria 9.
- Obedientiæ veræ conditiones. Nempe vt ſit
  - Fortis
  - Cœca & ſtabilis
  - Prompta
  - Humilis 9
  - Perſeuerans
- Obedientia
  - Mortuorum ibid.
  - Belluarum & rerum inanimatarum. Puta
    - Leonis 8
    - Lupi
    - Serpentum
    - Ranarum
    - Solis
    - Fluuiorum
- De obedientia apophthegmata Ethnicorum & Chriſtianorum 9. & 10.
- Inobedientia quid, eiuſque grauitas 10
- Inobedientia mandatorum Dei varie punita ibid.
- OBELISCI quid, eorumque forma, inuentor 11. Vbi & qua de cauſa inuenti? ibid, Eorum inſcriptiones 12
- OBESVS OBESITAS. Vide *Pingues.* Item *Affectus corporis*
  - Obeſitatis pœna Vide, *Pœna*
- OBLATIO quid & vnde dicta? 12
  - Oblationes in ſpecie variæ in veteri teſtamento Vt puta
    - Primogenitorum
    - Primitiarum
    - Ornamentorum, auri, byſſi
  - Oblatio ſuijpſius 13
  - Oblatio etiam rerum minimarum Deo grata ibid.
  - Oblationum obligatio quæ & qualis? ibid.
  - Oblatio & acceptio. Item Recuſatio munerum ex ſacra ſcriptura 13. Vide *Munera*
- OBLIGATIO quid, eiuſque diuiſio 14. Requiſita vt teneat ibid.
  - Obligationes Theologis & politicis familiares ibid.
  - Obligationes legitimæ vnde apud Iuriſc. oriantur? 15
  - Obligatio voti quibus modis ſoluatur. Item Iuramenti 16
- OBLIVIO quid & vnde dicta? De ea apophthegmata ibid.
  - Obliuio conſiderata
    - Reſpectu ſubiecti. Puta
      - Litterarum
      - Nominum
      - Mandati
      - Scientiarum omnium
      - Rerum geſtarum. Dictorum
    - Reſpectu cauſæ. Vt pote cauſata ex
      - Senio
      - Ictu
      - Caſu
      - Vino
      - Veneno
      - Morbo
      - Litteris 17
  - Obliuio nulla ibid.
- OBMVTESCENTIA quid & vnde dicta? ibid.
  - Obmuteſcentes
    - Qui?
      - Doctores
      - Oratores, Legati
      - Muſici
      - Hiſtriones
    - Propter quid? Ex
      - Pudore 18
      - Indignatione, ira.
      - Mœrore
- OBSCOENITAS quid & vnde dicta? 18
  - Obſcœnitas verborum fugienda. Eius effectus & pœna ibid.
  - Obſcœna dicta declinare Vide *Popularitas*
  - Obſcœna vſurpare Vide *Improbitas*
- OBSCVRO loco nati ad alta promoti Vide *Honor*.
  - Obſequium Vide *Amicitia*
  - Obſequia præſtare efferendo
    - Potum 19
    - Nuptias
    - Mortem, cœdem
    - Equum
- OBSERVANTIA quid & vnde dicta? Eius gradus & diuiſio. Erga quos ſit exhibenda. ibid.
- OBSERVATIO, obſeruare quid? 19
  - Obſeruare aliqua, nulla
  - Obſeruatio vana, ſuperſtitioſa. Vide *Superſtitio, Aſtrologia.*
- OBSIDIO ſiue OBSESSIO quid & vnde dicta? 20
  - Obſeſſi à
    - Subditis
    - Hoſtibus ibid.
  - Ad obſidionem oportune & feliciter faciendam requiſita ibid. Ad eandem ſuſtinendam & peragendam oportuna 23. Puta
    - Ad tutelam obſeſſorum de
      - Exercitanda cura ſuorum 24
      - Emittendo & recipiendo nuntio
      - Introducendis auxilijs & commeatibus ſuggerendis.
      - Diſſimulanda inopia, defectu
      - Eruptionibus
      - Obſeſſorum conſtantia 25
      - Fallentis ijs, qui obſidentur
- OBSONIVM, OBSONATORES qui, quid & vnde dicti? ibid.
- OBSTETRICES, OBSTETRICATIO quid & vnde dicta? ibid.
  - Obſtetricandi & obſtetricum vſus antiquus, officia ibid
- OBSTINATIO quid eiuſque etymon, variæ ſpecies, & exempla biblica & hiſtorica 26

†† 4 Indi-

Figure 3.2

From the list of headings in Laurentius Beyerlinck, *Magnum theatrum vitae humanae* (Cologne, 1631) which features up to five layers of indentation to indicate the hierarchy of subsections within one entry. The entries are alphabetically arranged, but the contents within each entry maintain many of the systematic divisions present in Zwinger's *Theatrum*, from which Beyerlinck borrowed heavily. This section includes the heading on forgetfulness ("oblivio") subdivided into: definition and etymology of the term and apophthegms about it, forgetfulness of what (letters, names, etc.), and the causes of forgetfulness (including old age, a blow, a fall, etc.). Reproduced with permission from Widener Library, Harvard College Library, CYC 25.

he seeks."[90] Though Zwinger indicated an awareness of problems that cross-referencing would help to solve, Zwinger provided none in the index, but only at the beginning of sections of text. The same was true of later editions of the *Polyanthea* which offered cross-references at the end of some headings but not in the list of headings (e.g., at the end of "insanity": "more below, at 'folly' and 'stupidity'"). Nani Mirabelli did not provide cross-references in 1503 and 1514, although Thomas of Ireland and other medieval sources did.[91]

ALPHABETICAL INDEXES OF PROPER NAMES

In 1571 Zwinger added for the first time an *index exemplorum* consisting of the names of the individuals (or occasionally the places or peoples) featured in each exemplum. The examples indexed were not themes or moral lessons, but the people themselves whose behavior and fate instructed the reader, though the index included occasional thematic entries, such as "memory, use of" between "Memnon, miraculous statue of" and "Memphis, inept actor."[92] The first appearance of a name was capitalized; subsequent entries were listed in lowercase. Some entries on the same person were grouped together, others not, for no obvious reason, but each was given a page number. Here, too, a prefatory blurb to the index explained the difficulties of "constantly keeping an order in such a great variety of things and similar dissimilitude of names." On one hand, Zwinger complained that alphabetical order did not respect chronological order: "If the same things are arranged alphabetically, things that happened first will come in the middle or last in the order of letters." On the other hand, Zwinger concluded that it was the most practical solution: "Certainly it will be more fitting to retain an alphabetical method in a grammatical arrangement."[93]

Zwinger also addressed the problem of "the diversity of proper names observed by diverse authors, [which] increases the difficulty." Figures could be known by their nomen, praenomen, cognomen, or agnomen (roughly, family name, first name, nickname, and surname). There were also alternative spellings and versions of many names, as Zwinger illustrated with some examples. "For that reason exempla can often be listed under different letters: nonetheless, to avoid repeating ourselves, we wanted to put them in one place, leaving only notes in the other places to point toward the source."[94] Zwinger announced the utility of cross-references, although he most often solved the problem without a cross-reference but by including in the index multiple spellings or variants of a name (e.g., by first, last, or nickname), each supplied with page reference. The variability of names caused a number of "self-indexing" alphabetically arranged books to include a further index listing the various forms of a name. For example, in the 1555 *Appendix* designed to supplement Gesner's *Bibliotheca* a table of names sorted by last name provided the first names under which the entries in the text appeared to aid readers "who did not know them or could not remember them" (as in, Luther, see Martin).[95] Given the greater variability of vernacular names, in his *Bibliothèque françoise* (1584) La Croix du Maine included separate entries for variant spellings in the index and for some first and last names (e.g., de Crenne Elisenne and Helisenne de Crenne, Seve and Sceve Maurice), thus sending readers directly to the correct page without explicit cross-referencing. The index to the *Magnum theatrum* (1631) still favored listing people by first name with some cross-references under the last name (but not consistently), but by the end of the seventeenth century biographical dictionaries favored last names instead.[96] Despite the uncertainties surrounding some names, I have found indexes of proper names to be the most effective finding device, in part no doubt because they have weathered the intervening centuries with less change than conceptual categories.

GENERAL ALPHABETICAL INDEXES

The best-indexed works also included a general index of "memorable words and things" contained in the various entries and not covered already by the index of headings or of proper names. In the case of Zwinger's *Theatrum* this index was the only new addition to the posthumous edition produced by Zwinger's son Jacob Zwinger (1604). In the career of the *Adages* of Erasmus, a general index was added in the edition of Froben, 1550, to complement the indexes present since 1508 listing the adages in alphabetical order (by the first word of the adage) and by commonplace heading (first without then with an alphabetical index to these headings) and just before the addition of the "fourth index" of authors cited in 1551. This "third index" was of an index of "things worthy of note not contained in the first index": "Friendly reader you will find here noted everything that happens in this work and that is not mentioned in the first index, in such abundance that you will complain that something here is superfluous rather than missing. Nothing has been omitted unless it is in the first index."[97] Zwinger's *Theatrum* and Erasmus's *Adages* each accumulated four separate indexes, which were designed to complement and not repeat one another. As a result, to use indexes thoroughly in early modern reference books required repeated consultations—with different keywords, in different indexes, even in indexes to the indexes.

A number of compilers acknowledged the strenuousness of consulting indexes. Conrad Gesner, for example, at the same time as he encouraged the indexing of books and praised the Germans for indexing more than most, complained that "it is often unpleasant to always go to the index to look for something." Gesner justified the alphabetical arrangement of his natural histories, which would be self-indexing and thus easier to use, especially for the inexperienced and the majority of readers.[98] Each of Gesner's natural histories also came with multiple indexes, differentiated by kind of animals (e.g., fish, birds, reptiles) and by language (some of which required different scripts), including Latin, Greek, Hebrew, and many vernaculars. Similarly, Aldrovandi's ornithology was equipped with seventeen separate indexes.[99] Nor were multiple indexes unique to natural history with its many areas and vernacular names: the 1569 Plantin edition of Thomas Aquinas's *Secunda secundae* (the most widely read part of his *Summa* because of its applicability to practical morality) featured seven indexes, including indexes of commonplace headings, biblical citations, memorable doctrines, and heresies refuted.[100] But in the case of indexes, more was not necessarily better: in his 1559 edition of Stobaeus, Gesner boasted (as if it were an innovation) of offering a single index including both proper names and topical headings, thus reducing the number of places in which to search.[101]

Gesner's indexes were among the best at the time: they were successful in gathering all the references to a listed topic in one place and were strictly alphabetized.[102] Many sixteenth-century indexes offered only a roughly alphabetized list of entries based on the summary statements printed in the margins of large books, without any or much attention to consolidating related entries. The *Margarita philosophica* of Gregor Reisch, for example, listed multiple entries on one topic side by side and even separated by other terms due to the loose alphabetization.[103]

In the early seventeenth century the *Magnum theatrum* (1631) and Alsted's *Encyclopedia* (1630) both featured indexes that presented great advantages over their sixteenth-century antecedents. These were single general indexes, which combined proper names, headings, and "memorable words and things" in one strictly alphabetized list. These indexes also subdivided major entries, providing details to both distinguish and group together the various occurrences of a term or concept as appropriate. Johann Heinrich Alsted likely made or masterminded his own index. He called attention to passages otherwise buried in obscure sections of the text in the index, presumably purposefully. The Copernican hypothesis, for example, appeared under "terra, an moveat" (earth, whether it moves) and referred to a discussion placed not in any of the central sections on physics but rather in the miscellaneous topics treated in the final volume entitled "farrago disciplinarum." That Alsted valued an index can be garnered from his dying request to his son-in-law to index a work he was on the verge of publishing when he died, the *Prodromus religionis triumphantis*.[104]

The index of the *Magnum theatrum* was a remarkable feat, at 687 folio pages compiled by one R. Princtius, licentiate in theology, "by work as abundant as it was fastidious." Princtius explained that he had gathered "materials, things, words explained and examples" all together in alphabetical order "in one catalog, so that you will not hesitate about where to look for what." The index used an efficient and precise form of reference: first a letter referred to each of the twenty-six books into which the alphabetically arranged headings work were divided, then a page number and a letter (A–G) indicated the part of the page. Among the entries different fonts distinguished headings (in italics) and proper names (capitalized) from other material. Most impressively, the index listed items under relevant headings other than those in which the exemplum was sorted in the text. The example of Paracelsus being punished for setting an excessively high price for his medical services was located by Beyerlinck under "Avaritia"—and it appears there, but also under "mercedis defraudatio punita" (commercial fraud punished) in Princtius's index. This index was a work of careful reflection as well as exacting precision. Despite the usual apology for errors due to "the very great heap [of material], the shortness of time and the diversity of collectors," I have found very few mistakes.[105] "The diversity of collectors" indicates that Princtius did not work alone but presumably relied on others to gather material from the 7,000 pages of text. We can only speculate exactly how the roughly 35,000 entries (many of them with multiple subentries) in the index were coordinated into a single list.

Princtius's feat of indexing such a large work so well was not rivaled for a long time. Chambers's *Cyclopaedia* included an index starting with the fourth edition of 1741. Diderot and d'Alembert's *Encyclopédie*, finished in haste under many pressures, had no index but offered cross-references within the articles as a means for the reader to pursue related topics within the seventeen volumes of text. In 1780 the publisher Panckoucke sold a separate two-volume alphabetical index to the thirty-three volumes of the *Encyclopédie* and its supplement.[106] An index to the *Encyclopedia Britannica* first appeared in 1824 along with the supplement to the fifth edition.

In the last decades of the seventeenth century, some of the best indexes appeared in the editions of the classics "ad usum Delphini," commissioned of leading scholars by Pierre-Daniel Huet for the instruction of the royal Dauphin, though the collection had far broader appeal. These indexes are still valued by scholars today even when the editions themselves are not. Huet envisioned them as concordances to the words used by each author, which could be merged to form a complete Latin vocabulary, though this project was never carried out.[107]

Indexes were highly valued by readers—printers boasted of them on title pages or apologized when they were missing. Indexes served, as Gesner noted, both to help a reader return later to a passage already encountered and to guide a reader toward new passages—hence, on one hand, the corrections and additions entered into indexes to facilitate reuse and, on the other hand, Drexel's special annoyance with errors in pagination that hindered initial success. One early modern scholar identified the index with printing so strongly that he denied that early printed books or manuscripts had any indexes.[108] Printed indexes were more abundant than manuscript indexes and generally easier to use. Entries in printed indexes always appeared at the beginning of a new line rather than being run onto the previous line to save space as in some manuscript indexes; references to page and folio numbers (providing they were accurate) likely also facilitated finding the passage in question. Above all, printed indexes were included in every copy of the work they indexed and were no longer produced, as in the Middle Ages, as optional extras to be purchased separately. Indexes proliferated in all kinds of printed books, large and small, and facilitated consultation of many books that could serve as personal choices for regular reference.[109] But reference books especially helped spread familiarity with consultation reading and the alphabetical index in particular.

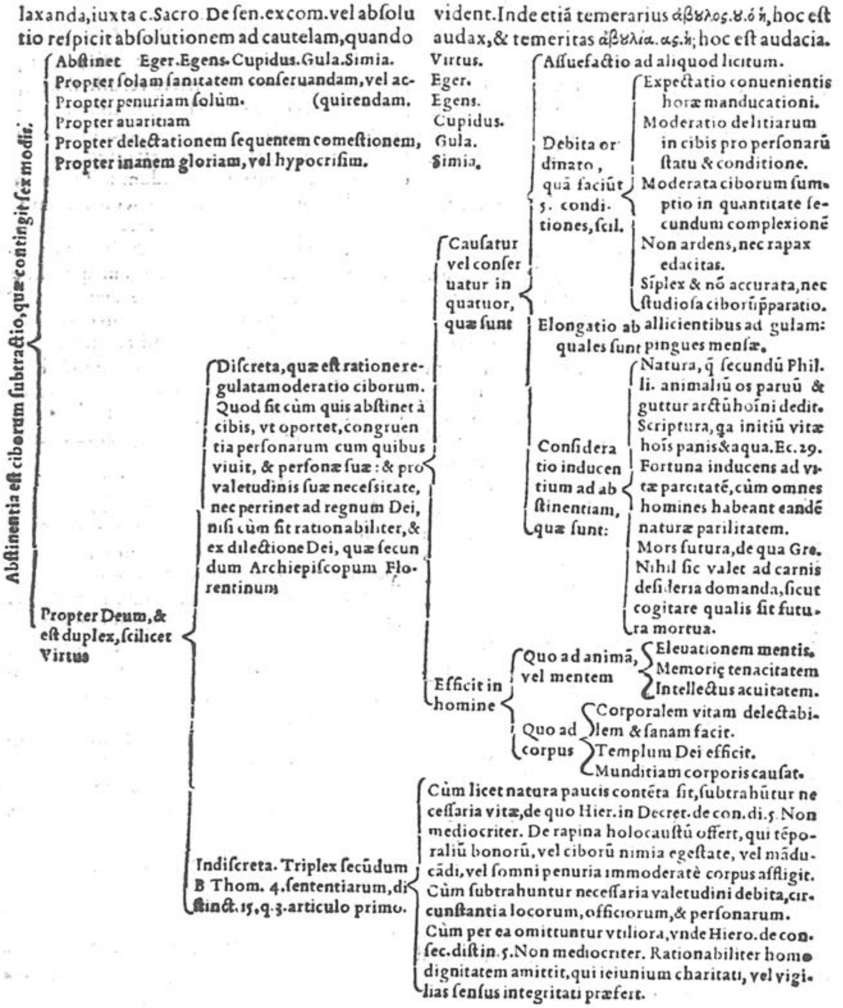
By the eighteenth century the index was a tool so common that it was taken for granted and manipulated in new ways. In 1749 Denis Diderot used the index to name an author whom he dared not name in the text because the author was known as unorthodox and would have caught the eye of the censors.[110] Censors were apparently less alert to paratextual elements than modern scholars or savvy contemporary readers—errata could be used similarly to plant terms that censors would otherwise have banned.[111] "Index learning" became a term of contempt (coined by Jonathan Swift), and by the eighteenth century some authors explicitly refused to index their works lest readers fail to read the text through.[112] These new concerns about the index attest to its prominent place among the methods of reading in the eighteenth century.

THE BRANCHING DIAGRAM

One of the most distinctive features associated with the organization of knowledge in the early modern period was the branching diagram, which featured especially in pedagogical works but also in some reference works. Contemporaries used the term "tabula," which blurs distinctions I would like to maintain between the branching diagram and the table arranged in rows and columns. The branching diagrams are often called "Ramist" because Petrus Ramus (1515–72) advocated their use as part of his pedagogical program to teach a topic in the shortest time by emphasizing the disposition and division of a topic into its constituent parts, notably in a diagram. But the branching diagram was prevalent both before Ramus and independently of his influence during the early modern period. The table, which arranged material in columns and rows, had the older pedigree, thanks to the continuous diffusion of Eusebius's chronological tables starting in the fourth century.[113] But medieval manuscripts also experimented with branching diagrams.[114] "Squiggly brackets" were common in medieval sermon manuals to bring together passages centered on a particular word and became standard for branching diagrams in print, though some incunabula left blank spaces for the bracket to be filled in by hand. Similarities in form can mask different uses served by branching diagrams—most offered a conceptual division of a topic, but a few also functioned as finding devices.

Starting in 1503 the *Polyanthea* offered branching diagrams for sixteen headings (with disproportionate representation among the A's, presumably as energies and finances flagged as the work progressed), and these were maintained unchanged in subsequent editions.[115] The entries equipped with branching diagrams were generally large ones, devoted to major religious vices or virtues, but the diagrams did not function as finding devices to the entries. Instead, the diagrams provided additional authoritative information, on a par with the other quotations gathered, and were consistently credited to Thomas Aquinas. Most of the diagrams cited the *Secunda secundae*, the second part of the second book of Aquinas's *Summa*, devoted to the cardinal virtues; it is possible that Nani copied them from existing medieval presentations of this material. The branching diagrams in the *Polyanthea* presented both vividly and efficiently the divisions made by Aquinas in multiple paragraphs of prose, even though some diagrams filled a whole page in the first edition (they were reduced to less space in later editions). The diagrams might also serve as an outline for a sermon on the topic, as a further resource to preachers turning to the florilegium for relevant quotations. Nani called attention to them in the colophon as aids to the memory: "[You have] some material ramified in trees so that you commit it more easily to the chest of memory."[116] The notion that division aided retention was not only central to Ramist pedagogy (developed in the second half of the sixteenth century); it had a long prior history, dating back at least to Hugh of St. Victor who recommended division of concepts as a way of remembering them.[117] The notion that *tabulae* of various kinds (tables and diagrams) were self-explanatory because they brought the material in view in summary form was widespread among early modern pedagogues and neither challenged nor defended in specific detail.[118]

Zwinger's *Theatrum* surpassed all other reference works in the number and length of its branching diagrams, which were all dropped in Beyerlinck's sequel. Zwinger peppered almost all of his publications with branching diagrams, and in some cases diagrams comprised the bulk of a book.[119] A surviving draft of one diagram attests to the care that Zwinger lavished on his diagrams, which he reworked



laxanda,iuxta c.Sacro De ſen.excom.vel abſolutio reſpicit abſolutionem ad cautelam,quando vident.Inde etiá temerarius ἄβȣλος.ȣ.ὁ ἡ,hoc eſt audax,& temeritas ἀβȣλία.ας.ἡ; hoc eſt audacia.

Abſtinentia eſt ciborum ſubtractio,quæ contingit ſex modis.

Abſtinet Eger.Egens.Cupidus.Gula.Simia.	Virtus.
Propter ſolam ſanitatem conſeruandam,vel acquirendam.	Eger.
Propter penuriam ſolùm.	Egens.
Propter auaritiam	Cupidus.
Propter delectationem ſequentem comeſtionem,	Gula.
Propter inanem gloriam,vel hypocriſim.	Simia.

- Propter Deum,& eſt duplex,ſcilicet Virtus
  - Diſcreta,quæ eſt ratione regulata moderatio ciborum. Quod fit cùm quis abſtinet à cibis, vt oportet,congruentia perſonarum cum quibus viuit, & perſonæ ſuæ: & pro valetudinis ſuæ neceſsitate, nec pertinet ad regnum Dei, niſi cùm fit rationabiliter,& ex dilectione Dei, quæ ſecundum Archiepiſcopum Florentinum
    - Cauſatur vel conſeruatur in quatuor, quæ ſunt
      - Aſſuefactio ad aliquod licitum.
      - Debita ordinato, quã faciũt 5. conditiones,ſcil.
        - Expectatio conuenientis horæ manducationi.
        - Moderatio delitiarum in cibis pro perſonarũ ſtatu & conditione.
        - Moderata ciborum ſumptio in quantitate ſecundum complexionẽ
        - Non ardens,nec rapax edacitas.
        - Sĩplex & nõ accurata,nec ſtudioſa ciborũ pparatio.
      - Elongatio ab allicientibus ad gulam: quales ſunt pingues menſæ.
      - Conſideratio inducentium ad abſtinentiam, quæ ſunt:
        - Natura, q̃ ſecundũ Phil. li. animaliũ os paruũ & guttur arctũ hoĩni dedit.
        - Scriptura, q̃a initiũ vitæ hoĩs panis&aqua.Ec.29.
        - Fortuna inducens ad vitæ parcitatẽ,cùm omnes homines habeant eandẽ naturæ parilitatem.
        - Mors futura,de qua Gre. Nihil ſic valet ad carnis deſideria domanda,ſicut cogitare qualis ſit futura mortua.
    - Efficit in homine
      - Quo ad animã, vel mentem
        - Eleuationem mentis.
        - Memorię tenacitatem
        - Intellectus acuitatem.
      - Quo ad corpus
        - Corporalem vitam delectabilem & ſanam facit.
        - Templum Dei efficit.
        - Munditiam corporis cauſat.
  - Indiſcreta. Triplex ſecũdum B Thom. 4.ſententiarum,diſtinct.15,q.3.articulo primo.
    - Cùm licet natura paucis contẽta ſit,ſubtrahũtur neceſſaria vitæ,de quo Hier. in Decret. de con. di.5 Non mediocriter. De rapina holocauſtũ offert,qui tẽporaliũ bonorũ,vel ciborũ nimia egeſtate, vel mãducãdi,vel ſomni penuria immoderatè corpus affligit.
    - Cùm ſubtrahuntur neceſſaria valetudini debita,circunſtantia locorum,officiorum,& perſonarum.
    - Cùm per ea omittuntur vtiliora,vnde Hiero. de conſec. diſtin.5.Non mediocriter. Rationabiliter homo dignitatem amittit,qui ieiunium charitati, vel vigilias ſenſus integritati præfert.

Figure 3.3
Branching diagram from the *Polyanthea* (Cologne, 1567), for "abstinentia" (abstinence). The diagram offers not a finding device to the contents of the article but an outline of how one might teach or preach on the topic. The diagram is adapted from the treatment by Thomas Aquinas, notably in his commentary on Lombard's *Sentences* cited explicitly at the bottom of the second bracket. Reproduced with permission from the Bayerische Staatsbibliothek, Munich, shelfmark 2 P Lat 1074, p. 2.

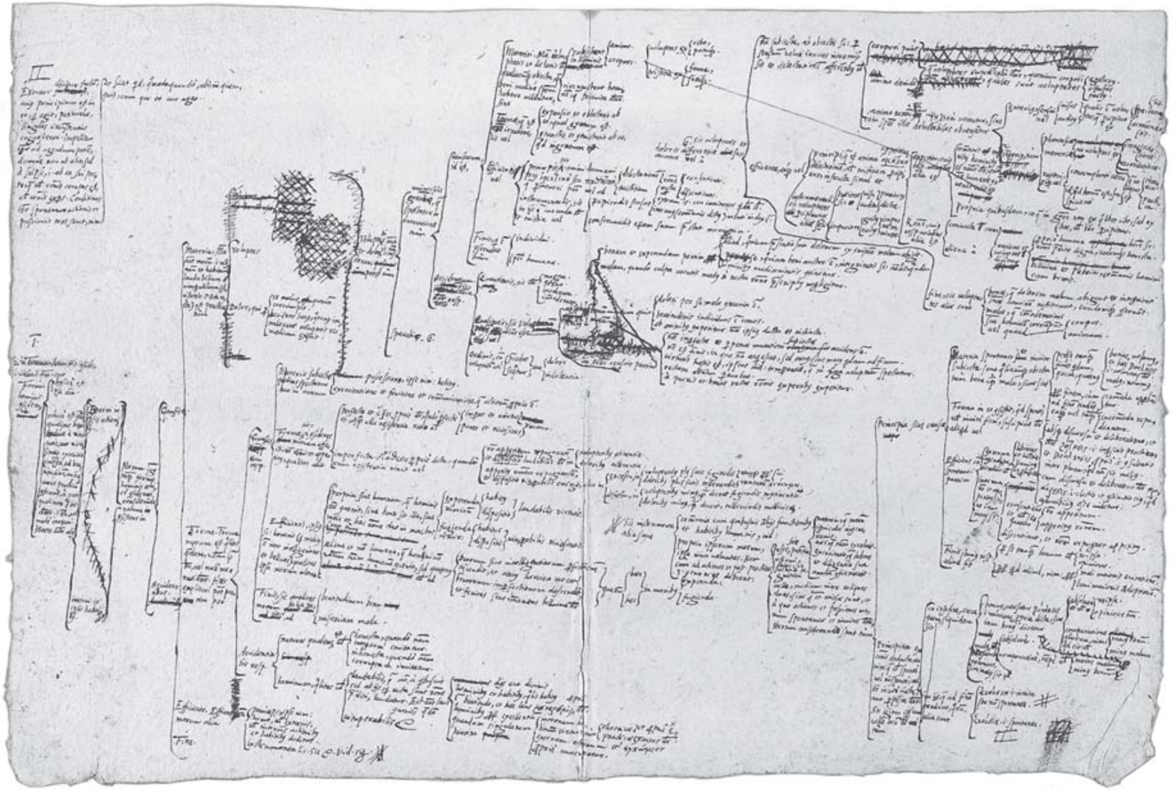


Figure 3.4

Draft of a branching diagram concerning politics, found in the Zwinger manuscripts alongside a set of "annotations in the first books of Aristotle's *Politics* . . . from the lectures of Theodor Zwinger, written by Ludovicus Iselius." The diagram is written in a different hand from the lecture notes (presumably Zwinger's), on an extra large sheet, and shows complex revisions; if printed it would span multiple pages, as many of Zwinger's diagrams did. Reproduced with permission from Universitätsbibliothek Basel, Mscr F IX 7a.

uitæ:alia Manifeſta, Ενέργεια, tanquam Χρῆσις & Operatio, ſiue Actu, ſiue Potẽtia, quæ δύναμις propriè dicitur. Iam uerò Efficiens tertiò loco cõſiderandus, partim Per ſe, ut inſtructus eſt bonis Animi, V. G. Doctus, Philoſophus, Rhetor: Corporis, ut Pulcer, Robuſtus: Fortunæ, ut Rex, Iudex, Sacerdos. partim reſpectu Inſtrumenti, ut ſcilicet Natura, Arte, & Exercitatione nititur. Vitæ FINIS quartum locum tuetur, Beatitudo ſcilicet & Felicitas, tum Theorica, tum Practica.

- Ex Fontibus prædictis porrò RIVOS deducamus. Vniuerſitatis humanæ loci propè innumerabiles, & niſi methodum adhibeas incomprehenſibiles, alij magis, alij minus uniuerſales. Ab illis ad hos progrediendum eſſe uidetur, ὁδῷ naturali ſcilicet. Exemplorũ proinde eorundem cõſideratio alia inſtituenda uidetur quodãmodo
  - Generalis, quæ ſpecialis cõſiderationis ueluti Cauſas & Principia cõtineat. Ordinem inter Titulos dari oportet ex Cauſis ipſis & Accidẽtibus. Etſi enim in ſingulis ferè exemplis omniũ cauſarũ ratio poteſt haberi: tamẽ unius certæ cauſæ primariò ſub uno Titulo, reliquarũ ſub aliis Titulis. Series ergo Titulorum ſecundùm Humanæ uitæ
    - Cauſas
      - Internas prior eſto, quandoquidem ſimplicior eſſe uidetur, & ſub ſenſum magis cadit. Vide ſignum I.
      - Externas, poſterior erit, ſiue ſpectemus
        - Efficientẽ
          - Principem. Sic, exẽpli cauſa, ratione Profeſſionis agi poſſet de
            - Philoſophis.
            - Mechanicis.
            - Conſiliariis.
            - Regibus.
          - Inſtrumentalem. De INSTRVMENTIS Operationum & Paßionum humanarum VOLVMEN XXI. pertractabit. Nimirum de
            - Natura. LIB. I.
            - Arte. LIB. II.
            - Exercitatione. LIB. III.
            - Inſtrumẽtis Secundariis. LIBER IV.
        - Finem. De BEATITVDINE & MISERIA humana VOLVMEN XXII. diſſeret: nempe de
          - Beatitudine & Felicitate. LIB. I.
          - Miſeria & Infelicitate humanæ uitæ. LIB. II.
    - Accidentia duo cõmuniſſima, quatenus ſubiicitur neceſſitate naturali &
      - Loco. TOPICA humana. VOLVMEN XXIII. aget de LOCO tum
        - Materialiter, ut Eſt. LIB. I.
        - Formaliter, ut Locat. LIB. II.
      - Tempori. CHRONICA humana. VOLVMEN XXIV. aget de TEMPORE conſiderato reſpectu
        - Numerat.tis. LIB. I.
        - Numerati. LIBER II.
  - Specialis, quæ Generalis conſiderationis Effectus & Principiatũ cenſeri debet. Oritur autẽ ex cõplicatione Cauſarũ, quando initio ſumto ab una cauſa, huic ipſi reliquæ adaptantur. Ergo initio facto à Materia, ut Homo eſt animal ſociale, Vita alia erit
    - Solitaria. VOLVMEN XXV. de Vita SOLITARIA unico Libro pertractabit.
    - Socialis, cauſa
      - Cognitionis. De ACADEMICA uita VOLVMEN XXVI. Libro unico.
      - Actionis erga
        - Deum Religioſæ. De Vita RELIGIOSA, VOLVM. XXVII. Nempe de Religione
          - Naturali. LIB. I.
          - Moſaica Iudæorum. LIB. II.
          - Chriſtianorum. LIBER III.
          - Ethnicorũ. LIB. IV.
          - Mahumetana. LIB. V.
        - Homines Profanæ, tum
          - Politicæ. De POLITICA Vita VOL. XXVIII. Videlicet de
            - Politia ut Totũ quiddam eſt. LIB. I.
            - Politia ſecundùm Cauſas conſiderata. LIB. II.
            - Politia ſecũdùm Effectus conſiderata. LIB. III.
            - Politiis ſingularibus. LIBER IV.
          - Oeconomicæ. De OECONOMICA Vita VOLVM. XXIX. De
            - Oeconomia, ut Totum. LIB. I.
            - Oeconomię CAVSIS. LIB. II.
            - Oeconomiæ EFFECTIS. LIB. III.
            - Oeconomiis ſingularibus. LIB. IV.

* * *

I. Titusubstantially in each of the three editions of the *Theatrum*. The first branching diagram of the *Theatrum* outlined the logical structure of the whole work and its breakdown into volumes and books cited by number, but without page numbers. In this attempt to present the whole work, Zwinger followed the lead of Conrad Gesner, who provided a diagram of the divisions into books of his *Pandectae*. But Zwinger's equivalent overview diagram spanned four pages, linked together by small symbols (hard to locate on a page), and thus did not bring the structure of the whole work into view at one time and, since it did not list page numbers, it was not very successful as a finding device.

At the beginning of each book of the *Theatrum*, Zwinger also offered a diagram of the headings in that book (*dispositio titulorum*), which often ran to ten pages or more. These diagrams included no points of reference to the text and could not serve as finding devices, but they offered the logical scheme underlying Zwinger's choice of headings and their arrangement. Zwinger proceeded through six or seven layers of subdivision from general to particular by dint of standard binary oppositions (e.g., matter/form, internal/external, general/particular, whole/part, negative/affirmative) and other categories (causes, accidents, subjects). At the right-hand margin, the end points of the diagram corresponded to the headings treated in the text that followed more or less closely. Some subdivisions listed in the diagram were omitted from the text, others were phrased differently, and some headings listed in the diagram and in the text were left with no content, driven by the logical scheme rather than the subject matter Zwinger had accumulated. The chart was meant to provide the rationale for the headings in the text and the order of their presentation by offering an ideal treatment of the topic.

Zwinger's diagrams and his multiple rearrangements of them were motivated not only by a need to organize his material but above all by his quest for a true order, derived from the nature of things and that could stand for all eternity. Zwinger complained of the arbitrary and inadequate headings used by many of his predecessors in the genre—authors of *variae lectiones*, commonplaces, and

Figure 3.5 (opposite)

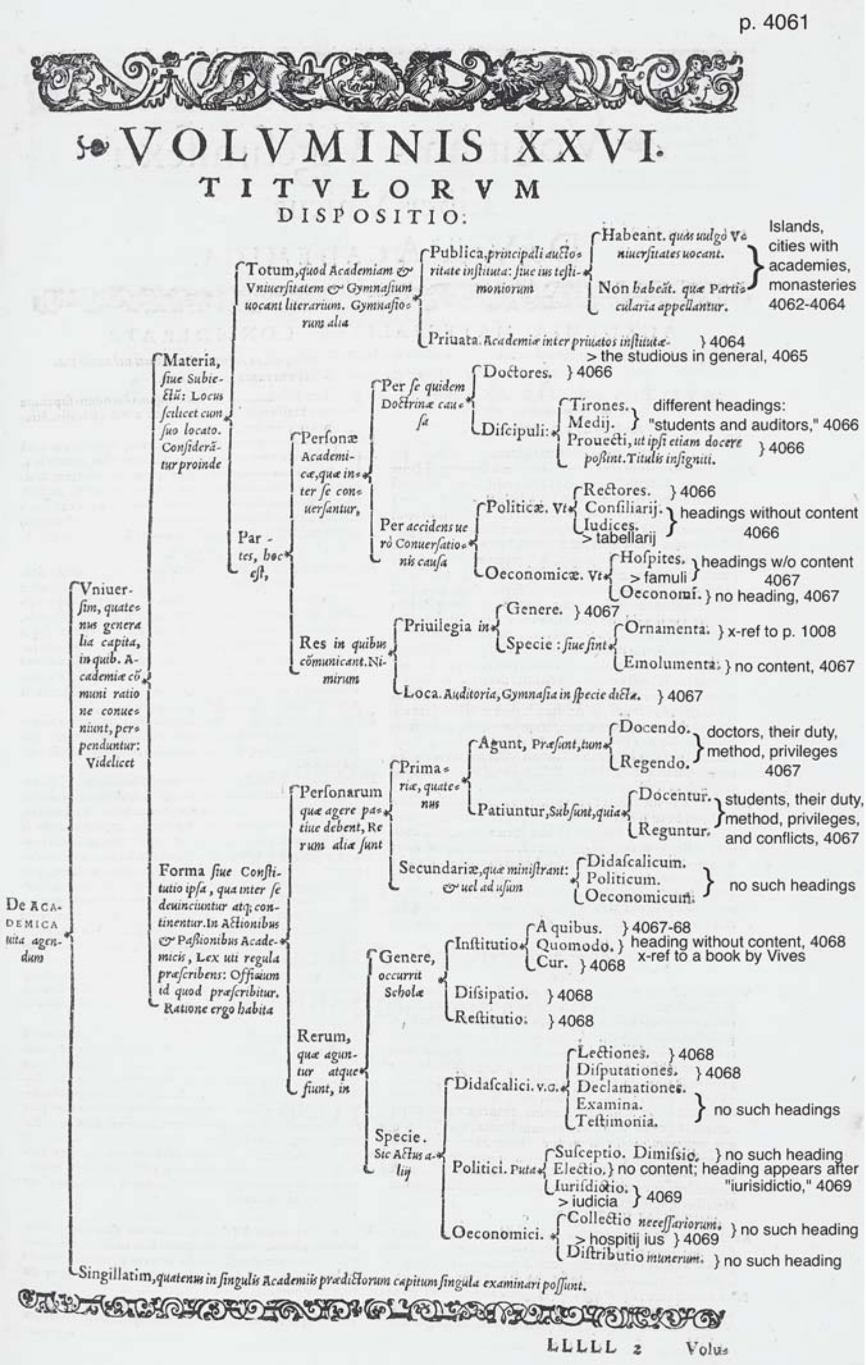
Part of the multipage branching diagram in which Zwinger outlines the whole *Theatrum* (1586). The diagram spans more than ten pages, which are linked together by call signs. On this page the chart explicates volumes 21–29, each of which is subdivided into one to four books. On the first line "vide signum I" sends the reader to the diagram on the next page (labeled I) that explicates books 10–20. Reproduced with permission from the University of Chicago Library, Special Collections Research Center, AE3.Z94.1587, sig. ***1v.

other collections of exempla: “They all labored under a great shortage of headings and they heaped headings rather than linking them and from their own advantage rather than from the nature of reality. Another order had to be instituted which was dependent not on the will of the writer, but on art and which could thus be eternal. The method of the art had to be deduced from the essence of things.”[120] Because Zwinger envisioned his elaborate charts as articulations of the true relationships between things, he was committed to revising the charts in each edition to reach that goal.

In some cases one can see the role of the diagrams in driving Zwinger’s collection of material. In 1565 a section on the fertility of lands included headings left blank (e.g., on wine, milk, salt, and lead) or supplied with only one or two examples (e.g., gold and pitch). In 1586 the sections on fertility in metals (e.g., lead and gold, tin and iron) were much expanded, though wine, milk, and salt were still blank, as if waiting for a later round of revisions.[121] Zwinger’s *Theatrum* was a work in progress driven by an abstract ambition to represent all human experience and cut short by the brevity of life. There were gaps between the ideal theater presented in Zwinger’s diagrams and the actual accumulation of exempla, but the elaborate layers of headings and subheadings and the unusually complex diagrams were especially significant to Zwinger.

However powerful the diagrams seemed to Zwinger, the evidence suggests that they failed to excite contemporaries. The diagrams were dropped from Beyerlinck’s *Magnum theatrum* silently without the mention that the shift to alphabetical order warranted. Many of Zwinger’s subdivisions were maintained within Beyerlinck’s articles (especially the longer ones), but no diagram was provided to chart them. Bartholomaeus Keckermann (1573–1609), professor of philosophy and theology at Heidelberg, then Dantzig, and himself the author of

Figure 3.6 (opposite)
Branching diagram announcing the organization of volume 26, “De scholastica vita” (On Life in the Schools), in Zwinger’s *Theatrum* (1586), 4060–69. The sections announced in the diagram do not match perfectly with the material presented in the text, as I indicate in my annotations in the righthand margin. These include the page on which each heading appears in the text and the form it takes there if different from the chart, as well as other discrepancies. The text includes headings not present in the chart (marked with >) and omits some headings altogether. In other cases the text offers a heading with no content, or with only a cross-reference to another section of the work (marked with “x-ref”). Image reproduced with permission from University of Chicago Library, Special Collections Research Center, AE3.Z94.1587, vol. 4, p. 4061, overlaid with commentary using Acorn software.



VOLVMINIS XXVI.

TITVLORVM DISPOSITIO:

- De ACADEMICA uita agendum
  - Vniuerſim, quatenus generalia capita, in quib. Academiæ cõmuni ratione conueniunt, perpenduntur: Videlicet
    - Materia, ſiue Subiectũ: Locus ſcilicet cum ſuo locato. Conſiderãtur proinde
      - Totum, quod Academiam & Vniuerſitatem & Gymnaſium uocant literarium. Gymnaſiorum alia
        - Publica, principali auctoritate inſtituta: ſiue ius teſtimoniorum
          - Habeant. quas uulgò Vniuerſitates uocant.
          - Non habeãt. quæ Particularia appellantur.
          - } Islands, cities with academies, monasteries 4062-4064
        - Priuata. Academiæ inter priuatos inſtitutæ } 4064 > the studious in general, 4065
      - Partes, hoc eſt,
        - Perſonæ Academicæ, quæ inter ſe conuerſantur,
          - Per ſe quidem Doctrinæ cauſa
            - Doctores. } 4066
            - Diſcipuli:
              - Tirones. Medij. } different headings: "students and auditors," 4066
              - Prouecti, ut ipſi etiam docere poſſint. Titulis inſigniti. } 4066
          - Per accidens uerò Conuerſationis cauſa
            - Politicæ. Vt
              - Rectores. } 4066
              - Conſiliarij. Iudices. > tabellarij } headings without content 4066
            - Oeconomicæ. Vt
              - Hoſpites. > famuli } headings w/o content 4067
              - Oeconomi. } no heading, 4067
        - Res in quibus cõmunicant. Nimirum
          - Priuilegia in
            - Genere. } 4067
            - Specie: ſiue ſint
              - Ornamenta. } x-ref to p. 1008
              - Emolumenta. } no content, 4067
          - Loca. Auditoria, Gymnaſia in ſpecie dicta. } 4067
    - Forma ſiue Conſtitutio ipſa, qua inter ſe deuinciuntur atq; continentur. In Actionibus & Paſſionibus Academicis, Lex uti regula præſcribens: Officium id quod præſcribitur. Ratione ergo habita
      - Perſonarum quæ agere paſſiue debent, Rerum aliæ ſunt
        - Primariæ, quatenus
          - Agunt, Præſunt, tum
            - Docendo. Regendo. } doctors, their duty, method, privileges 4067
          - Patiuntur, Subſunt, quia
            - Docentur. Reguntur. } students, their duty, method, privileges, and conflicts, 4067
        - Secundariæ, quæ miniſtrant: & uel ad uſum
          - Didaſcalicum. Politicum. Oeconomicum. } no such headings
      - Rerum, quæ aguntur atque fiunt, in
        - Genere, occurrit Scholæ
          - Inſtitutio
            - A quibus. } 4067-68
            - Quomodo. } heading without content, 4068 x-ref to a book by Vives
            - Cur. } 4068
          - Diſsipatio. } 4068
          - Reſtitutio. } 4068
        - Specie. Sic Actus alij
          - Didaſcalici. v.g.
            - Lectiones. } 4068
            - Diſputationes. } 4068
            - Declamationes. Examina. Teſtimonia. } no such headings
          - Politici. Puta
            - Suſceptio. Dimiſsio. } no such heading
            - Electio. } no content; heading appears after "iurisidictio," 4069
            - Iuriſdictio. > iudicia } 4069
          - Oeconomici.
            - Collectio neceſſariorum. } no such heading > hospitij ius } 4069
            - Diſtributio munerum. } no such heading
  - Singillatim, quatenus in ſingulis Academiis prædictorum capitum ſingula examinari poſſunt.

many textbooks, condemned Zwinger's organization as logically deficient and practically unusable. In a short treatise on commonplacing, Keckermann discussed a variety of organizational schemes for collections of *loci communes*, from the alphabetical to the order modeled on the Decalogue, including Zwinger's: "Another fuller order, or a fuller volume, was prescribed by Zwinger in the *Theatrum vitae humanae*, by which order that man tried to include the headings of all things, by an enormous labor, but I don't know that the fruit was equal to it. Indeed the order is neither constituted accurately according to logic nor is it such that you could refer all things to it nor find what you desire without great difficulty, unless you take refuge in the alphabetical index."[122] For Keckermann, Zwinger's three indexes (of headings, proper names, and "memorable words and things") were the keys to consulting the *Theatrum*. They spared the user the need to understand Zwinger's complex and changing organizational schemes. As a further sign of their relative disuse, I have found only one case of annotations in Zwinger's diagrams while his indexes were regularly annotated (as I discuss in chapter 5).

Even if they were little read, diagrams served an important purpose—to the authors who lavished attention on them but also for readers, even those who only scanned them casually without studying them closely. As compilations reached large proportions, through detailed description and the accumulation of so many particulars, the diagram gave evidence that mastery of such a large scope of material was still possible, if not in one gaze, then in one set of complex interconnections. In Zwinger's *Theatrum* diagrams complemented the large-scale accumulation of text, not as finding devices, nor as aids to memory, but as reassurance that systematic mastery of such complex material could be achieved. Similarly, the encyclopedic ambitions of Federico Cesi yielded sophisticated branching diagrams (such as his broadsheet on bees entitled "apiarium") alongside hundreds of pages of textual notes.[123] Although reference books were heavily textual, the *Polyanthea* and the *Theatrum* adopted this one visual tool from pedagogical contexts for teaching rhetoric and philosophy to serve not as a finding device, but as a conceptual guide to complex material.[124]

LAYOUT OR *MISE-EN-PAGE*

In addition to these paratextual devices, the text itself and its layout played an important role in facilitating consultation of a reference work. The features of word-processing have made as us well aware of the role of blank space and word positioning and of different sizes and kinds of font (capitals, italics, or bold) in formatting a page for optimum effect. It is delicate to assess the impact on past readers of features of the printed page to which we are not accustomed, especially given the absence of contemporary comments on layout. But many features that we consider familiar today developed in early printed books, and especially reference books. My analysis of the consultability of early modern pages will be informed by my modern perspective, but at least that perspective is indebted rather than foreign to early modern practices of layout. Decisions about layout were generally made in the print shop, though authors occasionally tried to influence them.[125] The development of *mise-en-page* in the reference books I have studied (especially the *Polyanthea* and the *Theatrum*) is not linear from one edition to the next. Some printers and editors introduced innovations in layout or finding devices, and others either copied or neglected to copy them. Overall, though, seventeenth-century editions successfully packed more text on a page while enhancing readability.

Medieval manuscripts of florilegia or other compilations, like those of indexes, varied widely in their ease of use. The most expensive copies combined color with blank space and running heads to highlight headings and successive quotations, but some manuscripts offered none of these features and many only some of them. Thus one manuscript of Thomas of Ireland that represents a midpoint between extremes included running heads and a red capital letter to indicate a new article, but each entry under that heading was run into the next and marked only by a red paragraph marker. The source of each quotation, generally included at the end, was not demarcated from the quotation in any way. A reader could locate an article by heading readily enough but then would have to read through the entire article to locate a desired author or quotation. Abbreviations would further hamper a nonexpert reader.

With printing, the use of color was lost (though an owner could have it added by hand), and instead blank space and font variation became central features of page layout, particularly in reference books. Most large-format reference books followed the medieval pattern common to manuscripts of the Bible and other long works of division into two columns of text.[126] Columns introduced a central margin and created narrower chunks of text that were easier to scan for specific words; they also encouraged paragraphing since less space would be wasted by starting a new line. The central margin was a prime location for finding letters (A–G), as in Erasmus's *Adages* and Beyerlinck's *Magnum theatrum*.

In 1503 the *Polyanthea* was printed in Roman script with few abbreviations, following newly established humanist patterns; early editions printed in the German area, such as in Strasbourg in 1517, used Gothic font. In this and subsequent editions, while the prose in many sixteenth-century genres was printed

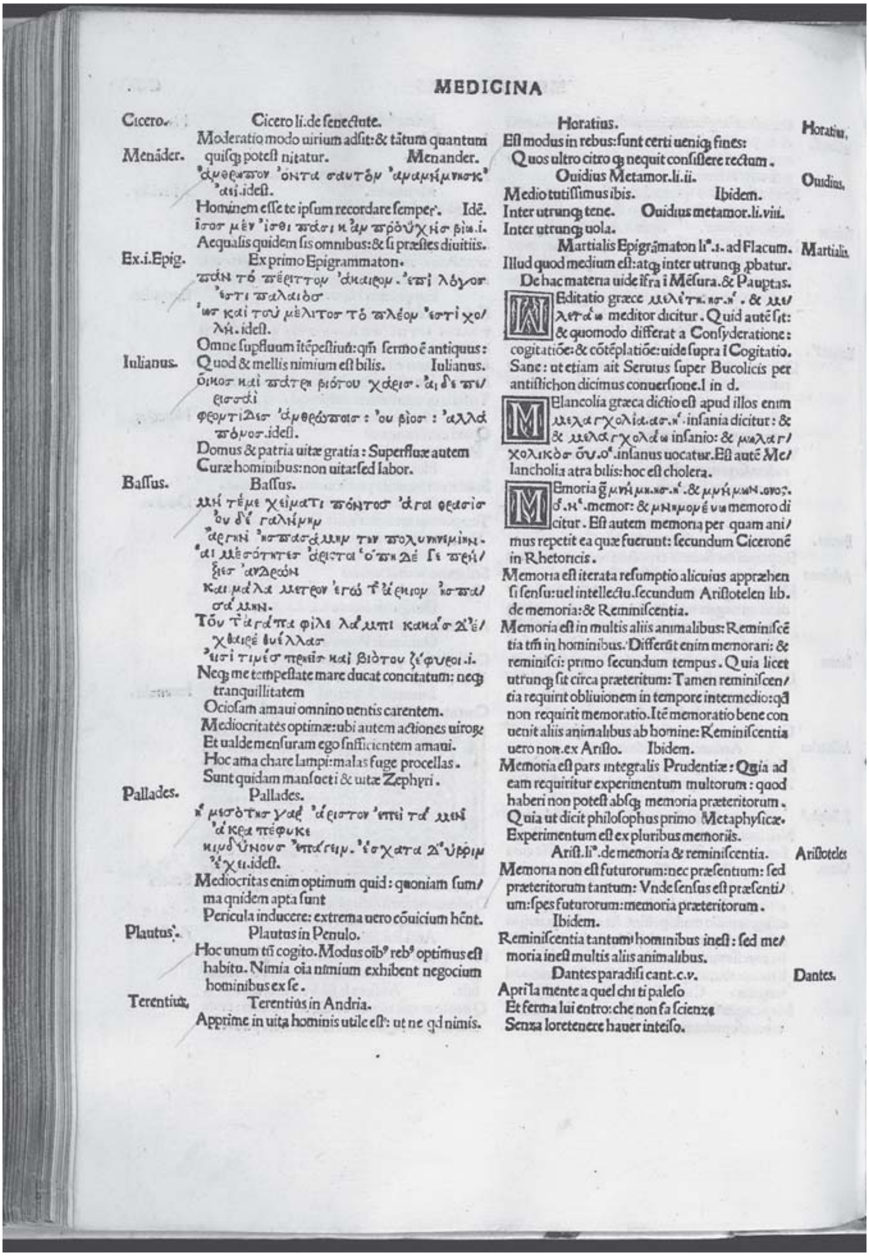
ꝑtectio colit· q° sup oīa inq'rat ⁊ diligat· h° ei de⁹ ē· Si q̄s ē
q° in dilectois lauco ꝑpondeat· h° ē de⁹ ē· cui⁹ sup indic
·oīa· ¶ Dns ū explene ꝑdit ū multu subſtauit· ¶ A q°· q·
vocat' ꝑtributo ꝑatoꝝ· Raz mot⁹ diuitas beata no ꝑmit'
q sup cadīu ctīa atq; imobil' ꝑsoluit· Et ista cōfusio· hinc
ꝑtinz fragilita· uo de lecto· q° tn̄· de ꝑlacato· ista de⁹· de bn
nolo· reddat' offens· cassi sup illo· ꝑs· tnc loq̄t' ad eos in
¶ hic multu ē monitio· q ho no bnt' dei bonitate ⁊ m͠ia· sic s·
multu deo· ac mortua q eā ꝑtes no hēt in memoria
de ipē q de eo no cogitas· te cognita ꝑdidisse· hug°· li· 1· r·
de claust' aie ¶ Ipse de⁹ ē· tectū ē int⁹ ē· ita dico locali v·
bat' int' nos ꝑē secz· maloz bonozq; inꝑoz obseruator ⁊
custos· hic ꝑut a nob tract⁹ ē· ita nos ipē tractat· bon⁹
u biꝑ· sed eo uco ē· sc̄a in q ¶ Nobus ubi amor· Ita· Vir
tus· Cognitio· Consideratio· Confessio· Creatio· Cupascio· De
lecto· Obiectio· Bonus· Via· Passio· Vici· Capra· Captura·
Deuotio ¶ Ro putrefit· cor· si hcneo ad ¶ Equinte· ·a·
deu· ꝑmutu tuu si beges in inferiorib; ne putref
lentes illo ad superiora· ꝑmutto tuo mutare gnos locu·
⁊ cor ꝑmitto in tra putref· ꝑmutu lentes ad superiora·
cor lena in celu· Et uido inq° possit· Et fumes· q ma
chie q scalo· Deuo· asscē ē· v° tuu· Conuersio tua ē· P
mundo ascendo· neglo descendo· Stans in tra· in ce
lo es· si diligis dnm· ag⁹ sup· ps· cxxx ¶ Si bec ad⁹ cor b
oblectet' extri⁹· sed relicqs manz int⁹· ag⁹ sup ioh·
¶ Questio q° incorpali ⁊ ſpūal' in nob fiat ds· q u son⁹ c
sit q aurē ꝑcutiat· u color q octis dicernat· u odor q ua
ribz capiat'· u sapor q faucibz iudicet'· u durū ⁊ mol
le q° tangendo sentiat'· ⁊ tn̄ aliq ē q° sentiq° facile ē·
explicat no possibile· ag⁹ sup· ioh ¶ Si nos iter⁹ amo· d

with no paragraphing (e.g., in Nani's preface or in each of Montaigne's essays), the text of the *Polyanthea*, consisting of individual *sententiae*, manipulated blank space uniquely well to delineate articles and the individual entries within them.[127] Locating a heading, typically already easy thanks to rubrication in medieval manuscripts, was probably not greatly improved in the printed *Polyanthea*. Headings were signaled in various ways: by a decorated initial of different sizes or by a small "undent" (protruding into the margin) and/or a bigger font. In later editions headings were generally demarcated with less variation, which facilitated browsing them. The signal improvement of the printed edition over medieval antecedents was in browsing within an article—this development also coincided with a considerable expansion in the length of articles as Nani added new quotations to the stock he borrowed from Thomas of Ireland. Unlike in medieval manuscripts, each quotation under a heading was given a new line. In addition, source citations were often centered on the line and/or marked with a pilcrow. Quotations were generally grouped by author, and in early editions the appearance of each new author was highlighted by name in the margin. These features made it easier to browse within a topical article for a particular author and within the selections from an author for a particular quotation.

As the *Polyanthea* grew, the margins were used in some editions to indicate new entries or add variant readings or occasionally a short summary of the content of the excerpt. By 1600, after many rounds of additions, the headings were indicated in small capitals (distinguishable but without standing out clearly), and articles consisted of long lists of quotations hard to browse by author. Joseph Lange's revision of 1604 revamped the layout as well as the contents of the *Polyanthea*. Lange improved the readability of each article by grouping the authors into categories labeled in capitals in the center of the column: Bible, church fathers, poets, philosophers, and so on. The source was listed in italics at the end

Figure 3.7 (opposite)

A fourteenth-century manuscript of Thomas of Ireland, *Manipulus florum* (1306), a much-copied florilegium. The manuscript offers many features to aid consultation, including a running head at the top of the page, which indicates that this page spans the entries on "Deus" and "devotio," and rubrication of heading terms and of the pilcrows indicating a new quotation, but the text has no line breaks. A reader has added the pointing fingers to highlight items of interest and the letters down the margin, which enumerate the quotations under each heading (up to "u" in the section on "God," or twenty-one quotations, and four on this page for "devotion"). Reproduced with permission from the Cambridge University Library, Ff.vi.35, f. 55r.



MEDICINA

Cicero. Cicero li.de ſenectute.

Moderatio modo uirium adſit:& tãtum quantum quiſq; poteſt nitatur.

Menáder. Menander.

ἀμθρωπον ὄντα σαυτὸμ ἀμαμιμνήσκ' ἀεὶ.ideſt.

Hominem eſſe te ipſum recordare ſemper. Idẽ.

ἶσοσ μὲν ἴσθι πᾶσι κ' ἂμ προὔχησ βίω.i.

Aequalis quidem ſis omnibus:& ſi præſtes diuitiis.

Ex.i.Epig. Ex primo Epigrammaton.

πάμ τό περιττομ ἀκαιρομ. ἐπὶ λόγοσ ἐστι παλαιὸσ

ὡσ καὶ τοῦ μέλιτοσ τό πλέομ ἐστὶ χο/λή.ideſt.

Omne ſupfluum itẽpeſtiuũ:qm̃ ſermo ẽ antiquus:

Iulianus. Quod & mellis nimium eſt bilis. Iulianus.

οἶκοσ καὶ πάτρη βιότου χάρισ. αἱ δὲ πε/ρισσαὶ

φροντίδεσ ἀμθρώποισ: οὐ βίοσ: ἀλλὰ πόνοσ.ideſt.

Domus & patria uitæ gratia: Superfluæ autem

Curæ hominibus: non uita: ſed labor.

Baſſus. Baſſus.

μή τέμε χείματι πόντοσ ἄγοι θρασὺσ οὐ δὲ γαλήνην

ἀργὴν ἠσπασάμην τὴν πολυηρεμίην.

αἱ μεσότητεσ ἄρισται ὅπη δέ γε πρή/ξιεσ ἀνδρῶν

καὶ μάλα μέτρον ἐγὼ τὸ ὑμέτερον ἠσπα/σάμην.

Τοῦτ' ἀγάπα φίλε λάμπι κακὰσ δ' ἐ/χθαιρε θυέλλασ

εἰσί τινεσ πρηεῖσ καὶ βιότου ζέφυροι.i.

Neq; me tempeſtate mare ducat concitatum: neq; tranquillitatem

Ocioſam amaui omnino uentis carentem.

Mediocritates optimæ: ubi autem actiones uirorꝫ

Et ualde menſuram ego ſufficientem amaui.

Hoc ama chare lampi: malas fuge procellas.

Sunt quidam manſueti & uitæ Zephyri.

Pallades. Pallades.

ἡ μεσότησ γὰρ ἄριστον ἐπεὶ τὰ μὲν ἄκρα πέφυκε

κινδύνουσ ἐπάγειν. ἔσχατα δ' ὕβριν ἔχει.ideſt.

Mediocritas enim optimum quid: quoniam ſum/ma quidem apta ſunt

Pericula inducere: extrema uero cõuicium hñt.

Plautus. Plautus in Penulo.

Hoc unum tñ cogito. Modus oib⁹ reb⁹ optimus eſt habitu. Nimia oia nimium exhibent negocium hominibus ex ſe.

Terentius. Terentius in Andria.

Apprime in uita hominis utile eſt: ut ne qd nimis.

Horatius. Horatius.

Eſt modus in rebus: ſunt certi uenicq; fines:

Quos ultro citro q; nequit conſiſtere rectum.

Ouidius. Ouidius Metamor.li.ii.

Medio tutiſſimus ibis. Ibidem.

Inter utrunq; tene. Ouidius metamor.li.viii.

Inter utrunq; uola.

Martialis. Martialis Epigrãmaton li°.i. ad Flacum.

Illud quod medium eſt: atq; inter utrunq; ꝓbatur.

De hac materia uide ĩfra ĩ Mẽſura.& Pauptas.

MEditatio græce μελέτη.ησ.ἡ. & με/λετάω meditor dicitur. Quid autẽ ſit: & quomodo differat a Conſyderatione: cogitatiõe:& cõtẽplatiõe: uide ſupra ĩ Cogitatio. Sane: ut etiam ait Seruius ſuper Bucolicis per antiſtichon dicimus conuerſione.l in d.

MElancolia græca dictio eſt apud illos enim μελαγχολία.ασ.ἡ. insania dicitur: & & μελαγχολάω inſanio: & μελαγ/χολικὸσ οῦ.ὁ.inſanus uocatur. Eſt autẽ Me/lancholia atra bilis: hoc eſt cholera.

MEmoria ḡ μνήμη.ησ.ἡ. & μνήμων.ονοσ. ὁ.ἡ.memor: & μνημονεύω memoro dicitur. Eſt autem memoria per quam ani/mus repetit ea quæ fuerunt: ſecundum Ciceronẽ in Rhetoricis.

Memoria eſt iterata reſumptio alicuius appræhenſi ſenſu: uel intellectu. ſecundum Ariſtotelen lib. de memoria:& Reminiſcentia.

Memoria eſt in multis aliis animalibus: Reminiſcẽtia tñ in hominibus. Differũt enim memorari: & reminiſci: primo ſecundum tempus. Quia licet utrunq; ſit circa præteritum: Tamen reminiſcen/tia requirit obliuionem in tempore intermedio: qđ non requirit memoratio. Itẽ memoratio bene conuenit aliis animalibus ab homine: Reminiſcentia uero non. ex Ariſto. Ibidem.

Memoria eſt pars integralis Prudentiæ: Quia ad eam requiritur experimentum multorum: quod haberi non poteſt abſq; memoria præteritorum. Quia ut dicit philoſophus primo Metaphyſicæ. Experimentum eſt ex pluribus memoriis.

Ariſtoteles Ariſt.li°.de memoria & reminiſcentia.

Memoria non eſt futurorum: nec præſentium: ſed præteritorum tantum: Vnde ſenſus eſt præſenti/um: ſpes futurorum: memoria præteritorum.

Ibidem.

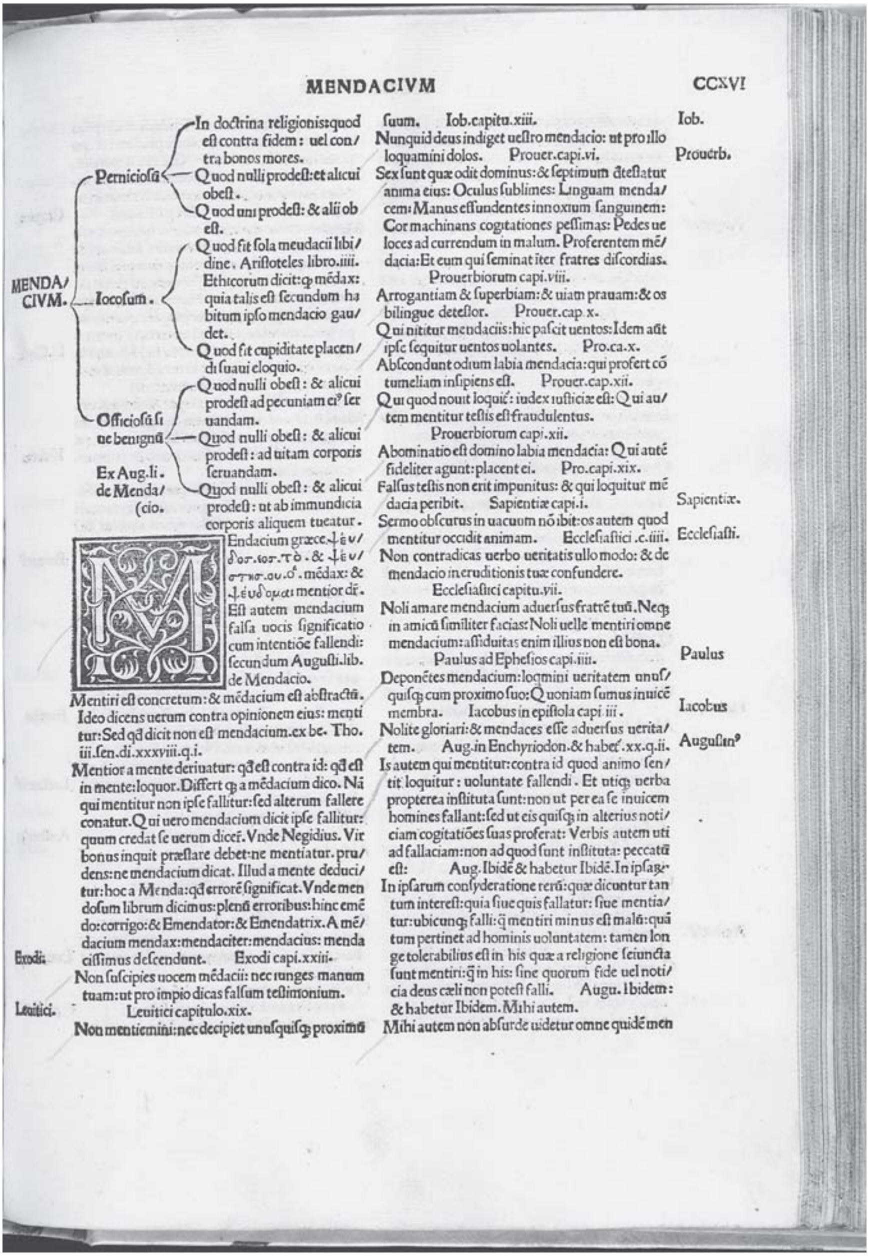
Reminiſcentia tantum hominibus ineſt: ſed me/moria ineſt multis aliis animalibus.

Dantes. Dantes paradiſi cant.c.v.

Apri la mente a quel chi ti paleſo
Et ferma lui entro: che non fa ſcienza
Senza lo retenere hauer inteſo.

Figure 3.8

Sample opening from the first edition of Domenico Nani Mirabelli's *Polyanthea* (1503). Woodblock capitals (note that one was accidentally set upside down) and white space delineate the separate articles. Running heads indicate the entry treated at the beginning of each page. The authors of the quotations are called out in the margin and



MENDACIVM CCXVI

MENDACIVM.

- Perniciosũ
  - In doctrina religionis: quod eſt contra fidem: uel contra bonos mores.
  - Quod nulli prodeſt: et alicui obeſt.
  - Quod uni prodeſt: & alii obeſt.
- Iocoſum.
  - Quod fit ſola meudacii libidine. Ariſtoteles libro.iiii. Ethicorum dicit: ꝙ mēdax: quia talis eſt ſecundum habitum ipſo mendacio gaudet.
  - Quod fit cupiditate placendi ſuaui eloquio.
- Officioſũ ſiue benignũ
  - Quod nulli obeſt: & alicui prodeſt ad pecuniam eiꝰ ſeruandam.
  - Quod nulli obeſt: & alicui prodeſt: ad uitam corporis ſeruandam.
  - Quod nulli obeſt: & alicui prodeſt: ut ab immundicia corporis aliquem tueatur.

Ex Aug. li. de Mendacio.

MEndacium græce ψεῦδοσ.ιοσ.τὸ. & ψεύστησ.ου.ὁ. mēdax: & ψεύδομαι mentior dr̃. Eſt autem mendacium falſa uocis ſignificatio cum intentiōe fallendi: ſecundum Auguſti.lib. de Mendacio.

Mentiri eſt concretum: & mēdacium eſt abſtractũ. Ideo dicens uerum contra opinionem eius: mentitur: Sed qđ dicit non eſt mendacium.ex be. Tho. iii.ſen.di.xxxviii.q.i.

Mentior a mente deriuatur: qđ eſt contra id: qđ eſt in mente: loquor. Differt ꝗ a mēdacium dico. Nã qui mentitur non ipſe fallitur: ſed alterum fallere conatur. Qui uero mendacium dicit ipſe fallitur: quum credat ſe uerum dicer̃. Vnde Negidius. Vir bonus inquit præſtare debet: ne mentiatur. prudens: ne mendacium dicat. Illud a mente deducitur: hoc a Menda: qđ errorē ſignificat. Vnde mendoſum librum dicimus: plenũ erroribus: hinc emēdo: corrigo: & Emendator: & Emendatrix. A mēdacium mendax: mendaciter: mendacius: mendaciſſimus deſcendunt. Exodi capi.xxiii.

Exodi.

Non ſuſcipies uocem mēdacii: nec iunges manum tuam: ut pro impio dicas falſum teſtimonium.

Leuitici.

Leuitici capitulo.xix.

Non mentiemini: nec decipiet unuſquiſq; proximũ ſuum. Iob.capitu.xiii.

Iob.

Nunquid deus indiget ueſtro mendacio: ut pro illo loquamini dolos. Prouer.capi.vi.

Prouerb.

Sex ſunt quæ odit dominus: & ſeptimum d̃teſtatur anima eius: Oculus ſublimes: Linguam mendacem: Manus effundentes innoxium ſanguinem: Cor machinans cogitationes peſſimas: Pedes ueloces ad currendum in malum. Proferentem mēdacia: Et eum qui ſeminat iter fratres diſcordias.

Prouerbiorum capi.viii.

Arrogantiam & ſuperbiam: & uiam prauam: & os bilingue deteſtor. Prouer.cap.x.

Qui nititur mendaciis: hic paſcit uentos: Idem aũt ipſe ſequitur uentos uolantes. Pro.ca.x.

Abſcondunt odium labia mendacia: qui profert cōtumeliam inſipiens eſt. Prouer.cap.xii.

Qui quod nouit loquit̃: iudex iuſticiæ eſt: Qui autem mentitur teſtis eſt fraudulentus.

Prouerbiorum capi.xii.

Abominatio eſt domino labia mendacia: Qui autē fideliter agunt: placent ei. Pro.capi.xix.

Falſus teſtis non erit impunitus: & qui loquitur mēdacia peribit. Sapientiæ capi.i.

Sapientiæ.

Sermo obſcurus in uacuum nō ibit: os autem quod mentitur occidit animam. Eccleſiaſtici .c.iiii.

Eccleſiaſti.

Non contradicas uerbo ueritatis ullo modo: & de mendacio ineruditionis tuæ confundere.

Eccleſiaſtici capitu.vii.

Noli amare mendacium aduerſus fratrē tuũ. Neq; in amicũ ſimiliter facias: Noli uelle mentiri omne mendacium: aſſiduitas enim illius non eſt bona.

Paulus ad Epheſios capi.iiii.

Paulus

Deponētes mendacium: loqmini ueritatem unuſquiſq; cum proximo ſuo: Quoniam ſumus inuicē membra. Iacobus in epiſtola capi.iii.

Iacobus

Nolite gloriari: & mendaces eſſe aduerſus ueritatem. Aug.in Enchyriodon.& habet̃.xx.q.ii.

Auguſtinꝰ

Is autem qui mentitur: contra id quod animo ſentit loquitur: uoluntate fallendi. Et utiq; uerba propterea inſtituta ſunt: non ut per ea ſe inuicem homines fallant: ſed ut eis quiſq; in alterius noticiam cogitatiōes ſuas proferat: Verbis autem uti ad fallaciam: non ad quod ſunt inſtituta: peccatũ eſt: Aug. Ibidē & habetur Ibidē. In ipſarꝫ

In ipſarum conſyderatione rerũ: quæ dicuntur tantum intereſt: quia ſiue quis fallatur: ſiue mentiatur: ubicunq; falli: q̃ mentiri minus eſt malũ: quãtum pertinet ad hominis uoluntatem: tamen longe tolerabilius eſt in his quæ a religione ſeiuncta ſunt mentiri: q̃ in his: ſine quorum fide uel noticia deus cæli non poteſt falli. Augu. Ibidem: & habetur Ibidem. Mihi autem.

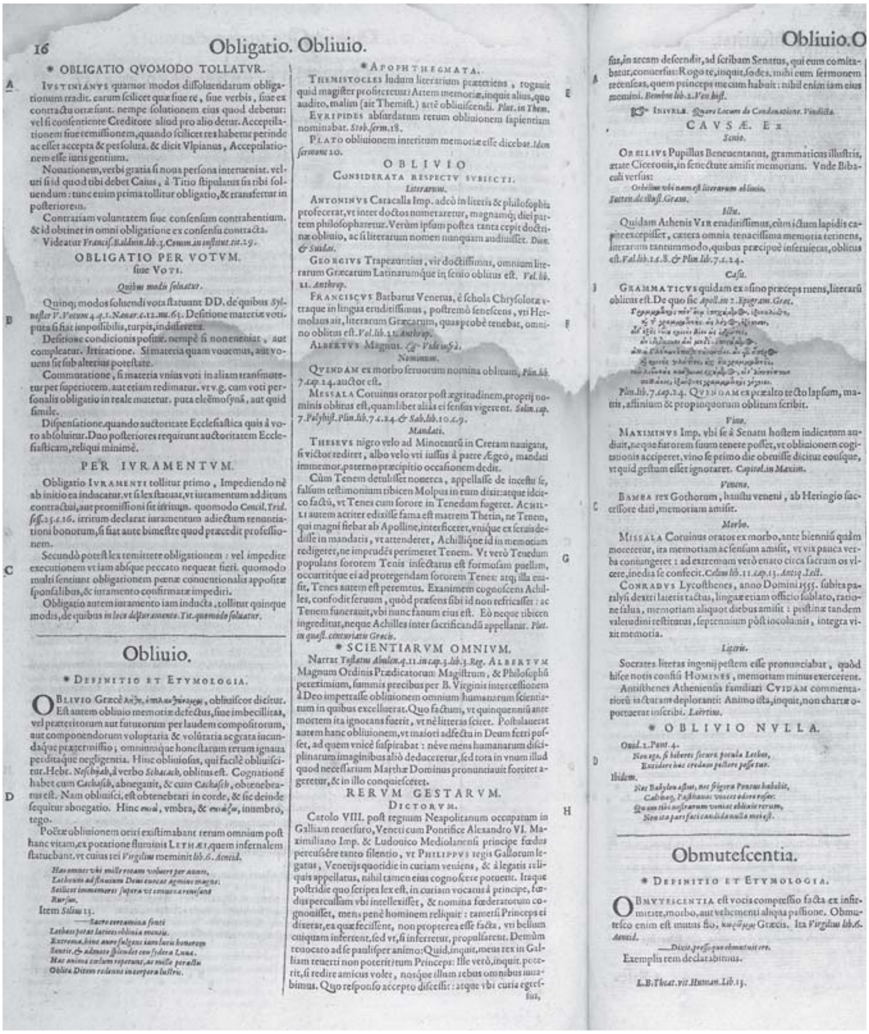
Mihi autem non abſurde uidetur omne quidē men

centered on a line of text before the corresponding quotation. "Mendacium" (lying) features a small branching diagram. An anonymous reader has drawn attention to many of the quotations with a marginal line. Reproduced with permission from Houghton Library, Harvard University, Typ 252.03.596F, ff. 215v–216r.

of each entry and the margins generally left blank; the main character in an anecdote or apophthegm was also italicized. Seventeenth-century editions of the *Polyanthea* combined multiple sizes and kinds of font, lines, and pilcrows to facilitate consultation even as the amount of writing per page was significantly greater than in early sixteenth-century editions due to large pages and smaller fonts.

Whereas the *Polyanthea* at its height enumerated quotations under two levels of heading—the article heading and one subheading for the type of source cited—Zwinger strove to represent up to five layers of divisions and subdivisions in his *Theatrum*. Main headings spanned both columns with their capitalized title and italicized description; subheadings spanned only one column, sometimes but not consistently in a smaller size of capital letters. Further layers of subdivision were not additionally marked in 1565. But in the edition of 1586 the text was three times as long and included helpful new elements of layout. The preface was divided into sections with headings and paragraphs (though these could still span up to two folio pages, down from five in 1565), and in the text different kinds of lines, fonts, and dingbats signaled the divisions between sections and their place in the hierarchy. Zwinger used three kinds of dingbat (akin to the ancient *hedera* or ivy leaf, which appeared in late antiquity as a form of punctuation) to mark material in descending order of importance: the clover, the right-facing *hedera* and the left-facing *hedera* (or pepper?).[128] A pointing finger highlighted cross-references for the first time (which had been present in 1565 but not marked in a special way).[129] In this way Zwinger managed to distinguish between four layers of headings with a consistent system, even if it was not perfectly carried out. Authors were well aware of errors in layout; Gesner, for example, noted in the errata to a volume of his *Pandectae*, "fol. 54c l. 29 the words 'De bonis spiritibus, de malis spiritibus,' pertain to the previous heading and should be written in small characters."[130]

Along with other aspects of Zwinger's elaborate scheme, these signals of a systematic arrangement were dropped in Beyerlinck's *Magnum theatrum*. Lines remained important, appearing between articles with a new line down the center between the columns; headings were all single-column headings, either in capitals or smaller in italics. The only symbols used were pointing fingers for cross-references and stars to indicate headings added since Zwinger. The result, particularly in articles that spanned tens of pages ("bellum" was more than 100 pages long), does not seem easier to browse than the edition of 1586. While Zwinger's *Theatrum* invited aimless reading or browsing with its visually interesting layout, the *Magnum theatrum* stressed efficient access through precise indexing down to sections A–G on each page.



16 Obligatio. Obliuio.

* OBLIGATIO QVOMODO TOLLATVR.

A IVSTINIANVS quatuor modos diſſoluendarum obligationum tradit. earum ſcilicet quæ ſiue re, ſiue verbis, ſiue ex contractu orta ſunt. nempe ſolutionem eius quod debetur: vel ſi conſentiente Creditore aliud pro alio detur. Acceptilationem ſiue remiſſionem, quando ſcilicet res habetur perinde ac eſſet accepta & perſoluta. & dicit Vlpianus, Acceptilationem eſſe iuris gentium.

Nouationem, verbi gratia ſi noua perſona interueniat. veluti ſi id quod tibi debet Caius, à Titio ſtipulatus ſis tibi ſoluendum: tunc enim prima tollitur obligatio, & transfertur in poſteriorem.

Contrariam voluntatem ſiue conſenſum contrahentium. & id obtinet in omni obligatione ex conſenſu contracta.

Videatur *Franciſ. Balduin. lib. 3. Comm. in inſtitut. tit. 29.*

OBLIGATIO PER VOTVM.

ſiue VOTI.

Quibus modis ſoluatur.

B Quinq; modos ſoluendi vota ſtatuunt DD. de quibus *Syluester V. Votum 4. q. 1. Nauar. c. 12. nu. 65.* Deſitione materiæ voti. puta ſi fiat impoſſibilis, turpis, indifferens.

Deſitione conditionis poſitæ. nempè ſi non eueniat, aut compleatur. Irritatione. Si materia quam vouemus, aut vouens ſit ſub alterius poteſtate.

Commutatione, ſi materia vnius voti in aliam transmutetur per ſuperiorem, aut etiam redimatur. vt v.g. cum voti perſonalis obligatio in reale mutetur. puta eleēmoſynā, aut quid ſimile.

Diſpenſatione, quando auctoritate Eccleſiaſtica quis à voto abſoluitur. Duo poſteriores requirunt auctoritatem Eccleſiaſticam, reliqui minimè.

PER IVRAMENTVM.

Obligatio IVRAMENTI tollitur primo, Impediendo nè ab initio ea inducatur. vt ſi lex ſtatuat, vt iuramentum additum contractui, aut promiſſioni ſit irritum. quomodo *Concil. Trid. ſeſſ. 25. c. 16.* irritum declarat iuramentum adiectum renuntiationi bonorum, ſi fiat ante bimeſtre quod præcedit profeſſionem.

C Secundò poteſt lex remittere obligationem: vel impedire executionem vt iam abſque peccato nequeat fieri. quomodo multi ſentiunt obligationem pœnæ conuentionalis appoſitæ ſponſalibus, & iuramento confirmatæ impediri.

Obligatio autem iuramento iam inducta, tollitur quinque modis, de quibus *in loco de Iuramento. Tit. quomodo ſoluatur.*

Obliuio.

* DEFINITIO ET ETYMOLOGIA.

D OBLIVIO Græcè [illegible], obliuiſcor dicitur. Eſt autem obliuio memoriæ defectus, ſiue imbecillitas, vel præteritorum aut futurorum per laudem compoſitorum, aut componendorum voluptaria & volūtaria ac grata iucundaque prætermiſſio; omniumque honeſtarum rerum ignaua perditaque negligentia. Hinc obliuioſus, qui facilè obliuiſcitur. Hebr. *Neſchijah*, à verbo *Schacach*, oblitus eſt. Cognationē habet cum *Cachaſch*, abnegauit, & cum *Cachaſch*, obtenebratus eſt. Nam obliuiſci, eſt obtenebrari in corde, & ſic deinde ſequitur abnegatio. Hinc [illegible], vmbra, & [illegible], inumbro, tego.

Poëtæ obliuionem oriri exiſtimabant rerum omnium poſt hanc vitam, ex potatione fluminis LETHÆI, quem infernalem ſtatuebant. vt cuius rei *Virgilius* meminit *lib. 6. Aeneid.*

Has omnes vbi mille rotam voluere per annos,
Lethæum ad fluuium Deus euocat agmine magno:
Scilicet immemores ſupera vt conuexa reuiſant
Rurſum.

Item *Silius* 13.

——Sacro certamina fonti
Lethæi potat latices obliuia mentis.
Extrema hinc auro fulgens iam lucis honorem
Sentit, & admoto ſplendet cum ſydera Luna.
Hac animæ cælum repetunt, ac mille peractis
Oblitæ Ditem redeunt in corpora luſtris.

* APOPHTHEGMATA.

E THEMISTOCLES ludum literarium prætereuns, rogauit quid magiſter profiteretur? Artem memoriæ, inquit alius, quo audito, malim (ait Themiſt.) artē obliuiſcendi. *Plut. in Them.*

EVRIPIDES abſurdarum rerum obliuionem ſapientiam nominabat. *Stob. ſerm. 18.*

PLATO obliuionem interitum memoriæ eſſe dicebat. *Idem ſermone 20.*

OBLIVIO

CONSIDERATA RESPECTV SVBIECTI.

Literarum.

ANTONINVS Caracalla Imp. adeò in literis & philoſophia profecerat, vt inter doctos numeraretur, magnamq; diei partem philoſopharetur. Verùm ipſum poſtea tanta cepit doctrinæ obliuio, ac ſi literarum nomen nunquam audiuiſſet. *Dion & Suidas.*

GEORGIVS Trapezuntius, vir doctiſſimus, omnium literarum Græcarum Latinarumque in ſenio oblitus eſt. *Vol. lib. 21. Anthrop.*

F FRANCISCVS Barbarus Venetus, è ſchola Chryſoloræ vtraque in lingua eruditiſſimus, poſtremò ſeneſcens, vti Hermolaus ait, literarum Græcarum, quas probè tenebat, omnino oblitus eſt. *Vol. lib. 21. Anthrop.*

ALBERTVS Magnus. ☞ *Vide infrà.*

Nominum.

QVENDAM ex morbo ſeruorum nomina oblitum, *Plin. lib. 7. cap. 24.* auctor eſt.

MESSALA Coruinus orator poſt ægritudinem, proprij nominis oblitus eſt, quamlibet aliàs ei ſenſus vigerent. *Solin. cap. 7. Polyhiſt. Plin. lib. 7. c. 24. & Sab. lib. 10. c. 9.*

Mandati.

THESEVS nigro velo ad Minotaurū in Cretam nauigans, ſi victor rediret, albo velo vti iuſſus à patre Ægeo, mandati immemor, paterno præcipitio occaſionem dedit.

Cùm Tenem detuliſſet nouerca, appellaſſe de inceſtu ſe, falſum teſtimonium tibicen Molpus in eum dixit: atque idcirco factū, vt Tenes cum ſorore in Tenedum fugeret. ACHILLI autem acriter edixiſſe fama eſt matrem Thetin, ne Tenem, qui magni fiebat ab Apolline, interficeret, vnique ex ſeruis dediſſe in mandatis, vt attenderet, Achillique id in memoriam G redigeret, ne imprudēs perimeret Tenem. Vt verò Tenedum populans ſororem Tenis inſectatus eſt formoſam puellam, occurritque ei ad protegendam ſororem Tenes: atq; illa euaſit, Tenes autem eſt peremtus. Exanimem cognoſcens Achilles, confodit ſeruum, quòd præſens ſibi id non refricaſſet: ac Tenem funerauit, vbi nunc fanum eius eſt. Eò neque tibicen ingreditur, neque Achilles inter ſacrificandū appellatur. *Plut. in quæſt. conuiuiatis Græcis.*

* SCIENTIARVM OMNIVM.

Narrat *Toſtatus Abulen. q. 11. in cap. 3. lib. 3. Reg.* ALBERTVM Magnum Ordinis Prædicatorum Magiſtrum, & Philoſophū pereximium, ſummis precibus per B. Virginis interceſſionem à Deo impetraſſe obliuionem omnium humanarum ſcientiarum in quibus excelluerat. Quo factum, vt quinquenniū ante mortem ita ignorans fuerit, vt nè litteras ſciret. Poſtulauerat autem hanc obliuionem, vt maiori adfectu in Deum ferri poſſet, ad quem vnicè ſuſpirabat: néve mens humanarum diſciplinarum imaginibus aliò deduceretur, ſed tota in vnum illud quod neceſſarium Marthæ Dominus pronuntiauit fortiter ageretur, & in illo conquieſceret.

RERVM GESTARVM.

DICTORVM.

H Carolo VIII. poſt regnum Neapolitanum occupatum in Galliam reuerſuro, Veneti cum Pontifice Alexandro VI. Maximiliano Imp. & Ludouico Mediolanenſi principe fœdus percuſſēre tanto ſilentio, vt PHILIPPVS regis Gallorum legatus, Venetijs quotidie in curiam veniens, & à legatis reliquis appellatus, nihil tamen eius cognoſcere potuerit. Itaque poſtridie quo ſcripta lex eſt, in curiam vocatus à principe, fœdus percuſſum vbi intellexiſſet, & nomina fœderatorum cognouiſſet, mens penè hominem reliquit: tametſi Princeps ei dixerat, ea quæ feciſſent, non propterea eſſe facta, vti bellum cuiquam inferrent, ſed vt, ſi inferretur, propulſarent. Demùm reuocato ad ſe paulìſper animo: Quid, inquit, meus rex in Galliam reuerti non poterit? tum Princeps: Ille verò, inquit, poterit, ſi redire amicus volet, noſque illum rebus omnibus iuuabimus. Quo reſponſo accepto diſceſſit: atque vbi curia egreſſus, in aream deſcendit, ad ſcribam Senatus, qui eum comitabatur, conuerſus: Rogo te, inquit, ſodes, mihi eum ſermonem recenſeas, quem princeps mecum habuit: nihil enim iam eius memini. *Bembus lib. 2. Ven. hiſt.*

Obliuio.O

☞ INIVRIÆ. *Quære Locum de Condonatione. Vindictæ.*

CAVSÆ. EX

Senio.

ORBILIVS Pupillus Beneuentanus, grammaticus illuſtris, ætate Ciceronis, in ſenectute amiſit memoriam. Vnde Bibaculi verſus:

Orbilius vbi nam eſt literarum obliuio.

Sueton. de illuſt. Gram.

Ictu.

Quidam Athenis VIR eruditiſſimus, cùm ictum lapidis capite excepiſſet, cætera omnia tenaciſſima memoria retinens, literarum tantummodo, quibus præcipuè inſeruierat, oblitus eſt. *Val. lib. 1. c. 8. & Plin. lib. 7. c. 24.*

Caſu.

B GRAMMATICVS quidam ex aſino præceps ruens, literarū oblitus eſt. De quo ſic *Apoll. in 2. Epigram. Græc.*

[illegible]

Plin. lib. 7. cap. 24. QVENDAM ex præalto tecto lapſum, matris, affinium & propinquorum oblitum ſcribit.

Vino.

MAXIMINVS Imp. vbi ſe à Senatu hoſtem iudicatum audiuit, neque furorem ſuum tenere poſſet, vt obliuionem cogitationis acciperet, vino ſe primo die obruiſſe dicitur eouſque, vt quid geſtum eſſet ignoraret. *Capitol. in Maxim.*

Veneno.

C BAMBA rex Gothorum, hauſtu veneni, ab Heringio ſucceſſore dati, memoriam amiſit.

Morbo.

MISSALA Coruinus orator ex morbo, ante bienniū quàm moreretur, ita memoriam ac ſenſum amiſit, vt vix pauca verba coniungeret: ad extremum verò enato circa ſacrum os vlcere, inedia ſe confecit. *Cælius lib. 11. cap. 13. Antiq. Lect.*

CONRADVS Lycoſthenes, anno Domini 1555. ſubita paralyſi dextri lateris tactus, linguæ etiam officio ſublato, ratione ſalua, memoriam aliquot diebus amiſit: priſtinæ tandem valetudini reſtitutus, ſeptennium pòſt incolumis, integra vixit memoria.

Literis.

Socrates literas ingenij peſtem eſſe pronunciabat, quòd hiſce notis confiſi HOMINES, memoriam minus exercerent.

Antiſthenes Athenienſis familiari CVIDAM commentariorū iacturam deploranti: Animo iſta, inquit, non chartæ oportuerat inſcribi. *Laërtius.*

* OBLIVIO NVLLA.

Ouid. 2. Pont. 4.

D *Non ego, ſi biberem ſecura pocula Lethes,*
Excidere hæc credam pectore poſſe tuo.

Ibidem.

Nec Babylon æſtus, nec frigora Pontus habebit,
Caluaq; Paſtanas vincet odora roſas:
Quam tibi noſtrarum veniat obliuio rerum,
Non ita pars fati candida nulla mei eſt.

Obmuteſcentia.

* DEFINITIO ET ETYMOLOGIA.

OBMVTESCENTIA eſt vocis compreſſio facta ex infirmitate, morbo, aut vehementi aliqua paſſione. Obmuteſco enim eſt mutus fio, [illegible] Græcis. Ita *Virgilius lib. 6. Aeneid.*

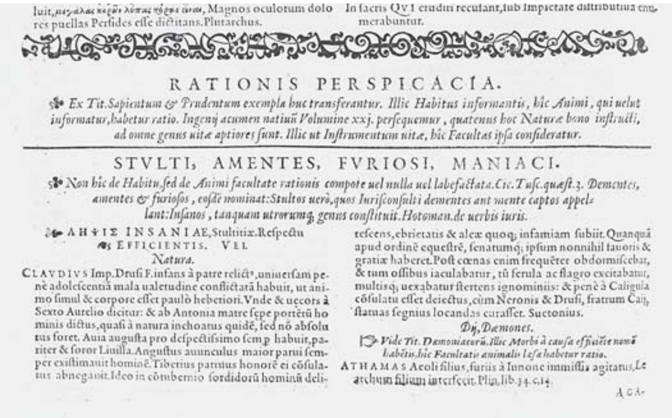
——Dixit, preſſoque obmutuit ore.

Exemplis rem declarabimus.

L. B. Theat. vit. Human. Lib. 13.

Figure 3.9

Sample opening from Laurentius Beyerlinck, *Magnum theatrum vitae humanae* (1631) including the complete article for "Oblivio." Many more words are packed onto the page than in 1503. Letters A–H printed in the margins help to designate a particular place on the page; lines demarcate entries and columns; changes in size and kind of font and blank space highlight the hierarchy of subheadings and entries. Reproduced with permission from Widener Library, Harvard College Library, CYC 25, O16–17.



luit, [illegible], Magnos oculorum dolores puellas Perſides eſſe dictitans. Plutarchus.

In ſacris QVI erudiri recuſant, ſub Impietate distributiua enumerabuntur.

RATIONIS PERSPICACIA.

Ex Tit. Sapientum & Prudentum exempla huc transferantur. Illic Habitus informantis, hic Animi, qui uelut informatur, habetur ratio. Ingenij acumen natiuū Volumine xxj. perſequemur, quatenus hoc Naturæ bono inſtructi, ad omne genus uitæ aptiores ſunt. Illic ut Inſtrumentum uitæ, hic Facultas ipſa conſideratur.

STVLTI, AMENTES, FVRIOSI, MANIACI.

Non hic de Habitu, ſed de Animi facultate rationis compote uel nulla uel labefactata. Cic. Tuſc. quæſt. 3. Dementes, amentes & furioſos, eoſdē nominat: Stultos uerò, quos Iuriſconſulti dementes aut mente captos appellant: Inſanos, tanquam utrorumq; genus conſtituit. Hotoman. de uerbis iuris.

ΛΗΨΙΣ INSANIAE, Stultitiæ. Reſpectu
EFFICIENTIS. VEL
Natura.

CLAVDIVS Imp. Druſi F. infans à patre relict9, uniuerſam penè adoleſcentiā mala ualetudine conflictatā habuit, ut animo ſimul & corpore eſſet paulò hebetiori. Vnde & uecors à Sexto Aurelio dicitur: & ab Antonia matre ſæpe portētū hominis dictus, quaſi à natura inchoatus quidē, ſed nō abſolutus foret. Auia augusta pro deſpectiſsimo ſemp habuit, pariter & ſoror Liuilla. Auguſtus auunculus maior parui ſemper existimauit hominē. Tiberius patruus honorē ei cōſulatus abnegauit. Ideo in cōtubernio ſordidorū hominū delitescens, ebrietatis & aleæ quoq; infamiam ſubiit. Quanquā apud ordinē equeſtrē, ſenatumq; ipſum nonnihil fauoris & gratiæ haberet. Poſt cœnas enim frequēter obdormiſcebat, & tum oſſibus iaculabatur, tū ferula ac flagro excitabatur, multisq; uexabatur ſtertens ignominiis: & penè à Caligula cōſulatu eſſet deiectus, cūm Neronis & Druſi, fratrum Caij, ſtatuas ſegnius locandas curaſſet. Suetonius.

Dij, Dæmones.

☞ *Vide Tit. Dæmoniacorū. Illic Morbi à cauſa efficiēte nomē habētis, hic Facultatis animalis læſæ habetur ratio.*

ATHAMAS Aeoli filius, furiis à Iunone immiſſis agitatus, Learchum filium interfecit. Plin. lib. 34. c. 14.

ACA-

Figure 3.10

Dingbats used in Zwinger's *Theatrum humanae vitae* (1586) to accompany headings or associated comments in descending hierarchical order: the cloverleaf, the right-facing pepper, and the left-facing pepper, leaving a final level of subsection with no dingbat. The pointing finger indicates a cross-reference to another section of the work. Reproduced with permission from the University of Chicago Library, Special Collections Research Center, AE3.Z94.1587, vol. 1, p. 14.

SCRIPTORES BIBLIOTHECARII OR BOOKS ABOUT BOOKS

These nonspecialist Latin reference genres, closely clustered to the point of overlapping in their focus on information about ancient language, literature, culture, and historical exempla, were engines of the *copia* or abundance that Renaissance authors, orators, and audiences valued highly in both writing and speaking. These books offered in one convenient place, with finding devices to facilitate access, excerpts from books that one did not have the time or the opportunity to read or that one had read but no longer mastered. These genres were the first to develop, often from medieval models, in the early sixteenth century; they then became the most widely reprinted and distributed of the large Latin reference genres. Their success played an important role in spreading familiarity with consultation reading and methods of information management across a broad readership of the Latin-literate.

By the beginning of the seventeenth century, these genres were joined by other, newer reference genres also targeted at the educated nonspecialist. Books about books became increasingly available as sources of information about books and as models for managing that information as the number and size of personal libraries had grown rapidly as a result of printing. Gabriel Naudé introduced a helpful term for these genres when discussing their utility in a library catalog that he published in 1643: *scriptores bibliothecarii* or, in the parlance of other contemporaries, *scriptores bibliothecarum* (writers about books or writers of libraries). These genres aided in the knowledge of books and comprised library catalogs, bibliographies, sales catalogs, and some meta-genres that developed from the mid-seventeenth century, such as bibliographies of bibliographies and lists of libraries.[131] The library catalog and the bio-bibliography had medieval and ancient origins, but starting in the mid-sixteenth century important new works in those genres and new genres appeared that grew rapidly with the book market, including booksellers' and auction catalogs and guides to libraries.

LIBRARY CATALOGS

With the exception of the union catalog of English Franciscan holdings, most medieval library catalogs were designed for local use by those tending a collection of books. Most early modern library catalogs remained in manuscript and followed medieval patterns; many favored an organization by discipline, perhaps close to the physical arrangement of the books, with or without an additional alphabetical index by author or title.[132] At the turn of the seventeenth century printed library catalogs emerged as a new resource about books beyond the local context—Naudé also recommended transcribing manuscript catalogs for further information about available books.[133] The University Library of Leiden is known as the first institution to publish its library catalog, in 1595, followed by the Bodleian in 1605; in 1679 the publication of the catalog of the famous library of the de Thou family helped to establish a sevenfold division of the disciplines as the norm in French book cataloging.[134] The search for reputation among private collectors was also stimulated by the publication of books that described admirable libraries throughout Europe. The competition for inclusion in these books was such that the leading author in the genre was accused of engaging in puffery by inflating the number of noteworthy libraries.[135]

BIBLIOGRAPHIES

The genre of the bibliography or bio-bibliography was another useful tool for research and book collecting since it listed books beyond any single collection. The term "bibliography" was only coined in the mid-seventeenth century and applied specifically to contemporary publications, as in Naudé's discussion of recent works in his *Bibliographia politica* of 1633 or the annual lists of Parisian imprints published by Jacob de Saint-Charles as the *Bibliographia parisina* starting in 1645. Instead, a common early modern title for more general bibliographies (not just lists of recent books) was *bibliotheca* (and its vernacular equivalents—

bibliothèque, libraria); in the eighteenth century these terms also designated other genres that gathered bookish information, like periodicals and anthologies.[136]

Bibliographies did not originate with printing or the early modern period. Ancient and medieval bibliographical works included autobibliographies (e.g., Galen's list of his own works), doxographical sources (e.g., Diogenes Laertius or Stobaeus, which listed authors and their works), lists of works cited or recommended (starting in the twelfth century), and lists of authors and works in a particular religious or regional tradition. In the latter category *De viris illustribus* of the church father Jerome (347–420) was written to demonstrate the achievements of Christian authors in his day and was copied and imitated throughout the Middle Ages, notably, starting in the twelfth century, by bibliographies devoted to specific religious orders. The first printed bibliography, *De ecclesiasticis scriptoribus* (1494) by Trithemius, abbot of Sponheim (1462–1516), belonged in this tradition—it was devoted to 963 ecclesiastical authors, with a strong local bias toward German authors represented in nearby monasteries and listed in an earlier bibliography from the same region. In one case, a bibliography drawn up collectively by the houses of the Windesheim Congregation, 1470–1530, also included information about the location of books among the houses—another example of how library catalogs and bibliographies could overlap in form and function.[137]

Conrad Gesner (1516–65) departed significantly from the model of these localized bibliographies in his *Bibliotheca universalis* (1545) in which he attempted an exhaustive listing of works composed in Latin, Greek, and Hebrew—"extant and not, ancient and more recent down to the present day, learned and not, published and hiding [in manuscript] in libraries."[138] Gesner's ambition to be exhaustive was new and required some justification against the charge of including "bad books": "No author was spurned by me, not so much because I considered them all worthy of being cataloged or remembered, but rather to satisfy the plan which I had set for myself, simply to enumerate without selection all [writings] which happened. . . . We only wanted to list them, and left the selection and judgment free to others." The result was an alphabetical list of some 3,000 authors and 10,000 works, complete with details about the publication and often additional information about the author and/or the content of the works. Gesner included, as he explained, "censures, arguments, [excerpts from] prefaces or chapter headings, either all or some of these, when it could be done conveniently," but he did not offer judgments of his own.[139]

Invoking Pliny's "no book so bad," Gesner explained that he included censured books so that readers, particularly the less well educated, could be warned away from them and even books in barbarian prose because they too might teach good and useful things.[140] He also justified the exhaustive scope of his bibliography by highlighting the shifting judgments about authors across time and space: "Many authors which are common and useful in one place are very rare or completely unknown in another: and those which once were very common are now of no use to studies. . . . Very many authors are very well known to everyone today, who will lie in obscurity known to very few after one hundred years." Only an exhaustive listing could revive the knowledge of authors fallen into oblivion. Exhaustiveness meant collecting from sources like the *Suda*, Athenaeus, and Stobaeus information about authors "from whom nothing is extant, or only a few prefaces, or even a single one, or one letter."[141] Gesner hoped that knowing what works had once existed would hasten their recovery. But Gesner also gathered information from the most recent sources, including the book lists of printers and booksellers that he collected "from many regions," library catalogs, and the letters and the advice of his many correspondents throughout the Republic of Letters.[142]

Gesner's *Bibliotheca* was printed in only one edition, and the goal of Gesner's companion volume of *Pandectae* (1548), to provide a thematic index to the books in the *Bibliotheca*, was never fully realized. But the *Bibliotheca* had an impact far larger and longer lasting that the single edition would suggest: it was cited regularly as a model and was recommended for use and purchase in advice manuals of the seventeenth and eighteenth centuries.[143] At first the *Bibliotheca* spawned abridgments and sequels published in Zurich, which reduced the information provided on each book to a bare minimum but covered thousands more authors (up to 9,000 in Simler's continuation of Gesner in 1583).[144] Soon Gesner's *Bibliotheca* spawned complementary bibliographies, notably devoted to vernacular works. The first vernacular bibliography was the first volume of the *Libraria* (1550) of Anton Francesco Doni (1513–74), devoted to 159 Italian authors; although Doni reiterated Gesner's principle of not selecting between good and bad authors, his listing was idiosyncratic rather than thorough. In 1548, John Bale (1495–1563) published the first bibliography of English authors in his *Illustrium maioris Britanniae scriptorum summarium*, a chronological listing of British authors (writing in Latin) likely inspired by direct contact with Conrad Gesner when Bale traveled on the Continent from 1540 to 1547. In France, François de La Croix du Maine and Antoine du Verdier each composed a *Bibliothèque* to outdo Doni with their lengthy listings of French authors. Although La Croix du Maine also proposed a classification of books into one hundred buffets meant to rival Gesner's *Pandectae*, it had no lasting impact; instead the volumes were valued for their bibliographical information and reprinted again in the eighteenth century.[145] In 1625 Georg Draud (1573–1635) catalogued authors active within the previous century in his *Bibliotheca classica* and devoted his *Bibliotheca exotica* to various vernaculars.[146]

By mid-seventeenth century the number of available bibliographies, including bibliographies on particular subjects, inspired for the first time the idea of composing a guide to them, which was successfully carried out by the Jesuit Philippe Labbé (1607–67) in his *Bibliotheca bibliothecarum* (1653, with a fuller edition in 1664). Labbé listed alphabetically some 800 authors of bibliographies and provided eight subject indexes that enabled a reader to identify bibliographies relevant to a given topic. But the genre did not develop much further and was revitalized only in 1812 by Gabriel Peignot who portrayed his *Répertoire bibliographique général* as a completely new genre.[147]

SALES CATALOGS

A genre without medieval antecedent but of increasing significance during the early modern period was the book sales catalog. Diffusion of information about books available for sale or copying in the Middle Ages depended primarily on personal contact: shops might post a tablet listing the manuscripts available, but book buyers principally relied on information gleaned from one another and from other intermediaries. The urgent need of printers to recover the investment made in printing books explains why printers and booksellers took on the further expense of publishing sales catalogs. Only a small fraction of these cheap and functional imprints—first broadsides, then pamphlets, or even books of hundreds of pages—survive, but they were known to and used by contemporaries.[148] Starting in 1564 the catalogs of the biannual Frankfurt book fairs listed recent imprints divided by language (Latin and German) and field, "for the use of foreign booksellers and all those studious in letters."[149] Since books were typically available for sale for many years after their printing, collective editions of these catalogs were printed, such as the 1592 collection of Frankfurt fair catalogs spanning 1564–92. The great Paris book collector Jacques-Auguste de Thou owned and annotated a copy of it, using an asterisk to indicate the books he already owned and a slash for those he wished to buy.[150] Catalogs spread news of books to potential buyers in far-flung locations but could also be of use to customers locally, for example, in the case of Parisian booksellers who did not have enough space to display all their books.[151] Before the mid-seventeenth century, booksellers' catalogs generally did not include prices, which were communicated orally either in person or through an agent. English term catalogs were the first to report prices consistently, starting in 1668.[152]

A special subset of sales catalogs developed in the late sixteenth century with the rise of auctions to sell books from the estate of a deceased book owner. The first auction was held in the Netherlands in 1596, and the first surviving auction catalog dates from 1599. It is estimated that extant auction catalogs represent only 20 percent of the 25,000 to 30,000 auctions held in the Netherlands in the seventeenth and eighteenth centuries. One eighteenth-century observer described the peculiar readiness of Dutch heirs to part with the books of a deceased relative in order to build a library according to their own tastes—a process that was facilitated in turn by the frequency of auctions at which to buy books inexpensively.[153] In England auctions started in 1676 and in France only ca. 1700, in part due to conflicts between booksellers and auctioneers over control of the activity, but the phenomenon reached great heights in the eighteenth century.[154] Auction catalogs must be used with caution as evidence for the books owned by an individual: some books actually owned might not appear in the catalog because they were kept by the family or sold ahead of the auction, and booksellers could add other books to those being auctioned. Booksellers likely made such additions in order to facilitate the sale of books by associating them with the learned qualities of the deceased whose collection was being sold, of which the catalogs frequently boasted. The best evidence for the practice is the existence of regulations and complaints about the "imposing of old Rubbish out of Shops and bad Editions of books under pretence of eminent Mens Libraries."[155] In his 147 auction catalogs Gabriel Martin (1679–1761) developed a system of classification but rarely included an index—instead he exhorted users to read the catalog all the way through, no doubt in the hope of increasing sales.[156] Auction catalogs were often saved, bound in groups, and were sometimes annotated with the prices at which the books were sold.[157]

These tools appealed to professional or quasi-professional collectors of books. The Bodleian Library owns a near complete and heavily annotated set of the catalogs published by Oxford booksellers advertising the stock they imported from the Continent; Hans Sloan (1660–1753), whose voracious buying resulted in a massive collection bequeathed to the British Library, owned 700 book auction catalogs.[158] But they also offered inexpensive guidance for the more occasional book buying in which many of the educated engaged. John Evelyn, for example, owned about 20 of them.[159] In some cases, when a particular book was difficult or impossible to access, consulting a catalog or bibliography may well have substituted for seeing the book itself. Auction catalogs likely served this purpose for students and professors in courses on *historia litteraria*, which offered an introduction to the world of books and assessments of recent publications. Indeed, in late-seventeenth-century Germany, where these courses were common, university libraries were small and neglected and professors relied on their own collections and, when possible, access to the libraries of local grandees.[160]

Books about books were useful as sources of information about books, whether because someone respectable owned or had owned them (according to library or auction catalogs), or because they were available for sale or at least in the abstract (sales catalogs or bibliographies). They could serve, with annotations, as a record of books one owned or hoped to own. For example, printed catalogs were used by both institutions and individuals as a basis for new catalogs formed from the manuscript annotation of a printed catalog. The 1674 edition of the catalog of the Bodleian Library at Oxford was interleaved and annotated to serve as a manuscript catalog for the Bibliothèque Mazarine in Paris.[161] Similarly, Conrad Gesner explained how his *Bibliotheca universalis* could be annotated with shelf-marks and additions in the blank spaces to serve as the catalog of one's own library. Perhaps as a result of Gesner's advice, Philip Edward Fugger (1546–1618), son of Georg Fugger, catalogued his library by annotating a copy of the 1574 continuation of Gesner's *Bibliotheca*.[162]

These genres also offered models for classifying one's own books and book lists: one eighteenth-century manuscript library catalog was explicitly modeled on an auction catalog.[163] Similarly, the French system of classification codified by Jacques Charles Brunet in 1810 drew on earlier classifications used in library catalogs (notably the catalog of the Jesuit college of Paris by Jean Garnier in 1678 and the catalog of the de Thou library published in 1679) and in the book trade (in the auction catalogs published by Gabriel Martin between 1703 and 1761, among others). The elaborate schemes of classification of knowledge—exemplified by Samuel Quiccheberg's abstract plan for a museum (1565) or Giulio Camillo's "theater of memory" (1550) or in the systematic arrangement of Theodor Zwinger's *Theatrum* or Johann Heinrich Alsted's *Encyclopedia*—were rarely represented among the pragmatically minded *scriptores bibliotecarii*, which emphasized arrangements by discipline, language, and format.[164]

NEW GENRES: BOOK REVIEWS AND *HISTORIA LITTERARIA*

The books about books, being functional and versatile, generally weathered the transition from a focus on ancient learning to more modern topics (which I discuss in more detail chapter 5) without great difficulty. But new genres also developed simultaneously with the new focus on the modern rather than the ancient. The historical or biographical dictionary and the book review focused on recent rather than ancient authors and were often written in the vernacular. A third genre, unique to the German academic environment, addressed the *historia litteraria* (literary history) and *notitia librorum* (the knowledge of books) with a combination of bibliographical information, judgments about books, and general advice about how to study. They were composed in Latin and focused on works in Latin, due to their origins in a university setting and to the slower rise of the vernacular in the German-language area than in England and France, but these works too were dominantly concerned with recent developments rather than classical antiquity.

The birth of the periodical in the last decades of the seventeenth century had many causes—including the formation of institutions that published some of them (e.g., the Royal Society), the development of subscription publication, and most important, the expansion of a readership interested in news from the Republic of Letters that motivated publishers to undertake the risk.[165] One of the most common features of the many periodicals that were launched in the late seventeenth century (some of which were short-lived) was the book review, which presented a summary, perhaps a few extracts, and an assessment of a recently published book. In some cases (e.g., *Philosophical Transactions,* 1662–) book reviews constituted a relatively small proportion of the contents of the journal. Other periodicals were principally devoted to abstracting and reviewing books, including the *Journal des sçavans* (begun in 1665), the *Nouvelles de la République des Lettres* (1684–) by Pierre Bayle, the *Acta eruditorum* (Leipzig, 1682–), or the *Weekly Memorials for the Ingenious* (1681–), which promised explicitly to supplement the "bare Titles of books yearly Printed in our Common [sales] catalogues [which are] somewhat dry things."[166]

Billed as a solution to the overload of books, the book review of course soon generated its own overload. Almost simultaneously with the genre was born the accusation of reviewing without having read the book, which was leveled against Adrien Baillet's multivolume *Jugemens des sçavans:* "If it is true that one person cannot read all the books of which [Baillet] speaks, then he should admit that he reports on many books which he too has not been able to read."[167] Eighteenth-century feats of book reviewing included the 9,000 reviews written by Albrecht von Haller (1708–77) in thirty-one years writing for the *Göttingische Zeitung von gelehrten Sachen* (in addition to publishing dozens of other volumes from medicine to poetry), or the output of Giovanni Lami, Florentine editor of the *Giornale de' litterati d'Italia* and founder of *Novelle letterarie,* who reported on vast quantities of books by attending only to the beginning of each book, typically copying out all or most of the preface.[168] The quality of the assessments likely suffered in book reviews produced at such high rates, but it is not clear that the sales or reputations of the journals were curtailed as a result.

Although the periodical was formally the opposite of the reference book, with its serial publication in small format and its ephemeral qualities, the editors of periodicals sought to place their work on a par with reference works, and by the end of the seventeenth century some annual or grouped indexes could make a well-preserved series of issues usable on a consultation basis.[169] The *Acta eruditorum* included from the first issue an annual "index auctorum ac rerum," and after ten years the editors commissioned a volume of seven indexes to the existing issues of the journal; at least eight men worked on this large undertaking, which was published in 1693. This volume, and the subsequent ones published at ten-year intervals, enabled subscribers to maximize the utility of the issues they already owned and suggested to potential new subscribers that they could make a fresh start in beginning a subscription at that point.[170] Even if the journal itself did not publish an index, others could: the bookseller Cornelis van Beughem published an index to the *Journal des sçavans* for 1665–81 and a collective index to the "other most prominent learned periodicals" in four separate volumes published between 1689 and 1701.[171]

The discussion of recent literature in academic settings flourished in German universities with the rise of *historia litteraria* ca. 1660–1740.[172] The most comprehensive and influential book in this genre was the *Polyhistor* of Daniel Georg Morhof (1639–91), published partially in 1688 and in a longer version posthumously in 1708, with reeditions in 1714, 1732, and 1747. Part manual on how to read and study, part guide to the literature, containing both long quotations and sharp judgments, the *Polyhistor* likely originated in teaching and proceeded like a textbook but was consultable from two large indexes, of authors and of topics. Biographical dictionaries of recent authors also originated in this German academic context. The *Theatrum virorum eruditione clarorum* (1688) by Paul Freher (1611–82) offered bio-bibliographical information and often a small portrait of authors across many disciplines. A variant in the genre was the dictionary of anonymous and pseudonymous works, which promised to identify by careful research the authors of printed works and manuscripts that did not disclose the author's name. Vincent Placcius (of note closet fame) published a short list of such works in 1674 that was the kernel of the *Theatrum anonymorum et pseudonymorum*, published posthumously in 1708 in two folio volumes.[173]

THE ENCYCLOPEDIA

Throughout this survey of early modern reference genres, based primarily on categories visible at the time, a dominant modern term has been mostly absent: the encyclopedia. "Encyclopedia" did not designate the genre we are familiar with until Ephraim Chambers's *Cyclopaedia* of 1728 and the French *Encyclopédie* (1751–75) it inspired triggered the popularity of both the term and the associated genre (as I discuss in chapter 5). When the term "encyclopaedia" was coined in the early sixteenth century, it designated the philosophical ideal of the interconnection between the disciplines, and this sense persisted through the seventeenth century.[174] Works referring to the "encyclopedia" were often abstract treatises on the disciplines, but starting in the late sixteenth century "encyclopedia" occasionally appeared as the subtitle or title in didactic works. It is especially difficult to define "encyclopedia" during a period when the term circulated with a variety of interpretations at the time (more so perhaps than for periods when the term did not exist as an actor's category).[175] Many early modern works spanned multiple disciplines and/or proposed a classification of the disciplines and could thus be considered encyclopedic in one way or another. In the most comprehensive attempt at listing early modern encyclopedias, Alfredo Serrai includes the reference genres I have discussed but also other kinds of books, such as books of secrets, scientific poetry, and treatises on the method and division of the disciplines.[176] Other broad-ranging treatments of early modern encyclopedism include encyclopedic narratives, illustrated works or collections of objects (e.g., libraries, museums, and cabinets of curiosity).

A version of the term "encyclopedia" first appeared in a didactic work in the 1583 edition of the *Margarita philosophica* (1503) by the Carthusian monk Gregor Reisch (d. 1525) subtitled "most perfect cyclopaedia of all the disciplines." Printed in a 600-page quarto, the *Margarita* (Pearl) presented a compendium of each of the liberal arts and of natural and moral philosophy, with a subsection on the mechanical arts, in a total of twelve books.[177] The *Margarita* was equipped from the outset with an alphabetical index, table of contents, and a clear layout of divisions and subdivisions, so that it could be both consulted punctually and browsed easily. Unlike the reference books considered so far, which compiled selections, the *Margarita* operated by summarizing the essentials of each discipline, as in a textbook. This "cyclopaedia" focused not on the theory of the disciplines but on their content. The same emphasis was true when the term appeared in the title of the last printed edition of Vincent of Beauvais's *Speculum maius* in 1624. The Benedictines in Douai marketed the massive folio under a rejuvenated title gathering many of the new metaphors associated with reference books: The Library of the World, the Fourfold Mirror (Natural, Doctrinal, Moral, Historical), In Which the History of All Nature, the Encyclopedia of All the Sciences, the Treasury of Moral Philosophy, the Vast Theater of the Times and of Human Actions Are Exhibited.[178] The key terms *historia*, *encyclopedia*, *thesaurus*, and *theatrum* (printed in red on the title page) each referred to one of the four sections of Vincent's work. The "encyclopedia" designated Vincent's *Speculum doctrinale*, devoted to the arts and sciences but with a focus on the wealth of information drawn from each of them rather than on the theory of their interconnections. In these cases "encyclopedia" had already become associated with encyclopedic content.

Johann Heinrich Alsted's *Encyclopedia septem tomis distincta* of 1630 was the first reference work to use "encyclopedia" as its title, without any qualifying or accompanying terms or metaphors. This four-volume work was reprinted just once in 1649, but it was widely known (like Gesner's *Bibliotheca*) and was likely a catalyst for the increased use of "encyclopedia" in book titles. During the following decades, the title appeared in a number of works, both specialized and multidisciplinary.[179] Alsted's *Encyclopedia* also spawned the term "encyclopedist," by which John Evelyn referred to Alsted in 1651, and which Christian Liberius extended (in Latin) beyond Alsted to other authors of reference books. In his 1681 advice about books Liberius forestalled the accusation that he lifted from existing compendia by declaring that he had "neither the time nor the inclination to read, let alone copy from Zwinger, Rhodiginus, Alsted, Beyerlinck, and others, whether diarists or encyclopedists."[180] In the eighteenth century "encyclopedist" designated more specifically the authors of the collaborative work known as Diderot's *Encyclopédie*.[181]

What Alsted offered as the model for the encyclopedia a century and a quarter after Reisch's *Margarita* was a similar kind of organized compendium of all the disciplines, but on a much larger scale, with more detailed information for each discipline (including, for example, under "lexica," glossaries of major roots and terms in Hebrew, Chaldaic, Syriac, Arabic, Greek, and Latin) and a vast number of new disciplines covered, many of them unique to Alsted's work. Alsted acknowledged the first meaning of "encyclopedia" by displaying the hierarchy and subdivisions of the disciplines in long branching diagrams clustered at the beginning of the work and in shorter charts peppered throughout. At the same time Alsted's *Encyclopedia* was a useful reference work, containing information in many areas and equipped with a clear layout and a single detailed index in which entries on a topic were grouped together and subdivided as they would be today. Alsted's *Encyclopedia* consisted of a compendium of information on every discipline, with chapters typically divided for easy retention into precepts and numbered rules. Although Alsted did not often name his sources, expert analysis has shown that he composed the *Encyclopedia* by relying on a wide range of contemporary manuals and treatises, from which he drew selections and paraphrases to distribute throughout his own work according to his own systematic arrangement.[182] In this textbook of textbooks Alsted managed information by reduction and summary rather than by selection from authoritative and named sources.

Without disclosing the full extent of his borrowing in composing the text itself, Alsted readily acknowledged his debt to eighteen other "great men who preceded him" in the project of "delineating in one syntagma the great expanse of the philosophical kingdom." Alsted's list of predecessors illustrates the wide range of contemporary notions of what constituted an encyclopedic project.[183] Alsted cited a number of works generated in the German universities, where he spent many years, such as treatises each devoted to a single discipline but collectively forming an encyclopedic project ("Clemens Timpler and Bartholomaeus Keckermann in their various *systemata*") or a Ramist textbook for children stripped to the barest collection of definitions in all fields (Thomas Freigius's *Paedagogus*).[184] But Alsted's list also ranged among other persuasions and genres, from the Jesuit *Bibliotheca selecta* by Antonio Possevino to Robert Fludd's estoeric *Macrocosmus et microcosmus*, and from treatises on the classification of knowledge to large compilations like Zwinger's *Theatrum* to entirely tabular presentations of the disciplines, like Jacob Lorhard's *Theatrum philosophicum*.[185]

The quest for the early modern encyclopedia is plagued by the lack of a clear equivalent to our modern category before the eighteenth century but also by the many distinct strands that even contemporaries identified as part of an encyclopedic project. Authors of encyclopedic works were torn between addressing theoretical issues about the proper hierarchy of the disciplines and the practical difficulties of making available large quantities of information. Alsted inaugurated "encyclopedia" as the title of a reference work, but the systematically arranged compilation of textbook material that he offered as an encyclopedia remained without direct imitators. Instead, the proven commercial success of the alphabetical dictionary in the seventeenth century and the convenience of alphabetical order both for users interested in consultation and for compilers with few theoretical pretensions help to explain the rise of the dictionary of arts and sciences that gave the (en)cyclopedia its form and subtitle in the dominant eighteenth century exemplars of the genre.

The tensions of early modern encyclopedism, which valued a carefully developed system of knowledge as well as a bulk of useful information, did not disappear in the new form. Chambers boasted that his *Cyclopaedia* could be read through, starting with long, well-organized articles and moving on through cross-references to build knowledge of a whole discipline. In the *Encyclopédie* d'Alembert defended the use of alphabetical order and offered a tree of knowledge that showed the interconnection between disciplines scattered under alphabetical entries. Diderot emphasized the utility of cross-references from which the reader could build many connections from one point of departure.[186]

The tension between philosophical system and effective information management has persisted throughout modern encyclopedias. Attempts at systematically arranged encyclopedias included Coleridge's *Encyclopedia metropolitana*, never completed, and the eleventh edition of the *Britannica*, structured around long presentations of major disciplines. The fifteenth and last print edition of the *Britannica* (1985) explicitly addressed the multiple aims of the encyclopedia by offering three separate elements: the *Micropaedia* for quick reference, the *Macropaedia* for in-depth articles, and also a one-volume *Propaedia* featuring a circular diagram of the division of knowledge into ten categories, each connected to one another and to the center of the circle, following the false etymology of the term as a "circle of learning."[187] The *Propaedia* probably never received much use, since it does not correspond to our methods of reading an encyclopedia, and it has been omitted from the digital *Britannica.*

The shift of reference works to digital platforms has begun to change and will no doubt continue to change how these tools are composed, maintained, and used. The search function has replaced the alphabetical index; expanded hyperlinks encourage the use of cross-references as the optimal form for moving from one topic to another, just as Chambers and Diderot had recommended; collaborative composition, long standard in printed works, now includes the potential for feedback and contributions from readers, at least in wiki-formats. Despite these changes (and others no doubt still to come), today's reference works carry with them the legacy of developments from centuries earlier. The conception of the reference work compiled from a neutral stance, for the common good, to cater to a wide range of interests, and by multiple contributors working collaboratively at one time and over time was honed in early modern Latin reference works like the *Polyanthea* and the *Theatrum*, as I will argue in the next chapter.

4

COMPILERS, THEIR MOTIVATIONS AND METHODS

A large work is difficult because it is large.
—*Samuel Johnson,* Dictionary of the English Language, *preface*

Authors of reference books engage in the management of textual information on a scale beyond the norm in their historical context. To study their motivations and methods of working is illuminating on multiple counts. On one hand, ordinary notions and practices are often more visible in these works of large scope and lesser literary pretensions. On the other hand, the exceptional demands of the bulk of material and pressure of time could trigger extraordinary working methods and innovative intellectual justifications. In the early modern period, these ranged from cutting and pasting from printed books to make the manuscript for a large compilation to justifying a massive accumulation as a "public garden" with flowers for all tastes.

Only a few authors of reference books have been the object of historical study. Best studied are the individuals behind famous modern dictionaries, people like James Murray of the *Oxford English Dictionary* (the first fascicle of which appeared in 1884) or Samuel Johnson, author of the *Dictionary of the English Language* (1755). These studies record heroic feats of perseverance and ingenuity and also the role of helpers (hundreds of contributors to the *Oxford English Dictionary* or six hack writers in the case of Johnson's dictionary) and of technologies, even lowly ones, such as the slip of paper. The collaborative origins of reference works are often difficult to study: for example, historians have been unable to identify all of the more than 140 contributors to Diderot and d'Alembert's *Encyclopédie;* collaborative interactions were often oral and have left no record.[1] Furthermore, we generally have no surviving manuscript drafts or notes from early modern reference books: the working papers of a large compilation were often integrated into the printer's manuscript to save the labor of copying. They would have been heavily marked up and then discarded after printing; we know of one such page, for example, from a 1587 dictionary, which survived as a pastedown in the binding of another book. In the case of Johnson's dictionary, a few working manuscripts survive only because these materials were overlooked and left out of the revised edition for which they were made.[2] Similarly, notes prepared for publication but left unused can shed light on the working methods of large-scale compilers of the sixteenth century, like Conrad Gesner and Theodor Zwinger.

In attempting to reconstruct how early modern authors of reference books managed their material and thought of their work, our principal source remains the printed editions, including paratexts by those involved in producing the book (authors, editors, to use modern parlance, or printers), and the changing contents and modes of presentation of the text. Valuable contextual evidence includes contemporary comments and the methods of note-taking and collaborative work outlined in chapter 2. Authors of reference books often described themselves as abundant note-takers, and a number of reference books originated in large collections of personal notes—from Pliny's *Natural History* to the *Dictionary of Phrase and Fable* (1870), whose genesis Ebenezer Cobham Brewer (1810–97) attributed to "his boyhood habit of notetaking which he continued all his life."[3]

The new propensity to stockpile notes in the Renaissance is crucial to explaining both the origins and the appeal of the many reference books that appeared during the early modern period. Printed compilations would not have been possible without one and usually more than one author contributing large quantities of notes to the final product, and these books would not have found buyers unless they were perceived as offering something that readers wanted: ready-made reading notes that they were not willing or able to take themselves but that they wanted to have all the same. In chapter 2, I considered some of the motivations and methods of early modern scholars for taking and stockpiling abundant notes in manuscript. In this chapter, I will focus on the motivations and methods of those who produced printed compilations.

THE STANCE OF THE COMPILER AND THE DEVELOPMENT OF THE *POLYANTHEA*

Michel Foucault insightfully observed that the function of "author" has a history. Although his own periodization was rough and ready, Foucault's work has prompted more detailed study of the concept and nature of authorship in different historical contexts as well as multiple proposals for the proper interpretation of "author."[4] In the modern "inspired genius" model of authorship, a text made of excerpts from other texts is considered the work of a compiler rather than an author and is considered inferior to an authored text because it involves little original composition. In contrast, in the postmodern conception of authorship the process of selecting is perceived to carry significant interpretive weight, so that the compiler might be rehabilitated as being on a par with the "author." But the firmly entrenched negative connotations of compiling and the utilitarian nature of many compilations have deterred scholarly attention to compilation until recently.

Compiling nonetheless offers fertile ground for study, not only because of the individual judgment and creativity involved but also, for my purposes, because compiling was a widespread form of information management in premodern periods. Compilers selected, summarized, sorted, and presented textual material to facilitate its use by others. Attending to the motivations and self-presentations of compilers and to their methods of working thus offers a useful entry into the history of information management. Early modern compiling was, of course, deeply indebted to a long medieval tradition, and those who have attended most closely to the phenomenon are medievalists.[5]

In classical Latin the term *compilare* had a negative meaning of pillaging or plundering (mainly people and buildings, with no special reference to texts), but by the seventh century Isidore of Seville defined "compilator" in morally neutral terms as "one who mixes the words of others with his own, just as those making pigments crush many different [colors] in the mortar." By the thirteenth century, *compilare* was effectively used interchangeably with a number of different terms (*excerpere*, *colligere*, *deflorare*) to designate the making of extracts or the selection of "flowers" (or best bits) from one's sources. During the thirteenth century and alongside the increased production of compilations of many kinds (florilegia, encyclopedias, and other such works), compilers articulated more precisely in prefaces the distinctiveness of their role. In particular the job of the compiler was to report the words of an "auctor," offering no authority of his own and vouching only for the presentation, not the content of the material.[6] Around 1250 Bonaventure, while a theologian at the University of Paris, distinguished compilers from authors, according to the proportion of original words to those taken from others. "Fourfold is the manner of making a book. For one writes another's [words], by adding or changing nothing; and he is called merely a scribe [*scriptor*]. Another writes another's words by adding, but not from his own; and that one is called a compiler. Another writes both his own words and another's but the other's as the principal ones and his own as those annexed for evidence; and that one is called a commentator, not an author. Another writes both his own words and another's but his own as the principal ones, the other's as things annexed for confirmation; and such ought to be called an author."[7]

In this commentary on the foreword to Peter Lombard's *Sentences*, Bonaventure clearly used the distinction to praise Peter Lombard as an "author," at the pinnacle of the hierarchy of those who produced books. But in a literary economy in which even the author was defined as drawing in part on the words of others, the compiler was not less respectable for bringing together the words of others without contributing many words of his own. Compiling was generally a valued literary and scholarly activity in the Middle Ages and into the early modern period. Critical assessments of compilation stemming from the greater valuation of originality and wit date principally from the seventeenth century and beyond.[8]

Medieval compilers, especially in florilegia and encyclopedias, typically cultivated a posture of humility and sometimes remained anonymous, highlighting the authority of the authors they excerpted rather than their own. Nonetheless, compilers were never simple copyists but transformed the material as they disseminated it.[9] By grouping the excerpts under headings or topical chapters, compilers created parallels between passages from different authors and contexts and invited interpretations focused on thematic parallels that might differ from the thrust of the passage in its original context. Compilers were eager to cite important authors as sources and occasionally included the title of the work, though they rarely included a more specific citation (e.g., book or chapter number). Compilers smoothed the process of integrating these selections into a work of moral edification by making small, silent changes in the passages they provided, intentionally and not. For example, passages from pagan authors might be edited to eliminate references to ancient gods or to change a plural "gods" to one "God" to facilitate their interpretation and use in a Christian context. The compilers of florilegia ensured convenient and "safe" access to pagan authors by steering clear of difficult passages and by modifying discreetly the ones they selected.

Although the basic techniques of the compilation remained remarkably stable, the function and scale of compilations changed over time. Early florilegia were short, focused on just a few authors or themes, and some prologues portrayed them as notes first made for personal use and then circulated to others (e.g., within a religious order). By the thirteenth century, florilegia were longer (e.g., 1,400 quotations in the *Florilegium oxoniense*), and some catered to a broader readership. One prologue boasted of offering something edifying for every kind of moral condition: "Therefore through this [work] let the untrained mind educate himself, the prudent one exercise himself, the tepid one find passion and the weak one comfort; here the sick will find [the means] to cure himself, the healthy to stay healthy, the tired to be restored, the hungry to eat, the studious to read, the lazy to be urged on in some cases or delighted in others; let the simple read what he can understand, and the poor have what is worth writing."[10] This claim that the florilegium offered something for everyone became a common theme in printed florilegia, which depended more than medieval genres on attracting as many buyers as possible.

During the early modern period, compilations grew massively in size, at all positions in the spectrum: average-sized florilegia grew from tens of thousands of words in Thomas of Ireland to 430,000 in the *Polyanthea* of 1503, and exceptionally large compilations grew from the 4.5 million words of Vincent of Beauvais to the 10 million words of Beyerlinck's *Magnum theatrum.* These increases were made possible by the lowered costs of production with printing and were also fueled by the need to sell more copies, given the expenses of printing, by appealing to the varied interests of potential buyers. To justify the larger scale of accumulation, early modern compilers developed in greater detail than their medieval counterparts a stance as neutral reporters serving the common good. Early modern compilers explained that they included material for different occasions and tastes, bad examples as well as good ones, often declining to pass judgment themselves on the truth or value of what they reported. Instead they called on readers to exercise their own judgment in assessing and selecting from the accumulated material. The regular refrain of title pages and front matter boasting of "more correct and more abundant material" in each new edition indicates that these claims were considered effective in selling these large volumes—more was better, or so readers were expected to think. The growth in size was also facilitated by the succession of editions of compilations like those of the *Polyanthea.* Each edition expanded on earlier ones through a collaboration that spanned not only those involved in producing a given edition but also decades of work by successive compilers, some of them acknowledged by name, others not.

In the first edition of the *Polyanthea,* Nani sounded justificatory themes familiar from the Middle Ages yet also acknowledged some departures from medieval practice. He boasted that he had selected the best of literature, appropriate for the moral edification of young and old and of both sexes, and desired it to "be useful to as many people as possible." Nani devoted his ode to the reader to praising the censorship value of his selections—which "plucked gold from amid filthy squalor"—perhaps precisely because he had cast his net more widely than his predecessors and feared criticism for doing so. He listed 163 authors excerpted and acknowledged that some of these had mocked the Holy Scriptures and taken positions contrary to the Catholic truth.[11] But thanks to his careful selection, Nani promised safe passage through the shoals of pagan literature—both the raciness of Ovid or Horace and the obscurity of Aristotle—for the moral edification of Christians; he included quotations from a few recent authors like Dante and Petrarch. This theme of religious edification and safety was underscored by the engravings present in the first two editions. The title page of the first edition featured the author seated at an altar reaching for a basket of flowers around which were clustered religious and other worthy figures; the image helped to elucidate a Greek title that Nani also explained in his preface, lest readers not understand it as a synonym for florilegium.[12]

At the same time as he played up the religious themes, Nani identified his principal audience as young people studying rhetoric. For them especially, Nani was proud to offer definitions and descriptions; Latin translations of all Greek expressions; sentences of philosophers, historians, and poets in Latin and Greek; and a tabular outline of the larger topics. The early *Polyanthea* served in part as a dictionary of hard words, offering in addition to the major articles, many very short ones, with just a definition, a Greek etymology, and one or even no quotation as an example.[13] The dual appeal of the *Polyanthea* as aid to humanist rhetoric and as aid to piety and preaching is evident from the books with which it was bound—vocabularies and aids to reading poetry on the one hand, collections of sermons on the other. This combined appeal is evident through the sixteenth century, before the *Polyanthea* had become too thick to be bound with another work.[14]

The *Polyanthea* soon became the object of constant revision in successive editions, for reasons that invite analysis. With its accumulation of quotations under headings, the genre certainly made it easy to introduce additions, removals, and changes to both headings and contents. But not all works with an accumulative structure were revised posthumously by so many different hands. Erasmus added to his *Adages* during his lifetime, but the many posthumous editions of Erasmus's *Adages* modified only the paratext, not the text itself. In that case, Erasmus's international reputation as an author was no doubt rightly perceived as a major selling point of the *Adages*, so that no editor ventured or claimed to add to or "correct" Erasmus's work (although abridgments were marketed with success). Reeditions of miscellanies and *lectiones antiquae* by lesser authors than Erasmus typically were also faithful to one most complete edition—if not the first edition then a posthumous edition that claimed to draw on surviving notes of the deceased author. But the *Polyanthea*, like Calepino's dictionary (though it was not as widely reedited), became something of a brand, in which many different editors made substantial additions and changes with and without attribution. In some editions, new material was marked with a symbol (often not consistently), most likely to substantiate a claim on the title page that the edition was richer and more correct than any previous ones.[15] The early success of the *Polyanthea* in the book market and the system of privileges designed to protect a printer's investment may help explain why the *Polyanthea*, like the Calepino, was so often revised.

In continental Europe, where all these reference books were produced, a system of privileges regulated competition throughout the early modern period by granting the printer who requested it (for a fee) a monopoly on printing a work for a few years. The length of privileges varied according to the time, the place, and the work involved; they tended to become longer in France, from two to three years in the early sixteenth century to twelve to fifteen years by the middle of the seventeenth century. Privileges were only valid within the jurisdiction of the granting agency, whether the Holy Roman Empire, a local city-state, or a kingdom like France, and they were only granted for works that were new or substantially augmented. As George Hoffmann has argued from his study of the timing of new editions of Rabelais and Montaigne in sixteenth-century France, when the term of a privilege on a successful work was close to ending, printers had an incentive to print a new edition that was augmented enough to warrant a new privilege before a competitor was allowed to print the work.[16] Thus two of the new editions of Montaigne's *Essays* were printed near the end of the privilege on the previous edition and announced that they were substantially augmented ("by one third," as per the French requirements for privileges). In this way Simon Millanges of Bordeaux and Abel L'Angelier of Paris kept a monopoly on printing the *Essays* for three cycles of privilege by printing editions in 1580, 1588, and 1595. Similarly, a printer might have wanted to expand the *Polyanthea* in order to renew his monopoly on printing it after an earlier edition had sold well; indeed, the clearest sign that an early modern book was successful on the market was that the same printer published another edition of it within five to ten years.

Printers were under no obligation to obtain a privilege and only went to the expense and trouble of doing so for books that warranted protection from competition because they were expected to sell well (including textbooks and schoolbooks) or because they were especially expensive to produce (e.g., illustrated or very large). The *Polyanthea* met both criteria, being expensive to produce and a good seller, and most editions of the *Polyanthea* were likely protected by a privilege. But in many cases we have no firm evidence for the existence of a privilege or its duration: that information was sometimes provided on title pages (which

Table 4.1: A Simplified Printing History of the *Polyanthea*, 1503–1681

Year of Publication	*Place of Publication*	*Printer/Publisher*	*Copies Located*	*Major Changes in Title and Content*	*Word Count*
1503	Savona	de Silva	20	*Polyanthea opus*	430,000
1507	Venice	Liechtenstein	28		
1507/1508	Venice	Rusconi	11/9		
1512	Basel	Alantsee	32		
1512	Paris	Petit et Bade	5		
1513	Lyon	Gueynard	10		
1514	Savona	Bibliaqua	16	Additions by Mirabelli not present in other eds	
1517	Strasbourg	Schürer/Alantsee	20/17		
1518	Trino, Italy	Ferrari	2		
1522	Lyon	Gueynard	6		
1539	Solingen	Soter	35		
1546	Cologne	Gennepaeus	19		
1552	Cologne	Gennepaeus	29		
1567	Cologne	Cholinus	26	Amantius added	
1574/1575	Cologne	Cholinus	5/16	Tortius added	
1585	Cologne	Cholinus	17		1 million
1592	Venice	Ciolli	14		
1600	Paris	Douceur	2		
1600	Lyon/Geneva	Vignon	10/1	Additions attributed to the "anonymous of Lyon"	
1604	Lyon/Geneva	Cardon/Vignon	2/6		
1604	Lyon	Zetzner	15	*Polyanthea nova* major revisions and additions by Joseph Lange	2 million
1607	Frankfurt	Zetzner	42	*Polyanthea nova*	
1607/8	Venice	Guerilius	12/2	*Nova polyanthea*	
1612/13	Frankfurt	Zetzner	16/35	*Novissima polyanthea*	
1614	Lyon	Harsy	6	*Novissima polyanthea*	
1616	Venice	Guerilius	16	*Novissima polyanthea*	
1617	Frankfurt	Zetzner	38	*Novissima polyanthea*	
1619/20	Lyon	Harsy/Ravaud	5/20	Additions by Sylvius; *Florilegium magnum*	2.5 million
1621	Frankfurt	Zetzner	35	*Florilegium magnum*	

Table 4.1: *Continued*

Year of Publication	*Place of Publication*	*Printer/Publisher*	*Copies Located*	*Major Changes in Title and Content*	*Word Count*
1622	Venice	Guerilius	9	*Novissimarum novissima polyanthea*	
1624	Strasbourg	Zetzner	11	*Florilegium magnum*	
1625/26	Lyon	Harsy/Ravaud	7/5	*Florilegium magnum*	
1627/1628	Frankfurt	Zetzner	1/26	*Florilegium magnum*	
1630	Venice	Guerilius	19	*Novissimarum novissima polyanthea*	
1639	Strasbourg	Zetzner	2	*Florilegium magnum*	
1639	Cologne	Stoer	28	*Florilegium magnum*	
1645	Strasbourg	Zetzner	42	*Florilegium magnum*	
1648/49	Lyon	Ravaud/Huguetan	29/1	*Florilegium magnum*	
1659	Lyon	Huguetan/Ravaud	30	*Florilegium magnum*	
1669	Lyon	Huguetan	41	*Florilegium magnum*	
1681	Lyon	Huguetan	41	*Florilegium magnum*	

Note: This table, based on surviving copies that can be located through online library catalogs, lists only editions for which at least two extant copies are attested. It also groups copies that likely should be considered part of a single edition published in partnership between different printers, sometimes in different cities, or in consecutive years. To establish an exact account of the relation between the various imprints would require extensive comparisons between related copies in disparate locations, a task I have not undertaken. More detailed results from this research from library catalogs, which was carried out by Morgan Sonderegger in spring 2006, is available at www.people.fas.harvard.edu/~amblair.

might signal the existence of a privilege but not its duration) or, more occasionally, when the full text of the privilege was reproduced in the front matter (perhaps when a blank page remained in a quire). Given the poor survival of printers' records that might also supply such information, the printing history of a book reconstructed from surviving copies is often useful in providing circumstantial evidence about the conditions of production, including privileges and partnerships.[17] The printing history of the *Polyanthea* shows clusters of editions produced in fairly short succession in one place, often by the same printer, under a single privilege or renewals thereof, for example, Cologne: Gennepaeus, 1546 and 1552, then Cholinus, 1567, 1574, 1575, 1585; or Frankfurt: Zetzner, 1607, 1612, 1613, 1617, 1621, 1627–28, 1663.[18]

One can also watch printers work together and then succeed one another in producing the *Polyanthea*, presumably after buying off or inheriting the remaining term of a privilege, as in Lyon: Harsy 1614, then Harsy and Ravaud, 1619, 1620, 1625, then Ravaud, 1626, 1648, and Ravaud and Huguetan in 1649 and 1659, and finally Huguetan alone in 1669 and 1681. Printers could also enter into partnerships across different cities and jurisdictions, often within a single family, as brothers settled in different places and benefited from a close relationship with one another: the Alantsee brothers printed copies in Vienna and Basel in 1512 and in Vienna and Strasbourg in 1517; the Zetzners printed not only seven editions in Frankfurt but also one in Lyon (1604) and three in Strasbourg (1627, 1639, 1645). The Zetzner family's output, spanning almost sixty years, involved more than one generation.

The success of the *Polyanthea* was swift. After the first edition published in Liguria in Northern Italy, in a city (Savona) with limited commercial ties, six editions were printed within the next ten years in some of the principal printing and commercial centers of Europe: Venice (1507 and 1508), Basel (1512, in cooperation with Vienna), Paris (1512) and Lyon (1513).[19] Whereas the majority of the surviving copies of the first edition are in Italian collections today (with three copies in England), the distribution of copies produced in major printing centers was much broader geographically: the twenty-eight surviving copies printed in Venice, 1507, are currently located in twelve European countries, and the twenty-five copies from Basel, 1512, in eleven different countries. But Nani Mirabelli published his own additions to the *Polyanthea* in Savona again, in 1514, with the full text of a papal privilege for seven years. Nani explained that after teaching canon law in Rome and Bologna he thought "it would be very useful not only to many but to myself" to add "universal propositions of pontifical law alongside some epigrams and some other items very worthy of note."[20] Nani's additions from canon law included new headings like "lex" (law) and "papa" (pope) and new legal maxims scattered under existing headings. Although no other edition kept these legal additions, they had an unexpected impact: one of the three surviving copies of the Savona imprint in England was owned by Henry VIII; it contains the marginal annotations clustered on the legal material under "law," "matrimony," and "vow" among articles, as if the king had consulted the *Polyanthea* as he was considering breaking his marriage to Catherine of Aragon, enacted in 1533. The annotations are factual, not judgmental, noting topics in the margin and using pointing fingers, underlining, and other marginal symbols to call attention to passages of interest.[21]

After Nani's death many editors boasted of augmenting the *Polyanthea,* not with legal maxims but rather by adding more passages in the same literary vein. The edition of Strasbourg—Schürer, 1517—announced translations from the Italian of verses by Dante and Petrarch; later editions would add substantial prose passages from Petrarch.[22] Most sixteenth-century editions recycled Nani's original front matter: ode, dedication, and list of authorities. But some included additional editorial statements that could also be recycled through successive editions.[23] The edition of 1539 from Solingen (a small Catholic town near Cologne) featured one such preface, reprinted in the following editions of Cologne, 1546 and 1552, which in the absence of an identified author would typically be attributed to the printer. This preface boasted of new material and a richer and more corrected text and articulated more sharply than Nani had the intention of reporting neutrally the sayings of others, whether good or bad: "I have added the sayings of philosophers, historians, poets both Greek and Latin, so that one can easily know what each thought on an issue, whether it is vice or virtue."[24] Whereas medieval compilers promised morally uplifting passages above all, silently modifying them if necessary to make them so, this editor offered a different line of justification, which other early modern compilers followed, boasting of a great variety of material that offered information from which readers were left to form their own edifying judgments.

In 1567 the *Polyanthea* became the preserve of Martinus Cholinus of Cologne who produced at least three editions in eighteen years; the title pages of 1567, 1574, and 1585 announced ten-year imperial privileges and each was dedicated to a different notable. Cholinus explained that he chose the "famous *Polyanthea* . . . in order to occupy his presses with something that would be an ornament to his business and a help to literary studies."[25] Cholinus started by merging into his edition of 1567 the contents of another large florilegium recently published, in 1556, by Bartolomaeus Amantius. He also added a new introduction, offering definitions of the vices and virtues, that remained standard in editions down to 1604. Cholinus boasted of the new bulk of the work, as readers would "profit from the sweat and labor of two authors for the modest price of just one book." He named the person who was probably responsible for editing the text, charged with leaving out nothing from Nani's original but avoiding repetitions: "M. Petrus Lynnerus, skilled in both languages and a public professor of Latin here, helped me in all these things."[26] At this point the *Polyanthea* was more than twice as long as Nani's original.[27]

In 1585 Cholinus claimed to further augment the work with the contents of another florilegium, by Franciscus Tortius. This work does not survive as a separate imprint; it may have existed only in manuscript, or perhaps the claim to add from it was only a marketing device, building on the success of including Amantius's collection in the earlier edition. In his new preface Cholinus praised these collections for selecting the best from ancient and modern works—"indeed, as Pliny rightly said, there is no book which is not useful in some part"—and transmitting their utility to human society and their reputation to posterity. The florilegium offered "a pleasant and easy synopsis of all the sciences and disciplines" and a "safe refuge" to those seeking philosophy or medicine or law or theology.[28] The emphasis on the safety of the selections, paramount in Nani's ode and preface and still present here, had become subordinate to an emphasis on the variety and abundance of the material, on the multiple disciplines covered, and on the premise that every book contained something worth gathering.

After three more editions (Venice, 1592, and Lyon/Geneva, 1600 and 1604) boasting corrections and enlargements (but only minor ones), a new ambitious compiler, Joseph Lange (ca. 1570–1615), gave the *Polyanthea* a thorough overhaul; the edition of Lyon, 1604, was the first of a long series of Zetzner imprints. Lange introduced much new material, not only more quotations from respected authors but also new kinds of passages taken from sixteenth-century collections of emblems, fables, exempla, and *hieroglyphica* (which designated symbolic interpretations of terms). To make it easier to find material within a heading Lange devised a systematic subdivision of each entry into sections by category of material (Bible, church fathers, poets, orators, emblems, etc.). Lange justified calling the work a *Polyanthea nova,* though he was not the "first inventor" of the work, because it had a "completely new appearance and form" designed "so that the reader without error or any tedium can most easily pick from this or that category [of excerpts] what he will judge suitable to his purpose." Lange explained that the added apophthegms, similitudes, adages, emblems, fables, and examples, so useful in enriching an oration, would spare the reader the tedium and frustration of looking them up in many different works.[29] Lange also drew quotations of a more traditional type from a 1553 edition of Thomas of Ireland's *Flores.* Gilbert Hess has identified Lange's method of integrating this material: he selected the first three *sententiae* of each heading in the 1553 collection but omitted any quotations that exceeded three lines in length. Rather than using intellectual or ideological criteria for selection, Lange's judgment was primarily practical: to maximize the number of concise quotations without creating too much bulk. Indeed, Hess also notes that some quotations in the *Nova Polyanthea* had a distinctly Protestant flavor, likely because Lange had collected them in his previous work—but most of these were eliminated in subsequent editions.[30]

Joseph Lange explained in a preface dated March 1607 some of the motivations behind his extensive revision of the *Polyanthea:* in 1604 he had recently converted to Catholicism from the Protestantism into which he was born in Kaisersberg (Alsace), and as a result of his conversion he found himself, with his wife and five children, without employment or friends. Hence he "was driven to get utility [i.e., income] out of a new edition of this book."[31] Lange was well prepared for the task. He had already published a collection entitled *Loci communes* or *Anthologia*, a thick octavo, offering Latin *sententiae*, apopthegms, and similes under alphabetized topical headings, that contained much of the material he would add to the *Polyanthea*.[32] Lange offered unusual detail in his preface, explaining the role of the Strasbourg lawyer Philip Glaser in instigating and supporting the project (as I discuss below). In the *Anthologia*, smaller and less expensive than the *Polyanthea*, Lange articulated the hope of reaching many kinds of readers. He had written with young people in mind, for those who had particular difficulty, as Glaser complained to Lange, in locating easily the "fundaments of rhetoric." But the work (which Lange dedicated to Augustus Junior, duke of Brunswick) also offered "leading men of the court and nobility" and "political men, busy with the most pressing matters of state" convenient access to the remarkable words and deeds of the wisest men.[33] In boasting of the utility of the work to the whole Christian republic, Lange returned to the trope of moral edification for all orders and ages of life, echoing the moral categories of the *Florilegium Duacense*. But Lange also pointed out the practical value of a book that could be used outside the library, carried without difficulty, and kept at hand in auditoriums and classrooms and when doing writing assignments in sight of one's preceptors—all for a modest price.[34]

The *Polyanthea*, on the contrary, was large and more expensive—Lange's edition was the largest yet at about 2 million words. In representing a greater investment, it likely offered a greater opportunity for profit.[35] Zetzner of Frankfurt and his heirs produced the *Polyanthea* continuously throughout the century, moving to the superlative *Novissima polyanthea* in 1613. Lange's *Polyanthea nova* was also printed in Venice by Guerilius (five editions, 1607–30), under the slightly modified title of *Nova polyanthea*, and in Lyon by Harsy, Ravaud, then Huguetan (ten editions, 1614–81) under the title *Florilegium magnum*. An edition of Lyon, 1619, introduced further additions—including new headings, some Hebrew etymologies, and new similitudes as highlighted by Fr. Sylvius Insulanus (i.e., one Dubois of Lille). At this point the *Polyanthea* had reached more than 2.5 million words, more than six times the size of Nani's original, with 978 articles. The title pages after 1619 credited the work to seven compilers (though even more had been involved): Nani Mirabelli, Amantius, Tortius, Cholinus (the Cologne printer), the anonymous of Lyon (responsible for the edition of 1600), Lange, and Sylvius.[36] Reflecting on the great quantity and variety of material, Sylvius offered in his preface a new variation on the traditional flower metaphor: in addition to being pretty and smelling good (and thereby inciting people to good behavior), the flowers of the *Polyanthea* had many different, even opposite, medicinal properties and uses, from heating to cooling or compressing to opening.[37] Sylvius too emphasized the diversity of needs that the work could serve.

Moral edification never disappeared from the justifications of the *Polyanthea*, which conserved old themes and materials as new ones were added. But the notion (implicit in medieval florilegia) that all the *sententiae* would have the same morally uplifting impact on all readers was abandoned in favor of the claim that whatever their various needs, readers would find material to suit them. The bulk of material and the diversity of readers led compilers to address problems of consultability and ease of use rather than moral edification. Almost every edition included an alphabetical list of authorities cited and a list of headings in their (alphabetical) order of appearance. But the material within each heading became increasingly hard to navigate when successive additions were simply tacked on to the end of the existing material in an entry; for example, newly added quotations by Ovid would be separated both from those added previously and from those originally present in 1503. Lange tackled this problem especially well, by replacing the heaping of material with a structured pattern for each entry that sorted the quotations by type: philosophers, poets, and so on. While the material was clearly hierarchized, descending from the Bible and church fathers to the (mostly ancient) poets and philosophers to the emblems and *hieroglyphica* gathered from recent collections, it is hard to tell whether the addition of more recent material reinforced or undermined the authority of more traditional material.[38] In any case, when faced with the expanding bulk of the *Polyanthea* by compilers keen to accumulate successively more in each edition, readers had to exercise their own judgment and selection at every turn (choosing from among headings, kinds of sources, and quotations) and much more drastically than their medieval counterparts handling a smaller florilegium.

In other genres, too, sixteenth-century compilers articulated the stance of "neutrality" vouching for the accuracy of quotations they reported but without endorsing the positions expressed there. In a lengthy preface devoted to the form, goals, and sources of his work, Theodor Zwinger declined responsibility for the veracity or moral tenor of the sayings and deeds that he reported faithfully: "We say nothing that was not said before: and if you condemn the authority of those whom we follow, this is done capriciously since you admit that they were reported faithfully from others, truthfully, that is, produced by us in good faith. . . . We cannot all do everything. The task of the collector is to report in good faith the words and writings of others and to watch and follow the truth of the report, as I say, rather than of the event [itself]."[39] This "neutral reporter" stance has also been identified among some medieval compilers, like Vincent of Beauvais, but even he did not address explicitly the incompatibility of different readers' interests. Zwinger, by contrast, made explicit his expectation that his readers would disagree in their judgments and choices: "Things that seem true to one person will seem false to another; what seems good to you will seem bad to another."[40] Zwinger's solution (like Gesner's) was to include all things and leave selection and individual judgment to the reader.

Diversity afforded pleasure, as many prefaces repeated, but diversity was also crucial to the utility of the collection in Zwinger's assessment: "The Italians like Italian [examples]; the Germans, German ones; the Scythians, Scythian ones. Since we attended to the advantages of everyone, we had to collect examples of every kind. Examples which you may reject as exotic will please another most. Similarly, do not pick from a public field plants that will benefit another, even if they are not pleasing to you: unless perhaps you think that all the others were grown just for you."[41] Here, Zwinger joined the traditional flower metaphor with a reference to the public botanical gardens that were being founded in his day in cities with medical faculties. As a doctor, Zwinger had direct knowledge of these gardens (elsewhere in the preface he mentioned the one in Padua in particular) and of their regulations declaring it "wicked to pluck branches, flowers, or seeds or uproot bulbs or roots."[42] Such rules were no doubt devised to stop visitors from stealing valuable plants for their own collections or gardens, but Zwinger invoked them to quell the criticism that his *Theatrum* featured plants that seemed useless or excessively exotic—every plant he included might be of use to someone. Zwinger thus presented the *Theatrum* as a public space, like a botanical garden, where readers with diverse interests could all find something of use and which they should approach in the spirit of civic-minded respect for others.

In comparing his stockpile of exempla to a botanical garden, with a diversity of flowers, exotic and local, grand and humble, Zwinger offered an elegant variation on the Plinian tag. As with books, so with plants, Zwinger observed: "There is no herb so vile that it does not contain something useful." So too with exempla: every example of human behavior served a useful purpose: "Old [*exempla*], because of the prerogative of age, bring with them no small majesty. Recent ones strike our senses more and are more capable of moving us, particularly if they are local. Those that are rare are recommended by their very novelty and strangeness. Those that are common or even proverbial acquire authority from habit or use." Zwinger especially sought to justify the inclusion of examples of bad behavior alongside the good. He maintained that both were instructive—the bad as examples of what to flee and detest and the good as examples of what to imitate and admire.[43]

Zwinger continued to exercise judgment in the assignment of the examples to headings (in some cases assigning a passage to multiple headings) and in the systematic arrangement of the headings, to which he devoted special care. But large-scale compilations shifted many decisions to the reader—judgments about how much to trust the veracity of an example and how to choose, interpret, and use it. In the opening exhortation to the edition of 1586, Zwinger emphasized above all that in his "portable paper theater" he gave the reader great liberty: "If you disapprove of the extravagance of the title, the choice of examples, the faithfulness of history, the order of disposition and you are neither mute nor deaf in the public house: who would limit your liberty given the license with which we all live nowadays? So be it."[44] Zwinger was well aware that he had no control over the use readers would make of his work, and that freedom became justification for his own license as a compiler in accumulating on a grand scale.

Although the model of select compilation (as in Possevino's *Bibliotheca selecta*) did not disappear, the emphasis of compilers on catering to the diversity of readers' judgments became a refrain in modern reference genres too, including eighteenth-century anthologies that invited readers of many kinds to form their judgment through contact with a broad array of literary texts largely without guidance from the compiler.[45] Chambers's *Cyclopaedia* and Diderot's *Encyclopédie* also catered to a variety of different interests. But few modern works practiced encyclopedic compilation in the same spirit of untrammeled accumulation as the Latin compilers of the sixteenth and seventeenth centuries. The largest of these compilations (notably the *Polyanthea* and the *Theatrum* and its *Magnum* sequel) grew to such proportions that the compiler's work involved less selection and judgment, which were increasingly tasks left to the reader, and more labor of text management. The motivations of these compilers, both economic and intellectual, can help to explain the massive scale on which they engaged in information management.

FINANCIAL MOTIVATIONS OF COMPILERS

The motivations for compiling varied: on one hand, printing offered compilers the potential for financial gain from their work; on the other hand, many compilers emphasized the intellectual merits of an activity that they claimed not to have pursued for profit. Compilers typically started as abundant note-takers, some obsessively so. Some compilers based their publications on notes accumulated over many years, likely without having initially planned to publish them; Domenico Nani Mirabelli, for example, published his *Polyanthea* after decades of teaching and collecting "flowers" from his reading, when he was over fifty years old. Other compilers were surprisingly young and no doubt took notes with a specific project in mind: Gesner was twenty-nine when he published the *Bibliotheca universalis*; Theodor Zwinger, thirty-two when he published the first edition of the *Theatrum*; and Caelius Rhodiginus was twenty-two when he started composing his *Lectiones antiquae* in 1491, though it appeared in print only in 1516.[46]

Compilers often engaged in multiple projects of listing, collecting, and indexing and boasted of the pleasure and profit derived from the gathering and sorting of information.[47] After producing his universal bibliography, Conrad Gesner, for example, composed massive natural histories—of quadrupeds, snakes, fish, birds, and plants. In all his compilations Gesner proceeded by combining information from his own reading and observations (of books or natural specimens) with contributions by dozens of correspondents throughout Europe whom he readily acknowledged in print. In many cases, however, the compilers' other projects did not result in publications, and we know little or nothing about them.

One unusual source gives us a glimpse of the obsessive compiling activities of Vincent Placcius (1642–99), whom we have encountered as the author of a manual on note-taking in 1689 (featuring the note closet) and of a dictionary of pseudonymous and anonymous works (published in 1674 and 1708). In a letter appended to his *De arte excerpendi*, Placcius described thirty years of compiling and did so, he explains, so that others might learn from his mistakes. In Placcius's account, the compiler was a personality type. Placcius recounted that at age eight, "driven by natural ardor for excerpting," he would ask his nurse for books in order to copy them out in alphabetical order. But the mature Placcius scoffed at the lack of judgment in this exercise and recommends not having children excerpt while they are in school "except phrases from Latin and Greek." At age fourteen, once enrolled in the gymnasium in Hamburg, Placcius's "native instinct for excerpting erupted, like a flame, which is stronger the more it is contained." Placcius implied that his private preceptor tried to restrain this ardor; nonetheless, he arranged excerpts of genealogical tables collected from various books, such as Natale Conti's *Mythologies*. When his father died, Placcius lost his preceptor, whom his father had no doubt been paying, and his excerpting knew no bounds. He read Drexel's *Aurifodina* and studied with Michael Kirsten (1620–78), a student of Jungius and an abundant note-taker, who admitted him and his brother to study for one hour twice a week.[48] In that period Placcius collected on loose sheets "a few special things for a future thesaurus," and despite his new teacher's misgivings about the immaturity of his judgment, he "started to adorn a large alphabetical volume in quarto" with sentences and exempla modeled on Lange's *Florilegium*. He copied sentences on the inside and examples on the outside of loose sheets folded down the middle, with titles for each page or two together.

Though the adult Placcius dismissed the results of this period too as a "nauseating mass of useless stuff," he soon started producing works that he saved and clearly still valued. Placcius closed his autobiographical section with a description of seventy-two works of his left in manuscript, as if to invite inquiries for publication. These included lists and collections in many forms: "phrases of poets and orators in one volume"; an outline and improved index to Weinrich's *Aerarium poeticum* in two volumes; notes on the writings of women alphabetically arranged on slips of paper; an index of rare words not found in the Calepino dictionary; additions to the bibliography of Draud; a table of the genealogies of the gods; observations on Italian phrases, juridical phrases, and French phrases, and so on. The twenty-page list ended with the only one of these items that was published: his bibliography of anonymous and pseudonymous works.[49]

Placcius noted in passing a plan he had had for an encyclopedia on every subject matter, with Latin phrases for elegant and copious use: "If I wrote for fame or lucre, this would have been a very salable volume."[50] Alluding perhaps to the success of the *Polyanthea*, Placcius clearly felt that he wrote neither for fame nor for financial gain. Why then did he excerpt so much? He did not specify his motives, but one can surmise that he was driven in large part by a search for order, for access to and mastery of books and knowledge through better indexes, outlines, selections, and summaries. In 1689 Placcius wrote to warn others of the pitfalls he experienced in the process. He especially regretted four related problems: taking too many notes in haste and without judgment, taking notes that proved useless afterward, taking imperfect notes (erroneous or excessively brief), and taking more notes on the words of others than on his own thoughts.[51] Placcius certainly had not lost faith in the value of stockpiling notes, indexes, and other finding devices, but he offered his advice and warnings to help others carry out these important tasks most effectively.

Placcius was a professor of rhetoric and earned his living from teaching at the University of Hamburg, both from the university and from the students whom he taught in private instruction, which most professors offered. Although Placcius highlighted the fact that he engaged in compiling not for income but for the intellectual value he expected for himself and for others, his assessment that compiling could prove financially rewarding was likely representative of contemporary opinion and practice. Early modern authorship usually offered few and unpredictable opportunities for financial gain. Authors could sell their manuscript to a printer for a small sum; others hoped to receive a gratuity or free gift from a patron or the person to whom they dedicated their work. The more ambitious and better-off could invest capital themselves, often in partnership with the printer, in the publication of their work and reap a proportional percentage of the profit, or the loss, that resulted.[52] Compiling, in contrast, was often performed on commission for a printer who would assume the costs of the work in anticipation of profits from a best-selling reference work. Printers commissioned compilations in the same way they commissioned abridgments and translations. And some compilers were clearly motivated by the need for income, as Lange described himself when he published his *Nova polyanthea*—given his recent religious conversion, he was "very miserably agitated with [his] wife and five children, . . . deserted by almost all mortals, seeking a new condition, wandering like a vagabond."[53]

Prefatory statements offer some clues about the kinds of support that printers provided to compilers working on commission. Lange described, for example, the arrangements for his first compilation, the *Loci communes sive florilegium*, published in 1598 when he was still a Protestant. In his preface Lange explained that the lawyer Philip Glaser approached him, when he was teaching rhetoric at the gymnasium in Strasbourg, with an idea for a work that would gather in one place all the "foundations of rhetoric": *sententiae*, apophthegms, similes, and examples.[54] Glaser explained the worthiness of such a work and noted that "many men of not contemptible learning had started collections of this kind." But Glaser, busy himself with "more serious occupations," asked Lange if he would take it on. As Lange described the arrangement in his preface: "Therefore so that I might do so easily without any impediment of things or frustration of work, he promised me for this study of great value to the Republic of Letters not only the necessary books and costs but also expenses and publication by his father-in-law Josias Rihelius, a most worthy printer of perpetual memory. I was greatly moved by the speech of this generous and excellent man [and] by his commitment to the public good, but also by the obvious utility of the project itself, so that I went to work not unwillingly."[55] Lange portrayed the project as a public act of charity on the part of Glaser, but it also benefited the printers in Glaser's family—Glaser's father-in-law Rihelius published at least six further editions of the work under the title *Loci communes*, and Wilhelm Christian Glaser (presumably a relative) published it in 1625 and 1631 under the title *Anthologia sive florilegium*. Whether disinterested or self-interested or both, the sponsors of the project covered Lange's expenses. Lange mentions books explicitly and other unspecified expenses likely included a stipend for Lange's labor and the cost of other necessary supplies, such as paper and ink and perhaps a helper. In particular, in the *Loci communes* one Johannes Philius, a "very handsome" young Frenchman, was credited with an index to "other fables, emblems, and symbols" in Camerarius and Alciati that had not been integrated into the collection "because the heap of papers was great and time was short to complete the work."[56]

Other compilers, too, praised the generosity of their printers. One I. D. Suentius edited the *Polyanthea* for Ioannes Guerilius of Venice, who printed it in 1607 and published four more editions to 1630. Suentius praised the "sedulous care of vigilance and singular diligence of the printer who spared no expenses and hired skilled men to compose and correct it. He is among the more famous printers of this famous city [Venice] and his books above all others are sought, bought and admired."[57] When relations went well, compiler and printer could use the front matter to praise one another, further puffing the book as a result, but such detailed praise was not the norm. Most volumes were silent on the relationship; in some cases one or both parties aired the tensions between them in the front matter or the errata list.[58]

While the sponsorship of printers offered the most reliable form of support for compilers, some sought financial reward for their compiling from noble patronage. François Grudé, sieur de La Croix du Maine (1552–92), being noble himself, invited patronage from the king and the highest ranks of the realm in the prefatory material to his *Bibliothèque* (1584). This bibliography of works in French, which he described compiling during the sixteen years since he had arrived in Paris as a student at age seventeen, was closely modeled on Gesner's *Bibliotheca universalis*. Like Gesner, La Croix du Maine explained that he included all authors, ignorant as well as learned, and while he praised some, he never criticized any "because we only recite their works and compositions, reserving for another place to express our judgments on them." In his dedication to the king, La Croix du Maine listed a few of the other works that he was "ready to bring to light," including a bibliography of Latin authors native to France and a list of all the noble houses of France, which named more than 20,000 of them "in order of the a, b, c so as to anger no one when I have them printed." La Croix du Maine also offered to send the king a list of his works in manuscript, which he had earlier circulated in 350 copies to friends in France and elsewhere. Many of these were historical, including enumerations of kings and queens and noble families. La Croix du Maine boasted that no one had yet written as "many books for France" as he had, but he acknowledged that "everything [he] had done was even more rejected than the plans of Christopher Columbus." La Croix du Maine's renewed bid for royal patronage in the *Bibliothèque* presumably also failed since none of his other works were ever published.[59]

The cost of producing large books also triggered other innovative funding devices. To raise funds for the publication of his *Cosmographia universalis* (1544), a large and lavishly illustrated compilation of geographical information, Sebastian Münster solicited contributions from the cities he described. Some obliged, to varying degrees, while others did not. The book turned out to be a great success, with further editions published soon after the first, but Münster received only 60 gulden, while the bulk of the profits went to the printer who had borne the risk and expenses.[60] Publication by subscription originated in England in the early seventeenth century, with the publication of John Minsheu's *Etymological Dictionary of Eleven Languages* of 1617, to which a list of subscribers was appended.[61] Nonetheless, many a large reference book proved ruinous or nearly so to its publishers, from the *Thesaurus linguae graecae*, which nearly bankrupted Henri Estienne's business, to the *Oxford English Dictionary*, which strained Clarendon Press.[62]

INTELLECTUAL MOTIVATIONS OF COMPILERS AND THE DEVELOPMENT OF ZWINGER'S *THEATRUM*

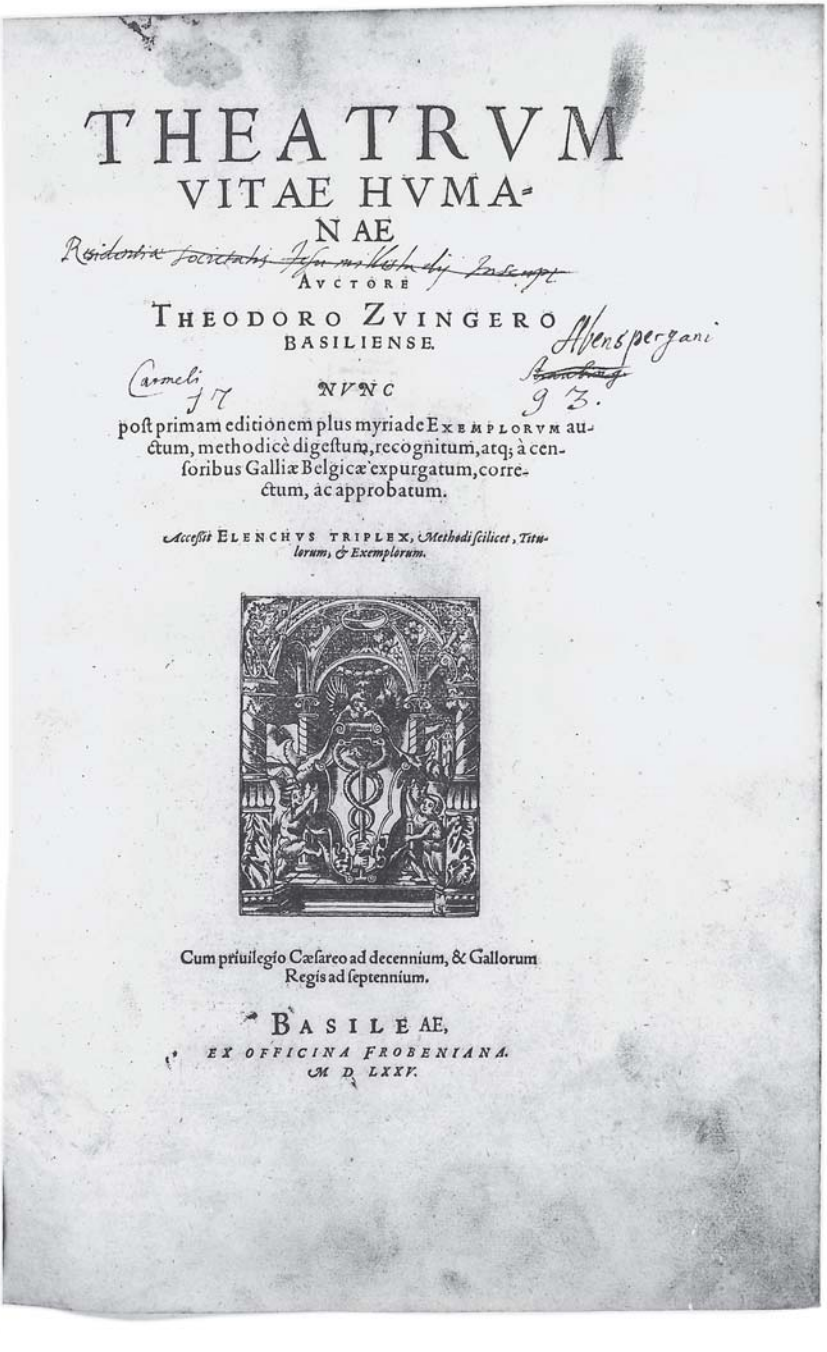
Intellectual motivations are particularly evident in large, complex books undertaken without commission from printers or patrons. Theodor Zwinger offers a prime example of a compiler motivated not primarily by financial needs but by daring intellectual ambitions and a desire for reputation. Though his father was a newcomer to Basel, Theodor Zwinger was born into the Basel elite through his mother, Christina Herbster, the sister of the renowned printer and professor Johannes Herbster, known as Oporinus. After studying at the school of Thomas Platter, then at the University of Basel, Zwinger traveled to Lyon, where he worked in a printing house for three years; to Paris, where he studied Greek, Hebrew, and Syriac; and to Padua, where he obtained a medical degree. On returning to Basel, Zwinger became professor at the university, first of rhetoric, then of ethics, then of theoretical medicine. He married Valeria Rüdin, the daughter of a wealthy corporation master, and kept a large house, with frequent visitors.[63] Zwinger was a friend and protégé of Basil Amerbach to whom he was related by marriage and who, like him, was a collector of paintings.[64] Zwinger is noted for his defense of Castellio and his interest in Paracelsianism, and he maintained a massive correspondence with more than one hundred scholars throughout Europe.[65] Zwinger participated in a period of unusual cultural ferment in Basel, fueled by international visitors, relatively lax censorship (though it was tightened in 1558), and the pursuit of an irenic and "liberal" humanism by a cluster of printers and intellectuals.[66]

Zwinger had a hand in many publishing ventures—he translated and edited texts, wrote prefaces, and saw the works of many scholars through the presses of Basel.[67] He published abundantly himself, on ethics, medicine, history, and travel, as well as the massive *Theatrum humanae vitae.*[68] In 1565 Joannes Oporinus, Zwinger's maternal uncle, published the first edition of the *Theatrum* in cooperation with Ambrosius and Aurelius Froben, who carried on the printing house founded by Johannes Froben, Erasmus's printer. In 1571 the Froben shop published a second edition, much augmented and reordered by Zwinger. Both carried an imperial privilege and a French royal privilege. The title page of 1571 specified that these protected the work for ten years and seven years, respectively; the 1565 edition did not specify the duration of the privileges, but the appearance of a new edition in 1571 may have coincided with the end of one of the privileges (e.g., the French one, likely shorter than the imperial one), after a commonly used term of six years. Indeed, another edition was also published in 1571, in Paris—this edition did not include the new revisions by Zwinger but was an expurgated version of the 1565 edition for Catholic use. It appeared with a six-year privilege, under two imprints: Nicolas Chesneau and Michael Sonnius. Nicolas Chesneau was unusually successful as a militant Catholic printer specializing in short polemical works during the religious wars of the 1560s; by the 1570s he increasingly published learned works, following the humanist ambitions he advertised by choosing for his shop the device of Johannes Froben of Basel (this symbolic association did not signify any business relationship with Froben's descendants). Chesneau often did business with Sonnius, who was likely a junior partner in publishing the *Theatrum*, judging from the greater number of surviving copies bearing Chesneau's imprint rather than Sonnius's. This Parisian edition included a letter to the reader "from the bookseller." In it Chesneau decried the expense of the Basel edition, promised the diligent expurgation of religious errors (though he acknowledged that in such a long and varied work some lapses were to be expected), and boasted of a new index of words and things (which had not been provided in 1565), drawn up by "an industrious and learned law student, Hieronymus Verrutius," who accepted after many others had refused the task. Like other printers of compilations and learned works, Chesneau emphasized his motivation to serve the common good: "Deeply excited by the public utility and honestly disposed toward literary affairs, I decided it was criminal to deny the studious the advantage [of this volume] still longer."[69] In 1586 Theodor Zwinger published the still more voluminous third edition of the *Theatrum* (Basel: Episcopius). Zwinger died two years later, and the third edition of his *Theatrum* was printed one more time by his son Jacob in 1604 (Basel: Henricpetri).[70]

In addition to these well-attested editions, a few copies survive of an imprint dated Basel: Froben, 1575, which was very similar to the edition of Basel, 1571, but announced that it was "corrected and approved by the censors of Flanders

[Galliae Belgicae].” The changes were small and allowed for a nearly identical pagination throughout the work. For example, from Zwinger’s preface a sentence was dropped that hailed the Magdeburg Centuries, a multivolume Protestant ecclesiastical history, as a model of study and diligence; praise of Protestants was typically removed in Catholic expurgations.[71] Like the edition of Basel 1571, this one appeared with a ten-year privilege from the Holy Roman Emperor and a seven-year privilege from the king of France. Given the paucity of surviving copies, the edition of 1575 was likely produced in a much smaller print run than the other editions, yet it still warranted obtaining a privilege, which attests to both the high cost of production and the potential for profit from a pirate edition. When Episcopius published the *Theatrum* again in 1586, it was just after the imperial privilege granted Froben in 1575 had lapsed. Although the *Theatrum* was not a bestseller like the *Polyanthea*, its privilege was carefully renewed at appropriate intervals.

Oporinus no doubt hoped to profit from printing the first edition of the *Theatrum*, but in a moving apology for the inevitable errors in the text and the absence of an errata sheet, he emphasized the great difficulty of producing such a big book, particularly given the plague epidemic that struck Basel in 1563–64. “We can testify honestly and simply that we were not moved by financial gain (of which someone unjust might accuse us falsely) as much as by the advantage of the Republic of Letters, to undertake such a difficult work in the most calamitous of times, while others left work and thought of death more than of the good of the republic, and to carry it to a successful outcome, by the benevolence of God.”[72] Oporinus was clearly sensitive to the charge levied by a number of humanists that printers looked only for profit and produced poor quality texts in haste. On the contrary, Oporinus aspired to and attained the status of “humanist printer,” respected for the quality of his editions (including Vesalius’s *De humani corporis fabrica*, 1543) and his own mastery of classical languages. Although he surely kept the need for profit in mind and printed small jobs on a prepaid basis, Oporinus printed no vernacular books, which would have reached a larger market. He aimed for a more or less broad learned market. One Greek-Latin edition of Isocrates and Demosthenes would appeal, he predicted in a letter, not to the best scholars, but to the nobles (*grosse Herren*) and “half learned school teachers and students” not yet skilled; on the contrary, a concordance that he acknowledged was “too expensive and heavy” would prove “indispensable for some” but probably not many.[73] Having started from poverty, Oporinus built himself a great reputation—in one letter he reported that he valued his printing achievements over money and pleasure, even life and health—and he twice married well amid the Basel elite. But he died in deep debt, though in pos-



THEATRVM VITAE HVMANAE

Residentia ~~Societatis Jesu [illegible] Inscript.~~

AVCTORE

THEODORO ZVINGERO
BASILIENSE.

Albenspergani
~~[illegible]~~
93.

Carmeli
17

NVNC
post primam editionem plus myriade EXEMPLORVM auctum, methodicè digeſtum, recognitum, atq; à cenſoribus Galliæ Belgicæ expurgatum, correctum, ac approbatum.

Acceſſit ELENCHVS TRIPLEX, *Methodi ſcilicet, Titulorum, & Exemplorum.*

Cum priuilegio Cæſareo ad decennium, & Gallorum
Regis ad ſeptennium.

BASILEAE,
EX OFFICINA FROBENIANA.
M D LXXV.

Table 4.2: A Printing History of Zwinger's *Theatrum* and Its Sequel, *Magnum theatrum* by Laurentius Beyerlinck, 1565–1707

Year of Publication	*Place of Publication*	*Printer/ Publisher*	*Copies Located*	*Major Changes in Title and Content*	*Page Count (text only)*
1565	Basel	Joannes Oporinus	60	*Theatrum vitae humanae*	1,428 pp. 1.8 million words
1571	Basel	Froben	42	Many additions, including the *index exemplorum;* a new arrangement	3,455 pp.
1571/2	Paris	Chesneau/ Sonnius	19/13	Ed. of 1565 with additions and expurgations for Catholic use	2,316 pp.
1575	Basel	Froben	3	Ed. of Basel, 1571, with Catholic expurgations	3,455 pp.
1586/87	Basel	Episcopius/ Henricpetri	80/7	*Theatrum humanae vitae* expanded and rearranged	4,373 pp. 6.3 million words
1604	Basel	Henricpetri	58	Ed. of 1586 with a new "index of things" published by Jacob Zwinger	4,373 pp.
1631	Cologne	Hieratus	45	Beyerlinck's much expanded *Magnum theatrum vitae humanae*	7,468 pp. + index of 600 pp. 10 million words
1656	Lyon	Huguetan + Ravaud	54		
1665–66	Lyon	Huguetan + Ravaud	57		
1678	Lyon	Huguetan	53		
1707	Venice	Balleonius/ Pezzana	13/17		

Figure 4.1 (opposite)

Title page of Theodor Zwinger, *Theatrum vitae humanae* (1575), which announced that the text had been "augmented with a myriad examples," and "expurgated, corrected, and approved by the censors" of Catholic Flanders. The changes were small enough to allow this edition to follow the same pagination as Zwinger (1571a). Only three copies of this edition have been located. Reproduced with permission from Bayerische Staatsbibliothek, Munich, shelfmark 2H misc 38c, vol.1.

session of many manuscripts and books, which were sold to pay his creditors.[74] The *Theatrum* did not ruin him, but neither did it fill the coffers as a *Polyanthea* probably would have.

The *Theatrum* was above all, I surmise, a work that was expected to contribute to the prestige of its producers—author, printer, and the city of Basel more generally. Zwinger himself marveled in the preface of 1586 at the applause that greeted the first edition though it was "so rough and unpolished."[75] One can garner some sense of the local pride invested in the production of the work from the epitaph for one Daniel Ulhard, which identified him as a "most experienced typographical compositor of the third edition of the Theatrum humanae vitae of that great Theodor Zwinger," who died in April 1587, at age thirty-seven, shortly after the publication of the book. Having a hand in producing that 4,500-page work was this man's signal accomplishment, recorded on his tombstone and in two printed collections of inscriptions.[76] Zwinger's own death a year later was marked by multiple publications: Johann Jacob Grynaeus, professor of theology and preacher at the cathedral, published the sermon he delivered at Zwinger's funeral along with a woodcut portrait and an elegy (by F.P., probably Zwinger's friend Felix Platter), and two students, Paul Zinck in medicine and Valentin Thilo, who later became a jurist, published commemorative sheets featuring the same woodcut and their own elegies. A volume of 1589 (which also included elegies by Thilo for Caspar Bauhin) printed these and other poems of praise of Zwinger. The enduring reputation of Theodor Zwinger (perhaps aided by his descendants, who included two other Theodor Zwingers, 1597–1654 and 1658–1724) is evident in the inclusion of Zwinger's epitaph and other mottoes in collections of famous inscriptions in Basel printed down to 1661.[77]

Zwinger described himself as motivated by private piety but above all by public utility in undertaking a project of a scope never before attempted.[78] Zwinger also brought to the task his exceptional info-lust and exuberant drive to accumulate nuggets of information. At his death, Zwinger's stepfather, Conrad Lycosthenes, had left a large collection of exempla that Zwinger had used as the basis for the first edition of the *Theatrum*, but over the next two editions Zwinger tripled the size of the work himself (along with any helpers he relied on). Zwinger clearly lavished great care on the work, which compiled exempla on an unprecedented scale but also followed a hierarchical organization of topical headings of exceptional complexity. The text was radically rearranged and massively augmented in each of the three editions that Zwinger composed. In each the long preface became longer, as Zwinger explained the sources and composition of the work, its arrangement, and its purpose.

At its most elaborate Zwinger's preface to the *Theatrum* began with the theory of knowledge itself: "Knowledge stands on two legs, relying now more on one, now more on the other according to the nature of the subject—history or the knowledge of particulars or examples, and theory or the knowledge of universals or precepts, acquired with the help of reason."[79] Zwinger's purpose in the *Theatrum* was to instruct by particulars and examples rather than precepts, following Seneca's tag that "the way through precepts is long but that through examples is short and effective."[80] But the instruction would serve a double purpose aiming both at contemplation and at action. "The examples of human history gathered in the 29 volumes of this theater serve *firstly* and in themselves philosophical contemplation, but *secondly* to action: insofar as, instructed by these examples, they are led and inflamed through some kind of examination to similar actions, physical, mathematical, theological, ethical, mechanical, and from these themselves they are pronounced doers of good and evil. Thus human history is useful to experience in knowledge and to art in action. These are the twin goals, defined briefly, but very great and broad in their use."[81] The wide-ranging examples of the *Theatrum* could be applied to many disciplines, Zwinger acknowledged, but ethics was the principal field for which he destined them. The examples not only served ethical theory but also were designed to inspire ethical behavior, as the reader reasoned from the particulars accumulated on a theme.

Zwinger defended (as we have seen) his accumulation of all kinds of examples: ancient and recent, obscure and famous, fabulous and true, good and bad. Zwinger claimed to embrace the complete range of human behavior, so that we can see "not only those who lived [earlier], not only those who live now, not only those who will live one day, but all of them together." The result Zwinger was even willing to compare to what God will see at the Last Judgment: "Thus, having brought together in one place all the actions and passions of all men who have lived from the beginning of the world to its end, we may be allowed to wish rather than to hope that this Theatrum, finally perfected, would resemble in some way that censorious display before the most just Judge."[82] Zwinger registered only a slight discomfort at comparing his *Theatrum* with God's perfect conspectus of human behavior. He was proud of the ambition and success of his encyclopedic info-lust but also careful to express humility now and then.

Zwinger dedicated the third edition of the *Theatrum* to "the one and triune Lord, eternal author, governor, and judge of all things" in a grandiloquent page set in large type.[83] Choosing a divine dedicatee was certainly unusual and was mocked in a 1716 satire on erudition; Johann Heinrich Alsted also opened his 1630 *Encyclopaedia* with an address to God, but it was formulated as a prayer preceding a more customary dedication to a prince.[84] In dedicating his work to God, Zwinger had to forgo the potential financial rewards of a human dedicatee, even though he had experienced those benefits. Zwinger had already dedicated the first and second editions of the *Theatrum* to the three Weitmoser brothers, Johann, Christopher, and Esaias/Elias, lords of Winckel and Falckenstein, with whom Zwinger had studied at Padua "six years earlier," ca. 1559, and he articulated his gratitude to them in the preface of 1586.[85] But by 1586, Zwinger strove for a different kind of recognition. The dedication to God signaled disinterestedness in mere earthly rewards and a self-conscious ambition to present "humbly and faithfully," as the dedication states, "a noble likeness of all humankind" and worthy of divine attention and appreciation.[86]

Overweening ambition was visible elsewhere in Zwinger's presentations of himself, notably in drafts by Hans Bock for the decoration of the facade of the house that Zwinger acquired in February 1572 and in a portrait by Hans Bock (dating at the latest from 1587).[87] These images coincided quite closely with the publication of the second and third editions of the *Theatrum* and focused on classical examples of the human fall through hubris. Following the practice of the Basel elite (a few murals have survived to this day, thanks to restorations over the centuries), Zwinger made plans for murals to paint on the outside of his house. The facade drafts (we don't know whether they were carried out) feature Phaethon and Icarus alongside a centerpiece devoted to Bellorophon, who (after multiple feats of greatness) offended the gods by trying to ride Pegasus up to Olympus and was struck down. The moral is brought home by a German saying on the facade: beware of climbing too high lest you should fall.[88] Further inscriptions from inside Zwinger's house, in Latin, Greek, Hebrew, and German, are reported in local collections of epitaphs and inscriptions, offering pithy exhortations to piety and morality.[89] Hans Bock's skillful portrait represents the fall of Bellorophon in the background with memento mori (hourglass and skull) and the crown of laurels, symbol of glory, in the foreground. The message is thus mixed: while calling attention to death and the fall from hubris, the portrait also hails Zwinger's great ambition and success in achieving immortal fame through his work. Humility and hubris are intertwined in this portrait, as they were in the dedication of the *Theatrum*.[90]

The 1586 *Theatrum* was the accomplishment of a lifetime. It was an exceptionally ambitious and idiosyncratic project of classification and management of information motivated by Zwinger's ambition to encompass the whole "theater of human life" and to achieve immortal glory even in failing to reach his goal. Though it was not a bestseller, the work achieved considerable renown. Like many reference books, the *Theatrum* was not cited as often as it was used, but we can document its use by Kepler and Montaigne, among others.[91] Though the work was full of references to and praise of Protestants, Catholics were eager to

Figure 4.2
Color portrait of Theodor Zwinger (1533–88) by Hans Bock the Elder, the dominant Swiss wall and panel painter of his time. Zwinger is portrayed with symbols of literary glory (the crown of laurels), traditional memento mori (hourglass and skull), and in the background the fall of Bellorophon, struck down by the gods for his hubris. Reproduced with permission from the Kunstmuseum Basel, accession no. 1877; photograph by Martin P. Bühler.

have access to it, too. Aldrovandi obtained individual permission to read the book and noted that he had read it thoroughly (by writing "perlegi" on a flyleaf). He also drew up what appears to be an index to the *Theatrum*, in a two-volume notebook filled with alphabetized slips of paper each containing a topic and a corresponding page reference.[92] The edition of Paris, 1571, had been designed for use by Catholics, though the task of expurgating such a vast work was inadequately carried out, at least in the eyes of one user of the edition who added further manuscript censorings in his copy.[93] A full century after its initial publication, the *Theatrum* was still cited as a model of a big book.[94] The continued appeal of the contents of the *Theatrum*, especially to a Catholic audience for whom it had never been adequately marketed, is evident from the publication of a much larger and clearly Catholic *Magnum theatrum vitae humanae* in 1631 with four more editions down to 1707.

THE *MAGNUM THEATRUM*

The *Magnum theatrum* was probably the largest reference book of the seventeenth century, in eight folio volumes comprising 7,468 pages plus a 600-page alphabetical index—for a total of about 10 million words. It originated from the commission of two brothers, Antonius and Arnoldus Hieratus of Cologne, who portrayed it as the culmination of a long process of collective work. The title page attributed the work unambiguously to Laurentius Beyerlinck, "theologian, protonotary, canon and archpresbyter of Antwerp," who was listed as sole author.[95] But the front matter (present in some but not all copies of the 1631 edition and consistently in later editions) revealed the role of many others who made the work possible.[96] Beyerlinck had died in 1627, and Antonius Hieratus died before the printing was completed, so the front matter, unsigned except for the dedication, was presumably penned by Arnoldus. Given these circumstances, an unusual section entitled "theatri proscenium" told of the development of the work, in part to praise the deceased contributors: "Five men in different places and times (each in his own way) brought this work to this perfection in which it now appears to the world. The first [Conrad Lycosthenes] laid the foundations; the second [Theodor Zwinger] erected and formed the building itself; the third [Theodor's son Jacob] did not add anything but polished it [adding one index]. The fourth and fifth finally added the last touches and the colophon to such a vast work."[97] The fourth contributor was Beyerlinck, who "brought forth the new from the old and doubled the size of the *Vitae humanae theatrum*, in all its numbers." Finally, the printer Antonius Hieratus, senator of the city and bookseller in Cologne, was named as the fifth contributor "who principally directed the fifth and last edition." Antonius was praised as a man of "great industry and labor" who weighed things carefully and conferred conscientiously with friends skilled in each matter. He printed many works, often large in size, "to the great advantage of himself and of the Republic of Letters," as made evident in a list of more than fifty works he had published (most of them presumably still available for purchase), ranging from works of the church fathers and sacred history to Clavius's mathematics, the *Hieroglyphica* of Pierus Valerianus, and a miscellany by Laelius Bisciola, the *Horae subsecivae* (1611), miscited as *Successivae lectiones*.[98]

After this publicity for Hieratus's imprints, his sponsorship of the *Magnum theatrum* was laid out in unusual detail:

> Finally, regarding this Theatrum in particular, since he had some share by hereditary right to the edition of the Basel Theatrum and saw that because of some errors noted by Catholics it could not be distributed in Spain especially and in Italy, he dispersed the copies that remained to him to some Frankfurt printer, nonetheless reserving for himself his right to make another Theatrum (if he wanted to). At that time he put his mind to a new edition of the Theatrum. Taking counsel from various friends, by conversations or letters, he agreed with Laurentius Beyerlinck to start and finish the work, on these conditions: (1) that what could be preserved without suspicion of error from the old Theatrum would be saved; (2) that the headings would be arranged in alphabetical order since many approved less of the studied [systematic] method for historical material; (3) that, to avoid the tiring inconvenience of copying out, the correctly printed books would be torn apart, and the various parts meant for the future edition would be affixed on sheets of paper arranged with the appearance of a large volume. In this Antonius Hieratus showed himself generous and high-minded in taking on various expenses, and he spared no labor until at last what he had in mind for the edition of this Theatrum seemed fully perfected and carried out. And Antonius Hieratus would have excelled in the printing of it, for his great benefit (as I said before) and that of the Republic of Letters, if a longer use of life had been granted him. In the meantime, gentle reader, use and enjoy these his labors and wish his soul well, who served so well the Republic of Letters.[99]

This unusual "proscenium" or preface, motivated above all by the desire to commemorate the deceased printer, sheds some light on the methods of making a large new work from an old one.

In this case Antonius Hieratus had come into multiple copies of the old Zwinger.[100] Hieratus sold off many of them to a Frankfurt printer but saved some copies for himself and commissioned a new and improved *Theatrum* with a Catholic market in view. Protestants more readily used Catholic works like the *Polyanthea* than Catholics did a Protestant work like Zwinger's *Theatrum*. Catholic censorship was more centralized and effective (especially in Spain and Italy) than Protestant efforts at censorships, which were more local in scope. Furthermore, Protestants from the beginning had been pragmatic about using Catholic books, since otherwise they would have had very little to read given the recent origins of the Reformation. Hieratus's calculation that there was an untapped market of Catholic interest in the *Theatrum* was evidently borne out since the *Magnum theatrum* was reprinted (with no major modifications) four more times: in Lyon, by Huguetan and Ravaud, 1656 and 1666, and by Huguetan alone, 1678, and in Venice by Paulus Balleonius, 1707. Each time the *Magnum theatrum* carried the appropriate privileges as well as two permissions by Catholic canons in Cologne (the place of first publication) and Antwerp (the home of the author). These praised the "more accurate" and "easier" disposition of the work, the careful expurgations and industrious additions, and certified that the text contained nothing contrary to Catholic orthodoxy work but was full of "healthy and solid doctrine for candidates not only in theology but also in other faculties."[101] Beyerlinck's expurgations were effective: I have found no further manuscript censorings by readers, while on the contrary the libertine Catholic Guy Patin, who praised the *Theatrum humanae vitae* as "truly a quite good book," complained that in "the latest edition of Cologne [1631], the text is castrated of what was said here and there [in Zwinger's original] against priests and monks."[102] Just as Zwinger was read by Catholics, so too copies of Beyerlinck can be found in Protestant institutions, such as colleges in Cambridge and Oxford. Reference works, more readily than other genres, crossed religious boundaries in both directions.

In Laurentius Beyerlinck (1578–1627), Hieratus had chosen the censor of books of the city of Antwerp and an experienced compiler. Beyerlinck had composed a collection of Christian apopthegms published by Plantin in 1608, which included some quotations taken (with acknowledgment) from Zwinger's *Theatrum*, and in 1613 a *Promptuarium morale* published by Hieratus. After studying theology and being ordained in 1602, Beyerlinck held various ecclesiastical positions before being named protonotary in a rural district, then also in an urban one. He was noted for his vernacular and Latin eloquence, for his wit, indefatigable study, and generosity. At his death (on his return from a trip to Cologne, possibly on business with Hieratus) he donated his library to the University of Louvain and funded stipends for students there.[103] "He had completed the whole *Magnum theatrum*, except for the index," but left other projects unfinished, "including a compendium of this *Theatrum*, limited to a single volume."[104] Beyerlinck's plan to produce a one-volume summary of the *Theatrum* was never carried out.

The enumeration in the proscenium of the three conditions under which Beyerlinck accepted the commission resembles the clauses of a contract to which both parties contributed. Beyerlinck would remove nothing from the old *Theatrum* unnecessarily. This would minimize Beyerlinck's labor, on one hand, and on the other hand would enable the publisher to market the new *Theatrum* as being as complete a version of the old *Theatrum* as Catholicism would allow. The new *Theatrum* would be arranged alphabetically. It is unclear whose assessment concluded that Zwinger's elaborate systematic arrangement and charts were unsuited to such a large work, but we have seen that Bartholomaeus Keckermann shared this opinion. The third condition described how Beyerlinck would work—not by copying out passages, but by cutting up the old printed pages of Zwinger's *Theatrum* and attaching the sections on pieces of paper from which to print the *Magnum theatrum*. And precisely at this point, the proscenium praised Hieratus for sparing no expense. Just as Lange had thanked Glaser for providing books and expenses, here we can see why the printer's generosity in supplying books to a compiler was important. The printer supplied copies of printed books so that the compiler could cut up selected passages to spare the labor of copying them. This method of working required at least two copies of each work to enable the compiler to cut from both sides of each page. In addition to copies of Zwinger's *Theatrum*, Beyerlinck likely cut and pasted from other printed books as well, notably a *Catalog of Emperors, Kings and Illustrious Men Who Loved Astronomy* by Heinrich von Rantzau (1526–99), which Beyerlinck acknowledged drawing from for some twenty pages of his article "Astronomia, Astrologia."[105] This method of compiling, inspired in this case by the surviving unsold copies of Zwinger that Hieratus found himself owning, enabled printers to make new value from old books. Hieratus's commission to Beyerlinck likely provided books and other supplies (paper, ink and glue, for example) and possibly living expenses, for the compiler as well as for the indexer, one Caspar Princtius, a theology graduate.

The motivations for publishing large compilations varied from printer to printer, from compiler to compiler. Compilers varied in occupation, geographical and religious affiliation, and age, but they typically shared pride in their activity and in the qualities it required—wide reading, diligent labor, and careful judgment. Some, like Placcius, were obsessive compilers of notes and information of many kinds without seeking to publish for profit or reputation. Many compiled in order to publish, either in the hope of patronage (La Croix du Maine) or more frequently on commission from a printer (Lange and Beyerlinck), because there was money to be made in a successful compilation for printer and compiler. But compilers and printers also harbored ambitions to serve and acquire reputation in the Republic of Letters, as Zwinger and Oporinus visibly did. The extraordinary labors involved in such work often stemmed from multiple motivations and justifications.

METHODS OF COMPILING

A regular refrain in the front matter to compilations was the great labor involved, particularly as the compilations became larger. Erasmus set the parameters for the theme in the 1508 edition of his *Adages*, when the work ballooned to 3,000 adages from the 600-some adages he had compiled in 1500: he called attention on the title page to the "very great labors" and "very great vigils" involved. In 1515 Erasmus's printer Froben also praised the "very great talent" involved.[106] In the *Polyanthea* of 1503 Mirabelli mentioned his own talent, but later editions emphasized especially labors and sleepless nights.[107] The theme of labor recurred in every edition of the *Theatrum*. In calling his labor "improbus," Zwinger alluded to Virgil's claim that it would conquer all obstacles; in 1571 Zwinger called his work "Sisyphean" and in 1586 reported devoting as much diligence and labor as he could to the *Theatrum*. Beyerlinck, too, positioned himself at the end of a succession of "so many labors."[108] Similarly, Gesner emphasized the scope of his labor in the preface to his *Bibliotheca*, on which he worked intensively as a young man for three years. He compared completing the book to emerging onto land after a shipwreck or returning from climbing a mountain.[109] These large-scale compilations certainly ranked among the most laborious achievements of early modern writers.

We have no direct accounts of the heroic measures these compilers may have taken, but we have a few anecdotes from similar contexts. For example, Thomas Platter (1499–1582), whose school Zwinger attended, recounted chewing on raw turnips and sand and drinking cold water to keep himself awake to study longer.[110] Other tricks included keeping one's feet in a basin of cold water or reading with just one eye open to rest the other; one scholar's method of sleeping only every other night did not prove viable for long.[111] The hard work of the scholar was understood to take a toll on the body. Scholars regularly complained of damage to their eyes and to their health in general. The wife of Adrien Turnèbe (1512–65), author of a large volume of *adversaria*, blamed her husband's death on too many sleepless nights poring over books.[112] The death of Louis Moréri (1643–80) at age thirty-seven was attributed by contemporaries to overwork on a second edition of his biographical dictionary of 1674; that second edition appeared posthumously in 1681 and was followed by eighteen more (often augmented) editions down to 1759.[113] Compilers routinely faced overload from an overabundance of books to read and text to write and looked to shortcuts to lighten their work.

Compilers also faced pressures of time. A number of early modern scholars complained of shortness of time and advertised tricks for making haste. Girolamo Cardano, for example, recommended reading a book in parts, marking hard passages to return to them later.[114] Historians have also identified signs of haste in the work of various famous early moderns who were often consummate multitaskers. One French author erred in describing characters from a book he had read, presumably in considerable haste or distraction. John Calvin had little time to prepare for his lectures or sermons and would read books and dictate letters from his bed to nurse his fragile health. His biblical commentaries were composed by his aide Des Gallars who took notes from Calvin's teachings and wrote them up for him to revise; when Calvin did compose himself, he was speedy—he wrote one pamphlet in three days, for example.[115] Calvin's Geneva imposed an unusual time discipline, but scholars everywhere faced the pressures of fitting an endless quest for learning (not to mention other gainful activities) into a human lifespan. Vincent of Beauvais eloquently articulated the problem and long before him Plutarch, for example, had remarked on the hurry with which he handed over his notes for publication.[116] Despite these deep antecedents, it is likely that the spread of printing into the lives of many scholars increased the pressures of haste.

In his voluble self-promotion and to ward off accusations of plagiarism, La Croix du Maine, for example, offered a fascinating glimpse of the rhythm of production of his *Bibliothèque*, the French vernacular bibliography published in 1584. Every day once he started printing the book, he gave the printers a "notebook of copy, which are twelve pages of writing or (to explain it better) three sheets of large paper filled with twelve sides of small handwriting of mine, each page containing more than forty lines and each line more than twelve syllables to supply the two compositors who were working on this book."[117] Every day he also corrected proofs, though he did not provide specifics. Given this method of production, La Croix du Maine was unable to revise the beginning of his text after he reached the end because the previous pages had already been printed. Of the Italian bibliographer Anton Doni, friends jibed that he sent his books to be printed before he had written them and composed books to the detailed specifications of printers.[118] Many early modern authors worked in haste, but the early modern compiler, especially when working on commission and deadline from the printer, epitomized the pressures of managing a great abundance of material in a short time.

Prefaces by authors and printers often apologized for the errors resulting from the haste with which a book was both composed and printed.[119] In the *Polyanthea* this was a regular theme, both in statements that previous errors due to haste had been corrected and in apologies for current errors. In the first edition of the *Nova polyanthea*, heavily revised by Lange, the printer Zetzner was especially conscious of the potential for defects: "Let us acknowledge openly and freely confess that because of the size of the work and the almost infinite variety of material, because of the shortness of time and the obstacles of very many very great difficulties, we could not do everything satisfactorily."[120] A substantially new edition was particularly vulnerable to errors, which could be corrected in later editions. Many title pages of reference books boasted of all the corrections made to earlier editions, though at least one compiler was uneasy about the loss of authority that might result for the earlier edition and requested that the claim be omitted from the second edition of the Magdeburg Centuries.[121] When new editions boasted of corrections, they are often hard to track since they were not signaled (and were no doubt in some cases exaggerated).

Genres based on the juxtaposition of a myriad separate passages were especially easy to modify, both intentionally and not. Beyond the reorganization and additions in each edition of the *Theatrum*, the common changes to the entries in Zwinger's *Theatrum* were the source citations, which varied remarkably from one edition to the next, as one reference was substituted for another, or a reference was added or dropped altogether, for reasons that are not particularly clear because some of the changes involved removing accurate references.[122] Contemporaries were well aware of the instability of these collections in which changes could easily pass undetected: Scaliger complained, for example, of silent changes to Erasmus's *Adages* made in some Italian editions. The editor of the 1718 Calepino deplored the heaping of material made over the years by the "half-learned" and the printers themselves seeking to augment the bulk of the work and to trick credulous users, especially the young.[123]

Despite complaints about them, compilers routinely relied on earlier work, whether their own or that of predecessors, in a kind of diachronic collaboration. Many of these sources went unmentioned, but compilers cited other reference works more readily than other authors did. Zwinger regularly cited Caelius Rhodiginus's *Lectiones antiquae* and discussed over two dozen other compilations in each of his prefaces. In his *Anthologia* of 1598, Langius acknowledged drawing on multiple florilegia, including Zwinger and many of the sources Zwinger had mentioned. Judging from one surviving leaf of printer's copy, Thomas Thomas composed his Latin-English dictionary of 1587 by annotating the printed pages of another Latin-English dictionary published four years earlier.[124]

Compilers relied on the help of others not only diachronically but also synchronically, at the moment of composition. We generally have little information about them, but it is likely that most compilers had helpers. Even Conrad Gesner, who complained regularly of his financial straits and was presumed to have worked alone (although he acknowledged receiving materials from many correspondents), referred in passing to amanuenses (in the plural), whom he held responsible for the prolixity of certain passages in the *Bibliotheca;* in a letter Gesner also requested help in hiring a helper.[125] Zwinger described working for fifteen years on the third edition of the *Theatrum,* as a man "of little talent and not firm health" (he was fifty-three when he finished) alongside his academic duties, domestic cares, and medical practice. In this passage of the preface, Zwinger mentioned his "sole helper, Basilius Lucius, my very dear cousin" whom he "used for three years and more to copy with a faithful and elegant hand and to glue things which needed to be put together." But at the beginning of his preface, Zwinger also mentioned another young relative, Joannes Luca Iselius (Iselin), his "dearest stepson," for whom Zwinger outlined a method of study on his departure to study in France and Italy. Iselin was the son of his wife Valeria Rüdin by her first marriage; he published some of Zwinger's lectures based on notes he had taken from them and himself became a professor at the University of Basel.[126] Youth was no doubt a common feature of such helpers, given that they required less pay and brought greater physical vigor to the task. A late edition of the Calepino acknowledged the help of a "very strong young man" who worked on the edition for four years, but without the requisite supply of books.[127] Joseph Lange tells us nothing about help he may have received, but his wife and five children certainly come to mind as likely candidates for the tasks like those Zwinger mentioned—copying and gluing. Examples in chapter 2 confirm the propensity of early modern scholars to rely for help on both immediate and more extended family when possible, although such help was only rarely acknowledged in print. Printers who authored prefaces occasionally named those who helped, whether in exchange for money, books, or services, or as an act of friendship. Cholinus, for example, who acknowledged the help of Petrus Lynnerus in the edition of 1567, in 1574 mentioned "a friend, not unlearned" who helped correct the Greek quotations used by Nani Mirabelli and corrupted over time. In his preface to the second edition of the *Onomasticon,* Conrad Gesner revealed that friends (left unnamed) compiled the material in his proper name dictionary for all the letters except A, B, R, S, V, X, and Z, which he covered himself. Of course, in those cases friends, like amanuenses, could also be responsible for errors, as Gesner pointed out.[128]

THE USE OF SLIPS IN COMPILING

The basic maneuvers of compiling had not changed in a long time. Medieval and early modern compilations typically involved selecting a passage from a source and assigning the passage to a topical heading under which it would be stored for later retrieval. But some new techniques became common or came into use for the first time in early modern compiling, in particular the use of slips and of cutting and pasting from printed books.

The few surviving working papers from the Middle Ages indicate that the principal method of ordered compiling in the thirteenth and fourteenth centuries was to leave blank space under a heading or a letter where material could be added over time. The Dominican biblical concordance of the thirteenth century was drawn up in this way. Similarly, some manuscripts of fourteenth-century history compilations featured material from a leading source copied onto a page followed by entries from different sources made in different hands and blank space remaining for further additions—an indication that multiple contributors worked together, reading from different sources.[129] This method of alphabetization typically resulted in lists sorted by first or first two letters, with items from the same source adjacent to one another. Strict alphabetization was rare in medieval texts (Balbi's *Catholicon* is the most notable example); it could be reached by this procedure but required multiple rounds of copying or the use of intermediate stages on wax tablets.[130] A recent edition of the *Tabula libri ethicorum*, a concordance to Aristotle's *Ethics* drawn up by Thomas Aquinas before 1304 (no doubt with the help of amanuenses), uses the text and its errors (textual and alphabetical) to argue for the use of slips. But the fact that the same passage containing the same errors appeared in two different sections of the index is no firm evidence for the use of slips; the repetition could equally well result from the scribe making the two entries under the separate sections in short chronological succession. Indeed, there is probably no evidence from the finished text alone that could determine with certainty whether or not slips were used in the process of alphabetization or of composition more generally.[131]

Convincing evidence for the use of slips comes rather from explicit discussion of the practice, in publications or letters, and from physical evidence. For example, letters describe du Cange (1610–88) as using "little slips" and "loose half-sheets" in drawing up his dictionary of medieval Latin.[132] Even better, thanks to the increased preservation of collections of personal papers starting in the

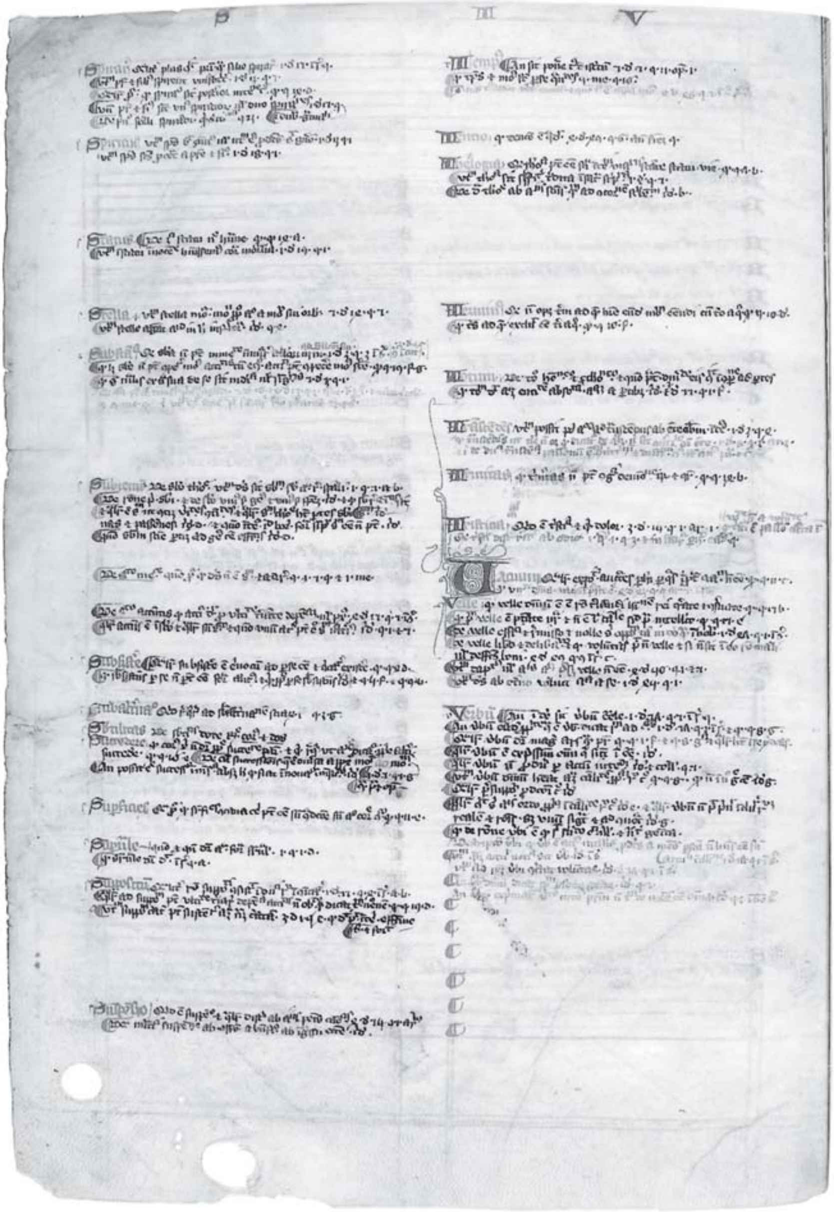


Figure 4.3
A fourteenth-century index designed to accommodate new additions. The manuscript is of finished quality, with rubrication and careful layout, but includes blank space, here under letters S, T, and U/V, where new material was added in a later ink. Reproduced by permission of the Master and Fellows of Pembroke College, Cambridge, MS Pembroke 39; photograph by the Cambridge University Library Reproduction Services.

Renaissance, we have examples of slips in working papers and drafts. The manuscripts used in making a printed compilation rarely survive, since manuscripts were typically marked up and damaged in the printing process, then discarded. What survive, then, are manuscripts that were not used in printing, either because they were prepared for printing but omitted, intentionally or not, or because they represent an earlier state of the work, whether a draft or preparatory notes. One manuscript of Caelius Rhodiginus's *Lectiones antiquae* is extant, for example, which is so densely packed with writing (eleven lines of manuscript correspond to thirteen-and-a-half lines of printed text) and with narrow margins filled with annotations that further insertions were made on slips pasted onto the page. This use of slips for insertions was especially made famous by Marcel Proust, who glued slips together into long chains to make insertions into his manuscripts.[133]

More commonly slips were used in the sixteenth century to distribute information within a complex organizational scheme, whether alphabetical or systematic. Conrad Gesner described in detail his method of indexing by using movable slips, presumably because he expected it would be new to his readers; he was also eager to share it with visitors and correspondents (Zwinger appears among the latter starting in 1560).[134] Ulisse Aldrovandi also kept notes on slips for the purpose of alphabetizing them, as discussed in chapter 2. Although Gesner associated them with alphabetization, slips could be used equally easily to compile material in systematic order. The *Nachlass* of Theodor Zwinger at the Universitätsbibliothek Basel contains, alongside hundreds of letters, a few manuscript slips in two different hands. These few slips may well survive because they were not used in the manuscript from which the *Theatrum* was printed.[135] Zwinger always acknowledged the seminal role of notes accumulated by his stepfather, Conrad Lycosthenes (Wolffhart) (1518–61), but took sole credit for the elaborate organization of them in the *Theatrum humanae vitae*. Lycosthenes was a significant compiler himself: he published a collection of prodigies that was particularly long-lived and a collection of some 7,000 apopthegms; he edited an *Epitome* of Gesner's *Bibliotheca universalis* in 1551 in which he scaled back the information that Gesner had originally provided for each book and added a thousand new authors, all in a slimmer volume. Lycosthenes also drew up indexes—notably to Sebastian Münster's *Cosmographia* and to Ptolemy's *Geography* in an edition of Basel, 1552.[136] When he died of apoplexy at age forty-three, he left behind what Zwinger described as a "heap or undigested mass of exempla collected over fifteen years," without having settled on a form or a disposition for the work.[137]

Among the Zwinger manuscripts I have identified some half-sheets of paper bearing notes in Lycosthenes' hand that were presumably remnants of a much larger set of notes on slips, though no evidence survives about how they were stored in the sixteenth century (they were tipped into volumes of correspondence probably during the nineteenth century).[138] The exempla were written on slips of papers in precisely the form in which the exempla of the *Theatrum* were printed—beginning with the name of the person or people involved in block letters and ending with the citation of a source. The slips in Lycosthenes' hand contained more than one entry under a topical heading indicated at the top of the slip along with a number; some also offered at the bottom of the slip a cross-reference to other slips by heading and page and "tome" number. This notation suggests that the slips were stored in volumes, perhaps with some of the temporary glue that Conrad Gesner recommended, or perhaps held together in volumes as Placcius illustrated.[139] No signs of holes (for storage with strings or hooks) are visible, but evidence of how they were originally stored may have been lost in the intervening centuries.

Along with these multientry slips a second type of slip survives in the Zwinger *Nachlass*, comprising just one entry on a narrow strip of paper (likely cut from a full sheet as Gesner described) in a messy and difficult hand, with a single topical keyword in the margin and no numbering (the only numbers on these slips were those added by librarians). These likely comprised material gathered by Zwinger himself (or his helpers). Lycosthenes' slips started the process of grouping exempla by heading, but Zwinger's slips had not yet been grouped by heading. The slip was a labor-saving device in that the material it contained could be moved around until the order was finalized without any additional copying. It entailed some waste of paper in that sheets could only be filled on one side if they were to be cut up, but the savings in time and in the potential for error in transcription compensated for these drawbacks. Additional copying would likely be required if the same excerpt appeared in more than one place in the final text since the sheets destined for the printer would consist of slips that had been glued in their final positions.

CUTTING AND PASTING FROM MANUSCRIPTS AND PRINTED BOOKS

An earlier stage of labor could be saved if the slip did not have to be made by copying but could be cut from another source. Conrad Gesner, active in nearby Zurich in the generation before Zwinger, put this additional principle into practice particularly effectively. Whereas the slips in Zwinger's *Nachlass* all consisted of excerpts copied onto paper for the purposes of compiling them, the slips extant

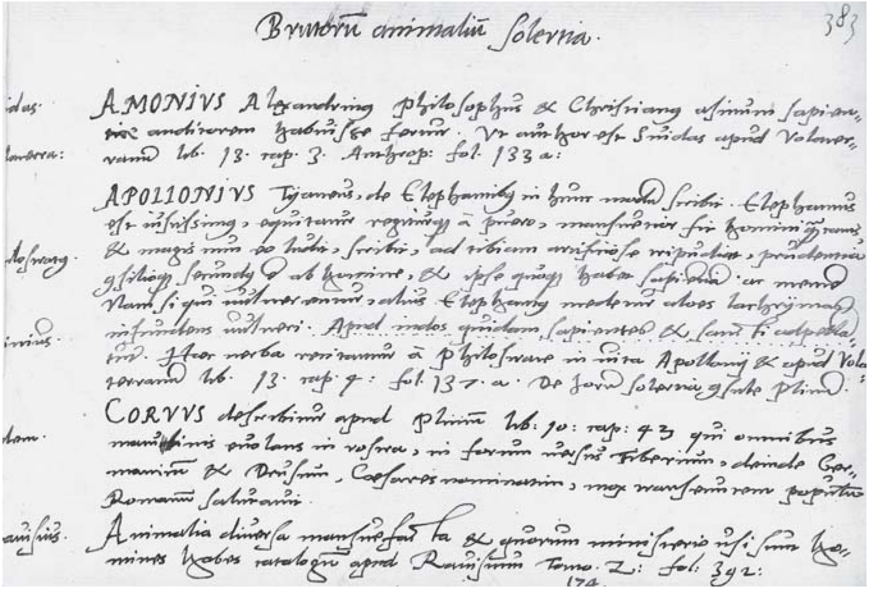
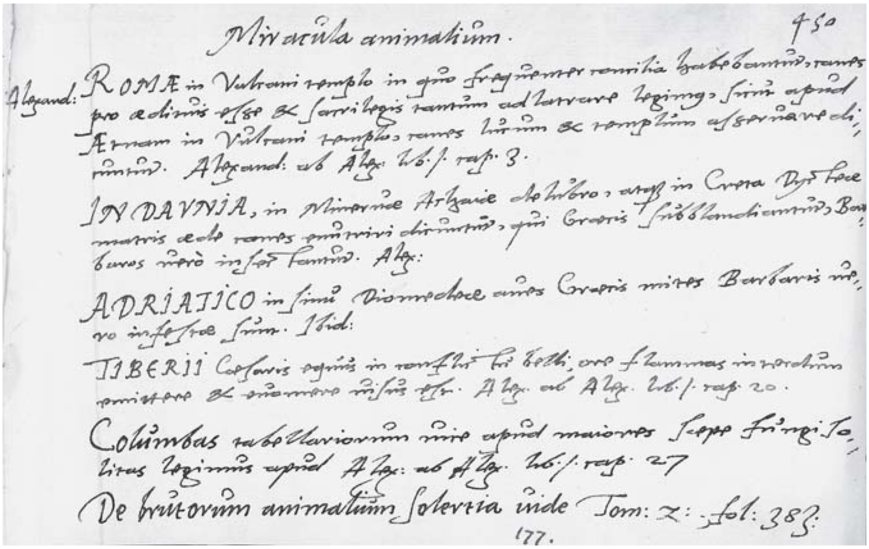


Figure 4.4
One of a few slips that remain among Zwinger's manuscripts: #383, "on the ingenuity of brute animals"; the "174" at the base of the page was a later addition made in cataloging the item. The form of the entries, grouped under a heading and with the proper name capitalized and the source provided at the end of most entries, matches that of Zwinger's *Theatrum*. The sources are also listed in the margin but have been cropped. The slip is likely in the hand of Conrad Lycosthenes (1518–61), Zwinger's stepfather. Reproduced with permission from Universitätsbibliothek Basel, Frey Mscr I, 13 #174.

in the Gesner *Nachlass* included many items cut from the work of others—from letters both incoming and outgoing, from manuscripts used in the printing process that would typically have been discarded, and from printed books. Gesner had explicitly recommended cutting and pasting from printed books in making indexes: "Where possible much labor can be saved in this way."[140] Clearly, cutting from printed books was not always feasible, but Gesner was well placed to use the technique, given his close ties to his printer Froschauer. Printers could supply compilers like Gesner with copies of books that had been used in the printing process and marked up and thus could not be sold, or books that had little or no market value for other reasons (e.g., books that were "remaindered" in today's parlance). Books that were near worthless could reasonably be used in



Miracula animalium. 450

Alexand: ROMAE in Vulcani templo in quo frequenter comitia habebantur, canes pro aedituis esse et sacrilegis tantum adlatrare legimus. Sicut apud Aetnam in Vulcani templo, canes lucum et templum asservare dicuntur. Alexand: ab Alex. lib. 1. cap. 3.

IN DAVNIA, in Minervae Achaiae delubro, atque in Creta [illegible] matris aede canes [illegible] dicuntur, qui Graecis subblandiuntur, Barbaros vero infestantur. Alex:

ADRIATICO in sinu Diomedeae aves Graecis mites, Barbaris vero infestae sunt. Ibid:

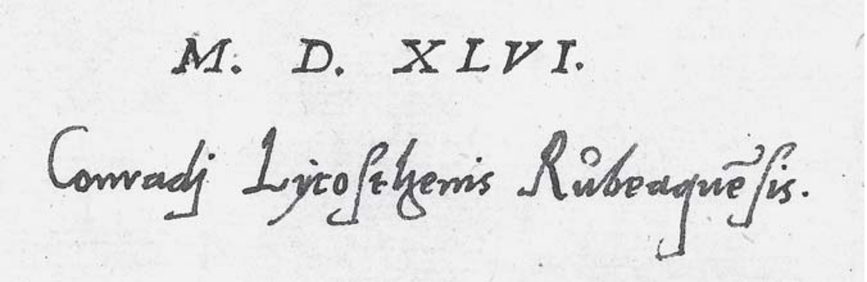
TIBERII Caesaris equus in conflictu belli, ore flammas in [illegible] emittere et [illegible] visus est. Alex. ab Alex. lib. 1. cap. 20.

Columbas tabellariorum vice apud maiores saepe fungi solitas legimus apud Alex: ab Alex. lib. 1. cap. 27

De brutorum animalium solertia inde Tom: 2: fol: 383.

177.

Figure 4.5
Another of Lycosthenes' slips; #450, "on the wonders of animals," which ends with a cross-reference to "tome 2 folio 383 on the ingenuity of animals" (i.e., figure 4.4). This reference implies that the slips were grouped in volumes in some way. (Placcius offers an illustration of slips preserved in volumes in Placcius [1689], plate 2.) All the entries on this slip are attributed to Alexander ab Alexandro, author of a much reprinted miscellaneous compilation, the *Dies geniales* first published in 1522. Reproduced with permission from Universitätsbibliothek Basel, Frey Mscr I, 13 #177.



M. D. XLVI.

Conradj Lycosthenis Rubeaquẽsis.

Figure 4.6
Ex libris of Conrad Lycosthenes in a book he owned: *Historia vera de morte Sancti viri Ioannis Diazij Hispani* (Basel: Oporinus, 1546). The hand matches that of the slips in figures 4.4 and 4.5. Reproduced with permission from Universitätsbibliothek Basel, shelfmark Aleph E XI 53.1.

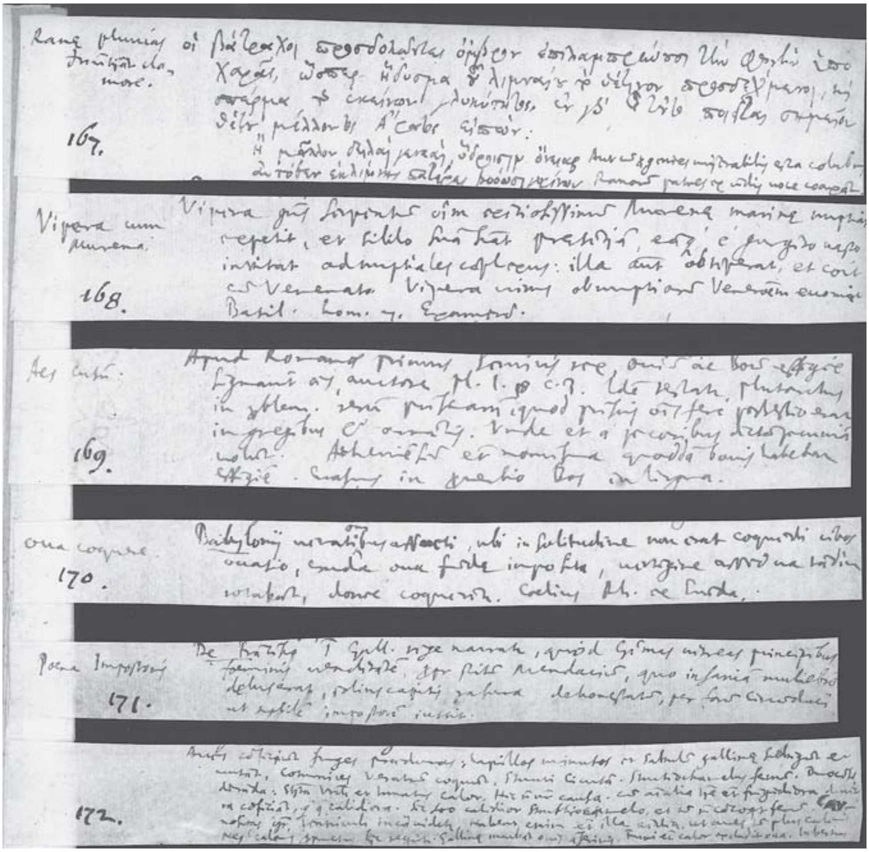


Figure 4.7
More slips from the Zwinger papers, in a different hand and format. These slips, written in haste and difficult to read, do not group related entries but offer a single headword in the margin; the numbers were added by librarians. Reproduced with permission from Universitätsbibliothek Basel, Frey Mscr I, 13 #167–69.

the destructive ways Gesner proposed, to add to a collection of notes or to help build an index or a new work to be printed.

Gesner cut and pasted from manuscript and print not only to produce indexes but also to gather notes toward compilations that could be published. One such collection survives because it was never printed, though the notes were gathered into volumes posthumously by Caspar Wolf (1525–1601), whom Gesner appointed executor of his manuscripts. The three-volume manuscript entitled *Thesaurus medicinae practicae* (Treasury of Practical Medicine) was formed, as Wolf noted on the title page, from "autograph slips and from the letters and advice of very famous doctors of his day and from his own experience and observation."[141] The volumes consisted of slips glued onto folio pages under topical headings arranged alphabetically by disease. We cannot know how Gesner had kept his slips before this stage of gluing them into volumes, but presumably he kept his notes under the same headings, whether in bundles, pigeonholes, baskets, or the like. The slips each contained a recipe, definition, observation, or description relevant to the disease listed in the heading, and the slips took a wide variety of forms. Some were classic notes—things that Gesner wrote down from his reading or experience on sheets of paper that were then cut up into slips. Sometimes, Gesner wrote on whatever writing surface was convenient to hand, including in one case a piece of thick blue paper of the kind used to wrap unbound books when they were sold. Other slips contained manuscript in a different hand, whether written by an amanuensis of Gesner or, as the title of the volume mentioned, by a correspondent of Gesner. Gesner routinely cut up useful passages in the letters he had received to distribute them among his notes, as he explained to one correspondent who asked him to refer back to a letter he had received some time earlier—Gesner replied that that he could not do so because the letter was no longer intact.[142] When entering in the *Thesaurus* passages from letters that Gesner had saved among his notes, Wolf faced the problem that letters were typically written on both sides of a sheet of paper and to glue them into the manuscript would obscure some of the information in them. In these cases, Wolf ingeniously cut a window into the page and fastened the letter into the window along the edges, so that the text of the letter remained legible on both sides.[143] A century later, Pierre Bayle integrated letters he had received into manuscripts sent to the printer, as can be gathered from the directions to the printer made on some surviving letters; these were evidently returned to Bayle after the job was finished, presumably at his request so that he could keep them as letters.[144]

Some of the manuscript passages glued into the *Thesaurus* bore markings in red pencil characteristic of casting off—that is, the process by which a compositor prepared a manuscript for printing by calculating how much would fit on each page and where the page breaks would occur. Compositors indicated page and signature numbers and could also strike through text once it had been set in type, in a practice that may have originated with medieval notaries who crossed out passages once they were copied elsewhere. Once the book was printed, these marked up pages were considered waste and were discarded, but Gesner plundered from some of this material.[145] Other slips among Gesner's papers were cut out of printed books, in German or Latin. A few of these printed passages also bear the red pencil marks of casting off, indicating that they had been used in the

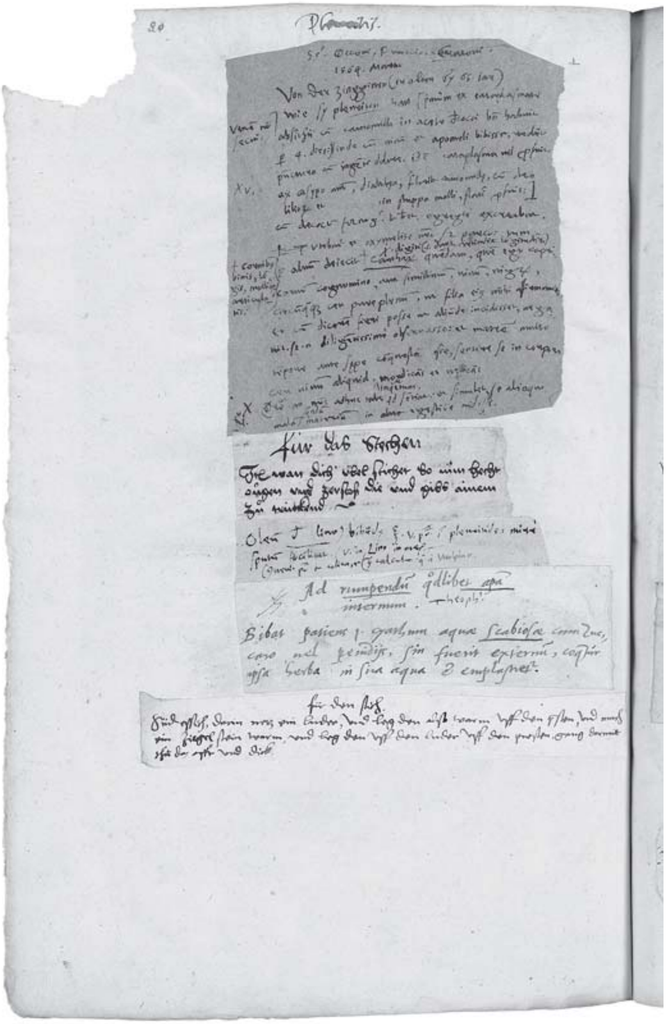


Figure 4.8
A page from the *Thesaurus practicae medicinae* (Treasury of Practical Medicine) compiled in 1596, after Gesner's death, by Caspar Wolf from slips Gesner had gathered. Gesner presumably accumulated the slips over a long period under the same headings (by disease) under which they were glued in this manuscript. The glued-in slips contain material in Latin and in German, with one entry here written on the stiff blue paper used in print shops to wrap unbound books. Reproduced with permission from Zentralbibliothek Zurich, MS 204b, f. 80r.

production of a new edition of a work that had been printed before. Since it was much easier to print from an old printed book than from a manuscript, printers procured books from which to compose new editions when possible.[146] A printed exemplar used to set the type of a new edition would also become waste on the printing house floor, and Gesner recycled some of these materials into his notes. Given Gesner's constant financial constraints, texts that could be had entirely for free as printer's waste were no doubt especially appealing, but Gesner probably also cut from books that were not otherwise destined for the trash, as he implied in his advice on indexing. I have not found any books mutilated by this kind of cutting as note-taking, however, which suggests that once a book was used in this way, it was discarded, if not immediately then by later owners, as defective.

Cutting and pasting to create new texts from old ones was likely a practice that originated among printers and most often applied to the manipulation of manuscripts. Printers frequently cut up copy texts in the process of printing from them, notably so that different compositors could work on different sections at the same time but also to edit a text. Thus Oporinus, in Basel, once explicitly asked an author to submit his manuscript written only on one side of the page so that the work could be put into better order by cutting and pasting.[147] The practice was used by prolific authors too: Girolamo Cardano recommended cutting and pasting passages from existing texts (of one's own or possibly by others) in order to rearrange or compose a book, and Robert Boyle described cutting up his manuscript notes to compose from them a text for publication.[148] Printers also cut and pasted from printed sheets in correcting proofs. For example, Gesner's personal copy (*Handexemplar*) of the *Bibliotheca* differs in one opening from the other surviving copies: two passages have been cut from another sheet in the print run (same layout and font) and pasted on to the bottom margin of the page—the passages were then integrated into these pages in the "standard" copies of the book. The *Handexemplar,* which Gesner enhanced with tabs for easy navigation and with many of his own marginal annotations, is best understood as a copy of the book in a near final stage of correction that Gesner kept for his own use. In this way Gesner did not deprive the printer of even one author's copy.[149] Finally, printers would also remove a volume from their stock and interleave it, adding blank pages at every opening, in order to record additions and changes that would be introduced in a later edition. The Gesner *Nachlass* includes an interleaved copy of the *Bibliotheca* of 1583, which survives because no further edition was ever published; the interleaved sheets carry manuscript additions and also a printed sheet bearing the table of contents of a volume by François Hotman, from which it had been torn out, so that the information was ready for inclusion in the next edition.[150]

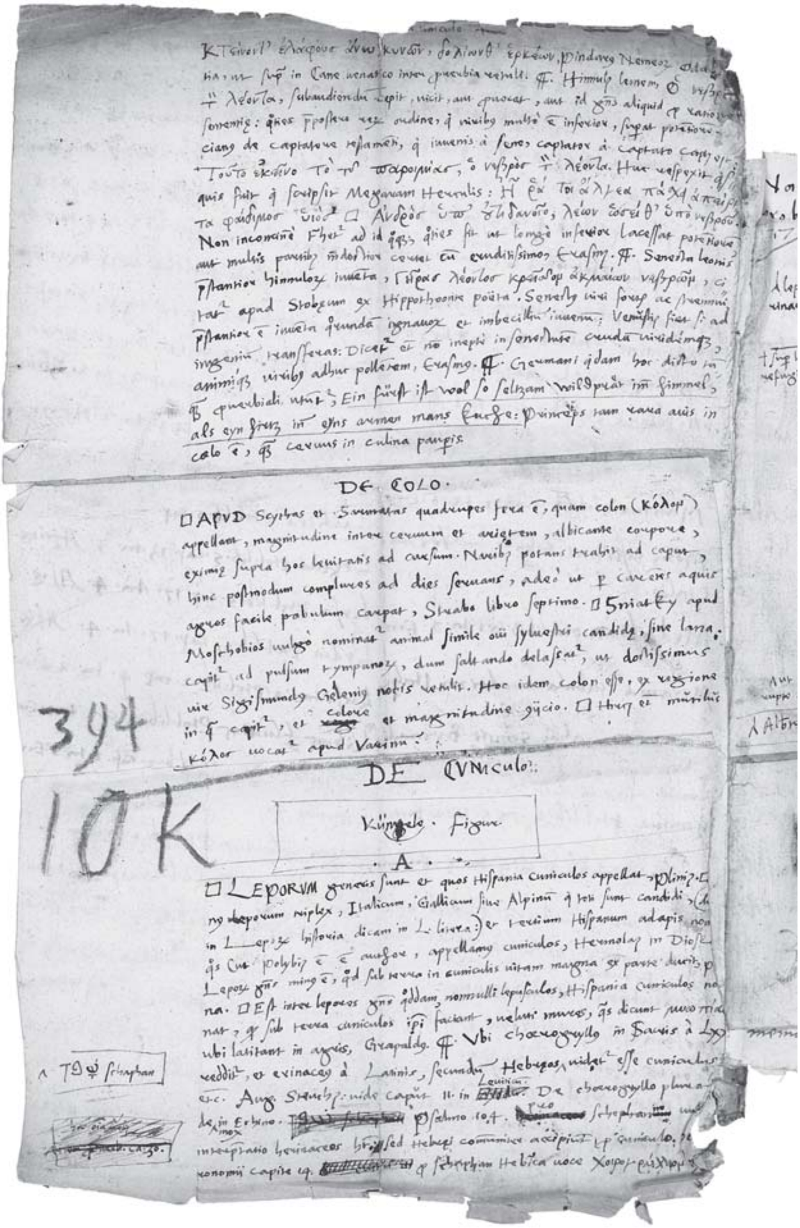
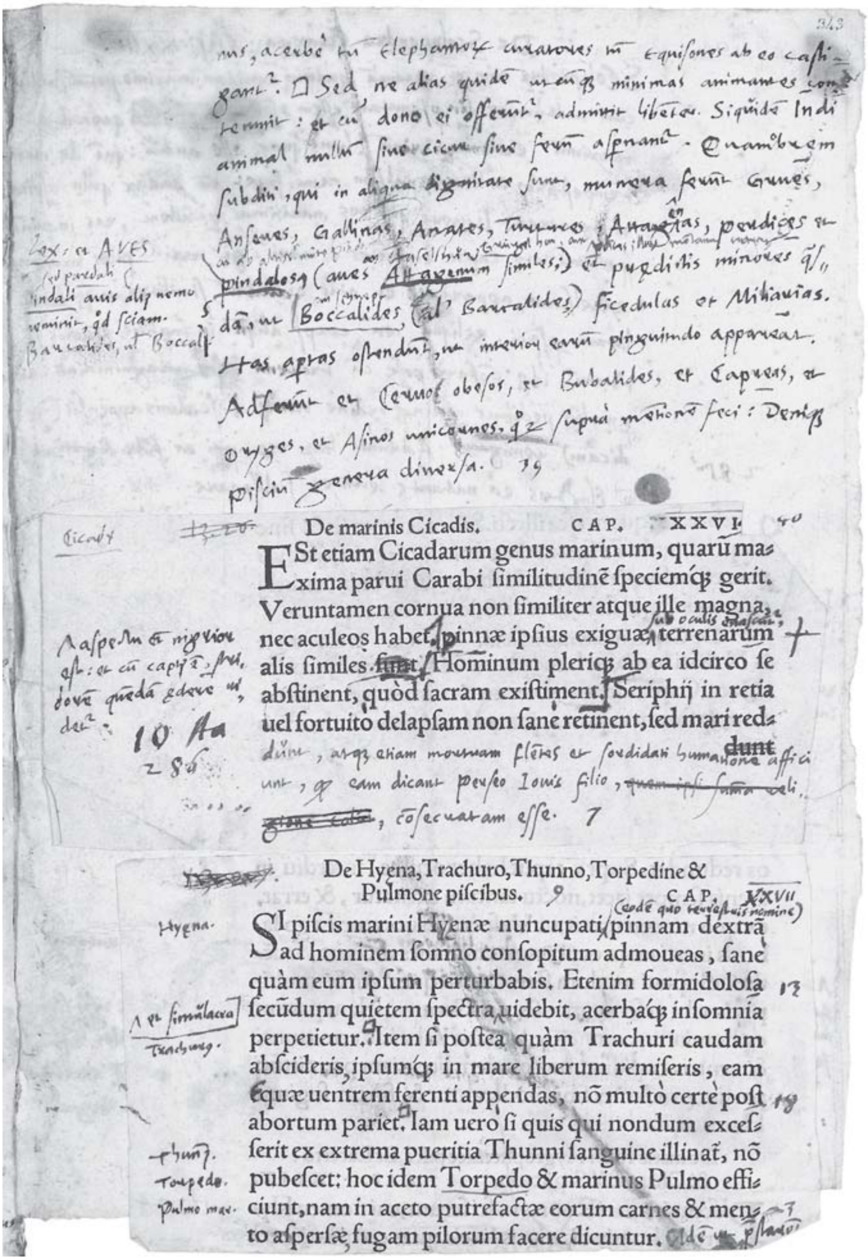


Figure 4.9

A page from the manuscript from which Gesner's *Historia animalium* (1551) was printed. In casting off or marking up the text to print from, the compositor used a red pencil to mark the page number and signature (394, K) as they would appear in print. The manuscript indicates the beginning of the section on the rabbit ("de cuniculo") with a placeholder for an image ("figura"). The printed book, Gesner (1551), matches all these indications. Reproduced with permission from Zentralbibliothek Zurich, MS C 50a, f. 355v.



De marinis Cicadis. CAP. XXVI

EST etiam Cicadarum genus marinum, quarũ maxima parui Carabi ſimilitudinẽ ſpeciemq́ʒ gerit. Veruntamen cornua non ſimiliter atque ille magna, nec aculeos habet, pinnæ ipſius exiguæ, terrenarum alis ſimiles ~~ſunt~~. Hominum pleriqʒ ab ea idcirco ſe abſtinent, quòd ſacram exiſtiment. Seriphij in retia uel fortuitò delapſam non ſanè retinent, ſed mari red~~dunt~~

De Hyena, Trachuro, Thunno, Torpedine & Pulmone piſcibus. CAP. XXVII

SI piſcis marini Hyenæ nuncupati pinnam dextrã ad hominem ſomno conſopitum admoueas, ſanè quàm eum ipſum perturbabis. Etenim formidoloſa ſecũdum quietem ſpectra uidebit, acerbaq́ʒ inſomnia perpetietur. Item ſi poſtea quàm Trachuri caudam abſcideris, ipſumq́ʒ in mare liberum remiſeris, eam equæ uentrem ferenti appendas, nõ multò certè poſt abortum pariet. Iam uero ſi quis qui nondum exceſſerit ex extrema pueritia Thunni ſanguine illinat, nõ pubeſcet: hoc idem Torpedo & marinus Pulmo efficiunt, nam in aceto putrefactæ eorum carnes & mento aſperſæ, fugam pilorum facere dicuntur.

Figure 4.10
Another page from the same manuscript shows the use of the red pencil to strike through the text once it was printed. Reproduced with permission from Zentralbibliothek Zurich, MS C 50a, f. 343r.

für hoptwee Capitis dolor.

Diascorides spricht dz basilien blatt in wasser gesotten vnd dz wasser getruncken benem das schwindel des houpts. Auch für den selben bresten ist dz kraut gut gestanden vber nacht in wein vnd den getruncken.

Basilicon rouch macht das hirn warm.

Der meister Haar spricht das Dattern den houptwee zu stillt, darumb gemacht ein pflaster also. Nim saffran vnd gummj arabicum, euforbium, mirra jegliches gleich vil, vnd temperir das mit einem eis weiß, vnd leg das fornen vff dz houpt.

für die vngnäpt (cephalea)
hopthirn, die mürer im hopt, cu nomin innadit, breui sanat.
folium Verbasci impone ~~ad~~ sup naso, et anhele odorem eius.

Item diſe wurtzel in waſſer geſoten vñ dz haubt darmit geweſchen vertreybt den weetagen des hirns. angelica –

Itē mit eſſig zerſtoſſen vertreibt dē wetagē des hirns vñ des miltz (Angelica [illegible])

Item Scamonea vermischet mit essig, vnd rosen öl, vnd da mit dz houpt geschmiert, benimpt groß houptwee [illegible].

für d' mürer im hopt.:
Schmeck an kilkersöple vn legg es vff dz hopt so gaat die mürer daruß. pb.

Cataplaſma in dolore capitis. Conſtat ex terræ lemniæ ʒ. cadmiæ præpratę drachmæ duæ, acaciæ ſex, capitum papaueris quinq;, rhuſſis uncia, ſcamonij, croci, ana. ℈. 4. ouorum luteis tribus, roſacea uncia, cum amylo in mortario diutius tudicula conterantur donec linimentum fiat, quo tempora illinantur.

das hopt wee
ein pflaster.
wem das hopt wee ~~thuot~~
thuot der nem / somen von stab
würtz gebulffert / vn dar zu
bech vn wachs, vn mach imme
darus ein bulffer, salbe, vn
selbe demme die ~~[illegible]~~ stirnen das
gilft.
oder nim brune kressich ~~[illegible]~~, vn wäsch
in in dem ~~[illegible]~~ selben wasser
do er inne stat, vn nym da
in zerstossen, vn bind das über
das hopt.

Zu grosse hoptwee
Legg an ein morgen binden vff dz genick j. rürgle in Goldwasser gnetz

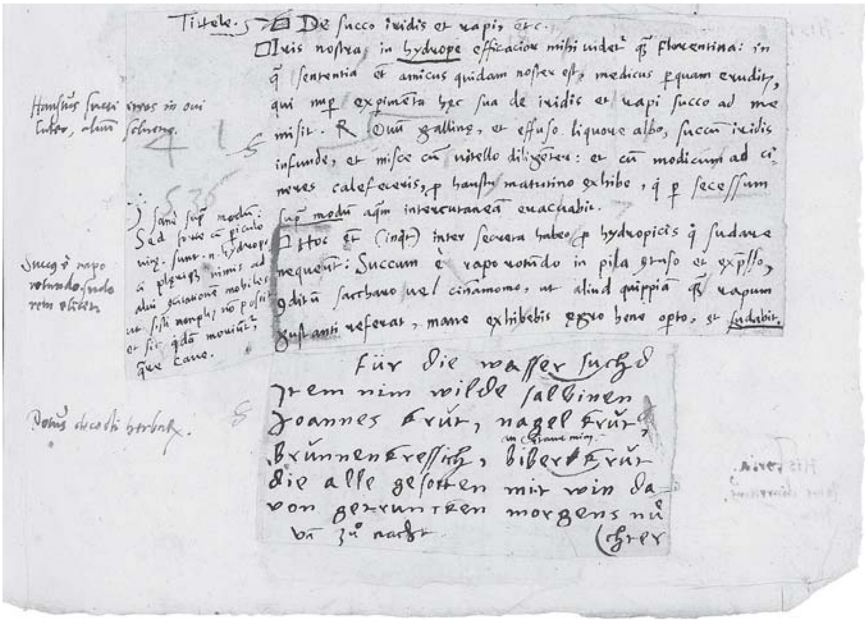


Figure 4.12
This section from Gesner's *Thesaurus practicae medicinae* includes an excerpt from a manuscript used in casting off (note the red pencil marks indicating signature and page number). Gesner recovered parts of the marked-up manuscript to keep in his notes. Reproduced with permission from Zentralbibliothek Zurich, MS 204b, f. 240r.

Figure 4.11 (opposite)
This page from the *Thesaurus practicae medicinae* compiled from Gesner's notes includes two slips cut from printed books: one in German in Gothic font, the other in Latin in Roman font. The latter bears some markings in red pencil, including a red line struck through the text (as in figure 4.10), which suggests that the passage was cut out of a printed book that had been used in casting off, for example, in printing a later edition of the same work. The printed text marked up by the compositor would have been discarded, but Gesner cut out passages to save in his notes. Reproduced with permission from Zentralbibliothek Zurich, MS 204a, f. 47r.

pra milleſimum & quadringenteſimum Chriſtiani natalis, quo anno accerſitus ad «
cum me contuli. Inde enim uſq; in ultimum uitæ diem ab eodem geſta & copioſius «
& apertius explicabo, quod eis præſens ſemper coramq; affui. Præcipue uero bellum, «
quod ſublato ex humanis Philippo Maria materno proauo tuo in hac noſtra «
ciſalpina Gallia fortiter geſſit, &c. hoc inquam bellum & re maximũ & memoria «
digniſſimum, cui dum gereretur aſſidue interfui, paulò diligentius ſcribere operæpretium «
duxi. Equidem omnia in commentarios, & eo ordine quo gerebantur «
in dies, ſingula celeri ſtilo depromſi, ſi minus eleganter minusq; ornate, at uera «
& incorrupta fide. Nihil enim à me ſcriptum eſt, quod uel non ipſe uiderim, «
uel à locupletiſſimis teſtibus auctoribusq;, uel etiam ab ipſo Franciſco, dum ille «
de ſe modeſtiſſime loquens aliquando præteritorum temporum pericula, resq; per «
omnem fortunam, non tam ab ſe quàm ab alijs geſtas, recenſeret, acceperim: quod «
alijs haudquaquam contigit, ſi qui fortaſſis reperiantur earundem rerum ſcriptores «
& eruditiores. Ex epilogo operis. His Commentarijs ab primo Alphonſi «
in Italiam aduentu, & ab anno Domini, 1424. uſq; ad annum 1466. non diui Franciſci Sphortiæ ſolum, ſed omnium Italicorum populorũ, regum, & rerum publicarum facta domi foriſq; continentur, tanta fide & religione literis prodita, ut nihil gratiæ atq; adulationi datum eſſe conſtet.

IOAN. Sinapius, natione Germanus, illuſtriſſ. heroinæ, Herculis Ferrariæ ducis coniugis hoc tempore medicus, quædã ex Luciano Latina fecit, quæ extant impreſſa.

IOAN. Sintheimius ſcripſit Commentarios Dauentriæ, ut teſtatur Beatus Rhenanus in uita Deſ. Eraſmi.

IOAN. Sommerfelt, natione Germanus, Cracouiæ ſcripſit argumenta Latinæ æditionis epiſtolarum Libanij. Vide in Libanio.

IOANNES Soreth, natione Normannus, ordinis fratrum beatæ Mariæ ſemper uirginis de monte Carmeli, quintus & uiceſimus Prior generalis, multa commendanda opuſcula ſcripſit, de quibus extant ſubiecta: T.M.1471.

Super ſententias,	lib. 4.	Sermones uarij,	lib. 1.
In regulam ordinis ſui,	lib. 1.	In eandẽ maius cõmentum,	lib. 1.
Conſtitutiones ordinauit,	lib. 1.	Scripſit & alia complura.	

IOAN. Spangenbergius Herdeſſianus, natione Germanus, uerbi diuini præco Northuſiæ, Pſalteriũ carmine elegiaco reddidit. Liber excuſus Francofordiæ in 8.

Catechiſmum maiorem Mart. Lutheri per quæſtiones explicauit: itidẽ & Poſtillam Latinam. Vtrũq; opus excuſum eſt Francfordiæ in 8.

Eiuſdem Margarita theologica, præcipuos locos doctrinæ Chriſtianæ per quæſtiones, breuiter ac ordine explicans. Liber ſcriptus ab authore, 1540. & excuſus Baſileæ apud Vueſthemerum in 8. chartis 22. anno 1544. omnibus uerbi miniſtris præcipue utilis. Acceſſerunt autem in hac æditione eorundem locorũ confirmationes, ex orthodoxorum patrum lucubrationibus, per Ioan. Gaſtiũ paſſim ſuis locis inſertæ. Ioan. Gaſtius.

Ex præfatione Caſparis Crucigeri. Bonam operã nauauit «
Io. Spangebergius, qui ut adiuuaret imperitorũ ſtudia, præcipua capita & partes «
doctrinæ ex locis cõmunibus æditis à D. Philippo Melanchthone, cõtraxit in quæſtiones, «
ut in promptu ſit, unde petãt ſtudioſi quid de ſingulis reſpondendum ſit. «
Ex præfatione Ioan. Gaſtij. Euolui patrum quorundam lucubrationes, & ex ijs «
diffinitiones has deſumpſi, easq; in hunc librum inſperſi, quo uerbi miniſtri theſaurum «
haberent numeratum ad quamlibet uocum diffinitionem. «
Index locorum & quæſtionum huius libri in calce adiectus eſt. «

Immanio et grammatica [illegible] citati a Leonhardo Culmanno impressa e Coloniae apud Gymnicum

IOANNIS Spangher Practica procedendi contra hæreticos, impreſſa cum Malleo maleficarum.

IOAN. Stabius [illegible] ac hiſtoricus

[illegible] forse [illegible] di Albano [illegible]

Quod autẽ alius ſit Ioannes ſiue Ianus, ut illis placet, Damaſcenus Theologus, & Ioan. filius Serapionis, quos multi confundunt & pro uno authore numerant, non difficile mihi probatu uidetur. Legimus enim Io. Damaſcenũ fuiſſe theologũ, & uixiſſe circiter annũ à natiuitate Domini quadringenteſimũ: nec ullus ex ueteribus & probatis authoribus inter medicos Io. Damaſcenũ recenſet, Io. Serapionis autem medicus fuit, & ut apparet ex initijs librorũ eius, regione, lingua, & tempore, non Chriſtianus, ſed Mahometicæ ſuperſtitionis cultor, ut reliqui opinor ferè omnes medici Arabes: quorũ hunc recentiſſimũ extitiſſe conijcio, cũ pleroſq; alios in ſcriptis ſuis alleget, ac inter alios filium Meſuei, qui ſi eſt Ioannes Meſuæi filius quem claruiſſe diximus circa annum Domini, 1158. neceſſe eſt aut æqualẽ ei fuiſſe aut poſteriorem quoq; Io. Serapionis filium. Sed potius iudico æquales fuiſſe, quoniam uterq; alterius ſcriptis allegatis utitur. De Io. Damaſceno theologo uide Lilium Gyraldum in uitis poëtarum dialogo 5. ubi diuerſas ſententias refert quo tempore uixerit: maxime tamẽ probat teſtimoniũ Io. Patriarchæ Hieroſolymitani, qui in uita eius Leonis imperatoris ætati eũ adnumerat, qui imperauit circiter annum, 742. Quod ſi etiam Io. Serapionis è Damaſco natus fuerit, nõ ſequitur ſtatim eundem eſſe Ioannem Damaſcenum ſimpliciter, cum & Meſuæi filius eiuſdem originis idem prænomen habuerit.

The cutting and pasting of textual passages from printed books to save the labor of copying them was a technique used primarily by bulk compilers—Gesner recommended doing so explicitly, and the proscenium of the *Magnum theatrum* revealed this method was a condition of Beyerlinck's work ("3. that, to avoid the tiring inconvenience of copying out, the correctly printed books would be torn apart"). Samuel Hartlib reasoned that Zwinger must have done so too, remarking in his diary in 1641 (unless he had in mind the prefatory statements in the *Magnum theatrum*): "Zwinger made his excerpta by being using [*sic*] of old bookes and tearing whole leaves out of them, otherwise it had beene impossible to have written so much if every thing should have beene written or copied out."[151] Both Beyerlinck and Zwinger could easily have used this technique to integrate large segments from printed books, as they discreetly acknowledged doing.[152] I have no manuscript evidence from the composition of the *Polyanthea*, but it is easy to imagine how a copy of an old edition of the *Polyanthea* could be transformed into the copy text of a new edition.

Beyond the ranks of large-scale compilers, early modern readers engaged in various kinds of cutting and pasting from manuscripts and printed books, for reasons that ranged from plundering pretty bits to carrying out the author's intentions to outright theft. The most widespread of these practices, which was considered acceptable down to the nineteenth century, was to cut illuminations, initials, and other decorative elements from medieval manuscripts and printed books in order to decorate another manuscript or book, or simply to collect them. By 1500 printing had led to a general decline in value of medieval manuscripts, which were considered superseded once a printed edition of the text was available. Of course a few manuscripts were always valued for their exceptional contents or provenance, but vast numbers of manuscripts were destroyed (most spectacularly during the dissolution of the monasteries in England) and used for the

Figure 4.13 (opposite)
Gesner's personal copy of the *Bibliotheca universalis* (1545), or Handexemplar, containing Gesner's annotations throughout. Gesner likely used his copy (to which he added thumb tabs to facilitate consultation) as a convenient place to store information. Gesner might also have had in mind the possibility of a later edition, though none was produced. In addition to manuscript annotations this page contains a printed paragraph, set in identical type, probably cut from another page of the same book, and glued onto the bottom of this page. In other copies of the *Bibliotheca* this paragraph appears in the regular printed text of this page, which indicates that this copy was used for corrections in the printshop, then withheld from circulation as Gesner's personal copy. Reproduced with permission from Zentralbibliothek Zurich, Dr M 3, 455r.

parchment on which they were written, as jar covers, wall papering, or bindings for printed books. Only in the eighteenth century did the emergence of a market for rare books and manuscripts begin to reverse this trend.[153] Medieval manuscripts had occasionally been cut up before printing (as early as the fourteenth century), to transfer illuminations from an old manuscript to a newer one. The cutting up of manuscripts for their illuminations intensified with the perception that most medieval manuscripts were of no value after the advent of printing. Illuminations cut from medieval manuscripts were mostly used to decorate other manuscripts or printed books or as trinkets for children to collect or play with, and only from the mid-nineteenth century did they become valuable collector's items that could fetch a high price.[154] The supply of medieval manuscripts had seemed practically infinite for so long that neither librarians nor booksellers nor bibliophiles had much compunction about cutting up those in their possession before the nineteenth century. Printed images and initials were cut out of books and pasted into manuscript commonplace books or diaries kept by English gentlemen as well as an unusual French textile worker.[155] In printed books, too, cutting a frontispiece, plate, or an inscribed title page from a book to paste into another copy was long viewed as a way of improving (or "sophisticating") that copy to increase its commercial value. Extra-illustrated volumes in the eighteenth and nineteenth centuries featured the addition of material cut from other sources (mostly images but in some cases also manuscripts and texts) and pasted onto interleaved pages; some of these volumes acquired considerable value and prestige and have become prized collector's items.[156]

Early modern authors also used the printed books to call on readers to cut and paste from the pages of a printed book to carry out the author's intentions, either to introduce corrections or to complete a book with movable parts. In one sixteenth-century book the author corrected a faulty illustration by inserting the correct image among the errata and asking the reader to cut it out and paste it over the incorrectly printed figure in the body of the text.[157] In one copy of a 1705 edition of *Suda*'s lexicon, the printed errata were cut out from the back of the volume and glued in the appropriate place in the text.[158] Other genres with cutouts or moving parts required cutting and pasting by the reader or a book professional (the binder or the rubricator who applied color to printed illustrations) to achieve their purposes. Astronomical books featuring volvelles printed them on pages from which they were to be cut out and then attached with a string to a page of the book to simulate the movements of the planets as they turned around the central string. Some anatomical books were designed to have liftable flaps (glued on by the reader) to reveal the organs inside the body. A confession manual of 1682 devised tabs that could be lifted out and tucked away to keep track of the commission and absolution of one's sins. In the case of Stoy's eighteenth-century picture academy, readers were to cut out the full-page images and paste them onto cardboard for use as cards in the moral instruction of children.[159]

More generally, printing facilitated a more cavalier treatment of books by reducing the cost of and increasing the quantity of printed matter. Joachim Ringelberg (1499–1531) described how during his frequent moves he could not bring all his books with him, so he would take with him only those pages containing his marginal notes and discard the rest of the book.[160] In the late seventeenth century, the bibliophile Jean-Nicolas de Tralage kept references to books of interest on slips that he glued into a folio notebook; but amid the manuscript slips he included a few printed items, for example, the title page of Bernardin Surius's *Le pieux pélerin*, which was not necessarily torn out of copy but may have circulated as a publicity flyer for the book.[161] The notebooks of Johann Joachim Winckelmann (1717–68) include a few pages torn out of a polyglot dictionary.[162] In these ways the intermixing of manuscript and print occurred not only through manuscript annotations in books but also through printed matter inserted into manuscripts.[163] By the late seventeenth century, some filing systems were especially designed to accommodate such intermixing easily, notably Placcius's note closet or the "folders" in which various clerical antiquarians stored their research in Paris.[164]

Despite the acceptability of cutting and pasting in many contexts, throughout the early modern period the mutilation of books belonging to another was considered criminal. Regulations of 1572 at the Herzog August Bibliothek in Wolfenbüttel forbade readers from carrying knives and scissors and from wearing long robes in which such implements might be hidden; librarians were to examine all books on return to ensure they were complete. These regulations clearly indicate anxiety about the possibility that readers desperate for a part of a book might cut it out. Melchior Goldast (1578–1635) did so with apparent impunity: he justified cutting out pieces from medieval manuscripts in a number of libraries with the argument that in publishing them he would bring them to light. But Matthias Flacius Illyricus (1520–75) was the object of scathing criticism from contemporaries for stealing and cutting from books while traveling from monastery to monastery disguised as a monk; but the accusation has been dismissed as slander by modern scholars.[165] The example serves as good evidence in any case of both the plausibility and the reprehensibility of the crime to early modern observers. Mutilation and theft by cutting or slashing rare books (especially to remove maps or illustrations for individual resale) has been a recurring problem in the modern period and down to the present.[166]

In most cases, early modern authors and readers cut and pasted from books for constructive purposes, to create new or improved books while sparing the labor of copying out. Occasionally, early modern scholars advocated cutting a book in order to destroy all or part of it. Censorship motivated the ripping out of pages or whole quires. Anxieties about overload also led a few to advocate a radical purging of existing books—selecting only those passages of interest or only a handful of books to pass on to future generations. But these proposals were likely so drastic precisely because there was so little risk that they could ever be implemented even if there were the will to do so.[167]

The shortcuts devised in the early modern period remained in use in the following centuries. Down to living memory, scholars and writers cut and pasted from their manuscript notes and drafts to compose publications and lectures.[168] Some also cut passages from printed books to insert into their notes, letters, or compositions; one twentieth-century author reported cutting out the parts of books he read that he did not like.[169] In the nineteenth century, scrapbooks—and starting ca. 1900, clipping services—cut out passages from the ephemeral cheap print of newspapers and magazines. Until recently, cutting and pasting was not a metaphor for the process of selecting and reusing a passage but referred quite literally to a physical activity that parlayed the relative cheapness of print into avoiding the labor and inaccuracy of copying.[170] William Smellie, who compiled the bulk of the first edition of the *Encyclopedia Britannica* (three volumes, 1768–71), was probably describing how he worked when he "used to say jocularly, that he had made a Dictionary of Arts and Sciences with a *pair of scissors*, clipping out from various books a *quantum sufficit* of matter for the printer."[171] The choice of the terms "cut" and "paste" in word-processing software, which was perhaps designed to create a sense of continuity with pre-electronic working methods, now echoes metaphorically the activities of writers who had glue and scissors in their tool kit alongside paper, pen, and ink.

The use of slips, including passages cut and pasted from printed sources, also continued long beyond Gesner and Beyerlinck. Samuel Johnson compiled the material for his dictionary on slips, and by combining print and manuscript passages, but, interestingly, he had to reinvent some of the intricacies of these methods afresh—Johnson's first draft was written on both sides and had to be transcribed onto single-sided sheets that could be cut up into slips. Six helpers worked on the project, copying passages flagged by Johnson onto a single-sided sheet, cutting the sheet into slips, sorting them in alphabetical order, and gluing them into the manuscript of the dictionary. Johnson revised his dictionary constantly until his death, in part driven by the need to keep a financial stake in it, since only a new work would warrant a new copyright and payment to the author.[172] In eighteenth-century England, despite a new system of intellectual property, neither the pressures on compilers to revise and expand their work nor the methods they used for doing so had changed dramatically since Gesner's time. Both were also still familiar factors more than a century later, in the making and marketing of the *Oxford English Dictionary*. Most famously, the *Oxford English Dictionary* was composed from slips kept in pigeonholes. The project began under Herbert Coleridge (1830–61), who laid out a grid of fifty-four pigeonholes to accommodate the 100,000 quotation slips he expected to receive from volunteer readers, before he died two years into the project and only halfway through the "A" section. Under James Murray the scale of information management was increased to 1,029 pigeonholes that accommodated millions of slips. The *OED* appeared in installments, under multiple editors, between 1884 and 1928.[173]

Cutting and pasting from existing texts (manuscript or printed) was an ingenious device that saved the labor of copying as well as the changes that copying could easily introduce (though that argument in its favor was to my knowledge not used at the time). By facilitating bulk borrowing from existing compilations and other sources, cutting and pasting made it possible to produce larger compilations faster and with less of the effort of labor and judgment than compilers had long boasted of bringing to their work. Today electronic tools offer even more powerful methods of automatic composition, witness the authoring of some 200,000 "books" compiled by computer on a vast range of specific topics. Mechanical methods of composition test the limits of current notions of copyright based on originality and creativity, but those concepts played a minimal role in the early development of copyright in the eighteenth century. Even in England where copyright originated, the Act of Anne in 1710 allowed for copying elements of a book (the scenes or characters of a novel, for example), as well as for abridgments, anthologies, imitations, and revisions. Thus in the early modern period a "mechanized" kind of compiling never posed legal difficulties. With the explosion of vernacular reference works in the eighteenth century (to which I return in the next chapter), compilers resorted to many tactics to attempt to block rivals from cutting into their market, but legal recourse was not often successful.[174] In the composition of reference works the use of slips and of cutting and pasting favored the delegation of some tasks (like sorting and gluing) to helpers who were considered unskilled (like women and children), but the use of these tools did not in itself dictate a "mechanical" attitude toward the larger intellectual tasks involved, which always inspired some compilers more thoroughly than others.

5

THE IMPACT OF EARLY PRINTED REFERENCE BOOKS

Tracking the impact of reference books in early modern Europe is particularly difficult. These books were expensive and were often owned by institutions, so that we have few records of the individuals who actually used them. Reference books were also less fully annotated than other genres, in part because they belonged to libraries that discouraged users from annotating books, and probably in part due to the kinds of reading involved. When a reference book does contain annotations, these traces often flag a passage with underlining, marginal lines, or simple signs (a star or pointing finger) without giving us a sense of how the reader intended to use the passage. These annotations do not reveal the hand of a reader, and it is unclear even how many different readers left the signs of reading that survive or in how many different sittings. Finally, then as now, reference books are not the kinds of sources that authors like to cite explicitly; many who used them denied doing so, and it is difficult to prove reliance on a reference book when an author could have consulted the source directly. At the same time, we have clear evidence for the wide distribution and use of reference books—in the large numbers of works and editions printed and the many surviving copies; in contemporary comments on their use, including the complaints about the decline of learning they caused; and in the spread of consultation devices typical of reference books to other genres and manuscripts.

BROAD DISTRIBUTION (GEOGRAPHICAL, CHRONOLOGICAL, AND SOCIAL)

Although reference books were generally produced in the major printing centers of Western Europe (Basel, Strasbourg, and Cologne on the Rhine River, as well as Lyon and Venice), the most successful, like the *Polyanthea*, circulated widely throughout Europe, across religious, political, and linguistic boundaries. One indirect form of evidence from which to gauge the breadth of use of a book is the geographical spread of current extant copies. Of course, many rare books are now in places far from where they were used in the early modern period—this is the case for almost all copies held in North American, East Asian, or Australian libraries, for example. But the Latin reference books currently held in European libraries were generally acquired not from the rare book market but "organically" from bequests, seizures, and mergers, which most often occurred on a local scale, so that their current locations offer a fair indication of where they were used (at least at their last point of displacement) in the past. The stability of these copies is further helped by the fact that these reference books were generally not associated with famous authors or valuable first editions, nor were they considered significant to the national patrimony—factors that typically motivated modern acquisitions by European institutions. Of course, books could travel far during the early modern period, through trade and the movement of people, including, for example, students returning home from study abroad or religious refugees, but the final location of a book generally corresponds to at least one place of near-contemporary ownership of that copy. Ex libris markings and other evidence of individual ownership confirm the spread of the *Polyanthea* and *Theatrum* from England to central Europe and from north to south.

Distribution networks are difficult to bring to light, given the paucity of surviving printers' records from this period, but recent studies have emphasized the international reach of printers, who participated in joint ventures and book swaps with one another across great distances of space, language, and religion. The settling of debts, often under pressure from bankruptcy or death, resulted in swaps of printed sheets that the recipient would not have selected initially but that, once he had them in stock, he naturally sought to sell.[1] Some such transaction between Italian and English bookseller(s) may explain why three copies of the *Polyanthea* of Savona, 1503, and four copies of the *Polyanthea* of Savona, 1514, ended up in London, Oxford, and Cambridge when all the other extant copies are in Italy or Spain.

Printers traded with one another across religious divides without qualms, but churches and states attempted to regulate the production and circulation of books deemed dangerous on religious, moral, or political grounds. Censorship existed in both Protestant and Catholic regions, but it is easier to study the Catholic case thanks to the production of printed lists of condemned books. Protestant censorship occurred on a local level, mostly before publication, and did not generate visible post-publication condemnations. Catholics devised ways to make some works by Protestants acceptable, but others were banned altogether. Reference books in particular, given their perceived utility, were among the works that the Catholic indexes of prohibited books allowed with specified expurgations, which eliminated, for example, praise for individual Protestants or Protestant doctrines. During periods of heightened censorship like the 1590s, special permission to obtain and use a work like the *Theatrum* was granted to those considered trustworthy in religion and deserving in their need to use the book (often for polemical purposes but in this case no doubt for encyclopedic ones)—among them Ulisse Aldrovandi.[2] But the *Theatrum* seemed useful even to clerics and featured, for example, among the holdings of the library of the seminary of Fiesole in 1646. The *Theatrum* reached other Catholic owners, in France among other places, judging from surviving copies that have been censored along Catholic lines, either according to a reader's own sense of propriety or in accord with published directives.[3] Conversely, Protestants were willing to use the *Polyanthea* despite its generally Catholic thrust; for example, in 1610 a group of students in Strasbourg gave their master a copy of Lange's *Polyanthea* even though Lange, originally from Strasbourg, had converted to Catholicism by then.

A reference book could be particularly useful in places with limited access to books. Even within Europe, the virtue of the florilegium as a substitute for books was acknowledged when Janus Gruter composed a commonplace book for the use of religious refugees as a "library for exiles to carry with them." Gruter knew of this need given his own status as a refugee after the sack of Heidelberg in 1622, in which his own library and the great library of the Palatinate where he worked had been destroyed.[4] For similar reasons, Latin reference works were also valued by Europeans outside Europe. A Spanish archival document recorded a request by a Spanish outpost in the Philippines for permission to obtain a copy of Zwinger's *Theatrum*.[5] The Jesuit mission in China owned a copy of the *Theatrum* of 1586 as of 1618. Bound in seven volumes, the work was among the books brought over by one Hubert de Saint Laurent of Douai, who was to join the mission in Beijing. Hubert died en route, but his books completed the journey and became part of the collection of the mission, duly marked with an ex libris explaining that Hubert had inherited the volumes from his brother Jean, professor of Greek at the academy of Douai, and with a warning about the citation of heretical authors therein: "to be read with caution . . . and the names [of condemned authors] should be cited or mentioned minimally."[6] In Spanish America copies of the *Magnum theatrum* can be documented both directly and indirectly. Volumes 2 and 6 of one edition (probably from the edition of 1656 or 1666 erroneously listed as 1665) figured among the books imported by a Mexican bookseller in 1683; in 1802 one of the largest libraries amassed by a provincial customs official included the eight-volume set of the 1707 edition among its 900 volumes. More indirectly, eight copies of the *Polyanthea* and five copies of the *Magnum theatrum* in Latin American libraries today may well have stemmed largely from colonial holdings.[7] In the North American colonies Cotton Mather praised Alsted's *Encyclopedia* as the "Northwest passage," but the copy of the *Magnum theatrum* (1707) now at the Boston Public Library does not date from the colonial period—it was among the early acquisitions of the library in 1840.[8]

Latin reference books remained in use for a long time after their first publication, judging from ex libris and substantive annotations made in copies a century or more after they were printed. These books were more expensive and bulky than most other genres and had to be bound in order to be usable, so they did not deteriorate easily from use and were more likely to survive a long time. In addition to being physically resilient, these books maintained value long after their publication. For example, a 1565 *Theatrum* was inscribed as a New Year's gift in 1666, more than a century after its publication, indicating that it was considered to have enough value for the most important gift-giving occasion of the year.[9] Another copy was extensively annotated even in the eighteenth century.[10] Ex libris annotations also record late acquisitions of the *Theatrum*. For example, in 1793 the Carmelites of Abensperg acquired a copy of the edition of 1575 that had belonged to the Jesuits of Millestadt; a copy of the *Theatrum* of 1586 was marked as owned by the Jesuits of Heidelberg in 1746, then became the property the Lyceum in Heidelberg (presumably at the dissolution of the Jesuits a few years later) before being sold and ending up at the University of Chicago.[11] These examples support the observation of one scholar that the *Theatrum* was in active use for two centuries.[12]

Polyantheas were similarly being read and annotated long after their dates of publication. An edition of 1613 was annotated by an Oxford student who matriculated in 1693.[13] A *Polyanthea* of 1567 was purchased by Andreas Felix Oeffele in 1734; though Oeffele was a bibliophile, he did not collect without attending to the contents of the *Polyanthea*, and he added a number of annotations in his copy, including a German saying relevant to the heading "munera" (gifts) and under "lex" a long Latin example labeled "lex dura" taken from an eighteenth-century history of Italy.[14]

The long shelf life of a Latin reference book makes the steady output of new editions through the late seventeenth century especially impressive, since the new editions had to sell in competition with old ones still in circulation. Although some owners (most commonly institutions) owned multiple editions of the same reference book, in general new editions suggest that these works reached progressively more owners and users, both directly and indirectly through the sale of older editions by those who upgraded to new ones.

It is hard to find indications of the prices at which these books were sold new—sales catalogs usually did not list prices, and ex libris inscriptions only occasionally recorded a purchase price. Prices for the same book could vary considerably. In the case of three copies of the *Catholicon* of Augsburg, 1469, the wealth of the buyer likely played a role in setting the price of these very early products of the printing press, at a time when there was no competition and prices were still rather arbitrary. Indeed, Bamberg Cathedral purchased two of these copies at a very high price, one on parchment for 48 gold florins and another on paper for 47 florins, while the Dominicans of Bamberg purchased a copy around the same time for only 16 florins.[15] Over time the Frankfurt fairs and the multiplication of printing centers likely helped to reduce such large pricing disparities, but early modern pricing was always subject to bargaining and to the pressures of specific circumstances (including the scarcity or glut of an item in a given time and place). Folio reference books were naturally expensive when new: the inventory of a Spanish bookseller in 1556 reported a *Polyanthea* of 1539 appraised at 408 maravedis, which was among the most expensive items on the list.[16] The cost of a book of the same size declined from the mid-sixteenth to the mid-seventeenth century, but new records for size and expense for a reference book were set by the *Magnum theatrum.* In 1638 Drexel mocked the expense of the *Magnum theatrum*, which cost 70 florins, he reported, not to mention the cost of binding.[17]

These books dropped in price, sometimes steeply, when they were used copies, judging from valuations in inventories after death and in auction catalogs that were occasionally annotated with sale prices. Even among unabridged, folio-sized Latin reference works, there was a considerable price range. The *Polyanthea* defined the low end of the price range: it was assessed surprisingly inexpensively, at 16 pence for each of two copies listed in the 1581 inventory of the library of Bishop Richard Cox.[18] The *Polyanthea* was also portable enough to be bound in the cheapest way, with a soft parchment cover, as in the copy that belonged to Edward Sylvester of Oxford (discussed below); a *Polyanthea* that belonged to the Jesuits of Munich was bound in a fourteenth-century music manuscript for extra thrift (sparing the expense of new parchment).[19] A copy of the 1691 auction catalog of the library of Thomas Bartholinus includes prices for a number of reference works, which illustrate the range of values attributed to them. On the one hand, some of the largest and most recent reference books were sold at high prices. The *Magnum theatrum* (no date specified) was among the most expensive books to sell at that auction, for £17; it was topped by only a few works, such as a 1685 multivolume *Histoire de France* (by Mézeray), which sold for £22 4s. 8d., and it was roughly equivalent in value to the recent multivolume *Opera* of Cardano (1663, £13 2s.) or to Hippocrates and Galen combined (1679, £18 0s. 2d.). The prices throughout this catalog indicate that a premium was placed on recent editions, but they no doubt also resulted from the particular interests of those who happened to attend that auction. On the other hand, other reference books sold for much less. A 1656 Calepino sold for £5, Rhodiginus's *Lectiones antiquae* (probably in the edition of 1666) for £2 1s., and the 1674 catalog of the Bodleian Library for £2 1s. 2d. Older works sold for much less, for example, Gesner's *Bibliotheca* with supplements for only 3s. 8d. or Turnèbe's *Adversaria* (1604) for 3s. 1d. A collection of proverbs dated 1646 (author and format unknown) sold in the same price range for 4s. 2d.[20]

Many surviving copies bear the ex libris of institutions, religious or educational, and would have been accessible to the members of those communities with library privileges (e.g., only fellows, not students in a college). University and college libraries in the early modern period typically grew not by acquisitions but by gifts and bequests, mostly by fellows and former students. Bequeathed books often entered a college library years or decades after the book had been purchased. One copy of the *Theatrum* was annotated by a father and son before becoming the property of their Cambridge college.[21] It is thus often unclear whether annotations in these books were made by the first owner, later users, or both. Catholic religious orders, particularly the many new religious houses born of the Counter-Reformation, by contrast, were more likely to have funds earmarked for library acquisitions. In a copy of the *Polyanthea* of 1539 owned by the Carthusians of Buxheim, a note explains that a parchment manuscript of the *Decretals*, of which they had more copies than they needed, had been sold for 3 florins, which were used to purchase other books that were considered necessary, including the *Polyanthea*.[22] Curiously, the Carthusians of Buxheim also owned a *Polyanthea* of 1507, both now in the Cornell University Library. Evidently, they valued having multiple and successively larger editions of the *Polyanthea*, at least to the extent of not disposing of the extra copy. Similarly, the Jesuits of Munich owned multiple copies of the *Polyanthea*, often by purchase shortly after their publication: a *Polyanthea* of 1604 was acquired in 1604 and a *Novissima polyanthea* of 1617 was acquired in 1618 for their college; they also owned a *Polyanthea* of 1552 (date of acquisition not specified).[23]

Latin reference works served a wide range of Latin-literate readers. Judging from surviving ex libris, the *Magnum theatrum* was primarily owned by institutions, but many individual owners can be documented for the *Polyanthea* and for the *Theatrum*, including doctors, lawyers, clerics, teachers, and noblemen.[24] The *Polyanthea* reached an especially broad audience for a Latin book of its size.

A copy of the *Polyanthea* of Strasbourg 1517 bears an ex libris in Hebrew script (undated), left perhaps by a convert from the Jewish community in that region or, more likely, by an owner born Christian and displaying his mastery of Hebrew letters.[25] One copy of the *Polyanthea* of 1669 bears the ex libris of a noblewoman, electrix Adelaide; another, from 1585, the ex libris of a women's convent, the Discalced Carmelites of Prague.[26]

KINDS OF USE

One of the selling points made in prefaces of general Latin reference works was their versatility in offering "something for everyone." Certainly works like the Calepino, the *Polyanthea*, and the *Theatrum* were used in a variety of contexts, although our evidence is often limited and incomplete. Prefaces and dedications, which were targeted understandably to wealthy princes and businessmen from whom the author might hope for a gratification, often noted the utility of compilations to men of action too busy to read much themselves. The prime example of such use is the copy of the *Polyanthea* of 1514 annotated by Henry VIII of England on topics of particular personal and political interest to him (e.g., "law," "matrimony," "pope").

As engines of *copia*, compilations of quotations and exempla were of use to all who composed in Latin and sought to impress by their mastery of textual culture, both ancient and biblical. For example, a late sixteenth-century Parisian lawyer can be found copying from printed florilegia (Estienne's collection of Greek epigrams and a historical commonplace book), drawing up practice arguments in his notebooks.[27] Preachers were the original audience for the medieval florilegium and continued to use the *Polyanthea.* Baroque Catholic preaching commonly adopted what has been called a "thesaurus style," packing in many examples, quotations, and encyclopedic information that seminarists were urged to start collecting from the beginning of their studies. This *copia* could also easily be gotten from printed florilegia if one's notes proved deficient.[28] For example, the library of the seminary at Fiesole, formed after the Council of Trent decreed that each diocese should have a seminary to train priests, owned a *Polyanthea*, a Calepino, and a *Theatrum* as its principal reference works.[29] Doctors may also have turned to compilations for quotations or examples. The Italian doctor Girolamo Mercuriale asked Zwinger repeatedly to send him a copy of the 1586 *Theatrum* even though he already owned a copy of the 1571 edition; but at least in one instance where he might have, Mercuriale did not rely on that work for his examples.[30] Since Zwinger was trained and active as a physician, his *Theatrum* is particularly rich in medical examples, and his correspondence network included many medical practitioners.

The principal users of humanist Latin reference books were no doubt teachers and students in arts faculties. There was hardly an Oxford or Cambridge college that did not own a *Polyanthea*, usually among a number of other reference tools. Many reference books vaunted their utility to studious youth, but only a few ex libris can be clearly identified as copies owned by students, whether they were purchased new or used.[31] But other forms of evidence confirm that students used reference works. The Calepino was especially widely owned. For example, the twenty Jesuits entering the novitiate in Toulouse between 1547 and 1587 brought with them dictionaries ranging from the basic and small-format texts (Robert Estienne, *Dictionarium puerorum*, or Ravisius Textor, *Epitheta*—a kind of thesaurus of adjectives in modern categories), to larger, more expensive ones like Nizolio's *Thesaurus Ciceronianus* and the Calepino, owned by "everyone familiar with classical literature."[32] Older contemporaries perceived these dictionaries as something new to this generation. For example Robert Estienne (1503–59) reminisced in the preface to his edition of the Calepino (1553): "When we were students [ca. 1520], we saw what need there was for complete and corrected dictionaries." In filling this need, Estienne argued that his dictionary would especially help *studiosi* identify words that had been corrupted in the texts they were using.[33]

In this instance and others, we can identify reference books being used (as they still are today) as sources of authoritative information from which to verify or correct other sources. For example, the humanist printer Plantin in Antwerp purchased multiple reference works for the use of his correctors: he spent 60 florins in 1563 on four thesauruses, seven dictionaries, two biblical concordances, a Latin Bible, and a Greek New Testament and later made additional purchases of this kind.[34] Presumably, these books served as sources against which to verify and correct quotations, spelling, and references in the Latin and Greek works for which the Plantin press was famous. Unfortunately, we do not hear about the choices Plantin may have made between various options for these purchases and whether he preferred some editions to others as more accurate and reliable.

I have found no contemporary comment on the use of reference books for verification; the kind of use that is best documented, though it was frequently criticized and thus worth hiding, was to turn to reference books as a source of quotations and information about antiquity. Teachers can be identified as prime users of reference books; in sixteenth-century Bergamo, for example, one schoolmaster owned multiple dictionaries and florilegia, including the *Polyanthea*.[35]

In antiquity, Juvenal satirized parents who expected their children's teachers to answer obscure questions with great speed. Humanist teachers in the Renaissance were under all the same pressures to impress parents and patrons, and they vied with one another for reputation and business.[36] The principal source of reputation was learned commentary on classical texts disseminated in the classroom, in conversation, and in publications. Gabriel Naudé illustrated vividly how teachers would use reference books as shortcuts in generating these commentaries in this description of one teacher at work at the University of Paris, ca. 1627:

> Whence it is, that they commonly say, the *Calepine*, which they take for all kind of *Dictionaries*, is the livelyhood of the *Regents;* And if I should affirm it of many, even amongst the most famous persons, it would not be without reason, since one of the most renound [*sic*] amongst the last had above fifty of them, which he perpetually studied; and who having encountered a difficult word at the first offering of the Book of *Equivocals*, as it was presented to him, he had recourse immediately to one of these *Dictionaries*, and transcribed out of it above a page of writing, upon the margent of the said Book, and that in the presence of a certain Friend of mine and of his; to whom he could not abstain from saying, that those who should see this remark, would easily believe that he had spent above two dayes in composing it; though he had in truth but the pains onely of transcribing it.[37]

Naudé claimed to report the scene as witnessed by a mutual friend, but all the players remained anonymous; only the text commented on was named—the "book of equivocals" was probably a work attributed to Xenophon.[38] The master, said to be among the most renowned, was described as constantly "studying" in his large collection of over fifty "dictionaries." "Dictionary," as used here, likely embraced more than linguistic dictionaries alone and included a variety of alphabetically arranged reference books. The master's familiarity with these sources (did he read any others?) enabled him to turn immediately to the book that yielded exactly the right learned comment to earn him a reputation for diligence and erudition. The master sought to hide his use of the shortcut, without being able to resist gloating at his easy gain in doing so since he had only the labor of copying from his source. In gently mocking the master for his deceit, Naudé neglected to comment on the master's skill in consulting the right books to find the optimal passage to copy in the first place. Those skills were fostered by the increased availability and use of reference books in the early modern period.

We can see someone very similar to this anonymous Paris master at work at Oxford around the same period. At his death Edward Sylvester left to Balliol

College a copy of the *Theatrum* of 1586 that is heavily annotated. Sylvester had matriculated as a student at Balliol in 1604 or 1605, then ran a successful private grammar school where he prepared boys for university; he was made bachelor of divinity in 1642 and lived in the college, without being a fellow there, until his death in 1653. Sylvester annotated the five volumes of his *Theatrum* with crosses and marginal flagging throughout and added a numbering system on many pages that functioned as a finding device, perhaps keyed to a note-taking system. When he came across material of interest, Sylvester numbered Zwinger's quotations sequentially, with some omissions, across both pages of an opening, from 1 to 15 or up to 25 depending on the number of quotations included in the sequence. Sylvester's numbering ignored all the section divisions that occurred in the opening in question and any of Zwinger's headings or subheadings. Sylvester's personal system of reference operated by page and quotation number only, bypassing Zwinger's elaborate hierarchical organization, and was likely more convenient, given the greater simplicity of numbers over multiple layers of headings and subheadings (Zwinger himself numbered only very large sections—books and parts of books).

Sylvester's heavy and carefully recorded use of the *Theatrum* is usefully understood in light of the description he warranted in a catalog of clerical alumni of Oxford published in 1691.

> [Sylvester] was the commmon drudge of the University either to make, correct or review the Latine sermons of certain dull Theologists thereof before they were to be delivered at S. Maries: as also the Greek or Latin verses of others (as dull as the former) that were to be put in, or before, books that occasionally were published. He lived to see several of his Scholars to be heads of Houses in this University: among whom were John Owen Dean of Christ Church, John Wilkins Warden of Wadham Coll . . . etc.; who, with other Scholars of his that were Doctors, Bachelaurs of Divinity, Law and Physics, and Masters of Arts, had an annual feast together; to which their Master was always invited, and being set at the upper end of the table, he would feed their minds with learned discourses, and criticisms in Grammar.[39]

The power-user of Zwinger in the second quarter of the seventeenth century was not an admirable figure to Anthony Wood in 1691. Sylvester was a bastion of Latinity and classical learning, which were increasingly out of fashion, at least in Wood's later assessment, but still useful to colleagues and students in need of help to pass Latin exams and turn out ceremonial Latin sermons, speeches, and poems. The classical allusions with which he peppered his conversation were portrayed as a welcome amusement at the feasts held by his former students, who were far more successful than he. The "common drudge of the university" certainly put the *Theatrum* (and likely other reference books) to good use, although his skill in doing so (including devising his own numerical system of reference) got him no credit with later commentators.

Other uses can be garnered from the mockery of them in literary works. In the final lines of an English play composed by 1583, a pedantic poet who is charged with composing an epithalamium (a poem in honor of a bride on her wedding) declared that to do so he would stay awake all night "turning over the tables of Zwinger" (*pervolvendis tabulis Zwinggeri*).[40] Although the audience never heard the result of his efforts, the play had already established the character as laughably incompetent. Similarly, a prose satire entitled *Inept orator* (published in Latin in 1659 and German in 1665) mocked the clever babbler who could pull an anecdote from Lange (the *Polyanthea* or one of his other compilations) for any occasion: "Whether your foot hits your head or your boot hits your helmet . . . whatever happens [however absurd] it is enough that you do not remain silent. Lange's florilegium should never leave your side. If you have to speak about a ripped coat or a bather's hat, report from the florilegium things from the time of the Athenians. Tell us what happens with the Indians, or about the customs of the wild Scythians . . . and these examples pieced together from so many beggars' coats you can put together with nice words: 'but,' 'moreover,' 'then,' 'therefore,' etc."[41] This satire of contemporary rhetorical conventions mocked those who responded to any situation by using a few conjunctions to string together bits from the *Polyanthea* that were useless and irrelevant.

Despite many negative portrayals, reference books conveyed status on their owners by implying a certain level of wealth and of learning. Owning books for ostentatious purposes was a topic of mockery from Seneca on and throughout the early modern period; at the same time, it was a form of patronage of books and learning that scholars often strove to encourage.[42] No doubt some copies of reference books that remained in pristine condition (especially the eight volumes of the *Magnum theatrum*) served primarily to look authoritative on a book shelf. For the same reasons reference books also made good gifts—they were suitably valuable and symbolic of utility and learning. In addition to the 1565 copy of the *Theatrum* inscribed as a New Year's gift, and cited above, another was inscribed as a gift of friendship in 1609 from the lawyer Bartholomaeus Flusk to his compatriot Zacharias Firker.[43] In 1610 the students of the Predigerkollegium in Strasbourg gave a copy of the *Polyanthea* of 1607 to their teacher Matthias Bernegger (1580–1640). Bernegger was only a young teacher at that point (otherwise he would have likely already owned a copy); he went on to develop a passion for finding devices, initiating a Lutheran project to index all the words and unusual grammatical features in classical texts.[44] Of course, once a book had served as a gift, it could serve as a text that was read and put to use—at least one of these gift copies (the 1565 *Theatrum*) was annotated.

USE BY PUBLISHED AUTHORS

The stigma attached to the use of compendia and shortcuts, which was already evident in the behavior of Naudé's master and heightened in the late seventeenth century, has in many cases persisted in assessments of the working methods of Renaissance scholars. Identifying an author's use of a reference work was long considered to tarnish an author's reputation, thus raising the stakes of such a determination both offensively and defensively. My purpose is not to assess the quality of Renaissance scholarship against some timeless standard or some current or past ideal of "true learning," but rather to gauge the impact of reference works on working methods and attitudes toward scholarship in the sixteenth and seventeenth centuries. Intellectual historians have often studied the reception of famous authors and faced the problem of an overabundance of citations of their works, only some of which came from direct contact with the texts cited; others were borrowed from intermediate sources, including reference works. In studying the reception of reference works, the historian faces the opposite problem—few users, whether in early modern Europe or today, acknowledge their use of reference books by citing them.

The printed books most likely to cite reference books were other reference books. As we have seen, later editions of a reference work relied on earlier ones and borrowed from other works in the same or another related genre. This borrowing was often tacit, but compilers acknowledged other compilations more readily than most authors, by including them in lists of authors used and in the attribution of specific quotations. Compilers may have felt less compunction about acknowledging the use of a compilation; they also may have hoped to receive explicit recognition from other compilers by acknowledging the tools they had used. As more such works became available, early modern compilations included more and more other compilations among their sources. For example, the first *Polyanthea* of 1503 cited only a few ancient and medieval compilations—Isidore of Seville, Valerius Maximus, and Varro but not, for example, Diogenes Laertius, Vincent of Beauvais, or Stobaeus (which was not yet in print). By 1607, the *Polyanthea* listed those and other compilations that had appeared in the meantime, including Zwinger's *Theatrum*, Rhodiginus's *Lectiones antiquae* and Alexander ab Alexandro's *Dies geniales.* In providing sources for many quotations (but never all of them), compilations generally listed author or author and title, but some citations specified book and chapter or page number. In a few cases a reference offered the equivalent of an "as cited in," listing the intermediate source and the original source as cited there. In the *Polyanthea* of 1648, for example, under "famine" the historical examples included one citation of Theodor Zwinger about the fall of Tyre in 1124 due to famine and a reference to the "horrendous famine" of Jerusalem, attributed to "Caelius [Rhodiginus] from Egesippus."[45]

Zwinger included Rhodiginus, Turnèbe, and Erasmus in the list of sources he used and mentioned in his preface some forty compilers, whose work "we used now frequently now more sparingly in this *Theatrum*" and whom he cited occasionally but probably not consistently after specific quotations. Zwinger was conscious of working in a genre where many works already existed; he vaunted the superior organization of the *Theatrum* without claiming great originality for the contents. Most of the names Zwinger cited were authors of recent compilations, including Erasmus, Pedro Mexía, Alexander ab Alexandro, and Bartholomaeus Amantius, an acknowledged contributor to the *Polyanthea*. Religious differences notwithstanding, Beyerlinck acknowledged Zwinger as a source in his *Apopthegmata,* alongside other compilations by Erasmus, Lycosthenes, and Baptista Fulgosus.[46] But beyond compilations, explicit citations are hard to find.

Even by current principles of scholarly citation, reference books that have been consulted in a research process that results in a publication often remain unmentioned. Scholars use reference works to find or confirm general knowledge that does not need to be attributed in order to be credible. Reference works also serve as an intermediate step in a research process, only the final stages of which will be documented in a footnote; for example, they provide bibliographical references leading to the sources that will actually be cited. Of course, the majority of uses of reference books do not result in a publication and stand even less chance of being recorded in writing. Early modern authors had all the same reasons not to cite the reference books they used, but in addition they generally felt under less obligation to cite their sources, even those from which they quoted directly. Early modern authors cited their sources, with varying levels of precision, primarily when they expected that the citation would add to the strength of their argument, notably by adding the support of a recognized authority. For most early modern authors, citing a source was a rhetorical strategy more than an act of intellectual honesty. John Selden recommended, for example: "In quoting of books, quote such authors as are usually read, others you may read for your own satisfaction, but not name them. Quoting of authors is most for matter of fact, and then I write them as I would produce a witness, sometimes for a free expression and then I give the author his due and gain my-self [*sic*] praise by reading him." Quoting was reserved for authors that would lend authority to one's statements and luster to one's credentials.[47]

Contemporaries were well aware of the silent use of sources—some became angry when they found that their own work had been used without proper citation; others simply noted the silent use of another's work. Conrad Gesner noted, for example, the difficulty of documenting the use of Stobaeus's anthology of sayings, a selection of which he published in Latin in 1559, because some uses were unacknowledged. "Most regularly cite sayings collected from [Stobaeus], some by name, some hiding where they got them, because they had the saying on hand hidden in a place of the thesaurus. Phavorinus Camers, whose Greek lexicon I own, translated into Latin a few short sayings selected from these collections. . . . Volaterranus transferred many of them into his books."[48] Even if Camers and Volaterranus did not cite Stobaeus as their source, Gesner was confident in identifying their use of the ancient compiler. Early modern authors, steeped as they were in the classical sayings with which they peppered their writings and in the compilations that aided them in doing so, were generally better placed than historians are to identify tacit citations. Many early modern authors engaged in textual borrowing of ancient and modern works without citing their sources at the same time that they condemned the practice in others, notably when the accusation formed part of a larger dispute, over priority for example.[49]

The tacit citation was not in itself associated with any opprobrium. On the contrary, to name one's sources was often considered inappropriate in the Renaissance. Montaigne, for example, did not generally name the ancient authors whom he quoted presumably because he expected his readers to be able to do so; certainly no contemporary complained of his practice. To name the author explicitly risked insulting educated readers, depriving them of the pleasure of recognizing the allusion, in addition to marring the flow of the prose. Modern editors of early modern works typically strive to point out the citations and allusions present in a text like Montaigne's, which is a great help to the modern reader. But in identifying the allusions to ancient authors, editors do not always pursue the source that the early modern author actually used—whether it was an early modern edition of that author or an intermediate source, such as a reference book. As a result, reference books are no doubt identified much less frequently than they should be as sources for early modern citations and allusions. Admittedly, it is especially difficult to prove tacit use of a compilation.

Unacknowledged use of a reference book can sometimes be identified, but only when material taken from the reference book can be distinguished from material taken directly from the reference book's sources or from another intermediate source. Convincing arguments for the use of a reference book typically depend on the presence of distinctive errors or on the distinctive juxtaposition of material. Anthony Lane concludes, for example, that there is no clear evidence that Calvin relied on an anthology of patristic writings, Lippoman's *Catena in Genesim*, because the suspect passages could have equally well been taken from other intermediary sources.[50] On the other hand, Fausta Garavini offers a convincing argument for Montaigne's use of Theodor Zwinger's *Theatrum humanae vitae* in her analysis of *Essays*, II, 33, "The Story of Spurina."[51] The eponymous hero of this essay is Spurina, a beautiful Etruscan boy who disfigured himself to ward off unwanted sexual advances, a story that Montaigne tells as an example of resistance to sexual desire by chastisement of the body. Although the story of Spurina can be found in various sixteenth-century collections of classical material as an example of beauty, of modesty, and of chastity, in Zwinger's *Theatrum* the story appears under the heading of "castigation of the flesh by flagellation, pains, etc.," which is precisely how it was spun by Montaigne, and alongside other examples that Montaigne integrated into that same essay.[52]

Arguments for a silent reliance on reference books are also effective when peculiarities of narrative detail can be traced to a particular reference book and would not have been introduced had the author consulted editions of the sources themselves. A good case has been made on these grounds for the use by Edmund Spenser of two manuals of ancient mythology: Boccaccio's *Genealogia deorum gentilium* (1360–74) and Natale Conti's *Mythologiae* (1551).[53] The effort involved in uncovering the silent use of reference books is considerable and may not be repaid by clear results. It has been attempted only for the most famous authors. Walter Ong linked the succession of adjectives in a Shakespeare sonnet, for example, to the collection of rhetorical commonplaces and in particular (despite the translation involved) the Latin collection of adjectives in Ravisius Textor's *Epitheta*.[54] Others have traced the use of Tottel's *Miscellany* (1557) by various English Renaissance poets, including Shakespeare.[55] Similarly, the Spanish playwright Pedro Calderón de la Barca (1600–81), who was educated by the Jesuits, owned a copy of Beyerlinck's *Magnum theatrum*, and suggestive parallels have been established between his verses and the *Magnum theatrum*.[56]

The use of a reference book need not be linked to a failure of inspiration or originality. The creativity of a Montaigne, a Shakespeare, or a Calderón was fueled by contact with sources of many kinds; reference books, which were themselves constructed from the accumulation of material from disparate sources, were thus likely to be particularly attractive. But these authors turned their sources to their own purposes so effectively that it takes painstaking analysis to construct a convincing argument for their reliance on a reference book. Of course, many authors of lesser repute also turned to reference books for information, examples, and quotations. The impact of Zwinger's *Theatrum* has been identified in two treatises from Basel and Zurich that borrowed examples from it. A treatise on chastity of Basel 1575 drew most of its examples of female behavior from Zwinger's *Theatrum*, though without any precise references; the author acknowledged his use of Zwinger in the preface and justified it with the observation that Zwinger's work was difficult to access, even in the city where the book was printed.[57] A treatise on temples of 1587 by Rudolph Hospinianus (1547–1626) borrowed its list of ancient and ecclesiastical libraries from Zwinger.[58]

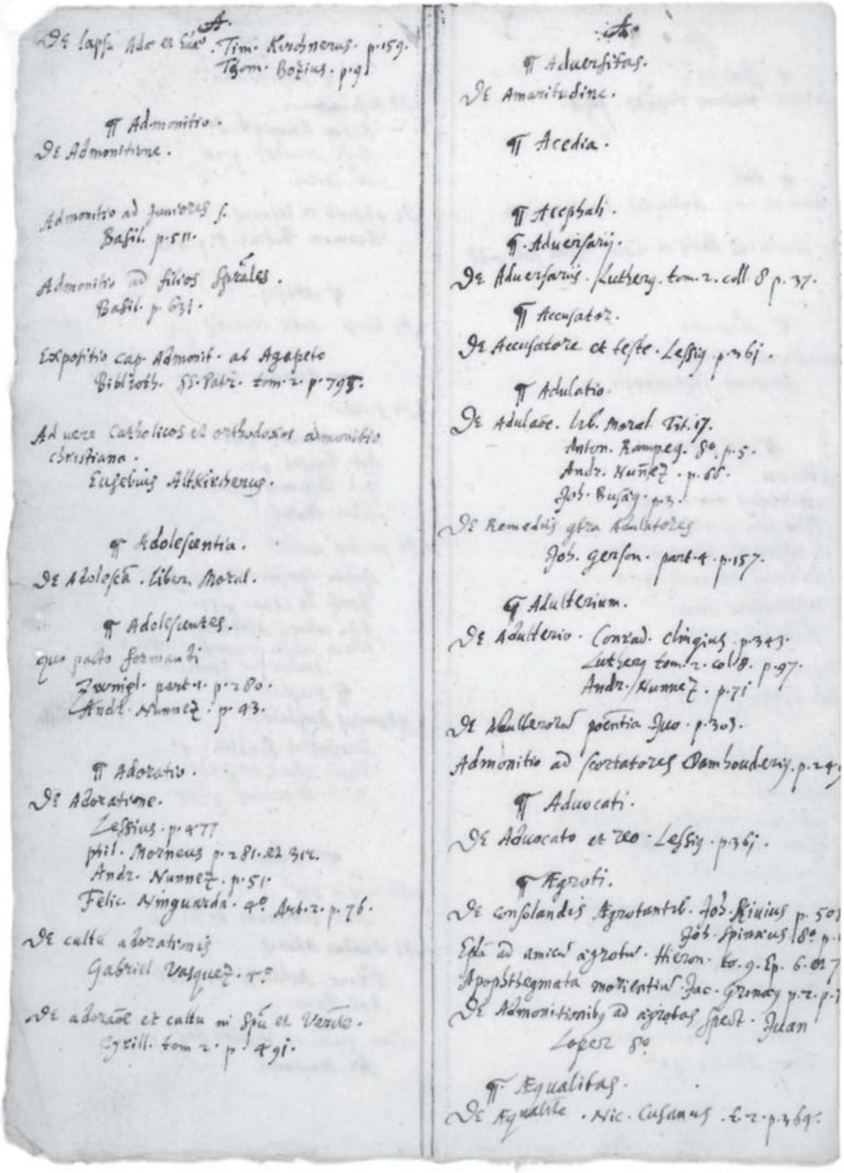
Reports that star humanist scholars never used reference books may seem more credible, but they are not all borne out by other evidence. In the table talk attributed to him, Joseph Scaliger (1540–1609) denied that he used even a dictionary, except to note its failings: "I never used a lexicon except a simple one, and not to look up words, but to add to it words that I had read." The *Scaligerana* also maintained that Scaliger's good friend Casaubon did not use dictionaries, and Scaliger mocked one Guersenius because he gained his knowledge *per compendium*.[59] Working without reference books probably was the norm among scholars in the early Renaissance when dictionaries were still scarce. Guillaume Budé apparently did not rely on existing Greek lexica in writing his commentaries in the 1510s: though he did not cite his sources, his comments do not match the discussions then available in dictionaries.[60] But by 1600 this method of working was no longer tenable: unlike those who "gamboled" among recently discovered texts, the scholar of 1600 "dragged a lengthening chain" and all the major scholars owned reference works.[61] When it was auctioned in 1609, Joseph Scaliger's impressive library included a fine collection of reference books: a dozen dictionaries and linguistic commentaries, including Calepino (1598), Perotti, Budé, Turnèbe's *Adversaria* (1581), and Erasmus's *Adages* (1558), but also a *Polyanthea* (1539), Zwinger's *Theatrum vitae humanae* (1571), and lesser collections of this kind with no author specified: *Thesaurus vocum latinarum*, *Apophthegmata variorum authorum*, and a *Promptuarium linguae latinae* (Antwerp, 1571).[62]

Joseph's father, Julius Caesar Scaliger, derived some of his antiquarian knowledge from compilations such as Alexander ab Alexandro's *Dies geniales* and the *Lectiones antiquae* of Caelius Rhodiginus (reported to be one of his teachers), and from florilegia some rare passages of Tibullus and Petronius, though he rarely cited these sources.[63] Julius Scaliger even defended indexing against the attacks of Erasmus, as a tool for those whose memories were not as strong as Erasmus's to verify the Latinity of an expression they sought to use; but this example may show primarily that in a polemical context J. C. Scaliger would use any kind of argument to berate Erasmus, even to praise an otherwise lowly "trot" such as an index.[64]

The portrayal of Scaliger as never using reference books probably stemmed less from Scaliger's own attitudes and self-presentation and more from a nostalgia that developed in learned circles in the mid to late seventeenth century for an era of true learning that seemed lost. Isaac Casaubon's nephew Meric articulated eloquently a sense of decline from the heights of learning reached around 1600 by his uncle Isaac Casaubon and his contemporaries, including Casaubon's good friend Joseph Scaliger. Meric decried the enthusiasm for new methods promising shortcuts to learning that were being hawked by various neoterics, including the followers of Petrus Ramus (whose impact increased in England after his death in 1572), Jan Amos Comenius, René Descartes, and Francis Bacon, among others. Meric was as impatient with experimental and mathematical methods as he was with pansophy and logic by tabular divisions. In an unpublished treatise of 1668, Meric Casaubon recommended learning and reading diligently rather than debating the best methods to use—industry and assiduity were the true keys to erudition.[65] When Scaliger, Casaubon, and other Renaissance scholars were lionized as models of true learning and diligence (notably through the publication of table talk and *-ana* literature), by contrast with the paltry performance of later imitators, it could not be acknowledged that they used reference books. To Meric Casaubon and others decrying the fall from great learning since the Renaissance, reference books were a major cause of decline, by offering shortcuts to learning for those unwilling to invest the proper effort (more on this below).

MANUSCRIPT NOTES

The impact of reference works can also be measured by the extent to which they were used and imitated in manuscript compilations and indexes. Various advice manuals recommended borrowing headings and material from printed reference works. In his manual on excerpting, Titius specifically named Lange's *Polyanthea* and Zwinger's *Theatrum* among the six books he listed as particularly good sources from which to draw headings.[66] In keeping with this advice, for example, an anonymous manuscript of 1628 comprising a topical index to various theological works followed quite closely the headings in the *Polyanthea.* Printed compilations likely supplied headings and material for many a manuscript commonplace book even when the source was not cited. Using the same kind of evidence that Garavini used for Montaigne, Gilbert Hess has argued that in his manuscript commonplace book the eleven-year-old duke Augustus of Brunswick copied quotations from Octavianus Mirandula's *Illustrium poetarum flores*—he followed the same headings and order and provided the same source citations as Mirandula even though the florilegium itself was never mentioned.[67] Printed



A.

De lapsu Adae et Evae. Tim. Kirchnerus. p. 159.
Thom. Bozius. p. 9.

¶ Admonitio.

De Admonitione.

Admonitio ad juniores f.
Basil. p. 511.

Admonitio ad filios spirituales.
Basil. p. 631.

Expositio cap. Admonit. ab Agapeto
Biblioth. SS. Patr. tom. 2. p. 795.

Ad vere Catholicos et orthodoxos admonitio christiana.
Eusebius Altkirchenus.

¶ Adolescentia.

De Adolescentia. liber. Moral.

¶ Adolescentes.

quo pacto formandi
Zwingl. part. 1. p. 280.
Andr. Nunnez. p. 43.

¶ Adoratio.

De Adoratione.
Lessius. p. 477
Phil. Morneus p. 281. 282 312.
Andr. Nunnez. p. 51.
Felic. Ninguarda. 4º. Art. 2. p. 76.

De cultu adorationis
Gabriel Vasquez. 4º.

De adoratione et cultu in Spiritu et Veritate.
Cyrill. tom 2. p. 491.

A.

¶ Adversitas.

De Amaritudine.

¶ Acedia.

¶ Acephali.

¶ Adversarij.

De Adversariis. Lutherus. tom. 2. coll. 8 p. 37.

¶ Accusator.

De Accusatore et teste. Lessij. p. 361.

¶ Adulatio.

De Adulatione. lib. moral. Tit. 17.
Anton. Rampeg. 8º. p. 5.
Andr. Nunez. p. 66.
Jos. Busaey. p. 3.

De Remediis contra Adulatores
Jos. Gerson. part. 4. p. 157.

¶ Adulterium.

De Adulterio. Conrad. Cligius. p. 343.
Lutherus tom. 2. coll. 8. p. 97.
Andr. Nunnez. p. 71.

De Adulterorum poenitentia [illegible]. p. 303.

Admonitio ad scortatores Dambouderij. p. 24

¶ Advocati.

De Advocato et reo. Lessij. p. 361.

¶ Ægroti.

De consolandis Ægrotantibus. Jos. Rivius p. 50
Jos. Spinaeus 8º. p.

Epistola ad amicum ægrotum. Hieron. to. 9. Ep. 6. et 7

Apophthegmata morientium. Jac. Gretser p. 2. p.

De Admonitionibus ad ægrotos Spect. Juan Lopez 8º.

¶ Æqualitas.

De Æqualitate. Nic. Cusanus. t. 2. p. 369.

Figure 5.1
An anonymous manuscript of 1628 entitled “Theology index” follows the headings of the *Polyanthea* in drawing up a list of passages in books relevant to each heading. Of the headings on this page only “acephali” and “adversarii” do not feature in the *Polyanthea.* A cluster of headings are out of alphabetical order, likely added later in the blank space left between “adversitas” and “adulatio” at the top of the right column. Reproduced with permission from the Cambridge University Library, MS Gg.i.28.

reference books thus played a major role in diffusing not only content but also categories for collecting, sorting, and using textual material, which readers transferred to their manuscript notes and later uses. More generally, too, reference books spread familiarity with the methods and tools of consultation reading. While they did not originate in the early modern period, these practices became more widespread as reference books were increasingly accessible to broader audiences in the sixteenth and seventeenth centuries.

Annotations provide useful insight into how those who read with pen in hand engaged with the text and its trappings. The majority of annotations consist (in descending order of frequency) of underlining in the text or markings in the margin—vertical or squiggly lines, x's, dots, or manicules (pointing fingers); less commonly, verbal annotations were included. Annotations were usually made in ink, but notes can also be found in pencil in seventeenth-century English copies, belying the common view that pencil was rarely used in the early modern period.[68] One cannot of course conclude definitively that passages that were not annotated were not read by annotating readers. Nonetheless, selective annotation in a reference work suggests consultation reading, especially when it is combined with signs of reading of the index and other finding devices. In very few instances do notes suggest that a reader attempted to read through a reference book. In two copies of Rhodiginus's *Lectiones antiquae* (which was not only designed for consultation, but promised the pleasure of variety through its miscellaneous arrangement) the first forty to fifty pages are annotated quite regularly before the annotations stop altogether—a pattern typical of books that were read sequentially (though not to the end) rather than consulted.[69] In another case, Henri de Mesmes, president of the Parlement of Paris and owner of a learned library (and who hired Gabriel Naudé to tend to it), took freestanding notes on his reading of the *Suda* and of Henri Estienne's *Greek Thesaurus*, both reference books designed for consultation; but de Mesmes excerpted passages (definitions and examples) from the dictionary entries selectively but following the alphabetical order of the original, which suggests that he proceeded through the books systematically.[70]

On the contrary, we have strong evidence of consultation reading from annotations that are dense through particular articles and not present elsewhere, or that include attention to finding devices. In one copy of Beyerlinck, the index sections on the Turks were underlined and the corresponding pages of text also showed signs of reading, including well-taken corrections.[71] In other cases when the index was annotated, corresponding sections in the text were not; one can wonder whether the reader first identified material of interest in the index, then either failed to follow up in the text or did so and found the material of little interest. But some notes to the index were certainly made after reading in the text. In particular, additions and corrections to the index indicate a desire to improve the index for future consultation.[72]

Annotations in the *Polyanthea* reveal the selective interests of various readers. That readers often manifested special interest in religious topics is not surprising given the organization of the work around virtues, vices, and religious concepts. One copy is abundantly annotated at "Eucharistia," "matrimonium," and "simonia," with sparser notes on a few other mostly religious topics; another has notes only at "Christi nativitas" and "humilitas."[73] A more heavily annotated copy also included notes on "bellum" (war), "mendacium" (lying), and "mercatura" (commerce) alongside more clearly religious categories.[74] In all these cases, quotations from the Bible and church fathers were favored for flagging. In contrast, a copy of the first edition of the *Polyanthea* reveals a reader (anonymous and undated) interested above all in the classical quotations, adding a few verses from Seneca's *Medea* under the heading "naufragium," for example; additionally, a reader of the 1567 edition flagged the example of the daughter who nursed her imprisoned father to give him nourishment, among other ancient stories with traces of reading. In a *Polyanthea* of 1517, one reader added a quotation under "ignorance" but then noted that he could not recall his source.[75]

Annotations in Zwinger's *Theatrum* were particularly varied. Herbert of Cherbury (1583–1648), an English baron and diplomat who wrote on religion and history, classified his copies of Zwinger (1604) and the *Magnum theatrum* as works of theology, so a religious emphasis in reading was plausible.[76] But many readers highlighted encyclopedic information of various kinds. One reader repeated in marginal notes information central to the section on Hebrew rulers ("the prophet Samuel gives the Hebrews King David") but also information provided in passing and not central to Zwinger's selection ("Judea is divided in 5 equal parts").[77] But Zwinger's appeal was probably not only informational. One reader especially flagged stories of cruelty and death, such as examples of people who were buried alive, or who died from food and drink, or of the dead who came back to life.[78] Zwinger pursued edification by offering a broad range of exciting and entertaining stories, with plenty of violence and some sex, while in the more staid *Polyanthea* edification meant primarily quoting from biblical, ecclesiastical, and ancient worthies. Though it was expensive and expensively produced, the *Theatrum* provided its readers with some of the same kinds of thrills as the collections of prodigies that circulated in Latin and in the vernacular, often in smaller, cheaper formats (including a work by Zwinger's stepfather Lycosthenes from which Zwinger may have drawn some of his material).[79] The witticisms on offer did not always find favor with readers. One noted "ridiculous" alongside the quip attributed to an old woman on seeing Stratonicus the cithar player leaving Corinth: "I wonder that your mother's uterus could hold you for ten months while your city can't take you for a day. Erasmus, *Adages*, from Athenaeus book 8."[80] Finally, Zwinger was of interest to some readers as an individual author whose voice could be identified (unlike the contributors to the *Polyanthea*), judging from annotations to Zwinger's prefaces and statements introducing various sections.[81]

Beyond using the finding devices provided in print, readers of the *Polyanthea* and the *Theatrum* also deployed their own strategies for managing information, even if we cannot always reconstruct their organizational schemes. One reader of the *Theatrum* noted cross-references between exempla featuring the same historical figures, apparently not content to rely on the "index exemplorum" that was present in that edition; but he stopped doing so after just a few notes, perhaps realizing the magnitude of the task.[82] This copy also features tabs added for each of Zwinger's twenty-nine volumes, signaling a desire to consult the work not only by the continuous pagination but also by volume number (though none of Zwinger's indexes referred to volume numbers). As part of their personal reference system, some readers added numbers that are remarkably absent (beyond page numbers) in Zwinger's work. One reader, presumably Roger Goode, fellow of King's College, numbered the quotations he selected as worthy of interest in a particular entry, for example, 1, 2, 3 under "mendacium" in a *Polyanthea* of 1539.[83] Similarly, Edward Sylvester numbered quotations of interest sequentially across the two facing pages of an opening. In Samuel Hilliard's *Polyanthea*, now at Balliol College, Oxford, quotations of interest were annotated with a number (3.168 or 2.103, but also 7, 73, 473) that presumably served as a numerical thematic key to a commonplace book or other system of note-taking.[84] One reader who numbered from 1 to 4 various quotations in the section on the use of music also offers the single example I have found of an annotation to one of Zwinger's branching diagrams: by adding a heading ("potters") and its associated page number in a chart in the tome on mechanical arts the reader made the diagram usable as a finding device on that particular issue.[85] In these cases readers used annotations to improve their ability to retrieve or return to a passage of interest according to their methods of working and note-taking.

Judging from the variety of traces of reading notes and freestanding manuscripts, printed reference books spread familiarity with finding devices and methods of consultation reading that readers imitated and developed further in their manuscript notes and annotations. But some of the strongest evidence for the use of reference works can be gleaned from the often strident complaints about them in early modern Europe.

COMPLAINTS ABOUT REFERENCE BOOKS

In many contexts the spread of reference books offering collections of excerpts or summaries triggered complaints, some of which resemble concerns voiced today about new methods of working, from Google Books to Wikipedia to data mining. Like today's complaints, past complaints were freighted with normative judgments and offer valuable evidence for the historian about the anxieties of those who voiced them—anxieties that were often caused by much broader phenomena than the circulation and use of certain kinds of texts. Early modern European complaints about reference tools included some themes that were raised in earlier contexts (though those making them were often not aware of the antecedents) and others that were new, which highlight developments peculiar to Europe in the sixteenth and seventeenth centuries. The complaints probably had little impact in reducing the use of reference tools—indeed, they serve as good evidence for significant use—but they did have an intellectual impact, in helping to form new concepts and ideals of scholarship in reaction against common practices of the time. Just as during the thirteenth century concern about an excessive reliance on excerpts contributed to the formation of the notion of an "original," so too during the seventeenth century complaints about the impact of compilations of quotations reinforced ideals that were still in development about quoting accurately and with respect for the original context of the quotation.[86]

The complaint that summaries caused the loss of the longer originals that they summarized has a particularly long history—it was voiced by scholars in tenth-century Islam (by Ali ibn Ridwan) and by European humanists (Erasmus, among others) who were active in transmitting and recovering ancient texts.[87] By the seventeenth century in Europe, the fear of loss on these grounds seemed less acute. In his advice on studying, Degory Wheare (1573–1647) acknowledged that "*Compendiums* have some times [*sic*] done much mischief in the World, and proved the ruine of some of the best ancient authors" but went on to commend the genre as a useful starting point: "Yet we will not therefore despise those *Epitomes* which are made with reasonable Abreviations." In 1685 Adrien Baillet concluded that epitomes were in fact not to blame for any losses.[88]

A more complex and long-lasting complaint was that in relying on compilations, readers ignored the originals and thus were misled by textual errors and deeper misunderstandings introduced by the excerpts. Some compilers complained of other compilers that they introduced mistakes. For example, Vincent of Beauvais observed that existing "flowers" from Aristotle's writings changed the order and form of the words present in the originals and that even when the excerpts were faithful to the meaning of the author, they abbreviated the original or inserted sentences of explanation.[89] Four hundred years later, Pierre Bayle approved of the project of the *Polyanthea* but complained that it could be of use, notably to students, only if the quotations had been corrected from the originals instead of being so full of mistakes.[90] Other scholars blamed compilations more sweepingly for the rise of new schools of thought of which they disapproved. John of Salisbury (1120–80), for example, may well have had florilegia in mind when he complained that his enemies the Cornificians relied on shortcuts and reductions of authors instead of proper instruction in logic and eloquence. More directly, a thirteenth-century cartulary of the University of Paris blamed the rise of nominalism in philosophy on the use of alphabetically arranged collections of *sententiae*.[91] In both these cases, the charges were polemically motivated and designed to elicit the reader's indignation at the behavior of a new philosophical school rather than to offer a careful assessment of its origins. This line of attack was long-lived. In an often-quoted passage of 1707, John Locke complained, "The [Epistles] are so chopp'd and minc'd . . . that not only the common People take the Verses usually for distinct Aphorisms; but even Men of more advanced Knowledge, in reading them, lose very much of the Strength and Force of the Coherence." Locke's complaint was a polemic against the religious positions of sectarians and enthusiasts among his contemporaries rather than an observation about their reading habits. Locke's point was that in reaching their faulty conclusions they must have relied on faulty reading, whereas his interpretation of the Bible grasped that book's true "coherence."[92] Similarly in twelfth-century China, Zhu Xi's complaints that fragmented reading missed the true understanding of the classics can also be understood in the context of a competition between philosophical schools.[93]

Early modern European complaints about the reliance on collections of excerpts also took more specific forms, that of bemoaning the tendency to heap poorly chosen quotations lifted without acknowledgment of their source or original context. In this line of thinking, which extended from Petrarch to the eighteenth century, excerpting was valuable only if it was informed by the well-considered judgment of the one who would use these excerpts. To rely on the excerpts of others was to engage in a mechanical production of literature, easier and faster but devoid of adequate personal reflection. Thus pedagogues routinely insisted on the importance of taking one's own reading notes rather than relying on printed collections of such in reference works.[94] Despite these criticisms, some pedagogues were willing to entertain their use—Jan Amos Comenius (1592–1670), for example, criticized printed commonplaces but made an exception for Lange, whom he mined for some quotations—and no doubt even more pedagogues actually used them, like Naudé's "well-known regent master."[95]

Others indicted the accumulation of notes itself for encouraging authors to write without having anything to say. This criticism evolved from a playfully self-referential form in Montaigne and Robert Burton ("nous ne faisons que nous entregloser" or "we can say nothing but what hath been said") to the biting attacks of later authors. Jonathan Swift, for example, mocked those who wrote with "empty heads but full commonplace books," clearly perceiving himself to be immune to the charge.[96] Similarly, Malebranche condemned the culture of citation in which authors quoted others at length with no purpose other than to appear to have read books that they had not read.[97] The critique of excerpting as harmful to independent judgment and prone to slavish imitation and plagiarism was especially long-lived in eighteenth-century Germany, along with excerpting itself.[98]

Printed reference books were also criticized for heaping excerpts indiscriminately and without regard to context. Gabriel Naudé, who also recommended using reference works, listed "polymathy" or the "uncritical heaping of material in large volumes" as one of the three main causes of error.[99] Similarly, Bernard Lamy (1640–1715), author of biblical commentaries as well as a treatise on mechanics, complained that compilations sowed confusion by collecting contradictory quotations and quotations taken out of context.[100] Adrien Baillet was generally sympathetic to reference books in his section on "the prejudices against abridgments, summaries, excerpts, collections, and compilations made of ancient authors," notably by rejecting the charge that they caused the loss of ancient originals. But he, too, warned that these works were of most use to those who made them and should be avoided by readers who did not know the original texts themselves, such as the young for whom they were often designed: "Those who read the unsewn patches [*pièces décousues*] in these large repertories cannot know the purpose of the original authors, and it is hard that they not misuse the bits against the use for which they were intended. . . . Which should cause us aversion to these large compilations that we have under the name of 'Theater of Life,' 'Polyanthea,' 'Garden of orators' and a number of others whose pretty titles serve only to impress us."[101] For Baillet, the most serious failing of the reference book was to accumulate material divorced from and without reference to its original context.

The charge may seem odd given how regularly seventeenth-century authors seem to us to have used sources without attending to their original context, but this complaint was not unique to Baillet. This new argument against a much-criticized genre may have resulted in part from the spread of historical reasoning, but even more so, I would suggest, from the search for criteria by which to distinguish true learning from the mere appearance of learning.[102] The medieval florilegium operated precisely on the premise that an authoritative *sententia*, typically taken from the Bible or a select group of ancient and Christian authorities, could be made useful in any context, regardless of its original purpose. Early modern collections of quotations, examples, and anecdotes promised the same versatility for their material, but as more and more texts became available in excerpts, the simple use of a quotation no longer constituted a display of learning. Instead, to show knowledge of the original context of a quotation, which was often absent or misrepresented in a compilation, became the hallmark of one who had read the original source. Or rather, the absence of such demonstration of mastery became the ground for criticism by the learned—criticism that was frequently motivated by personal and corporate rivalries.[103]

At the root of most complaints about reference books by the learned was a more or less explicit awareness of the changing status of Latin learning amid a broad set of cultural changes during the sixteenth and seventeenth centuries, including the rise of the vernaculars and increases in literacy, in attendance at universities and in social mobility (or at least in the perception of social mobility). Just as Hieronymo Squarciafico complained in 1477 that printing let "everyone pretend to be learned," so too compilations were blamed for letting everyone put on airs of learning. The humanist Conradus Mutianus Rufus (1471–1526) complained of Erasmus's *Adages* that they were "nothing but a florilegium helping students show a learning that they do not really have."[104] This was a regular refrain, as scholars in many different contexts felt insecure in their social status, and often with good reason. In England, Richard Montagu (1577–1641), Anglican divine and bishop, observed, "The Abridgements that have beene made long since, and of late, are held to be one of the chiefe plagues of Learning, and learned men. It maketh men idle, and yet opinionative, and well conceited of themselves."[105] By the late seventeenth century in France, the position of the scholar had indeed declined radically: the figure of the scholar was routinely mocked as pedantic in the theater, and learning in Latin was no longer valued, neither in the salons nor at the court where the witty repartie of the *honnête homme* was admired instead.[106]

In this context, those learned in Latin complained fiercely about the low standards of learning among their contemporaries. The *Menagiana* (1715) or table talk attributed to Gilles Ménage (1613–92) lumped dictionaries with lotteries as amusements for the masses: "The dictionaries and lotteries which we see multiply from day to day are the sure mark of ignorance and baseness for the century."[107] Similarly, though he experienced a successful ecclesiastical and literary career, as bishop of Soissons, then Avranches, and as a member of the Académie française and editor of the Delphin Classics (known for their detailed indexes), Pierre-

Daniel Huet (1630–1721) mused with bitterness on the "causes of the decadence of letters." Like Meric Casaubon, Huet looked to the late sixteenth century as the heyday of learning. Huet identified the principal cause of the decline since then as "the new methods devised to make men learned." Learning was difficult to acquire in the Renaissance: "printing had not yet multiplied books infinitely," so books were expensive and hard to read, devoid of such aids as translations, prefaces, divisions, notes, commentaries, and tables; grammars and dictionaries were few and unappealing. Those who could overcome all these obstacles were perforce excellent scholars. They naturally sought to share with their contemporaries and descendants the results of their hard labor and to shorten and smooth the path of knowledge, but this brought about decline: "The success of their work was too great and a good cause has had a very bad effect: the ease of study has triggered its weakening; content with the false erudition which is at the foot of the mountain, [today] they spare themselves the effort of climbing to the top where true erudition is. So many summaries, so many new methods, so many indexes, so many dictionaries have slowed the live ardor which made men learned. . . . All the sciences are principally reduced to dictionaries today, and no one seeks other keys to open them."[108] None of the features that Huet identified as the source of the decline of learning in his day were as new to the seventeenth century as he claimed. But certainly indexes, compilations, and reference tools of many kinds had multiplied profusely since they were first devised in the thirteenth century and were largely perceived by scholars as a new plague brought about by printing and the ambitions of so many to ape the learned.

The tools to facilitate emulation of the learned had been available for sale in print since ca. 1500, but what was really new in the late seventeenth century was a vivid awareness of the loss of status of Latin learning. That loss had developed progressively over some 150 years, but by the late seventeenth century its effects were unmistakable. Huet and other scholars pointed to reference books as a principal cause of the problem, blaming them for making the trappings of learning too widely available and for discrediting the whole enterprise of looking for guidance in the best passages of received authorities. In fact, many cultural forces were at work that shunted Latin learning away from its position of primacy among the humanists to the purview of academic specialists, though school curricula continued to impart the rudiments of ancient literature and culture on generations of well-educated boys for another two centuries.

Rather than blaming reference works, intellectual historians today identify the impact of René Descartes as a major blow to the methods of humanist learning, but interestingly Descartes himself used the scholars' grounds for complaint against them. Whereas Meric Casaubon and others viewed Descartes as another exponent of a worthless method promising quick returns without learning or effort, Descartes complained that the real shortcut was to rely on textual authority, as the Latin scholars did, rather than thinking for oneself. Instead Descartes advocated starting from first principles to build a new philosophical system and complained that his contemporaries were unwilling to do so: "I am surprised that among so many rare minds who would have done this much better than I, there was no one who had the patience to unravel these things and that they almost all imitated those travelers who leaving the main road to take a crossroad [shortcut] remain lost in the brambles and precipices."[109] Thus, both sides in the quarrel of the Ancients and the Moderns in the last decades of the seventeenth century agreed on criticizing shortcuts and advocating the longer, harder path, but they had opposite ideas of what constituted a shortcut. The Ancients (that is, the seventeenth-century proponents of the superiority of antiquity) decried reference books as illegitimate shortcuts that undermined true humanist scholarship, and they called for the careful and unmediated study of ancient texts. But for Descartes, in the Modern camp, to rely on ancient authorities at all was the illegitimate shortcut; instead he advocated building philosophical truth by ratiocination from first principles. Descartes was thus no more sympathetic to reference books than the scholars in the Ancient camp. He thought it acceptable to use compilations to refresh one's memory of works one had already read, but he discouraged the study of *pièces détachées*, which could only give an appearance of learning and could not lead to wisdom.[110]

THE SHIFT FROM ANCIENTS TO MODERNS

Many factors must be invoked to explain the complex intellectual transition from late humanism to the Enlightenment and the devaluation of ancient authorities in favor of more recent ones. The quarrel of the Ancients and the Moderns in France (which began with Perrault's *Parallèle des anciens et des moderns* in 1687) and the related Battle of the Books in England (1690–1704) were two episodes in which the comparison between ancient and modern achievements was made explicit in fields ranging from literature and art to science and technology. The Ancients resented the claims of the Moderns that more recent authors and works had surpassed the achievements of antiquity. Other debates with similar implications hinged, in France for example, on the choice of language (Latin or French) used on official inscriptions and treaties or on the kind of natural philosophy to teach at university (Aristotle or Descartes or Newton—although French universities taught Newton only from the 1730s, Aristotle was abandoned in the 1690s).[111]

Some seventy-five years ago, Paul Hazard identified 1680 to 1715 as the crucial decades of this cultural ferment. Although Hazard's thesis has been criticized for neglecting antecedents to the "modernity" he identified with that period and for focusing only on a few figures, recent scholarship has generally reinforced Hazard's claim that during these years the tide of educated interest shifted away from the commentary on ancient culture and tradition and toward the discussion of new theories and observations, formed in various scientific fields, or from travel, and facilitated by movements of people and books in the Republic of Letters.[112] My study of Latin reference works confirms Hazard's chronology. Between 1666 and 1707, the Latin reference works I have studied were printed, but for the last time: Rhodiginus's *Lectiones antiquae* in 1666; the *Polyanthea* in 1681; and Beyerlinck's *Magnum theatrum* in 1707.[113] After that, of the major Latin reference books of the preceding century only the Calepino was still published, in twelve editions down to 1779, all but one of them by the seminary at Padua, presumably for use by students in that clerical environment.[114] Of course, copies of the large Latin reference works continued to be available, and used copies were bought, read, and annotated during the eighteenth century, but after 150 to 200 years of regular reprintings of these works, after 1707 no one ventured a new edition. Even if the shift away from late humanist culture did not occur at the same pace everywhere, the reference works designed to fuel Latin rhetoric, commentary, and argument were no longer in sufficient demand across Europe in the eighteenth century.

Yet contemporaries commented on an increasing abundance of dictionaries in print during these same decades, as one dictionary preface noted in 1690: "One could hardly count all the dictionaries that have been reprinted or composed in the last fifteen or twenty years of which most have sold and are still selling extraordinarily well."[115] While reference works aimed principally at the mastery of classical culture and copious Latin composition were printed for the last time, during the same decades, other (often new) kinds of reference books became strong sellers, composed in the vernacular and focused on current or recent developments rather than on the ancient world. Around 1750 Jean le Rond d'Alembert described the most prevalent new genres as three different kinds of dictionaries: linguistic dictionaries, historical dictionaries, and dictionaries of arts and sciences.[116] Although vernacular language dictionaries were not new, many more and much larger such dictionaries were produced in the late seventeenth century, and some explicitly hailed the model of Latin antecedents. Historical/biographical dictionaries and dictionaries of the arts and sciences were largely new genres that did not acknowledge Latin antecedents, but, I would argue, they too were indebted to the prior success of Latin reference works in various indirect ways. The Latin reference books had opened the way for these new works by showing the commercial viability of large reference works; by experimenting with collaborative authorship, methods of compilation, and various forms of presentation and finding devices; and, most basically, by spreading familiarity with reference reading.

The Latin genres themselves did not disappear entirely but took new forms that were narrower in scope and in intended audience. The florilegium designed for a broad audience disappeared, but handbooks offered lists of synonyms, prosodic information, and famous examples of ancient usage to aid in the Latin composition expected of schoolboys through the nineteenth century in many contexts. The *Gradus ad Parnassum* (1691) by Paul Aler was in print until 1862 and its use acknowledged, more or less directly, by such literary figures as Stendhal (1783–1842) and Jules Vallès (1832–83).[117] At the same time, the practice of gathering the best quotations from sources of wide interest spread to the vernacular, notably in anthologies of best bits taken from the eighteenth-century English novels that tacitly acknowledged the model of excerpts from ancient authors.[118] In the mid-nineteenth century Bartlett's *Familiar Quotations* started as a collection of quotations from ancient and modern "classics" and was targeted at audiences to whom most of the material would have seemed familiar. Over the course of dozens of new editions down to the present time, this particular brand of florilegium has increasingly been designed to introduce readers to authors with whom they might not be familiar, including the ancient classics, as they became less widely known, but also, in the most recent editions, East Asian sages or women and minority authors.[119] Nor is Bartlett's the only kind of florilegium currently on the market. Perpetuating the two main motivations behind early modern compilations, *Brush Up Your Shakespeare* offers pithy quotables, and *Wisdom from the Ancients: Enduring Business Lessons from Alexander the Great, Julius Caesar, and the Illustrious Leaders of Ancient Greece and Rome* (2001) seeks to draw from classical examples practical and moral lessons for the present.

The "several lections" became a genre with specialist appeal to experts in classical studies. Nineteenth-century works perpetuated the title of *variae lectiones* and the tradition of emendation and miscellaneous commentary.[120] At the same time, the miscellaneous order and the model of the collections of apophthegms and ancient exempla inspired the *mélanges* and the *-ana* that gathered the witticisms and notable behaviors not of ancient figures but of recently deceased scholars and other people of note.[121]

The last of the works entitled *loci communes* (focused on the Bible and law) appeared in the early eighteenth century. But note-taking by commonplaces persisted much later in the vernaculars, through the nineteenth century and beyond.[122] The printed genre was also perpetuated, with transformations, in the dictionaries of arts and sciences that first appeared in the first half of the eighteenth century and that, as Richard Yeo has argued convincingly, were marketed as commonplace books made available ready-made to readers "to prompt their memory of earlier reading or to explore topics outside their current knowledge."[123] These works were arranged alphabetically, as many commonplace books were, but focused on recent developments, notably in the sciences, rather than on the classical quotations and cultural information characteristic of Naudé's genres.

Of the new vernacular genres, the linguistic dictionary offers the case of most direct continuity with its Latin antecedents. Antoine Furetière, who published the first of a new wave of linguistic dictionaries in 1690 (which was followed by the *Dictionnaire de l'Académie française* in 1694 and the *Dictionnaire de Trévoux* in 1704), directly compared his task to that of the authors of Latin dictionaries and cited antecedents among them, including Robert and Henri Estienne. Furetière acknowledged that it was easier to master vocabulary in one's mother tongue than in a dead language, yet the dictionary of a modern language had to represent the whole language, including familiar speech, which was not expected of a dead language dictionary.[124] In keeping with the dominant Latin dictionary, the Calepino, Furetière also boasted of the encyclopedic interest of his dictionary. He promised a dictionary without dryness, with much diversity, with examples from history, citations of sources, and "one hundred pretty curiosities from natural history, experimental physics, and the practice of the arts": "It is not just words that you're taught [here] but an infinity of things, the principles, rules, and foundations of the arts and sciences."[125] The new vernacular dictionary was no less encyclopedic than the Calepino. Because of that encyclopedic scope, the Jesuits produced a rival work known as the *Dictionnaire de Trévoux*, which purged Furetière's book of any traces of sympathy for Protestantism or heterodoxy.[126]

The new biographical dictionaries were also indebted to the dictionaries of proper names focused on antiquity that were much reprinted down to 1686, the date of the last printing of Charles Estienne's *Dictionarium historicum ac poeticum*. But the vernacular biographical dictionaries that started appearing from the middle of the seventeenth century centered on recent figures and drew material from collections of *éloges* (praise) for the leading figures in a profession, discipline, or region.[127] Louis Moréri's *Grand dictionnaire historique* (1674) was the first vernacular biographical dictionary, yet in it he spent more than a page naming his predecessors, including Charles Estienne. The Moréri became, like the Calepino, a brand name, printed across Europe and with many augmentations, down to a twenty-fourth edition in 1759, and it remains a most useful source of biographical information on early modern figures.[128] Most famously, Pierre Bayle began his *Dictionnaire historique et critique* (1696) as a corrective to the errors in Moréri and other works. But Bayle strayed far from this initial plan and published a work idiosyncratic in both content and format. The articles themselves were often short and factual, covering an unsystematic range of biblical and ancient figures and more recent authors (including even unusual figures like Spinoza). In a first tier of notes that in many cases bulked much larger than the article itself, Bayle assessed, often critically, the behavior and existing interpretations of the figure under discussion and provided source citations in a second tier of footnotes.[129] Whereas the Moréri offered ever-increasing amounts of biographical information, the distinctiveness of Bayle's treatment likely explains the stability of this text through multiple editions and its tremendous appeal in eighteenth-century France, when Bayle was read as a precursor to the philosophes. Readers at the Mazarine Library competed for access to the volumes in 1715, and Bayle's *Dictionnaire* was one of the most widely owned books according to a study of 500 inventories of Parisian libraries from 1750 to 1780.[130]

The dictionaries of arts and sciences, from Chambers's *Cyclopaedia* (1738) to the *Encyclopédie* of Diderot and d'Alembert (1751–80), are typically portrayed as the immediate models of the modern encyclopedia. The success of Ephraim Chambers's two-volume account of scientific fields in alphabetical articles both long and short inspired a French publisher to commission a French translation of it from Denis Diderot, a young writer in search of work. What resulted many years later was something very much larger and more ambitious than a translation of Chambers's two volumes: seventeen folio volumes of text and eleven volumes of plates, with contributions by 140 identified authors (the majority of whom remained anonymous at the time). The *Encyclopédie* established the norm for the dominant modern conception of the genre as a multivolume, multiauthor, illustrated, alphabetized reference book. But its new format was not what the work was noted for at the time. Although the *Encyclopédie* presented an eclectic mix of articles, including conventional ones sometimes copied from elsewhere, a number of articles were written by important Enlightenment philosophes, not only by Diderot and d'Alembert but also Montesquieu, Turgot, and Voltaire, among others. These articles were often laced with criticisms of church and state, in keeping with the philosophes' plan of reform through persuasion of the elites. The *Encyclopédie* got into print despite its bold stances thanks to various maneuvers to veil them: for example, by burying them in innocuous-looking articles, by omitting mention of authors considered dangerous even if their ideas were adopted in the text, and by using cross-references to create tendentious associations. Although the *Encyclopédie* was not printed in France after the first volume, it was widely read there because of the difficulties in enforcing censorship, which ranged from the chief censor's sympathy with the project to the existence of well-honed networks for producing the books abroad and smuggling them into France.[131]

The success and fame of the *Encyclopédie* spawned a tremendous explosion of encyclopedias throughout Europe, both specialized and general, some ideologically engaged either for or against the philosophes, most more straightforwardly informative.[132] Following the model of Diderot, encyclopedias became longer and more often involved multiple contributors and illustrations; a few appeared in large format until 1800, but after the late eighteenth century encyclopedias were almost always printed in smaller formats.[133] Among them, the *Encyclopedia Britannica* published in three quarto volumes (1768–71) by William Smellie reverted back to earlier models with its single-author compilation, but alone of the eighteenth-century works, the *Britannica* became a brand that produced successive editions, each drawing on the previous but significantly modified. From the mid-nineteenth century, the *Britannica* set the standard of the modern encyclopedia through the twentieth century.

D'Alembert's threefold division of dictionaries does not account for the largest reference book of the eighteenth century, Johann Heinrich Zedler's *Universal-Lexicon*, published in sixty-four volumes from 1732 to 1750, which included biographical as well as geographical, historical, and scientific and technological entries and even linguistic information, thus combining all three of the genres d'Alembert enumerated as separate. Zedler swore his contributors to silence, so we do not know how many wrote articles, in addition to the editor Zedler hired after 1738, Carl Günther Ludovici, who published four supplementary volumes (1751–54) after Zedler's death. At a staggering 67 million words, the *Universal-Lexicon* was not printed again, though it is still consulted today, in facsimile editions and online. Unlike Beyerlinck's *Magnum theatrum*, the largest reference works of the eighteenth century, the *Universal-Lexicon* and the *Encyclopédie* (totaling about 25 million words) were published by subscription and in installments over decades.[134] This method of production made it impossible to plan with precision what lay ahead in future volumes or to revise earlier entries in light of later ones. Both works issued supplemental volumes almost immediately after completion, in part to palliate this problem, but still did not offer an exhaustive list of their entries, as Beyerlinck did at the beginning of each volume.

The modern dictionaries of arts and sciences generally did not acknowledge any models among the Latin reference genres.[135] Nonetheless it is hard to imagine such large, expensive, and sophisticated works being published without the prior experience of successfully printing and selling so many earlier compilations.

Alphabetized entries, topical headings, and a layout that enabled consultation, with columns and running heads, can be traced back to medieval innovations. Early modern printed reference books honed these features in the medium of print and experimented with arranging and supplementing texts for consultation. Of the many finding devices introduced in early printed reference books, cross-references were the only ones consistently adopted by the modern ones. D'Alembert used a hierarchical chart in much the same way Zwinger and Alsted had, to offer an overview of the division and hierarchy of knowledge, but d'Alembert's chart focused on the relations between the disciplines, while Zwinger and Alsted each delved deeply into the specifics of individual subjects. The encyclopedias of the eighteenth century generally did not include lists of authorities, lists of headings, or general indexes, though an index to the *Encyclopédie* was published separately by Pierre Mouchon, without Diderot's permission, in 1780 (in two thick volumes), and such indexes became more common in the nineteenth century.[136] Unfortunately, we know remarkably little at the moment about how the encyclopedias of the eighteenth century were produced—for example, how Diderot managed his own notes and writings or those of over one hundred contributors; nor do we know much about how printers transmitted their experience in managing such large projects.

The terms in which writers of encyclopedias justified their work in the eighteenth century were very similar to the themes emphasized in Latin reference works. Prefaces typically boasted of the public utility of works that contained so much information relevant to so many different readers and interests; many also stressed the great labor and sound judgment involved. Collaborative authorship was the norm, whether on a small scale, with one author and some helpers, or on the scale of hundreds of contributors, less often through the successive editions of a single work. When many contributors were involved, eighteenth-century encyclopedias followed no consistent policy: Zedler tried to hide the fact and never identified his contributors, whereas Diderot envisioned that every article would be signed through a system of symbols to which he would provide a key. Diderot portrayed himself in terms similar to medieval and early modern compilers, as merely reporting the words of others without taking responsibility for them. In practice, censorship complicated Diderot's plan for collective authorship and responsibility. After the work was suspended from publication in France following the appearance of the first volume, many contributors no longer wanted to be identified, and it is unlikely that Diderot accurately recorded his own authorship of articles with a star, as he promised in the preface, possibly to avoid readers noticing that he wrote the bulk of the articles in the final volumes.[137] Further complicating the identification of contributors is the fact that some prolific contributors engaged helpers to whom they delegated part or all of the task of writing articles.[138] The pattern of tacit use and explicit criticism also continued in the eighteenth century. For example, Montesquieu, who described detesting compilations, relied on Stobaeus at least for many quotations in his *Discours sur la sincérité* (1717).[139] Voltaire bemoaned the multiplication of dictionaries, although he himself produced multiple editions of a best-selling *Dictionnaire philosophique*, and he cut and pasted from his own prose and that of others throughout his many writings.[140]

Most important, the Latin reference genres had spread familiarity with the tools and methods of consultation reading beyond specialist circles to a general educated readership. In the eighteenth century, reference books no longer needed the blurbs that appeared in the sixteenth and seventeenth centuries explaining how to use an index. The predominantly self-indexing reference works of the eighteenth century assumed familiarity with the use of alphabetized headings and cross-references. Of course, reference books never dictated their use to readers—one annotated copy of the *Encyclopédie* that has been studied suggests that it was read both sequentially and by consultation at different times by the same reader over more than thirty years of ownership.[141] The spread of consultation reading can also be traced through the rise of terms to describe it. Whereas Conrad Gesner had to explain his use of *consulere* in 1551, that term and vernacular equivalents became unproblematic during the seventeenth century. In 1653 Georg Philipp Harsdörffer had no misgivings about not reading books cover to cover, noting that books that were not schoolbooks were often meant for consultation—and he used the term still in use today: *nachschlagen*. Anthony Wood is credited with the first use of "look up" as a synonym for consulting a book in 1692. Furetière's (1690) was the first of the major French dictionaries to include the notion of consulting books under *consulter*.[142]

By the eighteenth century, Samuel Johnson famously described his working methods as heavily indebted to library catalogs and indexes, as he sought to extract what was of use to him without reading a book entire: "Knowledge is of two kinds. We know a subject ourselves or we know where we can find information upon it. When we enquire into any subject, the first thing we have to do is to know what books have treated of it. This leads us to look at catalogues and at the backs of books in libraries."[143] By backs of books, Johnson presumably had in mind the index at the end of a book. Johnson's call for this kind of knowledge of books is reminiscent of the *notitia litterarum* that Daniel Georg Morhof advocated in the *Polyhistor*, a debt that Johnson reportedly acknowledged explicitly. Johnson found the advice of one Reverend Herbert Croft to "read to the end of whatever books he should begin to read" to be impractical and unnecessary; instead he remarked, "A book may be good for nothing; or there may be only one thing in it worth knowing; are we to read it all through?"[144] In composing his dictionary, like many authors of reference works before him, Johnson relied on reference tools: we know of one instance where he relied on an index to *Clarissa* rather than the original, and Chambers's *Cyclopaedia* has been called his "reference book of first resort."[145] Johnson was of course no ordinary reader, but his extraordinary activities and achievements also made him the object of special admiration by contemporaries. One of them, Mary Knowles, commented, for example, "He knows how to read better than anyone; he gets at the substance of a book directly; he tears out the heart of it."[146]

Johnson's methods of extensive and consultation reading may serve as an example of the solidification of modern methods of information management. They sound familiar today to those doing research in books and through electronic resources, with allowances for the new media and the many refinements in reference tools and in techniques of storage and retrieval that have accrued over the intervening 250 years. It would be illusory to offer a single explanation for the emergence of the practices, concepts, and terms associated with modern information management, but the large Latin reference books of 1500 to 1700 played an important part in the transmission and transformation of medieval techniques to suit early modern compilers, printers, and readers.

EPILOGUE

Many developments in information management and reference tools that are still crucial to our information culture followed the consolidation of the basic form of the modern encyclopedia in the eighteenth century. Historians have identified key developments in business and office management techniques in the decades from 1870 to 1910, including ideals of impersonal and controlled processing of information, new office techniques in copying and vertical filing, and new genres of writing, such as the memo.[1] Innovations in reference tools were also stimulated by the continued accumulation of publications, especially in fields where research involved extensive use of earlier literature. Chemistry, a field in which researchers could "go back sixty years and find immediately useful information," was often the first to develop tools now widely available in most academic disciplines: abstracting journals (from antecedents in the seventeenth and eighteenth centuries), tertiary guides to the secondary and primary literature (such as Gmelin's *Handbuch*, first published 1817–19, which grew to ten volumes by 1870), and cumulative journal indexes.[2] Citation indexing began in the sciences in the 1950s and was marketed from the beginning for its sociological and historical as well as its scientific import in an effort to recoup the massive investment involved.[3] The professional ramifications of these technologies continue to unfold today with the use of the *h*-index in some fields to compute automatically the standing of a researcher.

The history of modern reference works includes not only tools that continue to thrive today, though often in new forms and under new names, but also examples of experiments that did not prove successful despite great investments of human and material resources. From 1910 to 1934, Paul Otlet and Henri La Fontaine created the Mundaneum in Brussels, which stored information in some 12 million index cards from which staff members would answer mail-in queries.[4] In 1945, Vannevar Bush envisioned a mechanical system of reducing, storing, and retrieving information, the "memex." Many now see the Internet as a fulfillment of that vision, though the frequent references today to Vannevar Bush have more to do with creating a genealogy for the Internet after the fact than with actually explaining its origins.[5] The only tangible result of Bush's vision was the "rapid selector," which Ralph Shaw built in 1949 to retrieve automatically documents on microfilm by having a photoelectric cell identify the congruence between a query code entered by the user and the subject code on the microfilm. After trying to use the rapid selector to sort through vast quantities of documents declassified after the war, Shaw considered it a failure and extolled books as "still the most efficient tool for storing and finding information." But Bush's vision of searching for information following every user's trail of personal associative connections rather than pre-established headings has been more effectively realized with Internet searching.[6] Microfilm technology in general did not live up to the enthusiasm that surrounded its initial uses in the 1920s when it was touted as a definitive solution to the problem of information storage and retrieval. But in the 1990s, Early English Books Online (EEBO) and other projects that transfer microfilm images onto the Web have put to good use the massive investments made in microfilming decades ago.[7]

The rapid changes in technology, especially in recent decades, have also highlighted, sometimes poignantly, the tremendous investment of human labor in tasks that were soon made obsolete by computers. Many large indexing projects launched in the first half of the twentieth century were completed just as computers were becoming widely available: for example, the Isis Cumulative Bibliography of publications in the history of science was completed in 1984 after sixty-one years of collective work.[8] As an example of the contrast between manual and current computer indexing, the indexes to the early editions of Bartlett's *Quotations* took twenty people six months to complete, while the computerized indexing of the current edition takes a computer 3 hours to compile—down from about 19,200 hours of labor in the nineteenth century.[9] Reference tools are prone to going out-of-date not only in their contents but also in their methods of composition. Our own current practices and results will no doubt rapidly become obsolete too.

Yet the reference tools that previous generations composed at such great cost were—and still are—of use in many ways. In their own contexts, they served as useful tools, making possible or facilitating various tasks for their users, and as models of how to manage information that users might imitate in their own practices of recording and organizing material. Furthermore, they demonstrated the existence of a demand that helped to stimulate new solutions to various problems of information management (e.g., from the rapid selector to "data mining" as the latest development in the field of automated information retrieval).[10] For the historian, reference tools serve as large and rich remains of a past cultural system, where the knowledge, ideals, and working methods of their authors are often more clearly visible than in other kinds of sources.

Historical research rarely delivers any clear lessons for the present. The story of the management of textual information in personal notes and printed reference books, 1500–1700, could be presented as a decline narrative from the heights of great learning to an increasing reliance on shortcuts and substitutes, or alternatively, as a triumphalist account of new methods democratized and made increasingly sophisticated. Similarly, among those reflecting on current and future developments, the doomsayers on the one hand and the info-boosters on the other often seem the loudest voices. I have tried to steer clear of such extreme positions, although I am conscious of having leaned more toward an optimistic stance because I am confident that new research tools and techniques can both enhance our ability to do thoughtful scholarly work and widen access to learning for broader audiences. The decline narrative has been in use for centuries and continues to appeal today, often fueled by general anxieties rather than specific changes. But given the long history of the trope, it seems no more appropriate to our context than it does to the Renaissance or the Middle Ages when it was used so extensively.[11]

Technology still has its limits. In my line of work, no tools exist to stand in for personal mastery of one's subject matter and careful judgment, informed by contextual understanding. Human attention is one of our most precious commodities and many forces compete for it with an ingenious range of software and hardware devices. Even while information storage has been delegated to other media, human memory still plays a crucial role in recalling what to attend to, and when and how. Similarly, judgment is as central as ever in selecting, assessing, and synthesizing information to create knowledge responsibly. The opportunities to settle for misleading or partial information, and to rely on snippets turned up by an Internet search without attending to their context, have never been more abundant.[12] Whereas early modern reference books were criticized for failing to yield material on a topic of interest, an Internet search invariably offers results. Whether those results are good or not depends on our skills in optimizing searches and assessing results. Those skills themselves will require constant honing, in response to changes in the search engines and in the material available for searching. While a savvy user of early modern reference books needed to be familiar with a fairly stable canon of authors quoted and of finding devices, a skilled Internet user must assess an ever-broadening range of materials that can appear on a list of results, from shopping sites to blogs, from government agencies to elaborate scams. With the digitization of massive amounts of printed matter it will be useful (and perhaps increasingly difficult to younger generations) to understand the tools and categories of the world of print, including reference books, library catalogs, indexes, and the conventions of different genres, which are obscured by their presentation in electronic form.

As a historian, I am concerned about our ability to revisit old sources left in obscurity for a generation or more. The ability to do so has often proven fruitful—to Renaissance humanists rediscovering early medieval copies of ancient texts, to geneticists reading Mendel's work decades after its first publication, and to historians. As we turn to storing most of our data on electronic media, we risk eliminating from the chain of transmission anything that is not regularly updated onto new media, since we can expect both software and hardware to become outdated multiple times even in one lifetime. But historians, especially, thrive on posing new questions of old material—material that to others seems useless and already sufficiently mined. The reference tools of the sixteenth and seventeenth centuries, for example, written in a dead language in a distant culture and focused on an even more distant culture, have long since been mined for useful bits—the linguistic dictionaries for definitions and interesting examples, the historical dictionaries to fill entries in modern ones on those figures who still warranted inclusion, the florilegia and commonplace books less visibly, having spawned no direct offshoots.

Early printed reference works are effective as working tools, still today. Editors of early modern texts know already the value of looking to the sources available at the time rather than to modern versions of them to assess and explicate a work in its historical context. Intellectual historians, too, would do well to attend to the working methods and tools of the authors they study. The finding devices and layout of these works invite multiple kinds of browsing in the mental landscape of a different era. As I have tried to show, the Latin reference books represented the collective note-taking of multiple generations of scholars trawling ancient texts and commentaries on them, presented with thoughtful appeals to the public good and the diversity of readers' interests. Beyond their explicit statements, these works devised innovative methods of managing textual information in an era of exploding publications to which our own methods of reading and processing information are indebted.

Notes

ABBREVIATIONS

BnF	Bibliothèque nationale de France, Paris
ECCO	Eighteenth Century Collections Online
EEBO	Early English Books Online
OED	*Oxford English Dictionary*
KVK	Karlsruher Virtueller Katalog: a portal consolidating many online catalogs of major libraries around the world
ZB	Zentralbibliothek in Zurich, Switzerland

INTRODUCTION

1. In chapter 3 I discuss this and similar terms (e.g., "repertory") in use before the modern period. By "reference book" I mean a large collection of textual information designed to be consulted rather than read through.
2. See Moss (1996) on commonplace books; on encyclopedias, see below, ch. 3.
3. *OED*, "information," esp. I.1a and I.3a.
4. On information in the life sciences, see Wright (2007), ch. 1; in information science, Shannon (1948).
5. Machlup (1962) is credited with coining the term; see Beniger (1986), 21.
6. My discussion of information is indebted to Nunberg (1996) and Brown and Duguid (2000), 118–20.
7. For other applications of the term to the past, see Hobart and Schiffman (1998). On *res et verba* in the Renaissance, see Kessler and Maclean (2002).
8. Lyman and Varian (2003), executive summary.
9. The 300,000 items in the McGuckins hardware store, for example, exceed the number of entries in many dictionaries; Norman (1993), 168.
10. Sutton (2002).
11. For the point that each generation perceives overload afresh, see Rosenberg (2003), 2.

12. Recent work in this vein includes: Park and Daston (2006), part 2 on sites of knowledge; Te Heesen and Spary (2002) on collecting; Soll (2009), Friedrich (2008), Blair and Milligan (2007), Blair and Stallybrass (2010) on administrative practices. Soll (2009) offers a rich example of cross-fertilization between different fields.
13. See Long (2001) and Eamon (1994) on how-to manuals and books of secrets.
14. Descartes (1996), 10:497–98.
15. On Gibbon, see Yeo (2001), 90–91; d'Alembert, *Mélanges de littérature, d'histoire et de philosophie*, 2 vols. (Berlin, 1753), 2:3–4, as cited in Désormeaux (2001), 61.
16. Hertz (1985), 40–60.
17. See the advice of the Jesuit Antonio Possevino in *Bibliotheca selecta* (1606); the contrast is discussed in Zedelmaier (1992).
18. Amory (1996), 51.
19. See, among their many works, Weijers (1996) and Rouse and Rouse (1991a).
20. See the seminal article of Shapin (1989); for recent studies of scientific notebooks, see Holmes et al. (2003); on the domestic context of scientific work in particular, see Cooper (2006), Algazi (2003), and Harkness (1997).
21. See, e.g., Thornton (1997) and Grafton (1997).
22. On the many kinds of discontinuous reading, see Stallybrass (2002).
23. For the historiography on facts, see Shapiro (2000), Daston (2001), Poovey (1998).
24. See Eisenstein (1979), Johns (1998) and Eisenstein and Johns (2002).
25. See Grafton (1980) and Needham (1980).

CHAPTER ONE. INFORMATION MANAGEMENT IN COMPARATIVE PERSPECTIVE

1. See, e.g., Grafton (1992).
2. On early modern Japan, see Berry (2006); on India and Persia, see Colas and Richard (1996), Scholberg (1986), Vessel (1986).
3. Ogilvie (1997) and (2006), 230; see also Cooper (2007) and, on zoology, Pinon (forthcoming).
4. On the term and its history, see Fowler (1997), Céard (1991), Dierse (1977), De Rijk (1965); the *Propaedia* volume of the *Encyclopaedia Britannica* (1985) also opens with the circle metaphor.
5. It is difficult to quantify that loss. Bardon estimates that writings survive for only 20 percent of the Latin authors we know existed, but those authors wrote other works now lost and there were of course authors of whose existence we have no trace; Bardon (1952), 13.
6. Needham (1986), 31; see also Eiserman (2006).
7. A Bible with multiple commentaries and appendices seems to be the incunabulum with the highest page count at 1,571 pages (Venice, 1481), Gesamtkatalog der Wiegendrucke #4286. I am grateful to Falk Eisermann for his help on this point.
8. See Posner (1972), 61; Kilgour (1998), 16; Daly (1967), 93.
9. For the "literacy thesis," see Goody (1986) and the critique in Halverson (1992). For

counterevidence from a complex Nigerian cattle market operating without written records, see Finnegan (1988), 146.

10. *Phaedrus*, 275–77 in Plato (1973), 96–99. In *Timaeus* 23 Critias praised the Egyptians for their mastery of writing; writing was also the key to the transmission of the story of Atlantis in *Critias*, 113.
11. *Aphorisms*, I.1, in Hippocrates (1953), 98–99.
12. Seneca, *De brevitate vitae*, I.1 in Seneca (1932), II, 286–87.
13. *Ad Lucilium epistulae morales*, II.3, in Seneca (1917), I, 6–9; see also *De tranquillitate animi*, IX.4.
14. See, e.g., Giovanni Battista Caccialupi, *Tractatus de modo studendi* (Pavia 1510), 2v. The English gentleman William Drake endorsed this advice, though he honored it in the breach given his wide reading; see Sharpe (2000), 181. The Spanish author of an advice book on libraries, Francisco Araoz, used Seneca's tag to justify keeping out books of light poetry and romances because these "pernicious and useless books only make art even longer." Araoz (1631), 10r. On canon formation, notably as a response to overabundance, see Most (1990).
15. Bacon (2001), II.14, 99.
16. For Bacon experience included book learning despite his critique of it, see Blair (1997), 228–30.
17. Schniedewind (2004), 166, 235 n4.
18. The *Glossa ordinaria* does not comment on Ecclesiastes 12:12; see the edition of Migne (Paris, 1879) online at http://books.google.com/books?id=g6Vc4QWRohwC. Rashi (1040–1105), whose commentary on the Bible and Talmud was especially authoritative, commented briefly on this verse; "If we would attempt to write, we would be unable to do so." As consulted online at http://www.chabad.org/library/bible_cdo/aid/16473/showrashi/true (consulted June 1, 2010). For a modern Jewish commentary, see Fox (2004), 85: "Writing books of wisdom continues without end and one can become overwhelmed with all their ideas." I am grateful to Adina Yoffie and Magda Teter for help on this point.
19. Vincent of Beauvais (1964), col. 1 (prologue, 1); Richard de Bury (1970), XVI, 146. Hugh of St. Victor (1096–1141) cited the verse to advocate moderation in study in *Didascalicon* (1961), V.7, 130.
20. Seeger wrote "Turn, Turn, Turn" in 1954, and it was released in 1965; see Dunaway (1981), 273. Today many religious Web sites highlight the verse for the current value of its wisdom.
21. Raven (2004), 12–18; MacLeod (2004), 8–10,102; Jacob (1996), 58–59.
22. Holtz (1997), 473, and Daly (1967), 22–23.
23. Blum (1991), 226–39, 22–24 (Aristotle), 46 (Theophrastus); Daly (1967), 94. See also Witty (1958); and, on order in the *Pinakes*, Schmidt (1922), 90–91.
24. Daly (1967), 85–90.
25. Irigoin (2003).
26. Callimachus (1949–53), I #465.
27. Didymus's output is reported as 4000 books in Seneca, *Letters*, 88, and more than

3,500 books in Athenaeus, *Deipnosophistae*, 4.139. On the meanings of "book," see Grafton and Williams (2006), 10–12.

28. Diogenes Laertius (1938), V, 42–50 in I, 489–503 (Theophrastus); VII, 180–202, in II, 289–319 (Chrysippus). For early modern mention of these and other polygraphers, see Jeremias Drexel (1638), 46, 65; Liberius (1681), 7–8.
29. Preface, 17, in Pliny (1967), I.12–13. On the reception of Pliny, see Borst (1994), chs. 2, 4, and 6. On ancient encyclopedism, see Doody (2009), König and Whitmarsh (2007).
30. Pliny the Younger (1969), III.v (to Baebius Macer), in I, 176–77.
31. Doody (2001). On the beginnings of scrolls, see Holtz (1997), 472.
32. Gellius (1946), I, xxxviii–lxii; on *tituli*, see Petitmengin (1997), and for works of poetry, Schröder (1999).
33. Pliny (1967), XIII.26, para. 83, in IV, 148–49.
34. Jacob (2001). The texts cited by Athenaeus include *Glosses* by Seleukos, Nicander, Glaukon, Pamphilus, Cleitarchus; *Cretan Glosses* by Hermon; *Attic Names* by Philemon; see Jacob (2001), lxxxviii. Examples of lexica published in the third century CE include Pollux of Naucratis, Phrynichus, Moeris, Herodian as discussed in Johnson (2006), 185–95.
35. Stobaeus (1884–1912). On Byzantine florilegia and their sources, see Wachsmuth (1971).
36. On Eusebius and the production of books in this environment, see Grafton and Williams (2006); also Arns (1953).
37. Murphy (2004), 195–96, 212.
38. On Florus, see *Oxford Classical Dictionary* (1996), Florus (1).
39. *Adages*, III.1.1 ("Herculei labores") in Erasmus (1964), 197–98. For a critique, see Baillet (1685), I.11, 453, 457–58. For a modern assessment of a work lost by being anthologized, see Bowie (1997), 66.
40. *Oxford Classical Dictionary*, s.vv. "Hypothesis," "periocha," and "epitome," and "Clement of Alexandria" for his *Stromateis* or "Miscellanies" (ca. 200–202). I am grateful to Christopher Jones for advice on this point. For the "hypothesis" of Aeschylus's play *Agamemnon*, see Witty (1973), 195.
41. Holford-Strevens (2003), 28, citing Quintilian 1.8.18–21 and Seneca, *Epistles*, 88.37.
42. Johnson (2006), ch. 2 and 86–89.
43. Roby (2000).
44. Blum (1983); also Keaney (1973).
45. Gesner (1545), 160r–v.
46. Gesner (1559), sig. b2v.
47. On heritage vs. inheritance, see Buckland (1999).
48. Bloom (2001) and 204–5 (Byzantium). For a critique of the disadvantages of parchment (including excessive weight and retention of moisture) from the ninth century, see Jāhiz (1969), 211–12.
49. Wilson (1983).
50. Translated from the French quotation in Lemerle (1966), 605.

51. Constantinus Porphyrogenitus, *Opera* (Leiden, 1617); on the Byzantine preference for intensive reading, see Cavallo (2006), e.g., 70–71.
52. Photius (1994), 17–18; Treadgold (1980), 97.
53. Baldwin (2006). My word count from *Suda lexicon* (1986): 5,755 pages with fifteen lines of Latin text per page on average and eighteen words per line.
54. Mangenot (1899), col. 901. I have found no other reference to it. For discussion of a specialist encyclopedia composed in this context, see Trombley (1997).
55. Dionisotti (1990). McEvoy (2000), 115–16. Suidas, *Lexicon graecum* (Milan: Johannes Bissolus and Benedictus Mangius, for Demetrius Chalcondylas, 1499). Photius, *Bibliotheca*, ed. David Hoeschel (Augsburg, 1601), and translated into Latin by the Jesuit Andreas Schott (Augsburg, 1606). Gesner (1545), 562r–v, 604v–605r.
56. Schoeler (2009). On habits of teaching and learning, see Makdisi (1990), 202–16; Rosenthal (1947), chs. 2, 6–7.
57. Makdisi (1981), 104; Makdisi (1990), 214.
58. Makdisi (1990), e.g., 88, 217 ff., 67–68. The historiography in European languages on Islamic encyclopedias includes: Endress (2006), Bisterfeldt (2002), Marzolph (1997), Van Berkel (1997), Van Gelder (1997), Guesdon (1996), Chapoutot-Remadi (1991), Pellat (1966).
59. Rosenthal (1947), 60.
60. See the 200-page biographical index in Ibn al-Nadīm (1970). My estimated word count of 217,000 from the English translation: 868 pages at twenty-five lines per page and ten words per line. See Wellisch (1986), 11 (survival), 31 (obscure books), 9 (books not seen), 37 (Hesychius).
61. Rosenthal (1947), 20 (bibliography), 37 (Mohammeds); on biographical dictionaries, see al-Qadi (2006), 67 ff.; on dictionaries, see Blachère (1975), 21–30.
62. Makdisi (1990), 214; Rosenthal (1947), 39–40.
63. Al-Juzajani (1974), 69; I owe this reference to Mottahedeh (1985), 88–89.
64. Examples include works by Ibn Qutayba (828–89), Ibn ʿAbd Rabbih (860–940), and Zakariyya al-Qazwini (d. 1283); Van Gelder (1997). For an English translation, see Ibn ʿAbd Rabbih (2006). See also Cheddadi (2006).
65. Van Berkle (1997), 167–68. Re ink colors, see Orsatti (1993), 282.
66. I am grateful to Jonathan Bloom and Sheila Blair for this suggestion. Orsatti (1993), 325 notes that innovations in the layout of presentation of manuscripts appeared first in the eastern areas of the Islamic world and spread later to the western ones.
67. See Atiyeh (1995); Pedersen (1984).
68. Rosenthal (1947), 2.
69. This was one of the first works to be printed in Istanbul; my word count from Kâtip Çelebi (1835–58): 3,724 pages in six volumes of text at nineteen lines per page and twelve words per line.
70. Birnbaum (1997). I am grateful to Cemal Kafadar for this reference.
71. Rosenthal (1947), 61 (Ibn Ridwan); Meyerhof (1984), 3:172, 174. I am grateful to William R. Newman for this reference.
72. Ibn Khaldūn, (2005), 414–16; see Rosenthal (1947), 61.

73. Rosenthal (1947), 20. On the ban, see Hanebutt-Benz et al. (2002), 230. Cf. Yeo (2001), 93–94.
74. I follow Rosenthal (1947), 2, and Makdisi (1990), 214.
75. An inventory of surviving Arabic manuscripts does not yet exist from which to study the distribution and number of copies of different works systematically.
76. Chapoutot-Remadi (1991), 267–80. The works of Ibn Qutayba, Ibn 'Abd Rabbih, al-Qazwini, al-Nuwayri, and others are in print today in inexpensive modern editions. These texts can be read by a broad audience due to the stability of Arabic, and they may have more readers now than they had when they were written.
77. Burke (1996), 202.
78. By contrast, European movable type printing required a greater initial capital investment to be recovered through printing as many copies of a book as one could hope to sell. For an excellent comparative analysis, see Brokaw and Chow (2005), 3–54.
79. On *biji*, see Fu (2007).
80. Loewe (1987), 6.
81. On Chinese "encyclopedias," see Establet-Bretelle and Chemla (2007), Monnet (1996a, 1996b, 1996c), Diény (1991), Bauer (1966).
82. Kurz (2007); Bauer (1966), 681.
83. Drège (2007), 31–32; Bauer (1966), 686.
84. Guy (1987) and http://eastasianlib.princeton.edu/skgs.htm; http://en.wikipedia.org/wiki/Wikipedia:Size_comparisons, and *Encyclopedia Britannica* (1985), Index volume A–K, preface.
85. Loewe (1987), 12–16; Monnet (1996b), 350.
86. Bauer (1966), 672–76; Monnet (1996a, 1996b); Bottéro (1996). The oldest Chinese dictionary, included among the Confucian classics, clustered words according to their meaning in nineteen thematic sections.
87. Monnet (1996a), 345–46. For more detail on the exams, see Elman (2000).
88. Drège (2007), 21.
89. Cherniack (1994).
90. Heijdra (2006), 20–21. I am grateful to Bridie Andrews and Lucille Chia for their guided tours of the reference room and rare book collection in Harvard's Yenching Library.
91. De Weerdt (2007b), Elman (2007), Bol (1996).
92. McDermott (2005), 59, 78, and 94n15.
93. Elman (2007), 138.
94. As quoted in Wagner (1997), 36–37.
95. Zhu (1990), 131–33, 139. On Zhu Xi, see de Weerdt (2007a), ch. 5.
96. As quoted in Wagner (1997), 36. See also Peterson (1968).
97. On leaf numbering in the Middle Ages, see Saenger (1996), 258, 275–76, and Stoneman (1999), 6. Saenger notes nonetheless that printing created the context in which leaf numbering flourished in both print and manuscript.
98. See Cassiodorus (2003), 105–10; Ribémont (2001).
99. Isidore of Seville (2006), 413 (Isidore's dedication), 24 (re surviving manuscripts). My estimate of the size of the text based on this translation: 367 pages at forty-four lines

per page, two columns of eight words per column. On Isidore's working methods, see Henderson (2007), 19–21; Fontaine (1959), 2:763–81; on his reception Bischoff (1966).

100. E.g., book 18 on war and games was divided into sixty-nine chapters: from war, triumphs, military standards, war trumpets . . . to dicing terms, the casting of dice, the moving of counters, the banning of dice, ball games; see Isidore of Seville (2006), 37. The literature on medieval encyclopedias is vast. In addition to the literature I cite below on Vincent of Beauvais, see Stammen and Weber (2004), Meier (2002), Meier (2001), Meyer (2000) and (1991), Binkley (1997b), Ribémont (2001), Picone (1994), Becq (1991), de Gandillac (1966), and multiple articles in *Cahiers d'histoire mondiale* (1966).
101. Mejor (1994), 651. See Rouse and Rouse (1982), 165–68 for the medieval titles, based on the flower metaphor or others, including *liber scintillarum* (book of sparks) or *pharetra* (quiver).
102. For ancient references to the practice, see Cicero, *Brutus*, xii.47 as cited in Carruthers (1990), 175n73. Reynolds (1983), 327, citing Seneca, *Epistles*, 33.7 and Jerome, *Epistles*, 107.8. Moss (1996), 24n1 (on the absence of medieval copies).
103. Rouse and Rouse (1982), 167.
104. Munk Olsen (1979), 52, 57 ff., 99 ff.
105. Munk Olsen (1980), 153–54.
106. Reynolds (1983), 422.
107. Munk Olsen (1982), 164.
108. Ullman (1928), 174. See also Ullman (1929, 1930a, 1931, 1932) and Ullman (1930b), 145–54 (on Dousa and Scaliger). On florilegia in the transmission of Martial, see Martial (2006), xxi–xxv. I am grateful to Kathleen Coleman for helpful conversations on problems of transmission.
109. Clanchy (1993).
110. My translation of the Latin quoted in Rouse and Rouse (1982), 174, 167–68.
111. Munk Olsen (1982), 164; he notes the suppression of some ancient names, the replacement "gods" with "God," of "Iuppiter" with "Conditor" (Creator). On the transformations by copyists, see Reiter (1996); and for a contemporary mention of this Masai (1967), 93–94.
112. My translation of the Latin quoted in Goddu and Rouse (1977), 520. On portability, see Munk Olsen (1982), 163.
113. Munk Olsen (1979), 49, 52; Munk Olsen (1982), 153. On indexing, see Rouse and Rouse (1979), 14.
114. See Rouse and Rouse (1991a, 1991b).
115. On Bernard, see Leclercq (1953); on the mendicants in general, Lawrence (1994); on methods of working in the early universities, Weijers (1996).
116. Goddu and Rouse (1977), 519. But for a uniquely early subject index in canon law, see the index of Cardinal Deusdedit in 1087; Rouse and Rouse (1991a), 194–95, and Somerville and Brasington (1998), 122–29, 125.
117. This estimate from applying a word count tool to the online full-text translation at Project Gutenberg (consulted June 1, 2010).
118. Carruthers (1990), esp. 242 ff.; Parkes (1976); and Rouse and Rouse (1991a), ch. 6. On

Arabic numerals, see Rouse (1981), 129–31. On the concurrent development of marginalia in manuscripts, including citations of authorities, see Hamesse (2002).

119. Delcorno (2000), 471; Bataillon (1993), IV, 200–205. D'Avray (1985), 72–75; Rouse and Rouse (1974a), 37.
120. Rouse and Rouse (1974b). For other tools drawn up to facilitate access to philosophical texts, see Hamesse (1996a). On the pecia system, see Rouse and Rouse (1991a), 303–20.
121. Various divisions of the Bible into chapters appeared between 1190 and 1230; Smalley (1952), 222–24. The Dominican concordance made Langton's chapter numbering standard; see Rouse and Rouse (1974b), 10. Verse numbering in the Bible was first used by Sante Pagnini (1470–1541) in an edition of Lyon, 1528; see Engammare (2002). But the numbering in the edition of Robert Estienne, 1551, was most influential, diffused in the Geneva Bible of 1560; see Armstrong (1986).
122. Rouse and Rouse (1974b). For other uses of letters as locators, see Grosseteste below; or the anonymous index to Huguccio's *Derivationes* described in Daly and Daly (1964), 235–36.
123. Weinberg (1997), 324–25, discussing, for example, a manuscript from Toledo, 1272, reproduced in Garel (1991), 44–45, item 31. For a general chronology, see Weinberg (1999), 114. Although numbering is present in some Masoretic manuscripts of the Bible, Jews typically referred to passages in the Bible by the first words of the portion involved.
124. Wellisch (1985–86). On the complicated history of Jewish verse numbering, see Moore (1893).
125. Harvey (2000b). On the impact of scholastic working methods on one Jewish philosopher, see Sirat (2003).
126. Théry (1935), 443n99.
127. Rouse and Rouse identify as the first example of an author drawing up an index as part of a new work the *Summa confessorum* of John of Freiburg, written ca. 1297–98. Rouse and Rouse (1979), 23.
128. Hunt (1953), 242. Hunt adds that in some mansucripts owned by Grosseteste the pages were divided into sections marked A–D for the recto and E–H on the verso—this system resembles the A–G division of Bible chapters, but it was not independent of the layout of the manuscript. The tabula is edited by Philipp W. Rosemann in *Opera Roberti Grosseteste Lincolniensis*, vol. 1 (Turnhout: Brepols, 1995), 235–320. I am grateful to John Flood for this reference.
129. MacKinney (1938), 253–55; Rouse and Rouse (1974b), 24.
130. Balbi (1971), [127]; Daly and Daly (1964), 233–37.
131. Powitz (1996).
132. Delcorno (2000), 518. Delcorno has surveyed library inventories mainly from the fourteenth and fifteenth centuries in Italy.
133. Bériou (1989), 89 and Roberts (1998), 327: students at Paris were criticized for liking "their masses short and their lectures and disputations long."
134. Rouse and Rouse (1979), 23. De Ghellinck (1939) and Guenée (1981); I am grateful for these references to Brigitte Bedos-Rezak.

135. “May you not on account of these modest gleanings disdain the fertile field of the originals. He is indeed improvident who, ignoring the fire, strives to warm himself with little sparks, and who despising the fountain, tries to quench his thirst with drops of dew.” My translation from the Latin of Thomas of Ireland, *Manipulus florum*, quoted in Rouse (1965), 249–50. For an antecedent, see Ralph Niger, *Commentary on Kings*, finished in 1191, as quoted in Smalley (1952), 226: “We put the sacred expositions of the holy Fathers before our own researches, just as we heard them in the schools, but in brief, that those who read may understand, by reason of this very brevity, that one should go back to the originals for full knowledge of them”; see also Rouse and Rouse (1982), 171. On the transmission of the list of authorities, see Rouse (1965), 245.
136. Voorbij (2000), 39, 42. My word count is lower than that of Voorbij (6.5 million words) but higher than the estimate of “over 3 million words” by Guzman (1996), 705; it is based on the 1624 edition: 8,226 columns at seventy lines per column and eight words per line. Vincent of Beauvais has been the object of much excellent scholarship. See especially Paulmier-Foucart et al. (1990), Lusignan et al. (1997), and Paulmier-Foucart (2004). For a bibliography and digital text, see the Web site maintained by Hans Voorbij at: http://www.cs.uu.nl/groups/IK/archives/vincent/bibl/subj/sh.htm.
137. Vincent of Beauvais (1964), col. 1 (prologue, 1). On the prologue, see Wingell (1990). For editions of it, in its final and two earlier versions, respectively, see von den Brincken (1978) and Lusignan (1979).
138. On Vincent’s use of Cantimpré, see Wingell (1990), 52, and Roy (1990); on other sources in Vincent, see Verger (1997) and Schuler (1995).
139. Borst (1994), 280.
140. Lusignan (1997). On sharing, see Tugwell (1997), 56.
141. Paulmier-Foucart (2002), 245–46, 253. On access to the royal library, see Minnis (1979), 399; on his dedicatory letter to Louis IX, see Guzman (1990).
142. Vincent de Beauvais (1964), col. 3 (prologue, 4).
143. Ibid., col. 15 (prologue, 18).
144. Ibid., col. 4 (prologue, 4).
145. Wingell (1990), 45.
146. “I admit that to a great extent, in my judgment, I exceeded the method of the intention of my profession, especially in investigating and describing those things which are not named in the divine books. Therefore by acting curiously, I incurred the vice of curiosity. Indeed doctors promise what is appropriate to doctors, artisans deal with artisanal things. Thus I too, a small representative of a sublime profession, whose whole study and work must tend toward the salvation of souls, should have done so too in this work, especially on those matters which concern my profession. . . . Nonetheless concerning all the things which are contained in this work, I confess they displease me. Not because they are not good in themselves and useful to the studious, but because, as I said, it was not proper for my profession to insist so diligently on investigating and describing them.” Vincent of Beauvais (1964), col. 15 (prologue, 18).
147. Vincent of Beauvais (1964), col. 4 (prologue, 4).
148. See Voorbij (2000) and (1996) and Guzman (1997), 321–22. The *Speculum naturale*

was printed in 1473, 1476, 1478, 1481, and 1494; the *Speculum morale* in 1476, 1477, 1485, and 1493; the *Speculum historiale* in 1473, 1474, 1483, and 1494 and in French in 1495 and 1532; the *Speculum doctrinale* in 1477 and 1486. The *Speculum quadruplex* was printed in 1591 (Venice: D. Nicolinus) and 1624 (Douai: Balthazar Beller).

149. Bartholomaeus Anglicus (2007). Early editions include Basel, 1470; Lyon, 1480; Strasbourg, 1480, 1485, and 1491; Cologne, 1483; Nuremberg, 1483 and 1492; Heidelberg, 1488; Strasbourg, 1505. Translations include Spanish, tr. Vicente de Burgos, Toulouse, 1494; French, tr. Jean Corbichon, Lyon, 1491, Paris, 1510, 1522 and 1556; Dutch, Haarlem, 1485; English, tr. John Trevisa, Westminster, 1495, and London, 1535, and ed. Stephen Batman, London, 1582.
150. Binkley (1997b), 84–86.
151. Rouse and Rouse (1979), 225. See also Von Den Brincken (1972); and Paulmier-Foucart (1980–81), who shows how de Hautfuney indexed some chapters exhaustively, as a succession of authoritative statements, and others more lightly.
152. Vincent of Beauvais (1964), col. 3 (prologue, 3).
153. Albrecht (2000), 55–57.
154. On the collaborative aspect of the *Speculum maius*, to which I return in the next chapter, see Bataillon (1997) and Congar (1980). Despite my focus on Dominican examples, Franciscans were active in similar projects: including the *Registrum Angliae* (union catalog) and indexes to passages in the church fathers, by Kilwardby and a group of Oxford Franciscans in the thirteenth century. See Rouse (1965), 250n29, and Callus (1948). Bartholomaeus Anglicus was a Franciscan; see also Roest (1997).
155. Vincent of Beauvais (1964), col. 1 (prologue, 1).
156. Minnis (1979), 403.
157. Paulmier-Foucart (1997). More generally Le Goff (1994) proposes a later date for the impact of Aristotle, ca. 1260–70.
158. Hugh of St. Victor (1961), VI.3, 137 and III.13, 96. See also Michel (2004), 259. For other prologues, see Nadeau (1997), 82.
159. Le Goff speaks of a new confidence in participating in God's work through intellectual achievement; Le Goff (1994), 39.
160. Rouse (1981), 135.
161. Vincent of Beauvais (1964), col. 7 (prologue, 8).
162. See, e.g., Hobbins (2009), 8–10.
163. Melville (1980), e.g., 62.
164. On late medieval encyclopedias, see Meier (1984), Sandler (1990).
165. See Eisenstein (1979) and reactions in Johns (1998), Eisenstein and Johns (2002), Grafton (1980), and Needham (1980). For a recent German perspective, see Zedelmaier (forthcoming).
166. See Eisenstein (1996) and (forthcoming).
167. For this and other examples, see McKitterick (2003), 100–101, 49.
168. Comment by Henricus Salmuth (b. 1592) in Pancirolli (1629–31), 252.
169. Gesner (1551a), sig. b1r.
170. In 1468 Andrea de Bussi reported that a text that would have cost 100 guilders could

be had for 20 when printed, as quoted in Hirsch (1974), 1, 69. These and other examples from Gilmont (2003a), 49–50, and Richardson (1998), 139–41. On Squarciafico's complaint, see Lowry (1979), 15, and chapter 5, below. See also the complaints of Trithemius about the poor durability and quality of printed books and the paper they were printed on; Trithemius (1974), 34–35, 64–65.

171. Richardson (1998), 141; also Gesner (1551a).
172. Monfasani (1988), Davies (1995), Hirsch (1978).
173. Needham (1982).
174. Labarre (1975).
175. On the development of the "modern book," see Febvre and Martin (1976), ch. 3, and Martin (2000), esp. 31 on the blackening of the page. On errata, see Blair (2007b), Lerer (2002); on the title page, Gilmont and Vanautgaerden (2008) and Smith (2000).
176. On these shifts, see Saenger and Heinlen (1991), 250–56. There are few studies of rubricators, among them Stoneman (1994). Professional scribes continued but in much smaller numbers; see Beal (1998).
177. Smith (1988). For a seventeenth-century discussion, see Caramuel Lobkowitz (1988), 32.
178. Quotation and discussion from Saenger (1996), 276–77.
179. Maclean (2007). Henri Estienne, for example, was bankrupted by the publication of his five-volume *Thesaurus Graecae linguae* (1580), though it was of such high quality that it continues to be used today (Naples: La Scuola di Pitagora, 2008); see Pattison (1949), 25. For the financial woes of Oporinus in Basel, see Steinmann (1969).
180. Stallybrass (2007).
181. For a detailed critique of attempts at quantification, see Dane (2003), 41–51.
182. Burmeister (1963), 119–20.
183. On commercial scriptoria, see Rouse and Rouse (2000).
184. In addition to the case of Vincent of Beauvais, discussed above, see Hillgarth (1992), 3–4 on the prevalence of partial copies of the works of Aquinas.
185. On the paradox that the mechanically produced text offers more information about its production than most scribal productions, see Beal (1998), 18–19. On the presence of some title pages before the thirteenth century, see Derolez (2008).
186. One pamphlet by John Calvin claimed that it was so changed as to be like "a new book" when in fact the revisions involved were few and superficial; Engammare (2002), 36–37.
187. McKitterick (2003), 148. For a study of variations among the surviving copies of the First Folio edition of Shakespeare, see Hinman (1996).
188. To identify a reissue requires finding a perfect match in the layout and printing of each page between the two "editions." A general similarity is not sufficient, since later editions often mimicked the layout of an earlier edition for convenience. Charles Hinman devised a machine (the Hinman collator) to compare the match between two pages at a glance. On the presence of reissues among early modern commemorative volumes, see Maclean (2002). For an example among reference works, concerning Philippe Labé's *Bibliotheca bibliothecarum*, see Taylor (1955), 24–39.

189. Blair (2000). For more discussion of indexes, see chapter 3.
190. Dane (2003), ch. 2; Needham (1999); Neddermeyer (1998); on print runs also Neddermeyer (1996).
191. Balayé (1988), 210. For one such study, see Le Roy Ladurie et al. (1996).
192. Raven (2007), 8, 20.
193. The used book market is difficult to study but can be glimpsed through the purchases of Gian Vincenzo Pinelli (1535–1601) who bought books principally in order to preserve them, driven by the "dream of never throwing anything away." Nuovo (2007), 43.
194. Compare Charon-Parent (1988), 88, and Mandelbrote (2000), 358; more generally Blair (2003), 15.
195. McKitterick (2003), 205 calls the complaint "timeworn." Highlighting the range of uses of the argument, Werle suggests that *copia librorum* tends to be connoted favorably while *multitudo librorum* is used pejoratively; Werle (2010).
196. Brant (1944), 62–63 ("of useless books").
197. Bodin (1945), 21.
198. Erasmus (2001), II.1.1, 145–46.
199. Calvin, *Opera* (1873), XI, cols. 634–35, as quoted in Gilmont (2003b), 234 n87.
200. Giovanni Nevizzano, *Inventarium librorum* (Lyon, 1522), preface, as cited in Balsamo (1990), 32. This comment prefaces a bibliography of law books.
201. Doni (1551), 4r.
202. Gesner (1545), sigs. *2v, *3v.
203. Gesner (1548), sig. 2v; see Müller (1998), 295, 303.
204. Araoz (1631), sig. [¶¶¶ 8r; annotation in copy at BnF; on Araoz, see Géal (1999), 293–96. On Lope de Vega's depiction of the abundance of books as excessive and confusing, see Chartier (2004), 140.
205. Naudé (1963), 29, 51–52. I discuss this passage in more detail in chapter 3. See also Araoz (1631), 4v.
206. Sanchez (1581), 92–93, 99.
207. Bacon (2001), II.14, 71.
208. La Mothe Le Vayer (1668), 113–14, 117.
209. As studied in Yeo (2001).
210. Waquet (1993), 116–17.
211. Henri Basnage de Beauval, *Histoire des ouvrages des savans* (July 1688), 339, as discussed in Lieshout (1994), 134.
212. Leibniz (1951), 29–30; as discussed in Yeo (2001), 88. See also Ernst (2002), 451. On Leibniz's plans for collaborative works, see Ramati (1996).
213. Baillet (1685), I, sig. avij v (avertissement au lecteur). On the context and reception of this work, see Waquet (1988).
214. For a contemporary critique, see [Boschet] (1691), 11.
215. See Engelsing (1970) and Wittmann (2003).
216. DeMaria (1997a), 1–15.
217. Boswell (1934), 3:332–33 and 4:217.
218. Yeo (2001), 93–94.

CHAPTER TWO. NOTE-TAKING AS INFORMATION MANAGEMENT

1. Gesner (1559), sig. a6r.
2. For Islam, see Bloom (2001). This is no thorough study of the introduction of paper in Europe; for a timeline, see http://www.baph.org.uk/general%20reference/early%20history%20of%20paper.htm (consulted April 2008), and for England, Lyall (1989). See Dover (2007) on the growth of diplomatic correspondence in fifteenth-century Italy amid the rise of princely and papal bureaucracies and Davis (2004) on the example of the Paston family archive formed in England between 1422 and 1509.
3. De Hamel (1992), 16. On the new paper mills, see Weiss (1983), 62–69. On parchment versus paper, see Kwakkel (2003); Booton (2006).
4. On the culture of collecting, see Findlen (1994); Impey and MacGregor (1985).
5. For general discussions, see Blair (2004), Daston (2004), Cevolini (2006a).
6. On notes taken from oral events, see Blair (2008); Jaeger (1934), 317 and passim; Leclercq (1953).
7. See Chartier (2007); Brown (1994); Rouse and Rouse (1989), 149–51. A remarkable cache of tablets was discovered in 1973 at Vindolanda, site of a Roman garrison on the British frontier (currently Chesterholm); see Bowman and Thomas (1983).
8. Stallybrass et al. (2004). For similar tablets in Spain, see Chartier (2007), ch. 2.
9. On blackboards, see Owens (1997), ch. 5, 74–107, and Dooley (1984), 129. On sand tables, see Bloom (2001), 129, and Beal (2008), 356. I am grateful to Peter Beal for calling my attention to sand trays.
10. Birnbaum (1997), 245. For similar reasons Erasmus burned his drafts, according to Baillet (1685), II.2, 150.
11. On MyLifeBits, a project of total self-archiving or “lifelogging,” see http://research.microsoft.com and Wilkinson (2007). Modern firms routinely destroy 96 percent of their documents; Hodson (1972), 9.
12. See Cevolini (2006); Weinrich (1996). For a rare discussion of forgetting in early modern treatises on memory, see Carruthers and Ziolkowski (2002), 251.
13. Hunter (1998b), 11, 130.
14. This observation was made by Bayle’s contemporary Des Maizeaux and endorsed by Labrousse (1963), 47–48. See also van Lieshout (2001), 99–100, 103, 297, and Nedergard (1958).
15. See Reddick (1996) and Johnson (2005). I am grateful to Allen Reddick for helpful conversations.
16. See Beal (2007).
17. Victor Hugo was the first author to bequeath his papers to the Bibliothèque nationale; see Espagne (1998), 217; Grésillon (2000). For a typology of drafts, see de Biasi (1998), 36.
18. Petrucci (1995), ch. 8. For studies of Petrarch’s manuscripts, see Baron (1985) and Wilkins (1977). Hunter (1998a) has pioneered the study of these early modern collections and of the working methods that created them.
19. See Gigante (1995), 16, and Dorandi (2000), 45.

20. For some examples, see Glorieux (1931); Hamesse (1994), 191 ff.; Glorieux (1968), VI, 178.
21. On miscellanies, see Petrucci (1995), ch. 1, and Nichols and Wenzel (1996). On the *Glossa*, see Smith (2009) and on Gratian, Winroth (2000).
22. Chartier (2007); Rouse and Rouse (1974b), 11.
23. See Petrucci (1995), esp. 148–50; Chiesa and Pinelli (1994), especially Hamesse (1994); Cécile (1981). For a bibliography of medieval autographs, see Lehmann (1959), 359–90.
24. See Kerby-Fulton and Hilmo (2001) and Kerby-Fulton and Despres (1999), 75–81. I am grateful to John van Engen for these leads.
25. See Bériou (1989), Hamesse (1986), and more references in Blair (2008).
26. On rapiaria, see van Engen (1999); on the diary Fothergill (1974).
27. See Branca (1999), Boccaccio (1915), Dotson (1994), Vasari (1938), Vecce (1998).
28. In medicine, see Durling (1991), 195. On notarial note-taking as a model for literary writing in the Middle Ages, see Petrucci (1995), 152–57. On Thomas Jefferson's legal note-taking, see Bilder (2010).
29. Michael Mendle is preparing a cultural history of shorthand in early modern England; see Mendle (2006). And Pepys (1970), 1:xcvii ff.
30. See Sacchini (1614), 91 (ch. 13); Bacon (1868), 11:62; discussed in Vickers (1996), xliii. Aldrovandi cited the habits of merchants to justify his alphabetical entries: "moreque mercatorum dividebam in ordinem alphabeticum quenlibet librum." Bologna MS Aldrovandi 21, II, 168–89, as cited in Giudicelli-Falguières (1988), II, 247–48, 272. I am grateful to the author for permission to consult this thesis at the Sorbonne library. See also Meinel (1995), 172.
31. On William Webster, *An essay on book-keeping* (1719) and on Lichtenberg's comparison, see Te Heesen (2005). Te Heesen also notes a case of influence in the opposite direction, in a cabinet of commercial samples modeled on cabinets of curiosities; see Te Heesen, (2002), 147. Zedelmaier argues that scholarly methods of information management inspired bureaucratic information management; see Zedelmaier (2004), 203. On Lichtenberg, see von Arburg (2003).
32. Chavigny (1920), 16. Cicero contrasted the short-lived memoranda of the merchant with the more carefully kept account book designed as a permanent record; see Cicero, *Pro Roscio comoedo*, II, 7.
33. Moss (1996), 54–55. For Guarino's methods, see the treatise by his son Battista in Guarino (2002); Erasmus discusses commonplacing in *De copia* and *De ratione studii* (Basel, 1512), in Erasmus (1978), 605–6, 636–38, 672; Vives does so in *De tradendis disciplinis* (1531), in Vives (1971), 108, 133.
34. Sacchini (1614)—further references to "Sacchini" will be to this edition; warm thanks to Helmut Zedelmaier for sharing with me his photocopy of this edition. Further editions include: Sammieli (Saint-Mihiel, Lorraine), 1615; Ingolstadt 1616; Bordeaux 1617; Dillingen 1621; Leipzig 1711 and 1738; and Venetiis Britonum (Vannes, Brittany), 1866. It was translated into French (Sacchini [1786]) and German, *Über die Lektüre, ihren Nutzen und die Vortheile sie gehörig anzuwenden, nach dem Lateini-*

schen des Sacchini teutsch bearbeitet und mit einem Anhange begleitet von Herrmann Walchner (Karlsruhe, 1832). I am grateful to Helmut Zedelmaier for the information about the German edition, which I have not seen. Sacchini's *De ratione . . . legendi* was a source for Rainierio Carsughi, *Ars bene scribendi* (Rome, 1709), as discussed in Haskell (2003), 260. For the full range of Jesuit practices of note-taking (including notes taken under dictation) see Nelles (2007)—I am grateful to Paul Nelles for helpful conversations over the years. On Sacchini, see also Dainville (1978), 224–27.

35. Drexel (1638). Followed by editions in Antwerp 1641, 1642, 1657, 1658, 1691; Cologne 1638 and 1643; Munich 1642; Bratislava 1659; Frankfurt 1670; n.p. 1671; Lyon 1675; and Naumburg 1695, as discussed in Zedelmaier (2003), 54. See also Pörnbacker (1965), 104–6. George Horne (1730–92) was a High Church Anglican minister who spent many years at Oxford, then was appointed dean of Canterbury, and shortly before his death, bishop of Norwich. See Nigel Aston's entry in the *Dictionary of National Biography.*
36. Drexel (1638), dedication, sig. A4r–v.
37. On note-taking, see Kergerus (1658), who boasted of a "more succinct drexelian method"; Philomusus (1684); Titius (1676); Placcius (1689); and Morhof (1688), who included chapters on excerpting; see Zedelmaier (2000). On study methods more generally: Vossius (1658), Grotius (1645), and Alsted (1610), who lists authors on the topic. Vernacular advice books include Sorel (1671 and 1673); La Mothe Le Vayer (1668); Udenius (1684); and Wheare (1685), translated from Wheare (1625 and 1637). For a selection of translations into modern Italian from note-taking manuals, see Cevolini (2006a).
38. Nelles (2001). At the University of Paris Frey (1674, first published 1628) was likely based on extracurricular instruction in a Paris collège; see Blair (1993). Morhof explains that some parts of his *Polyhistor* originated in private lessons; see Morhof (1732), I.1.16, sec. 2, 171; Morhof (1731) was published from lecture notes, as the preface explained.
39. See Fichet, SJ (1649); Sidelius (1713). Morhof (1732), I.1.1515, sec. 29, 160–61.
40. Drexel (1638), 88–102; Sacchini (1786), 79–96.
41. In Alexandria parts of the Hippocratic corpus were marked up with symbols that served as indications of keywords: Von Staden (1989), 501–5; Smith (1979), 199–201. Jerome described the practice of marking with asterisks and "obeli" biblical passages in need of various kinds of emendation. Jerome, preface to Job, http://www.ewtn.com/library/PATRISTC/PII6-17.TXT.
42. An estimated 60 to 70 percent of incunabula were annotated and 50 percent of books published in the 1590s, but at the Huntington Library, formed by acquisitions from the rare book market that long favored clean copies, only 20 percent of the holdings are annotated; see Sherman (2002), 122–24.
43. On non-reading notes, see Sherman (2002), 130 and more generally Sherman (2008). A curious example involved the quasi-legal testimony copied in a translation of Seneca, possibly for safekeeping, in Orgel (2000), 95. See also Blair (1997), 195–201.
44. Sorel (1671), 12. Sacchini (1614), 73–74.

45. On this term, see Châtelain (1997b). More loosely, the shelfmark "Adv." in the Cambridge University Library designated books containing marginal annotations; see Sherman (1995), 65–66.
46. Snow (1960), 370.
47. Drexel (1638), 83. On note-taking during travel, see Stagl (1995), 52–89, and Alsted (1616), 301.
48. Décultot (2003a), 18–19.
49. On W. H. Auden (1907–73), *A certain world: A commonplace book* (1970), see Havens (2001), 61.
50. For a theologian's papers, see Overgaauw (2006); on Poliziano, Maïer (1965); on Budé, Grafton (1997), 169, and (1993), 753–55; on Aldrovandi, Findlen (1994), 30, and Frati (1907); on Peiresc, Miller (2000), 2.
51. Meinel (1995), 166, 168.
52. Kirsten (1679), sig.)o(2r–v. Martin Fogel's *Nachlass* is preserved at the Leibniz Bibliothek in Hanover.
53. See Hunter (1998a) on the papers of Samuel Hartlib, Robert Boyle, Robert Hooke, Isaac Newton, and Leibniz. On Evelyn, see Hofmann, Winterkorn, Harris, and Kelliher (1995), Mandelbrote (2003); on Locke, Yeo (2004a).
54. Harkness (2007), ch. 5; Sharpe (2000).
55. Pascal (2005), xi–xiv; on Aubrey, see Bennett (2000)—I am grateful to Elizabeth Yale for this reference.
56. Van Hulle and van Mierlo (2004), 2; Foucault (1983), 243–46.
57. Small (1997), 130; Carruthers (1990), 12–13.
58. Drexel (1638), 9; re Scaliger and Erasmus, see Neumann (2001), 52.
59. For the American national memory championship, see http://www.usamemorychampionship.com/ and Anthony Ramirez, "You Must Remember This or Just Forget about It," *New York Times*, March 12, 2008.
60. Malebranche (1993), II.X.13, 196.
61. As quoted in Mulligan (1992), 49; Montaigne (1988), I.9, 34. See Yeo (2007b), 5, 30–31; Yeo (2007a), 37.
62. See, e.g., Mencke (1937) and chapter 5, below, on complaints about reference books.
63. Chavigny (1920), 35.
64. Yates (1966), 2n2, citing Cicero, *De oratore*, II.lxxxvi, 351–54. Cf. Buzan (1991).
65. Blair (2008), 63–65.On tables and images in medieval and early modern scholarship, see Murdoch (1984) and Siegel (2009).
66. Erasmus, *De ratione studii*, in Erasmus (1978), 671. Aldrovandi, "Maior est apparatus quam emolumentum," in Bologna, MS Aldrovandi 21, II, 166 as quoted in Giudicelli-Falguières (1988), 236. See Naudé (1963), 99, and on Keckermann, Hotson (2000), 83. Morhof did not deny the utility of the arts of memory: see Morhof (1732), I.2.6, sec. 96, 384 but devoted more attention to note-taking.
67. Meinel (1995), 185–86.
68. As reproduced in Braun (1990), 143. On the medieval "hand of Guido," which originated in music theory, see Murdoch (1984), 76, 81. See also Sherman and Lukehart (2000).

69. Watts (1761), 275–76. See Carruthers (1990), ch. 7.
70. Drexel (1638), 56; Sacchini (1614), 74. Similarly Vives praised the act of copying for keeping scabrous thoughts at bay; Moss (1996), quotation #125. See also Richard Steele, "What Are the Hindrances and Helps to a Good Memory in Spiritual Things?" (1683), 428, as quoted in Knoles and Knoles (2003), 57.
71. Sacchini (1614), 77 and ch. 6; Drexel (1638), 60; Wheare (1685), 323.
72. Drexel (1638), 65, 72. John Evelyn annotated books of devotion with observations on how to prepare oneself and one's servants for a sacrament; see Mandelbrote (2003), 87–88.
73. For this refrain, see Drexel (1638), 1, 10, 45, 48, etc.; Sacchini (1614), 67–68.
74. Sacchini (1614), 71. Drexel (1638), 68–69.
75. Drexel (1638), 69.
76. Sacchini (1614), 71–73. For a similar use of this anecdote, see Mapheus Vegius, *De educatione liberorum* (1541), 237–38, as quoted in Châtelain (2003), 170. Drexel (1638), 69.
77. Drexel (1638), 3. Sacchini (1614), 75. Thomas Fuller warned of the risks of losing one's memory to disease; as cited in Yeo (2004a), 12.
78. Sacchini (1614), 26, 41.
79. Drexel (1638), 87, 103, 165 (separation of profane and sacred), 85 (notebooks for separate fields).
80. Drexel (1638), 75 (citing Sacchini), 66–67 (memory).
81. Locke (1686). For a publication history and analysis, see Yeo (2004a), 2–3, 13 ff. Locke's index grid (without any accompanying text by Locke) was included along with an abridgment of Drexel's advice in Horne (1814). Locke's advice was also praised and repeated by Jean LeClerc, who published the 1686 journal article, in his *Ars critica* (Amsterdam, 1712; orig. pub. 1696–97), 99–100, as quoted in Zedelmaier (2003), 61.
82. Translated from the French quoted in Ferrer (2004), 9. Ferrer suspects that the quotation attributed to Bernardin de Saint-Pierre is "bogus." Poe's use of the quotation appeared in *Democratic Review* (November 1844), 483; see http://www.eapoe.org/works/MISC/MARGD01.HTM (consulted July 2008). The original quotation can be found in Saint-Pierre (1840), 473. On the shift to the note as license to forget, see Yeo (2007b), 30–31; Yeo (2007a), 34 ff.; and Cevolini (2006a).
83. See the "Keeping Found Things Found" project: http://kftf.ischool.washington.edu/index.htm and Jones (2007).
84. For Drexel's claims see Drexel (1638), 32–48. Dorandi calls ancient note-taking a five-stage process (Dorandi [2000], 31–32), while an earlier study identified three stages; see Skydsgard (1968), 155. The source for both is Pliny the Younger (1969), III.v in I, 172–79.
85. Pliny the Younger (1969), I, 177–79.
86. Dorandi (2000), 50. Pliny the Younger (1969), I, 172–75.
87. Locher (1986), 20–29. Detlefsen (1899), 22.
88. Porphyry, *Life of Plotinus*, 8, 4, as quoted in Hadot (1988), 33n31. Quintilian observed that texts composed by dictation required revision and Jerome that dictation favors hasty, bold, and inelegant writing. See Quintilian *Institutio oratoria*, X, 3, 18–22, as

cited in Dorandi (2000), 68 and Arns (1953), 47–48. Similarly Ambrose noted that composing in one's own hand allowed for more time for reflection; Dekkers (1952), 133–34.

89. For an entry into this literature, see Johnson (2000) and McDonnell (1996).
90. Cicero, *De inventione*, bk. 2, II, 4. On Varro: Skydsgard (1968). On Plutarch: Theander (1951) and Helmbold and O'Neil (1959). Prentice (1930) argues that Thucydides' *History* is unfinished, gathered from sheets left loose in bundles at the author's death. On Diogenes Laertius, see Mejer (1978).
91. Gellius (1946), xxvi–xxvii. Skydsgard (1968), 103, takes Gellius's claim at face value, while Holford-Strevens (2003), 35 ff. has emphasized the crafted nature of the text.
92. Hadot (1998), 30–34; he also mentions the *hypomnemata*, now lost, of Pamphila, an educated woman of the first century CE. Skydsgard (1968), 107–9 argues that *hypomnema* is the equivalent in Greek of *commentarii*.
93. Drexel (1638), 42. I rely for this section on Dondaine (1956). See also Gils (1992).
94. On the "littera inintelligibilis," see Hamesse (1994), 196. The difficulty of the script may have presented other advantages: on the use of secret hands in nondiplomatic and school contexts, see Bischoff (1981).
95. Dondaine (1956), 20n19.
96. Dondaine (1956), 10–11, 17, 19; on Aquinas's most constant companion, Raynald de Piperno, see Torrell (1993), 399–403. On Churchill, see Ball (2003), 122–24; Churchill dictated 500-word blocks at one time according to "Old Man, New Policy," *Time* (October 14, 1946).
97. Screech (1998), 4. Montaigne (1988), II.10, 409, 413 and II.18, 666; Montaigne (1965), 297, 301, 505. On Montaigne and the books he owned, see Montaigne (1988), III.12, 1056b; Villey (1933), 1:59–271; de Botton and Pottiée-Sperry (1997); and Millet (2004). I am grateful to George Hoffmann for expert advice on these points.
98. Compagnon (1979), 300–301 and Goyet (1986), 18 ff.
99. Villey (1933), 2:28, 38. On Montaigne's independence from his reading, see Tournon (2000), xviii, and Goyet (1986–87). Montaigne may have referred to his lack of note-taking when he wrote "je suis un homme de nulle retention." Montaigne (1988), II.10, 408.
100. See Bayle (1740), I, "Barthius," note T citing "Barthius in Statium, Tom. III, pag. 466"; see Barthius (1624). A manuscript *Grotiana* (sayings attributed to Grotius) noted that Barthius published by barrowfuls ("par charretées") and assumed that he had had barrowfuls of notebooks ("plein de charrettes de recueils"), as cited in Wild (2001), 27.
101. Drexel (1638), 95 and 88–95 (tears), 95–96 (resurrection); 96–98 (love of enemies); 98–99 (dancing and jumping); 99–101 (bacchanalia); 52–53 (on the pace of writing). Drexel published sermons and religious treatises at a rate just below one per year from 1618 to 1638; see Pörnbacher (1965).
102. For example, the inaugural lecture of Famiano Strada (1572–1649), professor of rhetoric at the Collegio Romano, discussed the reactions to sneezing, presumably to elicit wonder about how he could compose on such a theme; see Neumann (2001), 56.

103. Drexel (1638), 83, 103, 105; Sacchini (1614), 87, warned of "unhappy curiosity." Both cited the passage in Gellius, bk. 14, ch. 6, in (1946), III, 43–47.
104. Sacchini (1614), 86–87. Drexel (1638), 83, sig. [A8]r.
105. Hess (2003); for Augustus's *liber amicorum*, see Hess (2002).
106. Warkentin (2005), 238–39, 244. Sharpe (2000), 192; self-improvement was another of Drake's motives (89).
107. Turnèbe (1581), sig.):(2r–v.
108. Warkentin (2005), 238. Joseph Addison, *Spectator* 166 (September 10, 1711), vol. 2 (London: G. Woodfall, 1822), 352 as quoted in Podhurst (2004), 103–4.
109. Gassendi (1657), 200, 191–92 (second pagination sequence). On Gassendi's motivations in writing this biography, see Joy (1987), 50–61. I am grateful to Peter Miller for helpful conversations on Peiresc.
110. Gassendi (1657), 197 (second pagination sequence).
111. Pattison, "Casaubon" in *Essays* (1892), 425–28, as discussed in Yeo (2004a), 24.
112. G. W. Leibniz, *Mathematische Schriften*, ed. C. I. Gerhardt (1962), II, 227–32, as cited in O'Hara (1998), 160. On Fogel's method, see Von Murr (1779), 211; Meinel (1995), 178.
113. See Hunter (1998b), 126–27, 133–34, and Hunter and Littleton (2001), 376–77. On Boyle's work diaries, see http://www.livesandletters.ac.uk/wd/index.html.
114. William Wotton to John Evelyn, August 8, 1699, British Library, Evelyn Collection MS 3.3.112, as quoted in Hunter (1998b), 123. The expression paraphrased a Dryden poem.
115. Hunter and Davis (1996), 227; and Hall (1987), 111–16.
116. Sorel (1673), 14.
117. Van Lieshout (2001), 74.
118. Placcius (1689), 134.
119. Sorel (1673), 7. Bartholinus (1676), 191; see also Placcius (1689), 147. In a related practice, the historian Christoph Schrader (1601–80) recommended keeping a notebook of "dubia" with queries to be answered later. Brendecke (2004), 189.
120. Goyet (1987), 22–23.
121. Montaigne (1988), III.11.
122. Sorel (1673), 7.
123. Blair (1997), 74.
124. Erasmus (1508) and Moss (1996), 109 and quotation #112.
125. Nelles (2007), 98. Placcius (1689), 139. On Bacon, Snow (1960), 373. On Harrison and Locke, Malcolm (2004), 216.
126. Titius (1676), 102. Sorel (1673), 8.
127. See Alsted (1989), 2338 as discussed in Zedelmaier (2001), 20 and Zedelmaier (2000), 86 (Gesner).
128. Weimar (2003), 75–76. On the trend toward the idiosyncratic, see Décultot (2003a), 15, and Moss (1996), 261.
129. Drexel (1638), 135.
130. Meinel (1995), 166, 168. Giudicelli-Falguières (1988), 255.
131. Greengrass (1998), 44. Sorel (1673), 14.

132. Yeo (2004a), 19, 23 ff. On Locke's impact, see Décultot (2003a), 15–16; on Evelyn: Hofmann et al. (1995), 38. For a description of Locke's desk, with numerous pigeonholes and drawers, see Houghton (1979), I, 248. I am grateful to Peter Beal for this reference.
133. DeMaria (1997), 58; Décultot (2003b), 96. Helmreich (2003), 194, and Weimar (2003), 74–75. I am grateful to Klaus Weimar for helpful conversations and correspondence.
134. On early training in cataloging, see Passet (1991). On controlled vocabulary and its use in modern retrieval tools, see Taylor (1999). For many years Yahoo Directory offered a human-edited index of the World Wide Web; more active now is the Open Directory Project administered by a network of volunteers; see http://www.dmoz.org/.
135. Leibniz, *New Essays on Human Understanding* (1981), 523–24, as quoted in Malcolm (2004), 220.
136. Von Murr (1779), 211. Von Murr reports that Leibniz purchased the closet at the death of Clacius, Hanoverian secretary, who had had it made for him. It is unclear how widely known the closet was or whether it inspired other kinds of storage furniture; on Carl Linnaeus's plant storage closet (mid-eighteenth century), see Müller-Wille (2002).
137. See Malcolm (2004). Malcolm concludes (see his n58) that Placcius relied not on the BL manuscript but on some as yet unidentified copy of it. I am grateful to William Newman for first calling my attention to the BL manuscript in the Kenelm Digby Papers, MS Add 41,846, and to Noel Malcolm for helpful conversations on the topic. The manuscript was published in Placcius (1689), 121–49. In citing from Placcius (1689), I refer to Harrison as the author of the text on those pages and to Placcius as the author of the rest of the work and notes. See also Yeo (2007b), 13 ff.
138. Placcius (1689), 145. Meinel (1995), 173.
139. See Krajewski (2002) and Tenner (1990).
140. Krajewski (2002), 104 ff. and Petschar et al. (1999).
141. Chavigny (1920) and Heyde (1931). I am grateful to Noel Malcolm for sending me a copy of Heyde's book.
142. Shackleton (1961), 181; Rozier (1775), xi–xii.
143. Zedelmaier (2003), 51 ff. I learned of Lavater's notes on cards stored in little boxes shaped like books from an unpublished talk by Klaus Weimar delivered at Harvard University in 2005.
144. Krajewski (2002), 43–64; Te Heesen (2002).
145. Miniati (1989). One exemplar is extant at the Museum of the History of Science in Florence, another at the Herzog August Bibliothek, see Konrad et al. (1985), 202–3, and Raabe and Schinkel (1979), 190–91.
146. Georg Philipp Harsdörffer, *Delitiae philosophicae et mathematicae: Der philosophischen und mathematischen Erquickstunden dritter Theil* (Nuremberg, 1653), 57, as discussed in Meinel (1995), 170; Zedelmaier (2004), 199.
147. John van Engen, personal communication. For some other examples, all dating from after 1450, see Honemann (2000b), 36–37n27, 42; he notes the fluid boundaries between the single-sided imprint, the poster, and the *Zettel*.

148. Gesner (1548), fol. 20r; for a translation, see Wellisch (1981), 12. Wellisch surmises that the use of this method was "extensive" (n16).
149. See Germann (1994). Gesner described Pellikan as his "praeceptor" and followed his method for arranging a library in Gesner (1548), 20v, 21v.
150. Gesner's advice on indexing was substantially repeated (without the cutting and pasting from printed books) in Caramuel Lobkowitz (1988), 30, and faithfully reproduced in Placcius (1689), 85–88.
151. Tournoy (1998), 163–64.
152. Daly (1967), 86. See the catalog of the Bibliothèque Mazarine, Paris, MSS 4134–37, composed from slips cut up from a copy of the inventory of the library holdings; Gasnault (1988), 139. See also an eighteenth-century index to Ortelius in BnF MSS Latin 14351–53 "Ad Abraham Ortelii Theatrum geographicum index a Gregorio Mariette concinnatus" (undated).
153. Udenius, for example, mentions "codicilli reminiscentiae" ("little slips of memory") on which to take notes quickly to copy over later; Meinel (1995), 169.
154. Warkentin (2005), 240.
155. McLeod (2003), 94. I am grateful to Noel Malcolm for this reference.
156. Pascal (1991), 26; Keuntz (1985), 65–72.
157. Meinel (1995), 181.
158. Ibid., 168.
159. Placcius (1689), 133.
160. Ibid., 71. Adrien Turnèbe also compared his reading notes to Sibylline leaves because they lacked order, just as the Sibylline verses were collected haphazardly after the destruction of the temple of Jupiter where they had been kept; see Turnèbe (1581), sig. 2r–v.
161. Placcius (1689), 147.
162. Ibid., 157–59.
163. Ibid., 129, 145.
164. Ibid., 146.
165. Ibid., 148–49; Malcolm (2004), 215–16.
166. Placcius (1689), 148.
167. For insight into the organizational problems posed by editing a journal in this period, see Vittu (1997).
168. Placcius (1689), 162–63; he also refers to Morhof's discussion of learned societies in Morhof (1732; first published 1688), I.1.14, sec. 46–49, 149–50. On *Poetica giessensis major per Academiae Giessenae, nonnullos Professores . . . conscripta* (Giessen: J. D. Hampel, 1657), see Schüling (1982), 71.
169. Placcius (1689), 162 (discord), 156 (delegation).
170. Shapin (1989). On Montaigne, see Hoffmann (1998), ch. 2, and Montaigne (1988), III.3, 828. For the iconography of scholars at work, see Thornton (1997).
171. Webster (2002). On Bacon's impact in France, Le Doeuff (1984).
172. Harkness (2007).
173. On the Magdeburg Centuries, see Grafton (2001) and Lyons (2003); for an entry into French Catholic erudition, see Neveu (1994), esp. ch. 1.

174. Placcius (1689), 161. His detailed reference (Cons. log. de adornandis locis communibus c.1.p.3 columna 2 circa finem) corresponds to an edition other than the only one in which I have found the text: Keckermann (1614), cols. 222–23 [misnumbered 220–21]. On Keckermann, see Freedman (1997).
175. Hotson (2000), 33 ff. on Alsted's general desire to continue Keckermann's project; on the collegia Hotson (2007), 241–42. I am grateful to Howard Hotson for helpful conversations and correspondence over many years.
176. Frey (1674), 25–26; Hoole (1969), 183.
177. Gingerich (2002), xix–xxi.
178. Shapin (1989).
179. Algazi (2003). Harkness (1997); Cooper (2006).
180. Turnèbe (1581), 900; see Lewis (1998), 204. Historians have also noted how Isaac Casaubon's widow "pressed indefatigably for publication" of his "literary remains." Nuttall (2003), 144.
181. Findlen (1999), 29–57, 44 and n62. On the use of canvas bags, see Tugnoli Pattaro (1977), 15.
182. Littré (1992), 30–32.
183. See, e.g., the comment by J. J. Scaliger in a letter to Casaubon (June 10, 1604): "I rejoice with you over your wife's restored health . . . she is quite indispensable to your household, your studies and your children." Scaliger (1927), 46.
184. Soll (1995) and Soll (2000).
185. My account relies on Bierlaire (1968).
186. Michelini Tocci (1989), 39–49 and figures 6–7.
187. Bierlaire (1968), 99–100; Cognatus (1535). On Cousin, see Febvre (1907).
188. Grafton (1983), 101.
189. Scaliger (1927), 61. On Drake, see Sharpe (2000), 273–74. On Milton, Mohl (1969), 8–9. I am grateful to Thomas Fulton for helpful conversations about Milton; for a new assessment of the role of the various hands that contributed to Milton's commonplace book, see Fulton (2010), app. B.
190. In Adriani's edition of Dioscorides *De materia medica libri sex*, f. 352v, various faults were blamed on the amanuenses rushing through the correction of the work; as discussed in Grafton (1991), 5 and n25, 305. Erasmus apologized for errors that he attributed either to his amanuensis or to himself; Bierlaire (1968), 30n43. Gesner blamed excessively long passages in his work on an amanuensis; Gesner (1545), sig. 4r. Boyle apologized for letters that got burnt by servants in the laboratory; Hunter (1998b), 128–29. A spectacular servant error resulted in the loss of the manuscript of Thomas Carlyle's *French Revolution* in 1835, which was used to kindle a fire—Carlyle rewrote the work; see Beal (2007), 3.
191. For Erasmus's complaint about unauthorized additions, see Bierlaire (1968), 29. And *Adages* 1.x.xcv: "I had a certain secretary whose delight it was to weave something of his own into my writings, all unknown to me." Erasmus (1964), 162–63. On the ransom, see de Jonge (1977), 1, citing *Lettres françaises*, ed. Ph. Tamizey de Larroque (1879), 341. On Montaigne, see Hoffmann (1998), 43, 56. The lost section dealt with armor.

192. The misappropriation of the draft is recounted in Baillet (1685), II.2, 150. On the averted theft, see Bierlaire (1968), 93.
193. Hoffmann (1998), 42. On the rise of the secretary in fifteenth-century Milan, see Ianziti (1988), 10; also Nigro (1995). On Erasmus's servants, see Bierlaire (1968), 24 and the chart following 39.
194. Petrarch, *Familiari*, xviii.12. 3–10, as quoted in Hamesse (1994), 204.
195. On Boyle's amanuenses and their high turnover, see Boyle (1999–2000), 1:ci, and Hall (1987), 113; on the aural and other spelling mistakes they made, see Hunter and Davis (1996), 220. On Montaigne, see Hoffmann (1998), 48, and Hoffmann (1995); on Calvin: Gilmont (1997), 177, 180.
196. Peiresc's most faithful and laborious scribe was Fransicus Parrotus, who transcribed texts in many scripts including Greek, Arabic, and Turkish; Gassendi (1657), 200 (second paginations sequence). Sharpe concludes that a scribe may have copied out annotations from Drake's books into notebooks. Sharpe (2000), 273. Montesquieu had his amanuensis copy out material selected for use from his notebooks onto notecards; Volpilhac-Auger (2003), 89.
197. D'Avray (2001), 26–27.
198. On Naudé, see Nelles (1994), 219. On Hartlib, Greengrass (1998), 43, 47.
199. See Beal (1998); and Knoles and Knoles (2003), 10.
200. Chinese scholars also employed copyists nevertheless; Hilde de Weerdt personal communication.
201. Moss (1996), 54.
202. Drexel (1638), 58–59.
203. Ibid., 72–73. This and other criticisms of reference books are discussed in chapter 5.
204. Morhof (1732), I.1.21, sec. 12, 239. For a suggestive analysis of how intellectual trust was related to social standing in seventeenth-century England, see Shapin (1994).
205. Tite (1994), 55.
206. Bacon (2002), 439. Snow (1960), 373.
207. Jardine and Grafton (1990).
208. Naudé (1643); on Heinse, see Le Moël (2003), 206–7.
209. McKitterick (1992), 35. On Locke, see Yeo (2004a), 19.
210. Caramuel Lobkowitz (1988), 30.
211. Scaliger (1927), 44 (July 27, 1602); see Grafton (1975), 109, and Grafton (1993a), 504–6.
212. Jordan (1897), 307; Leibniz (1959), I, 181.
213. Daston (1994).
214. Chavigny (1920), 96–101; Price and Thurschwell (2005) and George Johnson (2005). On the transition to electronic "servants" see Krajewski (2010).
215. Pliny the Younger (1969), III.v.17, in I, 179. Licinus was the Praetorian Legate in Spain, ca. 73. MacMullen (1974), 293–94. I am grateful to John Bodel for help on this point.
216. Placcius (1689), 185. On Conring's note-taking, of which little is known, see von Moeller (1915), 23–24. I am grateful to Constantin Fasolt for this lead.

217. Erasmus, *Adages*, II.1.1 (Festina lente) in Erasmus (2001), 149. On lending out notes, see Décultot (2003a), 27.
218. Ribard (2002), 71.
219. Placcius (1689), 186–87.
220. Wellisch (1984), 24.
221. On Jean Paul's instructions to his wife, see Helmreich (2003), 197. See also the case of an Islamic scholar who bequeathed his notes to one scholar in order to avoid their falling into the hands of another who might destroy them; George Makdisi (1990), 214.
222. Gassendi (1657), 199–200 (second pagination sequence).
223. De Jonge (1977), 4–5, citing F. F. Blok, *Nicolaas Heinsius in dienst van Christina van Zweden* (Delft, 1949), 125.
224. Sherman (1995), 84.
225. Martin (1706), V, 28.
226. Beal (1993), 134; Yeo (2004b), 9, referring to BL MS Add28273 (personal communication from the author).
227. Warkentin (2005), 238–40—I am grateful to Germaine Warkentin for calling my attention to this case. Similarly Guillaume Budé was introduced to learning through his father's annotated books; see Grafton (1997), 148.
228. Franklin (1985), 2–6. Re Harvard college notes, Knoles and Knoles (2003), 37.
229. Byrd (2001), 33.
230. Findlen (2003).
231. See Perosa (1981), including a reproduction of a page of Vatican Library MS Lat. 3378 containing Quintilian's text with annotations by Valla and Leto; see Ginzburg (1999), 61.
232. Poliziano, *Opera omnia* (Venice, 1498), 1v, as quoted in Maïer (1965), 8.

CHAPTER THREE. REFERENCE GENRES AND THEIR FINDING DEVICES

1. As a criterion for "steady-selling," Ian Green proposes the publication of five editions in thirty years, and for "best-selling," one edition per year for ten, twenty, or more years; see Green (2000), 173, 175.
2. Gesner (1551b), second preface "candidis lectoribus," sig. β1v–2r.
3. On legal genres, see Coing (1973–88) and Stinzing (1867), 69–71 (concordances), 121–48 (on alphabetized collections). I am grateful to Thomas Duve of Munich for an introduction to early printed legal reference books. Theological reference works included the Polyglot Bibles, concordances, harmonies showing the parallels between the four Gospels (sometimes presented in tabular form). In medicine, reference works included the complete works of and indexes to authoritative figures like Galen, *practica*, collections of materia medica and of recipes.
4. Edwards, *Memoirs of Libraries* (1859), II, 634 as cited in *OED*, 3rd ed., consulted online, "reference" #7. *OED* dates the first occurrence of "books of reference" to the *Penny Cyclopedia* (1836), V, 455.
5. *OED* cites Brinsley 1612; see Brinsley (1627), 188.

6. The Boston Public Library featured a "reading room" from its opening in 1845. On reference rooms among the many Carnegie-funded libraries, see van Slyck (1991), 378–79.
7. Grafton (1993c), 40, plate 34. For dates: Artier (1988), 46; Clark (1901), 261–66.
8. Desgraves (1988), 394. James (1986), ix. The list of books available for election from Lincoln College, Oxford, in 1543 included a Calepino dictionary, which had likely been bequeathed to the college by a former fellow with the purpose of making it available for election. Ker (1986b), 479, 484, and (1986a), 456–57.
9. Hyde (1674), sig. [**4]r.
10. Stoneman (1999), 6; Meinel (1992), 66–67. Alsted gave a prominent place to "didactica" as the "doctrine on the study of the disciplines" in Alsted (1989), I, 89 ff.
11. Among systematically arranged catalogs (those alphabetically arranged being of no interest on this point), I have examined Kusukawa (1995), Leedham-Green and McKitterick (1997), de Jonge (1977), Finch (1986), Dupuy (1679), Martin (1706).
12. Naudé (1963), 51–52. Translation from Naudé (1903), 59–61 (italics from 1661). On the genre of treatises on library organization, see Werle (2007), 304–49.
13. Weijers (1990a), 204–5, and Weijers (1991). "Repertorium: index seu commentarius, particulatim rerum recensitarum descriptionem continens" Calepino (1554), 171. *Dictionnaire de Trévoux* (1704): "repertorium pour repondre au terme plus familier de 'inventaire.'" Definitions for "indices de livres," "tabella," and "lieux communs" all include the word "repertoire." I am grateful to Jean Céard for these observations. *OED* reports "repertory" in the sense of "index, list, catalogue or calendar" with examples from sixteenth to eighteenth centuries, and as "storehouse, magazine or repository" from sixteenth to nineteenth centuries.
14. Etienne Molinier, *Mystère de la croix* (1635), sigs. e1r–v as quoted in Bayley (1983), xx.
15. Araoz (1631), sig. 4v. Géal (1999), 295–96, observes that Araoz gave pride of place to reference works.
16. Lomeier (1669), 331; Lomeier (1962), 1–2.For a photograph of the Zutphen library which can be visited today, see Clark (1901), 154–55.
17. Weijers (1990a). Hamesse (1996b). See also the bibliography drawn up by J. Shaw et al. at http://www.chass.utoronto.ca/edicta/shaw/bib_b.htm (consulted May 2008).
18. I am grateful to Peter Burke for sharing with me the long list of early modern dictionaries that he compiled in manuscript. For a recent study, see Considine (2008).
19. See Henri Estienne (1572). On subject dictionaries, see Tonelli (2006).
20. Labarre (1975); Strada and Spini (1994) and Bravi et al. (2002). Warm thanks to Christopher Carlsmith for putting me in contact with the Biblioteca Mai in Bergamo and to the staff there for valuable assistance.
21. See Robert Estienne (1553); on this edition, see Furno (2001).
22. Labarre (1975), 7–8. See also *Lexicon latino-iaponicum* (Rome: Typis S.C. de propaganda fide, 1870); *Calepinus latin-magyar*, ed. Melich János (Budapest: A Magyar Tudományos Akadémia, 1912).
23. Frey (1674), 2. Montaigne uses the expression "au bout de son calepin," in *Essais* (1988), III.13, 1069. I am grateful to Hans Ramminger for helpful discussions of *calepinare*.

24. Robert Estienne (1531) and Henri Estienne (1572) and the electronic resources of the same title. See also Jean Nicot, *Thrésor de la langue françoise* (Paris: Douceur, 1606).
25. Baillet (1685), I, sig. eiijr–v (avertissement au lecteur).
26. See Calepino (1554, 1616, 1718, 1746).
27. Gesner (1544) and at least eighteen further editions to 1627.
28. For a study of filiations of dictionaries, see Wooldridge (1977).
29. Robert Estienne (1541) and Charles Estienne (1693).
30. "Ad lectorem, de triplici utilitate hujus Operis," in Gesner (1616), sig. AAa1v [p. 2]. This preface first appeared in 1546. Gesner referred here to his Latin translation and commentary of Tatianus's *Oratio contra Graecos*, first published as an appendix to *Sententiarum sive capitum, theologicorum praecipue ex sacris et profanis libris per Antonium et Maximum monachos olim collecti* (Zurich: Froschauer, 1546), e.g., 378 (re Pelops). Gesner's annotations are included in *Tatiani oratio ad Graecos* (Oxford: e Theatro Sheldoniano, 1700); references to his *Onomasticon* include p. 35n4 (on Zephyr) and p. 42n1 (on the worship of Jupiter Ammon in Lybia); Tatian was a Greek-speaking Christian philosopher of the late second century CE.
31. But to aid in finding encyclopedic material in his dictionary of medieval Latin Charles du Cange offered thematic indexes; Considine (2008), 268.
32. The grounds for this figure are not clearly articulated, see Vogel (1999), 186.
33. *Flores omnium pene doctorum qui tum in theologia tum in philosophia hactenus claruerunt:* KVK reports at least thirty editions between 1553 and 1760; the *Flores Bibliae* were also in print during that period, though not as often. See Rouse and Rouse (1979), 110, and Hess (2008), 98.
34. *Catonis Disticha moralia* (Augsburg: Otmar, Valentin, 1545), followed by dozens of editions into the eighteenth century.
35. See Moss (1996), 67–73, 95–98.
36. For a rich bibliography of early modern sources of rhetorical "inventio," which merges works that I separate into florilegia and miscellanies depending on their arrangement, see Fumaroli (1980), 738–48. Similarly, on works designed to offer material for reuse, see Cherchi (1998); also Lobbes (2000).
37. For an overview of its complex printing history and detailed word counts, see chapter 4 and table 4.1, below.
38. He called himself Dominicus Nanus; I follow other sources in referring to him as Nani Mirabelli. The first mention of him dates from his appointment as rector of schools in Savona in 1485; his date of death is also uncertain but after 1528. I am grateful to Dr. Marco Castiglia of the Archivio di Stato di Savona for this information by correspondence in 2004. Domenico Nani Mirabelli of Savona was trained in canon law, served as archpriest of the cathedral and as papal secretary; he was also a poet and a doctor, according to entry in SAUR biographies. See also *Li scrittori della Liguria, e particolarmente della maritime di Raffaele Soprani* (Genoa: Pietro Giovanni Calenzani, 1667), 84, which notes that he also wrote a "collection based on the four Gospels, of all the sententiae and authorities of the gentile philosophers, poets and orators, adapted to his commonplaces, calling them . . . Harmonia evangeliorum."
39. Nani Mirabelli (1514), dedication to Raphael Riarius bishop Hostiensis.

40. Rouse and Rouse (1979), 206.
41. Gilbert Hess notes that Nani was more open to humanist sources than other florilegia. Hess (forthcoming).
42. Beyerlinck (1666): "ad normam Polyantheae universalis dispositum." Janus Gruterus modeled his *Florilegium magnum seu polyanthea* (Strasbourg: Zetzner, 1624) on Lange's *Polyanthea*, though he favored sorting poetic excerpts by their verse form. See Hess (2008), 100–102.
43. See, e.g., Weinberger (2007).
44. Michel (2002).
45. Bartholomaeus Keckermann complained of the order of the *Theatrum* and noted that he relied on the index to use the book, as I discuss below.
46. Gellius (1946), I, xxvii.
47. On remarkable career of this work, see Mexía (1989), I, 54–59. On Mexia's sources, see de Courcelles (2003a).
48. Baillet (1685), II.2, 202. He refers to Turnèbe (1581). Turnèbe wanted to call his work "observationes," but his publisher chose the title. Lewis (1998), 200–201.
49. Recent work on miscellanies includes: Châtelain (1997), de Courcelles (2003b), and especially Mandosio (2003) and Mouren (2001). The literature on commentary in the Renaissance is vast; for some points of entry, see Céard (1981), Most (1999), Goulet-Cazé (2000).
50. Morhof called Rhodiginus Scaliger's teacher: see Morhof (1732), I.1.21, sec. 50, 247. Scaliger distanced himself from the genre, though he did not disapprove of it: "I have made many notes on authors both Greek and Latin, from which there might spring a vast progeny of *various readings*, *old readings*, *miscellanies* and other things of this sort, the sport of the self-advertising philologians of today. Not that I think this sort of writing useless, or reprove any writer for it. That would be foolish. But I prefer that others should publish such things rather than I." Scaliger (1927), 32, translating Scaliger (1628), 47.
51. See Marangoni (1997); also Marchetti (1989), 23–32. Gellius (1946), I, xxviii–xxix (preface), and II, 6–9 (bk. 6, ch. 2).
52. Rhodiginus (1516), sig. AA4r.
53. Ibid., XIII, chs. 18–27.
54. Rhodiginus (1516) reprinted in 1517; Rhodiginus (1542) reprinted in Basel, 1550 and 1566; Lyon, 1560 and 1562; Frankfurt, 1599; Geneva, 1620; Frankfurt and Leipzig, 1666.
55. Rhodiginus (1516) and (1542), front matter.
56. See the marginal annotation by an anonymous reader of Jean Bodin's *Universae Naturae Theatrum* (1597), 407: "de quo vide Caelium l.13.c.17." The reference is accurate: see Rhodiginus (1542), XIII.17, 485; see Blair (1997), 199.
57. Other "lectiones" include Marc-Antoine Muret, *Variarum lectionum libri VIII* (Venice: Jordanus Zilletus, 1559; in-quarto), which appeared in nine editions to 1600, and in 1791, 1830, and 1888, and Pier Vettori, *Variarum lectionum XIII novi libri* (in-folio), published in five editions 1553–1609; see also Blair (2006).
58. Poliziano's *Miscellanea* were reprinted in Paris, 1511; Basel, 1522 and 1524; and in edi-

tions of Poliziano's *Opera*. On the impact of Poliziano, see Grafton (1983), 22–44; Mandosio (2001), 33–41.

59. Furno (1995), 133. For illustrations, see Hankins (1993), 56–7.
60. Gesner (1548), 19r (titulus xiii, pt. 1); Guillaume Budé published his *Commentarii linguae graecae* in 1529.
61. Furno (1995), 16. For a similar assessment from the period, see Morhof (1732), I.4, 9, sec. 9, 821–22. Erasmus used Perotti as a reference tool: see Charlet (1997), 603.
62. Perotti (1532), Valentinus Curio to the studious reader. Robert Estienne referred to his *Dictionarium* (1536) as a "kind of commentary" (hoc commentandi genus), while a 1570 Calepino referred to "the kind of commentaries which we called dictionaries," as discussed in Céard (1997), 90; see Gesner (1616), sig. Aaa1v, as discussed above.
63. Mouren (2001), 17–19.
64. The one-and-a-half-page list of digressions was disordered and required browsing; Dolet (1536), II, front matter.
65. For a printing history, see Van der Haeghen (1972).
66. Balavoine (1984); but for a critique, see Mandosio (2003), 22–23; also Michelini Tocci (1989), 39–49.
67. *Dies caniculares* (Rome, 1597) were followed by five Latin editions to 1691 and French translations in 1612 and 1643. Maioli (1614), preface, sig.):(3v. Alexander ab Alexandro (1539); KVK lists eighteen editions of Alexander ab Alexandro, *Dies geniales*, between 1522 and 1667.
68. Indexes first appeared in 1627 (in French)—see Sayce and Maskell (1983), 110—and in 1632 in English (as announced on the title page). On Montaigne as "oeuvre mêlée" see Garavini (2000).
69. Alsted (1653), 38–41; Melancthon, *Loci communes theologici* (Wittenberg, 1536). See Rehermann (1974).
70. See Moss (1996), 114–15, on Ravisius Textor, and Ong (1976) on Ravisius and Zwinger.
71. Zwinger (1565), sig. ϵ[4]v (typographus lectori).
72. On paratexts, see Genette (1997), and von Ammon and Vögel (2008).
73. Skydsgaard (1968), 101–16. On Justianian: Roby (2000), xxiv.
74. Rouse and Rouse (1986), 148. Vincent of Beauvais (1964), col. 3 (prologue, 3).
75. Rouse (1965); on the Catholicon: Powitz (1996), 311.
76. Zwinger (1586), sig. YYyYY[7r].
77. Erasmus (1530).
78. Erasmus (1551), sig. hh2r–5v.
79. Rhodiginus (1542). The list of authors emended is especially long (seventeen folio pages) in Turnèbe (1581).
80. In *Stobaei collectiones* (Venice, 1536), BL 653.a.7, a reader has added page numbers to the list of headings.
81. Minnis (1979), 394.
82. As quoted in Melville (1980), 95.
83. Rouse and Rouse (1979), 29.
84. Lists of headings were omitted, for example, from editions of 1539, 1546, 1567, and

1574. The edition of Cholinus 1567 added the section on vices and virtues that was maintained down to the 1604 St. Gervais edition but was dropped in the editions following Lange's revised edition of 1604.

85. Compare Erasmus (1508), copy at Houghton Library, and Erasmus (1515). For illustrations from the annotations, see Blair (2008a).
86. Compare the "elenchus titulorum" in Zwinger (1565, 1586) and Beyerlinck (1666). Zwinger also introduced indentation into the text of his preface in 1586.
87. The index featured between 260 and 450 entries depending on the manuscript. See von den Brincken (1972), 903.
88. Zwinger (1586), sig. AAaAAr.
89. Drexel (1638), 73.
90. Zwinger (1586), sig. CCcCC[6v] (end of index titulorum).
91. *Polyanthea* (1585): 56 ("amentia," cross-referenced to "Insipientia" and "Stultitia") On cross-referencing in Thomas of Ireland, see Moss (1996), 41, and in fourteenth-century collections of exempla, see Bremond et al. (1982), 61–62.
92. Zwinger (1586), index exemplorum, sig. QQqQQ3v.
93. Ibid., sig. DDdDD1r (blurb to index exemplorum).
94. Ibid., sig. DDdDD1r.
95. Simler (1555), *3v–[*8]v.
96. La Croix du Maine (1584), sigs. eiiijv, oijv. In Beyerlinck (1631), vol. 8: at Huss: v. Jan Hus or Zwingli: v. Huldrych Zwingli. But at Iulius Caesar Scaliger: v. Scaliger and there is no entry for Scaliger. Beyerlinck (1631), vol. 8.
97. Erasmus (1550).
98. Gesner (1548), 19v (titulus xiii, pt. 2); Gesner (1551b), first preface "ad candidum lectorem," sig. b1v.
99. Pinon (2003), 66.
100. Thomas Aquinas (1569), sig. a1r–o6v; on the *Secunda secundae*, see Hillgarth (1992), 4.
101. Gesner (1559), sig. HHr.
102. Wellisch (1981), 15.
103. Reisch (1517; facsimile 1973), index at back of book.
104. Alsted, *Prodromus religionis triumphantis* (1641), sig. 5T6v. I am grateful to Howard Hotson for this information.
105. Princtius in Beyerlinck (1631), sig. (:)2r.
106. Mouchon (1780).
107. Pattison (1889), 278. Volphilhac-Auger (2000) and Furno (2000). For praise of one such index, see Holford-Strevens (2003), 342.
108. Gesner (1548), 19v. Drexel (1638), 73. Bartholinus (1676), 192.
109. Cahn (1994), 73; more generally, Blair (2000).
110. In his *Lettre sur les aveugles* (published under the false imprint of London, 1749) Diderot listed Joseph Raphson (1648–1715) only in the index with a reference to the passage in the text where he was quoted anonymously. I am grateful to Marian Hobson for this reference.

111. See Blair (2007b), 35.
112. On Swift and the Scriblerians, see Lund (1998). Iena history professor Martin Schmeizel refused to index his *Versuch zu einer Historie der Gelehrheit* (Iena, 1728), as cited in Zedelmaier (1992), 100.
113. On Ramist-style diagrams, see Höltgen (1965); Evans (1980); and Siegel (2009), 64–80. On the chronological table, see Brendecke (2004).
114. On medieval branking diagrams, see Murdoch (1984) and O'Boyle (1998), 255.
115. Charts appear in the articles on Abstinentia, Abusio, Acedia, Amicitia, Anima (in three parts), Avaritia, Fides, Gloria, Humilitas, Invidia, Iustitia, Luxuria, Mendacium, Modestia, Superbia, Temperantia, Tribulatio. Polyanthea (1503) and (1648).
116. *Polyanthea* (1503), 339r (colophon).
117. Rivers (1997) and Zinn (1974).
118. Brendecke (2004), 177. For an example of a professor recommending the use of diagrams at the University of Paris (where Petrus Ramus had no followers), see Crassot (1630), sig. a9r.
119. Zwinger attended courses by Ramus while studying in Paris and named Ramus as godfather to one of his children; Rother (2001), 14–16, 25, and Dufournier (1936), 325. But recent work has also noted that Zwinger's charts were more sophisticated than Ramus's and may have been stimulated in part by other contacts, such as Hugo Blotius; see Molino (2006), 49, 53, and Felici (2009).
120. Zwinger (1586), sig. **6r–v. For an insightful analysis and more reproductions of Zwinger's charts, see Schierbaum (2008).
121. Compare Zwinger (1565), 1313 ff. with Zwinger (1586), 3969–70.
122. Keckermann (1614), col. 225 (misnumbered 211).
123. Freedberg (2002), 170–74.
124. See more generally, Bolzoni (2001).
125. Martin (2000), e.g., 323–25 discussing Descartes' instructions on layout. For some near-contemporary discussion, see Caramuel Lobkowitz (1988), VII, 22–24.
126. The exception was Rhodiginus's *Lectiones antiquae* in which the chapters (often rather short, filling less than a page) spanned the full width of the page. On the appearance of columns in thirteenth-century manuscripts, see de Hamel (2001), 117.
127. On paragraphing, see Laufer (1985) and Janssen (2005).
128. On the hedera, Parkes (1992), 61, and Wingo (1972), 122–127. On eighteenth-century graphic ornamentation, see Barchas (2003), ch. 5 and 151.
129. Sherman (2008), ch. 2.
130. Gesner (1549), 157v; the *Partitiones* comprised book 19 of the *Pandectae*, not included in Gesner (1548).
131. Naudé (1643), 132–34. Other contemporary references to "Bibliothecarum scriptores" include Israel Spach in *Nomenclator philosophorum et philologicorum* (1598) and Paulus Bolduanus, in his *Bibliotheca philosophica* (1616) as discussed in Taylor (1955), 13, 16.
132. Derolez (1979).
133. Naudé (1963), 25.

134. See James (1986), vii; Pol (1975) and Coron (1988), 123.
135. Jacob de Saint-Charles (1644) named as an antedecent Clément (1635) for its description of the Escorial library. For the complaint, see Baillet, (1685), II.1, 273–74.
136. On "bibliography" and "bibliotheca," see Balsamo (1990), 5, and Chartier (1994), ch. 3. Also Taylor (1941), Arend (1987).
137. Rouse and Rouse (1986), esp. 147, 152; Balsamo (1990), 7–15. Trithemius's principal source was the "de viris illustribus" composed by Sigebert of Gembloux, some 150 miles from Sponheim, in the twelfth century; see Mertens (1983).
138. Gesner (1545), full title and sig. *3v.
139. Ibid., sig. *3r–v.
140. Ibid., sig. *3v.
141. Ibid., sig. *3v; on Gesner's keen awareness of loss, see Müller (2003), 80.
142. Zedelmaier (1992), 24; Gesner (1545), sig. *3r.
143. See Wilkins (1646), 32; Vogler (1691), 10–11 inter alia. On eighteenth-century use, see Zedelmaier (1992), 44–45.
144. See Hejnic and Bok (1989) and Wellisch (1984).
145. On Doni: Chartier (1994), 72–73; Balsamo (1990), 56; Cherchi (1998), 143–65. See Bale (1971); for the autograph manuscript, see Bale (1902). Bale worked from a notebook in which he compiled alphabetically information from the holdings of many English libraries that were later dispersed. La Croix du Maine (1584) and du Verdier (1585), were reprinted as *Les bibliothèques françaises de La Croix du Maine et du Verdier,* 6 vols. (Paris: Saillant et Nyon, 1772–73).
146. Draud (1625a) and (1625b).
147. Taylor (1955), 24–39, 64.
148. Wittmann (1984), 8; Hirsch (1974), 63–65. On the survival of pamphlets and broadsides, see Mandelbrote (2000a), 55. Even owners of these imprints advocated disposing of them, e.g., during moves; see Mandelbrote (2003), 73.
149. Fabian (1972–78), I, 3; also Pollard and Ehrman (1965), 70–84, and Flood (2007).
150. Coron (1988), 116.
151. Mandelbrote (2000a), 55.
152. McKitterick (1992), 35, 38.
153. Charon and Parinet (2000), 6; Lankhorst (2000), 20–21.
154. Lawler (1898). Although auctioneers held a monopoly on auctions since 1556, booksellers were increasingly granted exceptions on the condition that they not engage in buying at the auction; see Mandelbrote (2000a), 57.
155. Clavell, *The general catalogue of books* (1680) as cited in Mandelbrote (2000b), 347. For praise of the learned owner, see Martin (1711), sig. aijr–aiiijr. For Dutch regulations, see Lankhorst (2000), 25; also Charon and Parinet (2000), 7, and Masson (2000), 127.
156. Martin (1706), sig. ijv (#3); Martin (1711), sig. [av]r (#7); Martin (1746), vii. Martin included an index for the 1,035-page *Bibliotheca bultelliana,* evidently in response to requests from the learned: Martin (1711), sig. [av]r (#6). No English auction catalogs offered indexes; see McKitterick (1992), 37.

157. McKitterick (1992), 36. Some prices garnered in this way are discussed below p. 313n20.
158. Roberts (1997), 331; On Sloan, see Mandelbrote (2000b), 357–58.
159. Hofmann et al. (1995), 32.
160. Yeo (2001), 94; Grafton (1991), 161; on the library in Kiel, Germany, see Nelles (2000), 50 ff.
161. Mazarine Library, Paris, MSS 4138–45.
162. Gesner (1545), sig. 4v; Balsamo (1990), 39. Re Fugger: Widmann (1966), v.
163. Masson (1988), 264.
164. Brunet (1810). See Jolly (1988b), 379–83. On Quiccheberg and Camillo see Bolzoni (2001), Blair (2007a).
165. See Broman (2000), 225–38. On subscription publication see below p. 193.
166. As quoted in McKitterick (1992), 38–39.
167. [Boschet] (1691), 22.
168. On Haller, see Fabian (1976), 162; on Lami, see Dooley (1997).
169. See Yeo (2001), 70–75.
170. Laeven (1990), 73–6.
171. These were entitled, respectively, *La france sçavante*, *id est Gallia erudita* and *Apparatus ad historiam litterariam novissimam* (1689, 1694, 1699, and 1701); see van Lieshout (2001), 209.
172. Gierl (2001).
173. See Placcius (1674) and Placcius (1708), which was expanded in Christoph Heumann: *Bibliotheca anonymorum et pseudonymorum ad supplendum et continuandum Placcii Theatrum* (1740). See Lemcke (1925) and Mulsow (2006). On Morhof, see Waquet (2000).
174. *OED* records the first occurrence in 1531 as the "circle of doctrine." In 1690 Furetière gave it a similar definition: "Encyclopédie: s. f. science universelle, recueil ou enchaînement de toutes les sciences ensemble," *Dictionaire* (1690). The term did not appear in philosophical or Latin dictionaries of the period. For a detailed history, see Dierse (1977).
175. The literature on early modern encyclopedias is extensive: see esp. Stammen and Weber (2004), West (2002), Meier (2002), Binkley (1997), Eybl (1995), Kenny (1991), Arnar (1990), Schmidt-Biggemann (1983), Vasoli (1978).
176. Serrai (1988) and (1991).
177. Reisch (1583); see Ferguson (1929) and Münzel (1937).
178. See Vincent of Beauvais (1964): *Bibliotheca mundi Vincentii Burgundi, ex ordine praedicatorum venerabilis episcopi Bellovacensis, speculum quadruplex, naturale, doctrinale, morale, historiale. In quo totius naturae Historia, omnium scientiarum Encyclopedia, moralis philosophiae Thesaurus, temporum et actionum humanarum Theatrum amplissimum exhibetur.*
179. Specialized works include: Johann Philipp, *Encyclopedia juris* (1640); Jacob Ravensperg, *Encyclopaedia mathematica* (1642); Johannes Dolaeus, *Encyclopedia chirurgica* (1689) and *Encyclopedia medica* (1691). More general works include: *Encyclopédie des beaux-esprits* (Paris: Lamy, 1657 and 1659); Johannes Comenius, *Schola-ludus sive*

encyclopaedia viva (1657); Johannes Gezellius, *Encyclopaedia synoptica . . . in usum iuventutis* (1672). But among the major reference works before the *Encyclopédie*, only Chambers used the term in the title; see Kafker (1981).

180. Evelyn, *Memoires* (1857), I, 278: "Curtius had been scholar to Alstedius the encyclopedist." *OED*, "encyclopedist." As cited in, Liberius (1681), sig. A2r.
181. *OED* dates "encyclopedist" in this sense to 1796 (Hutton); that meaning is still current, see Kafker (1988).
182. See Hotson (2000) and esp. Hotson (2007), chs. 5–6. Alsted listed some sources that he recommended and used himself in his section on Didactica, ch. 5 in *Encyclopedia* (1630), I, 102. I am grateful to Howard Hotson for sharing with me his Oxford dissertation in 1991 and for valuable conversations and correspondence since.
183. Alsted (1989), I, sigs iiiv–iiijr.
184. Iohannis Thomas Freigius, *Paedagogus, hoc est libellus ostendens qua ratione prima artium initia pueris quam facillime tradi possint* (Basel: Sebastian Henricpetri, 1582). On Keckermann, see Hotson (2007); on Timpler, Freedman (1988).
185. Jacob Lorhard, *Theatrum philosophicum in quo artium ac disciplinarum philosophicarum plerarumque omnium . . . praecepta in perpetuis schematismis ac typis tanquam in speculo, cognoscenda obijciuntur* (Basel: Conrad Waldkirch, 1613) and *Ogdoas scholastica continens diagraphen typicam artium . . .* (Sankt Gallen: Straub, 1606). Alsted was probably misremembering the latter title in referring instead to Lorhard's "heptas philosophica." Both these works consist in a collection of charts of knowledge, one for each of the disciplines, paginated separately for a total of 450 and 380 pages, respectively.
186. On Chambers, see Yeo (2000); Diderot and d'Alembert (1751–80), xviii–xix, xxxvi (preliminary discourse); and 5:642 (article "encyclopedia").
187. See Céard (1991).

CHAPTER FOUR. COMPILERS, THEIR MOTIVATIONS AND METHODS

1. See Winchester (2003), Reddick (1996), Kafker (1996); also Quemada (1998).
2. On the page from Thomas Thomas's *Dictionarium*, see Stevenson (1958); on Johnson, Reddick (1996), 4–5.
3. P. M. C. Hayman, "E. Cobham Brewer LLD: A Brief Memoir by His Grandson." in *Brewer's Dictionary of Phrase and Fable*, ed. Ivor Evans (1970), vii–xii, esp. ix–x, as quoted in Bunge (1992), 24.
4. Foucault (1977). Amid the vast recent literature on authorship, see esp. Love (2002) and Ezell (1999).
5. See Parkes (1976), Minnis (1979), Hathaway (1989), Guenée (1983).
6. Isidore formulated this definition as Virgil's riposte to the accusation that he had committed theft in reusing some verses of Homer. Isidore of Seville (2004), 802; Isidore of Seville (2006), 216. On thirteenth-century usage, see Roest (1997); Guenée (1983), 60 ff.; Minnis (1979), 387 ff.
7. Bonaventure (1250–52), *Commentaries on the Four Books of Sentences of Peter Lom-*

bard, Questions on the foreword to the first book, question 4: "What is the efficient cause or author of this book?" As quoted and discussed in Parkes (1976), 127–28; translation from http://www.franciscan-archive.org/bonaventura/opera/bon01014.html.

8. On the thirteenth century, see Minnis (1979), 413; on the sixteenth, Lobbes (2000), 127. In 1696 the poet Longepierre complained, for example, that Pierre Bayle's wit was wasted in an activity that required only work and erudition, in writing his *Dictionnaire Historique et Critique* (1697), as quoted in Nedergard (1958), 219.
9. This paragraph is indebted to Munk Olsen (1982).
10. My translation from the Latin cited from the *Florilegium Duacense*, in Munk Olsen (1979), 56.
11. Nani Mirabelli (1503), Ad lectorem elegia.
12. On the frontispiece, see Gastert (2003), 307–8 and Hess (2008), 79–81.
13. See the short articles at the beginning of "A" for Ab, Abactor, Abacus, Abdicatio, Abyssus, Abuiuratio, Abominatio, Abortivus, and Abrogatio. In some later editions these short entries were either eliminated or expanded into articles with quotations.
14. The large holdings of the *Polyanthea* in the Staatsbibliothek in Munich include five copies of the *Polyanthea* bound with other works: a copy of Venice, 1507, bound with Dionysius Nestor, *Vocabula suis locis et secundum alphabeticam ordinem collocata* (Venice, 1506); a Strasbourg, 1517, with Johannes Trithemius, *Sermones et exhortationes ad monachos* (Strasbourg: Joannes Knoblouch, 1516) and with *Pastoris nuntii poenitentiae visiones* (Strasbourg: Joannes Schottus, 1522). The same kinds of works were bound with *Polyantheas* a few decades later: a copy of Cologne, 1546, was bound with with Julius Hyginus, *Fabularum liber, ad omnium poetarum lectionem mire necessarius* (Basel: Ioannes Hervagius, 1549) and of Cologne, 1552, with Henricus Helmesius, *Homiliae de sanctis* (Cologne: Gennepaeus, 1552). A copy of Cologne, 1574, was bound with another collection of sentences, Stephanus Bellengardus, *Sententiarum volumen absolutissimum* (Lyon: Ioannes Tornaesius, 1569).
15. The preface to the *Polyanthea*, 1514, announced that new entries would be marked with an X, but in fact some old entries were thus marked and some new entries (like "Abbatissa") were not. The edition of Cologne, 1552, indicated new passages with a pilcrow; that of Venice, 1592, indicated as "Tortius" new material from that source.
16. England imported all its Latin books, except for those produced directly for use at the universities in Oxford and Cambridge; see Roberts (2002). On the origins of the French privilege system, see Armstrong (1990); on its impact, Hoffmann (1993).
17. On privileges and the market for learned books, see Maclean (1988) (1990) and (1991); on the international partnerships involved, see Maclean (2007).
18. On Cholinus, see Reske (2007), 446.
19. Of these only Paris and Lyon shared the same zone of jurisdiction for privileges; most likely the second printer reached a financial agreement with the privilege holder, but a printer could also violate a privilege with impunity unless the privilege holder sought redress in court.
20. *Polyanthea* (1514), "ad rev. Riarium."
21. Eleven copies of this edition are extant in Italy and three in the United Kingdom

(London and Cambridge). The copy owned by Henry VIII is BL C.45.g.9; see Alston (1993), 397.

22. See *Polyanthea* (1517).
23. I have not seen copies of all editions of the *Polyanthea* recorded on KVK, and I have often been unable to consult editions side by side for detailed comparisons, so my account of the changes to the *Polyanthea* is not meant to be exhaustive but rather indicative of broader trends in early modern compilations.
24. *Polyanthea* (1552), preface, sig. aijv.
25. *Polyanthea* (1567), preface, sig. +2r. The edition of 1567 was dedicated to Joannes Geyr, dean of the College of the Apostles and counselor to the prince elector of Cologne; the edition of 1574 to Frederic ab Holdinghausen, scholastic of the cathedral of Speyer and canon of Mainz and Worms; the edition of 1585 to Burchard a Langen, provost of the cathedral of Minden and canon of Hildesheim.
26. *Polyanthea* (1567), preface, sig. +2v. See Amantius (1556). Amantius was also the author, with Petrus Apianus, of the largest collection of epigraphs for its time, the *Inscriptiones sacrosanctae non illae quidem Romanae, sed totius fere orbis* (Inscriptions of Venerable Antiquity, Not Only from Rome but from the Whole World) (Ingolstadt: Apianus, 1534); see Stenhouse (2005), 32; *Polyanthea* (Cologne: Cholinus, 1567), preface. I have found nothing on Lynnerus.
27. Nani Mirabelli (1503) comprised 339 folios (two pages per folio), with two columns per page, fifty-three lines per column, six words per line, for a total of 430,000 words. The edition of 1585 comprised 1,039 pages, two columns per side; sixty-three lines per column, eight words per line for a total of approximately 1 million words.
28. *Polyanthea* (1585), sig. ()2r-v.
29. *Polyanthea* (1604b), sigs.)(2r–3r.
30. Hess (2008), 99 and Hess (forthcoming). Langius can be rendered in German as Lang or Lange; I follow Gilbert Hess in preferring the latter form. On Lange's revisions, see also Moss (2003), Mejor (1994), and Ullman (1973).
31. *Polyanthea nova* (1612), sig. 2r, dedication to Joannes Adamus, abbot of Kempten (Bavaria).
32. The same text appeared under two different titles: *Loci communes* (Strasbourg: haeredes Rihelij, 1598), with reeditions by Rihel in 1621, 1622, 1625 and Zetzner in 1624; and *Anthologia* (Strasbourg: Wilhelm Christian Glaser, 1625 and 1631; Strasbourg: Josias Stadelius, 1655, 1662, and 1674). I quote from the 1662 edition, available on microfilm, in which the preface is dated 3 Cal. April 1598.
33. Lange (1662), lectori candido, sig. +4v; dedication, sig. +3r.
34. "It will exhort those who hold no public office to modesty; and the slothful to vigilance; it will bring consolation to the afflicted; it will bring back to laudable moderation those arrogant minds as if inebriated with good fortune; it will instruct the unskilled; it will delight the learned; it will punish the smatterers (*scioli*); it will teach respect to the young, courage to the men; wisdom to the old; and piety and virtue to all. In short there is no walk of life or age that will not be able to draw from this florilegium as if from a most abundant healthy spring precepts of honest living and prudent action." Lange (1662), sig. +3v (dedication) and sig. 5v–6r (ad lectorem).

35. Word count based on 1,271 pages, two columns per page, eighty lines per column (with allowances for headings and unfilled lines), ten words per line. On the greater profitability of larger formats in the eighteenth century, see Sher (2006), 82.
36. *Polyanthea* (1639), to the reader, sig. 2v. In this edition 2,987 columns and seventy-five lines per column (allowing for the many lines not full), twelve words per line amount to about 2,688,300 words.
37. *Polyanthea* (1639), to the reader, sig. 2r.
38. Hess (2008), 100.
39. Zwinger (1586), sig. [**5]v. In a fine example of reusing a proverb, Zwinger's "non omnia possumus omnes" is a quotation from Virgil's *Eclogues*, VIII.63. For more discussion of this preface, see Blair (2005).
40. Zwinger (1586), sig. **5v. Minnis (1979), 389, notes that in some passages Vincent's "implication seems to be that one man's philosophy is another's poison."
41. Zwinger (1586), sig. **3v.
42. Zwinger (1586), sig. **4v. See the regulations of the public garden in Leiden (ca. 1600), as quoted in Ogilvie (2006), 79–80.
43. Zwinger (1586), sig. **4v (herb), *4r, and ***6v (exempla).
44. Zwinger (1586), sig. *2v.
45. Baillet (1685); on anthologies, see Benedict (1996).
46. On Rhodiginus, see Marangoni (1997), 7.
47. On the pleasure of compiling, see Hunter (1998a), 13; Love (1993), 200; Sherman (1995), 64.
48. Placcius (1689), 192. For a list of Kirsten's manuscripts extant at his death see Kirsten (1679); on Placcius and Kirsten see Mulsow (2006), 234–35.
49. Placcius (1689), 190–226.
50. Ibid., 199.
51. Ibid., 226–27.
52. On Montaigne's partnership with his printer Millanges, see Hoffmann (1998), ch. 3. For the career patterns of seventeenth-century French authors, see Viala (1985).
53. *Polyanthea nova* (1612), sig. 2r (dedication). On abridgments, see Ezell (1999), 91. For example, Walter Ryff in Strasbourg was hired by printers to write abridgments and compilations in popular medicine; see Chrisman (1982), 52 and passim.
54. On Lange's biography, see Gass (1918), 24–26. I am grateful to Annette Braun of the Mairie of Kaysersberg for a copy of this article.
55. Lange (1662), "to the reader," sig. +5r.
56. Lange (1662), sig. CCCC1r. On Josias Rihel and Wilhelm Christian Glaser, see Reske (2007), 892–93 and 901.
57. *Nova polyanthea* (1607), sig. [a3]v.
58. For examples of tension between editor and printer who blamed one another for printing errors or spelling choices, see Richardson (1994), 12 and passim.
59. La Croix du Maine (1584), sigs. avv and aviiv–aviii r (to the reader); and sig. aiiir–v (dedication).
60. Burmeister (1963), 120.
61. Minsheu (1560–1627) was a language teacher in London. On subscription publica-

tion, see Clapp (1931) and (1933). On subscription financing of intellectual projects, Parry (2002) and Greengrass (1995).

62. On Estienne, see Considine (2008), ch. 2, 93; on *OED*, Murray (1977), 251.
63. See Gilly (2002) and (forthcoming), app. 1; Berchtold (1990), 2:655–80; Dufournier (1936); Moréri (1759), "Zwinger."
64. Oporinus married Amerbach's sister in his second marriage. On Amerbach and Zwinger as collectors, see Fischer (1936).
65. See Gilly (1977–78) and (forthcoming), which includes a list of Zwinger's correspondents. For a presentation of seven of them, see Berchtold (1990), 2:671–78. I am grateful to Carlos Gilly for sharing his manuscript with me and for his generous help and excellent advice during my visit to Basel and since. For further biographical and contextual elements, see Hieronymus (2005), 1:16–26.
66. See Berchtold (1990), 2:517–23; but toleration had limits: Oporinus reported having been twice imprisoned by censors, see Steinmann (1969), 180.
67. See Gilly (1985), e.g., 64, 78, 166. Girolamo Mercuriale, for example, relied on Zwinger's help to get his books printed in Basel; see Siraisi (2008).
68. On Zwinger's *Methodus apodemica*, see Stagl (2002), ch. 2, and Stagl (1995) 123 ff.; Felici (2009) and Molino (2006). On his ethics, see Lines (2007). On the *Theatrum*, see Gilly (2002), Blair (2005), and Schierbaum (2008).
69. On Chesneau, see Racaut (2009), 25–26, 37–39. Zwinger (1571b), sigs. aijv–aiijr. With its mix of proper names and themes this index differs from any provided in the Basel editions.
70. Jacob Zwinger (1569–1610) was the younger of Zwinger's two sons; his older brother Bonifacius died while studying in Padua in 1588; see Hieronymus (2005), 1:29. The *Theatrum* of 1565 comprised 1,428 pages, with two columns and seventy lines per page on average, nine words per line, for a total of roughly 1.8 millions words. The edition of 1586 involved 4,373 pages, with two columns and eighty lines per page, nine words per line, for a total of about 6.3 million words.
71. Zwinger (1575). I am grateful to Martin Mulsow for calling my attention to the copy at the Staatsbibliothek in Munich. KVK also reports copies at Erzbischöfliche Diözesan- und Dombibliothek Cologne and Universitätsbibliothek Freiburg. Walter Ong mentioned a copy attested by a bookdealer, Joseph van Matt of Stans, Switzerland, in Ong (1977), 171n39. For the differences in the front matter, see Zwinger (1575) and Zwinger (1571a), 13, and the resulting differences in typesetting on 11–12.
72. Zwinger (1565), sig. FFF[5]r. On that plague, see Karcher (1956), 46–49.
73. Steinmann (1969), 104, 139, 182–84.
74. Oporinus was refused credit near the end of his life; Steinmann (1969), 189–90; Steinmann (1967) and Gilly (2001).
75. Zwinger (1586), sig. ***5r.
76. Tonjola (1661), 136, under "Parochiae Sancti Petri." See also Gross (1625), 140.
77. Hieronymus (2005), 3:1994–2002. Much of this material and further funeral elegies for Zwinger appeared in Reusner (1589), Aa2r–Cc5v (totaling 38 pages); for the epitaph, see Gross (1625), 131–32, and Tonjola (1661), 136–37.
78. Zwinger (1586), sig. ***5r.

79. Ibid., sig. *3r.
80. Ibid., 1580.
81. Ibid., sig. [***6]r. Emphasis mine.
82. Ibid., sig. **3v.
83. Ibid., sig. *2r.
84. A dedication to Jesus is mocked in Mencke (1937), 74. Alsted (1989): "Deo uni et trino patria, . . . Amen Amen." The work was dedicated to Gabriel, prince of Transylvania.
85. See Zwinger (1565), 3; Zwinger (1571a) and (1575), dedication; Zwinger (1586), sig. ***5r.
86. Zwinger (1586), dedication page.
87. Kunstmuseum Basel (1984), 55–56, 79–81, 155–56.
88. Ibid., 94.
89. One of them is reminiscent of Tycho Brahe's "looking up, I look down." For this and other sayings, see Tonjola (1661), 400–403, and Gross (1625), 475 ff. Dufournier (1936), 27, reports that Zwinger's motto was "by rowing with favorable winds" (Homer, *Odyssey*, XI.640).
90. I am grateful to Evelyn Lincoln for helpful discussions of the portrait. For an earlier portrait, see Geelhaar (1992), 23; another is in private hands and has not been reproduced.
91. See Grafton (1997), 198, citing Kepler, *Gesammelte Werke*, 13:188–97. I discuss Montaigne and other examples of the reception of Zwinger in chapter 5.
92. For information on Aldrovandi's copy at Bologna I am grateful to David Lines. See Bologna MS Aldrovandi 33, described in Frati (1907), 31, and Mandosio (2002), 27.
93. See Zwinger (1571b) at the University of Minnesota Library.
94. "All of Cardano's works will make as many volumes as the *Theatrum vitae humanae*." Guy Patin in *Lettres inédites de Charles Spon à Guy Patin*, 206, as quoted in Maclean (1994), 330–31.
95. For general context about the elaborate frontispiece, see Remmert (2005). Word count based on 7,468 pages, with two columns per page, seventy-seven lines per page and nine words per line, for a total of 10,350,000 words.
96. Present in copy at Jesus College, Cambridge—warm thanks to Susan Cobbold for her help there. Not present in copies at Harvard University or Cornell University.
97. Beyerlinck (1666), sig. e2r (proscenium). Anton and Arnold Hierat, sons of Anton Hierat the elder (1597–1627), were active 1627–32; see Reske (2007), 467–68.
98. Beyerlinck (1666), sig. e2v, [e3]r.
99. Beyerlinck (1666), sig. [e3]v.
100. A simple inheritance from Henricpetri of Basel who printed the last edition of the *Theatrum* in 1604 is unlikely because Henricpetri died in 1627, by which time Beyerlinck had already completed his work. But Hieratus could have inherited these copies from another printer who had traded for them; for insight into the complexity of international deals among booksellers, see Maclean (2007).
101. The title pages announced publication with permission (from the church) and privi-

lege (left unspecified in 1631 and 1707). The Lyon copies were covered by twenty-year privileges dated September 1655 and February 1678 (reproduced in the front matter). The copies I have been able to compare indicate that different typesettings were involved, so they were not reissues of previously printed material. Permissions in 1631 were granted by Francken Sierstoffius of Cologne and by Petrus Coens of Antwerp, no doubt a colleague of Beyerlinck's.

102. Patin (1846), 1:196, 394.
103. The life of Beyerlinck provided in the front matter is our principal source of information; for modern biographies, see Ijsewijn (1987) and Paquot (Louvain, 1768), 2:22–24. On his involvement in a censorship dispute, see Verbeke (2010), 357–58. For apopthegms taken from Zwinger, see Beyerlinck (1608), 66, 67, 93, among others. Beyerlinck's *Promptuarium morale* (Cologne: Hieratus, 1613) was reprinted at least four more times by Hieratus, down to 1634. A collection of his sermons appeared in the year of his death: *Selectae conciones* (Cologne: Antonius Hieratus, 1627).
104. Beyerlinck (1666), sig. i1v.
105. See ibid., "Astronomia, Astrologia," A564, announcing a long section (to A575), and on A575 another section (to A586). Beyerlinck referred quite precisely to Ranzovius (1584).
106. Erasmus (1508), title page. Erasmus (1515), 633.
107. Nani Mirabelli (1503), sig. αiiiv; *Polyanthea* (1567), dedication, sig. ()2r–v and (1574), dedication ()2r; Lange (1662) sig. [+7]r–v.
108. Zwinger (1565), sig. FFF[5]r; cf. "Labor omnia vicit improbus" Virgil, *Georgics*, I, 145–46. Zwinger (1571a), sig. ☞☞☞ 5v dedication. Zwinger (1586), sig. ***5r. Beyerlinck (1666), proscenium sig. 2r.
109. "I rejoice and thank the immortal God that I finally emerged from this labouring which held me around three years and that I have returned to the port as if after a shipwreck in the middle of the sea where there was nothing but sea and air. Now I remember my labors happily, as one who has climbed down a mountain." Gesner (1545), [*6]r, and Müller (1998), 301.
110. Le Roy Ladurie (1997), 34.
111. For the strategies of F. A. Wolf (1759–1824), see Pattison (1908), 1:342 ff.; I am grateful for this reference to Jonathan Sheehan. On the attempted sleep regimen of Johann Lorenz Mosheim (1694–1755), see Neumann (2001), 52n13.
112. Robert Burton discussed the "Miseries of scholars," both physical and psychological, in his *Anatomy of melancholy* (1621), pt. 1, sec. 2, memb. 3, subs. 15. For Boyle's complaints about his eyes, see Boyle (1661), sig. A3v. On Turnèbe: Lewis (1998), 313.
113. See Moréri (1759), 7:778–89 (article "Moréri").
114. See Cardano (1643), ch. 39, 187, and (2002), 151. He also recommended cutting and pasting existing texts in composing new ones, as I discuss in a later section. Haste was also a regular theme of advice manuals, see, e.g., Grotius et al. (1645) and Vossius et al. (1658); and Zedelmaier (1992), 53n146.
115. On the errors of Dominique Bouhours, see Bouhours (1988), lv. On Calvin, Engammare (2004), 32–37.

116. Plutarch, *On the Tranquillity of the Soul*, I, 464F as quoted in Hadot (1998), 32.
117. La Croix du Maine (1584), sig. [avii]r. For some discussion, see Balsamo and Simonin (2002), 194.
118. See the letters by Pietro Mario Buoni da Rimini and Francesco Marcolini that Doni included in his *I mondi e gli inferni* (Venice, 1562), 279, 281, as quoted in Bolzoni (2001), 301.
119. See Turnèbe (1581), II, sig. s2v (just before p. 417). Henri Estienne apologized for the haste with which his French *Apologie* was written, but he promised that the time he had saved there he spent on his Greek and Latin publications, which he valued more highly; see Boudou (2002), 57, citing *Apologie*, I, x.
120. *Polyanthea* (1604b), typographus to the reader, sig.)(3r. For similar statements, see also the prefaces in Lange (1662; first published in 1598) and *Polyanthea* (1607) and (1612).
121. Steinmann (1969), 160.
122. I have investigated the shifting references provided in the section on "oblivio" (forgetfulness), comparing Zwinger (1586), 35–36, and Zwinger (1565), 1154 and 18. Almost no reference remained unchanged between the two editions. Some references were corrected: in (1565), 18, an exemplum re Calvisius (who couldn't remember the names of Ulysses, Achilles, or Priam) attributed to "Ravis[ius Textor]" was in fact taken verbatim from Rhodiginus (1542), XIII.31, 505. The 1586 edition enlarged the exemplum and attributed it to Rhodiginus accurately, dropping a reference to Ravisius which was indeed faulty: "Calvisius hebeto ingenio" appeared in the index with a reference to the appropriate section on obliviosi (735), but the anecdote did not actually appear there; see Ravisius (1552), sig. lll2r and 734–35. Some references were dropped: an exemplum about the "Thraces" (who reportedly could not count beyond four) was accurately attributed to Ravis[ius] in (1565), 18, see Ravisius (1552), 734–35; and in (1586), 35, the anecdote appears, but with no reference provided. Some references were added: an exemplum re "Quidam Atheniensis Vir" (who lost his knowledge of letters after being hit with a stone) was attributed to "Val[erius Maximus] lib 1 c 8" in (1565), 1154; and in (1586), 34, to "Val. lib 1 c 8 et Plin. lib. 7. cap 24." In other cases the references were changed completely. An example concerning Melitides (who could not count beyond five) was attributed in (1565), 18, to "Brusonius lib 3. Alex lib 2 cap. 25" (Brusoni, *Facetiae et exempla*, first published in 1518, and Alexander ab Alexandro, *Dies Geniales*, 1539); and in (1586), 36, to Plutarch. Such fluidity of source citations was common in early printed reference works and would warrant closer investigation; the research is difficult, however, given the disparity or lack of finding aids in some of the sources cited.
123. Scaliger (1695), 141. Calepino (1718), sig. a3r.
124. Zwinger (1565), 8, 14–16, and (1586), sigs. **r-**2r; Lange (1662), sig.):(5v; Stevenson (1958).
125. On Gesner's working alone, see Wellisch (1984), 18; and Braun (1990) who mentions only help in procuring specimens. But see Gesner (1545), sig. 4r. Gesner also requested help fromTheodor Zwinger in seeking a "young man passably instructed in letters, studious in medicine, poor, modest and good"; see Gesner (1577), 111v–112r

(letter of April 8, 1565). I am grateful to Candice Delisle for this reference and for helpful conversations; see Delisle (2009), 84–85.

126. See Zwinger (1586), sig. ***5r (Lucius) and sig. *6r (Iselin); they are mentioned in Forster (1985), 24, 56, and Hieronymus (205), 3:1994: Iselin later became a member of the Basel town council. The Zwinger *Nachlass* includes a manuscript entitled "Annotations on the first books of Aristotle from Zwinger's lectures in the hand of Ludovicus Iselin," Universitätsbibliothek Basel Mscr F IX 7a. Iselin also took notes on his travels following Zwinger's precepts: see Stagl (1995), 91.
127. Calepino (1718), sig. a3v.
128. *Polyanthea* (1574), dedication, sig. ()2v. Gesner (1616), sig. AAa1v; indeed the full title of the *Onomasticon* explained that it was "partly compiled by Conrad Gesner and partly by his friends."
129. Melville (1980), 67–68 and Melville (1988); on the concordances: Rouse and Rouse (1974b).
130. For a reference to wax tablets used in making compilations, see Munk Olsen (1979), 52n2, citing Hadoard in the preface to his *Collectaneum*.
131. Thomas Aquinas, *Opera omnia*, tome xlviii: *Sententia libri politicorum. Tabula libri ethicorum*, cura et studio fratrum praedicatorum (Rome 1971), introduction by René Antoine Gauthier, O.P., who edited the *Tabula*, p. B45–46. Zedelmaier (2004), 197, cautions against concluding for or against the use of slips from the finished text; Daly (1967), 86, associates the use of slips with the availability of paper.
132. "Petits billets" and "demies-feuilles volantes" [*sic*]; see Considine (2008), 270–71.
133. The Rhodiginus manuscript is MS 306 of the Biblioteca Concordiana, Accademia dei Concordi, Rovigo, Italy. I am grateful to Michela Marangoni of the library of the Accademia dei Concordi for kindly sending me reproductions of sample pages of Rhodiginus's autograph manuscript, notably f. 145v, which corresponds to Rhodiginus (1516), X.27, 514, on which there are abundant additions in the margins and on paste-ons. One *paperolle* of Marcel Proust was up to two meters long. See Brée (1963), 183. I am grateful to Virginie Greene for this point.
134. In addition to publishing his advice, Gesner responded by letter to inquiries about his method of indexing: see Gesner (1577), 136v (Zurich, August 29, 1561). I am grateful for this reference to Laurent Pinon. For Gesner's letters to Zwinger, from 1560 until one month before his death in December 1565, see Gesner (1577), 104v–115r.
135. Of the eleven exempla on the two slips on dogs only one is present in the *Theatrum* of 1586, and the text does not reproduce the slip verbatim. Compare from slip: "A Delo ubi Dianae templum fuit canes arcebantur quod impurum et procax animal canis esset. Alex ab Alex lib 2. cap. 14" with Zwinger (1586), 66: "Ab arce Atheniensium, ubi Minervae, et a Delo, ubi Dianae templum fuit, arcebatur canis quod impurum et procax animal esset. Alex Lib. 2. cap. 14." I am grateful to Charles Drummond for help with this research.
136. See Lycosthenes (1998); Gesner (1551a); Burmeister (1963), 138; and *Geographiae Claudii Ptolemaei Alexandrini* (Basel: Henricpetri, 1552).
137. Zwinger (1586), sig. ***4v.
138. I am grateful to Carlos Gilly for help in locating a signature by Lycosthenes.

139. Placcius (1689), plate between 66 and 67.
140. Gesner (1548), 20r.
141. Zentralbibliothek (ZB) Zurich, MS 204a (vol. 1) on diseases of the head; MS 204b (vol. 2), diseases of the chest and abdomen; MS 204c (vol. 3), diseases of the kidney, bladder, and sexual organs. For a sample page with translation, see Fischer et al. (1967), 118–19.
142. Gesner to Bauhin, November 14, 1563, in Gesner (1976), 28, 71; I am grateful to Brian Ogilvie for this reference; see Ogilvie (2006), 180. In one instance Gesner also cut up a letter of his own (presumably a copy of an outgoing letter); see ZB Zurich, MS 204b, f. 40v.
143. See ZB Zurich, MS 204b, f. 93 for an example.
144. Labrousse (1963), 47–48n97.
145. On casting off, see Hellinga (1962), 95–96; on medieval notaries, Petrucci (1995), 167.
146. Plantin made such purchases; see Voet (1985), 66.
147. Ing (1988), 73; Steinmann (1969), 127.
148. On cutting and pasting in composing, see Cardano, *De subtilitate* (Basel: Henricpetri, 1582), book 17, 503, or *Opera Omnia* (Lyon: Huguetan et Ravaud, 1663), III, 626, as discussed in Siraisi (1997), 18, and in Grafton (1999), 4. "I have been obliged that I might obey you not onley to Dismember, but to Mangle the Treatise You perus'd, cutting out with a pair of Scizzers here a whole side, there half and in another place perhaps a Quarter of one." Boyle (1661), sig. A3r–v; see Hunter and Davis (1996), 215.
149. Gesner (1545), 434v–435r, Handexemplar at ZB Zurich, shelfmark Dr M 3. I am grateful to Urs Leu for his help at the Zentralbibliothek Zurich. On Gesner's books, see Leu et al. (2008). For another case of cutting and pasting at the proof stage on the broadsheet *Apiarium* by Federico Cesi, see Freedberg (2002), 170.
150. Gesner (1583), copy at ZB Zurich. On interleaving, see Brendecke (2005).
151. Hartlib (2002), *Ephemerides* (1641), "ars excerpendi."
152. Zwinger acknowledges, for example, that he had "transferred not a few things" from Jacob Middendorp, author of *Officiorum scholasticorum libri duo* (1570) and *Academiarum orbis christiani libri duo* (1572), in Zwinger (1586), XXVI, 4062. For Beyerlinck's use of Ranzovius, see above.
153. See Myers and Harris (1996).
154. See de Hamel (1998). For an example of medieval illuminations pasted in a sixteenth-century manuscript Bible, see Sherman (1999), 130–31. I am grateful to Bill Sherman for helpful conversations over the years.
155. Jammes (1997), 813–17. The manuscript miscellany of Sir John Gibson (1606–65) contained images cut from printed books; see Smyth (2004a), 126. For other examples, see Smyth (2004b). A textile worker under Louis XIV cut out images from pamphlets (*canards*) and pasted them into his personal chronicle and copied the accompanying texts; Chartier (1985), 72. For printed initials cut from printed materials, see, e.g., the eighteenth-century index to Ortelius cited in chapter 2, BnF MS Latin 14351–53. A survey of history of letter forms by Pepys and Sloane mixed manuscript and print, see McKitterick (1992), 47.
156. On sophistication, see Barker (2006). See the extra-illustrated copy of *Johnsonian*

Miscellanies, ed. George Birkbeck Hill, 2 vols. (Oxford: Clarendon Press, 1897), which has expanded to nine volumes, including portraits and manuscripts added in; Houghton Library MS Hyde 75. I am grateful to Susan Halpert of Houghton Library for her guidance in these materials.

157. Oronce Finé, *La théorique des cieux et sept planètes* (Paris, 1557) includes an illustration designed to be cut out and pasted over another in the book; I am grateful to Annie Charon-Parent for this reference.
158. See one of the copies of Suidas (1705) in ECCO, I, 82, 83, 92. Some of these corrections were present in other copies, including the other copy of that edition in ECCO at pp. 82 and 92. I am grateful to Kristine Haugen for this example.
159. Gingerich (1993); I am grateful to Owen Gingerich for an expert tutorial on volvelles. On other kinds of cutouts, see Lindberg (1979); Karr (2004). On anatomy books, see Carlino (1999). The confession manual is Leutbrewer (1682); for a catalog description, see Petit (1997), 187. On Stoy, see Te Heesen (2002).
160. Ringelberg, *De ratione studii*, in Ringelberg (1967), 58–59, and Moss (1996), 137.
161. Mazarine Library, MS 4299 “Recueil de catalogues de livres imprimés et de manuscrits, par Jean Nicolas de Tralage.” The title page is from Bernardin Surius, *Le pieux pélerin ou voyage de Jerusalem* (Brussels: François Foppens, 1666)—a large work on the sites of the Holy Land.
162. Décultot (2001), 35n11.
163. Meinel calls this “contamination” the rule: Meinel (1995), 166. Others call it “cross-fertilization,” see Hindman and Farquhar (1977), 101–56.
164. On Placcius’s note closet, see chapter 2; on the folders or “porte-feuilles” of Père Léonard de Ste Catherine, librarian for the Augustins déchaussés at the Place des Victoires in Paris (1695–1706), see Neveu (1994), ch. 1.
165. Olson (1981), 115, and Mulsow (2001), 341.
166. For example, on the “Cambridge manuscript affair” involving J. O. Halliwell-Phillips (1820–89), see Schoenbaum (1993), ch. 3. A slasher of rare maps was apprehended at Yale in 2006.
167. For examples of the destructive impulse, see my introduction, and Désormeaux (2001), 61–62, and Yeo (2001), 90–91.
168. I am grateful to Peter Burke for telling me of how he composed lectures by cutting and pasting from his typescript notes in the 1960s, and to Malcolm Smuts for recollections of Lawrence Stone’s use of similar methods.
169. On Emily Dickinson’s practice of cutting up many books, including the Bible, see Smith (2004). See Céline, *Le Bulletin des lettres* 14 (January 25, 1933), 10–11, as cited in Compagnon (1979), 27. See also Blair (2003), 28.
170. See Collingwood (1972), 257–61.
171. Robert Kerr, *Memoirs of the Life, Writings and Correspondence of William Smellie*, 2 vols. (Edinburgh: John Anderson, 1811), 1:362–63 (emphases in the original), as discussed in Richard Yeo (2001), 180.
172. Reddick (1996), 43, 38, 4–5. On Johnson’s use of slips, see Samuel Johnson (2005), 419–25. Carl Linnaeus seems also to have “reinvented” the slip in the 1760s, after experimenting with other techniques; see Müller-Wille and Scharf (2009), 19 ff.

173. On the making of the *OED*, see Murray (1977). Winchester (1998), 95–96.
174. On the automation of compiling, see N. Cohen (2008). I am grateful to Leah Price for this reference. On the eighteenth-century context, see Stern (2009), 73–75. Rival compilers used German courts to hamper the production and distribution of Zedler's *Universallexicon* on the grounds that it could not be written without plagiarism of their works, see Quedenbaum (1977), 68 ff.

CHAPTER FIVE. THE IMPACT OF EARLY PRINTED REFERENCE BOOKS

1. For an example of these trades, see Maclean (2007).
2. See Fragnito (2001) and Firpo (1970). Zwinger's *Theatrum* was condemned in lists of forbidden books in Antwerp, 1570; Parma, 1580; Portugal, 1581; the Spanish indexes of 1583 and 1584 called for some eighty expurgations even to the Paris edition of 1571/2, which had been produced for Catholic readers; the index of Rome, 1596 called for condemnation of all editions unless corrected; see Bujanda (1984–2002), 4:461–62 (Portugal); 6:57, 265, 545, 867–68 (Spain); 7:233–34 (Antwerp); 9:179–80 (Parma) and 724 (Rome). On Aldrovandi's permission, see chapter 4.
3. Comerford (1999), 206–7, 213. Copies of Zwinger (1586) at University of California San Diego and of Zwinger (1571b) at University of Minnesota (the Paris edition designed for Catholics) bear many manuscript censorings. For another example, see Hess (forthcoming). Nicolas Fabri de Peiresc also owned a substantial manuscript listing corrections to be made in the *Theatrum*—I am grateful to Peter Miller for this information.
4. Janus Gruterus, *Bibliotheca exulum* (Frankfurt, 1625), as discussed in Moss (1996), 240.
5. As described in Gilly (1985), 430–31. I am grateful to Carlos Gilly for bringing this to my attention.
6. Verhaeren (1949), 918. I am grateful to Florence Hsia for pointing me to this source.
7. Leonard (1947), 431; Bernstein (1946), 180. See holdings in the national libraries of Brazil, Colombia, and Mexico.
8. As quoted in Mather (1994), lxiv. I am grateful to the staff of the Rare Book Room of the Boston Public Library for this information on provenance.
9. Copy at Houghton Library. On New Year's gifts, see Davis (2000), 23–24, 36.
10. Copy at the Institut d'Histoire de la Réforme, at the Univeristy of Geneva. I am grateful to Max Engammare for showing me this volume.
11. See Zwinger (1575) at Munich Staatsbibliothek (title page in figure 4.1) and Zwinger (1586) at Regenstein Library, University of Chicago.
12. Stagl (1995), 159–60.
13. *Polyanthea* (1613) at Balliol College, Oxford, inscribed by Samuel Hilliard, born 1676 and matriculated 1693.
14. *Polyanthea* (1567) at Staatsbibliothek, Munich, 548. The manuscript annotation he added is an accurate citation of Lodovico Antonio Muratori, *Rerum Italicarum scrip-*

tores (1723–51; facsimile edition Bologna: Arnaldo Forni Editore, 1975–89), vol. 16 (published 1730), col. 1067.

15. Geldner (1950), 38–39, 42 (postscriptum). Geldner notes that 48 florins were the equivalent of thirteen oxen.
16. Pettas (1995), 84.
17. Drexel (1638), 140. The cost of binding has been estimated at one-third the cost of the book; see Aquilon (1988), 185. For comparison, the prefect of the gardens of the University of Leiden (a medium-level academic position) received an annual salary of 400 florins in the 1590s; see Molhuysen (1913–24), 1:180. I am grateful to Brian Ogilvie for help on this point.
18. Leedham-Green (1992), # 1.26 and 1.183.
19. *Polyanthea* (1552) at Munich Staatsbibliothek, bound in pieces of medieval music manuscripts; for a similar binding, see the copy of Gesner (1583) at the Regenstein Library, University of Chicago.
20. Bartholinus (1691) at BnF annotated with prices, 45–46. Copies of Beyerlinck were priced at 40, 44, 60, and 68 Thaler (variations likely due to the binding involved) in Georgi (1742), 143–44.
21. *Polyanthea* (1539) entered King's College, Cambridge, in 1592 through the gift of the fellow Roger Goode. *Theatrum* (1586), Emmanuel College, Cambridge, was inscribed by Thomas Bownest, BA 1590–91 and William Bownest, BA 1620–21, presumably a son or nephew.
22. *Polyanthea* (1539), at Cornell University Library.
23. Copies at Staatsbibliothek, Munich.
24. Among the clerics Francis Dee, bishop of Peterborough, inscribed a *Polyanthea* (1617) in 1638; Rev. Pres. Thomas Morton, bishop of Coventry and Litchfield (BA Cantab. 1586–87) donated a copy of Zwinger (1604) (both at St John's College, Cambridge). Among the doctors: William Paddy, doctor of medicine and fellow, donated a *Polyanthea* of 1567 in 1602 (St. John's College, Oxford); Andrea Falcones, medical doctor of Lyon, inscribed a *Theatrum* (1565) (BnF). Lawyers inscribed a *Polyanthea* (1507) at Brasenose College, Oxford, and a copy of Zwinger (1565) at the Staatsbibliothek, Munich.
25. Copy at the British Library; the copy also contains annotations in Latin in a different ink. I am grateful to Magda Teter for deciphering the inscription as Casparus Keselmaichler (or close variant), and to Elisheva Carlebach, Debra Kaplan, and especially Stephen Burnett for their help in trying to identify the owner. The owner may have been one Caspar Kessellmeyer, of Landau (a city now in Germany, but near Strasbourg) who received a law degree at the University of Heidelberg in 1540; see Toepke (1889), 1:574. Since Jews were not allowed to study at university, this Kessellmeyer would have been either a Jewish convert to Christianity or a Christian who knew Hebrew. The Jewish community in early modern Alsace numbered around 100–115 families in the sixteenth century, and Landau had a Jewish population until its expulsion in 1545; see Weill (1971), 53–54. I am grateful to Charles Riggs for this reference.
26. *Polyanthea* (1669) was inscribed "ex libris serenissimae electricis Adelaidis" (no fur-

ther annotations), Staatsbibliothek, Munich. Henrietta Adelaide of Savoy (1636–76) married Ferdinand Maria, elector of Bavaria as of 1651. She was noted for her patronage of the arts; von Bary (1980). I am grateful to Charles Drummond for this identification. *Polyanthea* (1585) inscribed "ex libris conventus Pragensis Carmelitarum Discalcatarum" at Cornell University.

27. Houllemare (2004). On the importance of florilegia to the French officer class, see Vogel (2000).
28. Bayley (1983), x–xi.
29. Comerford (1999), 203, 213.
30. See Siraisi (2008), 89–90, and Agasse (2000), 239.
31. A likely example is the *Polyanthea* (1575) inscribed by Thomas Underhill at age sixteen, copy at Emmanuel College, Cambridge.
32. Aquilon (1988), 154.
33. Calepino (1554), I, preface.
34. Gerritsen (1991), 157.
35. Vittori (2001), 30, 47–53; I am grateful to Christopher Carlsmith for this reference.
36. Juvenal, *Satires*, VII, 228–43. On humanist teachers, see Grafton and Jardine (1986), chs. 1 and 4.
37. Naudé (1903), 59–60 (italics from 1661), and (1963), 65–66.
38. See Giovanni Nanni (Annius of Viterbo), *Antiquitatum variarum autores* (Paris: Joannes Parvus and Jodocus Badius, 1512), bk. 4. I am grateful to Luc Deitz for help on this point.
39. Wood (1691–92), II, 705.
40. Fraunce (1906), V.8, 91, lines 2707–9. I am grateful to Carla Mazzio for this reference; see Mazzio (2009), 8. The tables may have referred to the indexes as well as the dichotomous diagrams in Zwinger.
41. Schupp, *Orator ineptus* (1659) and tr. Balthasar Kindermann, *Der deutsche Redner* (1665), teil 2, sig. avi, as quoted in Cahn (1994), 65–66. I am grateful to Gilbert Hess and Thomas Ertman for help with the German.
42. See Seneca, *De tranquillitate animi*, IX.4. On the tensions generated by this passage, Nelles (1994), 134. On the common caricature of the ostentatious library in early modern Spain, see Géal (1999), 269.
43. Zwinger (1565), Staatsbibliothek, Munich.
44. Gass (1918), 26, describing the copy of the *Polyanthea* in Kaysersberg "in hübscher Goldschnittfassung"—but the gilt edges were likely a later addition. I am grateful for this information to Annette Braun of the Town Hall of Kaysersberg (Alsace). On Bernegger, see Malcolm (2004), 216.
45. *Polyanthea* (1648), 1007; see Zwinger (1586), 656 (no more precise citation offered), and Rhodiginus (1542), XIII.24, 494 (the citations to XXIII.4 or XXIII.24 in different editions of the *Polyanthea* were faulty by one or two digits).
46. Zwinger (1586), sig. **1v–2r. See Beyerlinck (1608).
47. Selden (1689), 9–10. For a similar medieval principle, see Goddu and Rouse (1977), 489. On the roles of the citation more generally, see Compagnon (1979).
48. Gesner (1559), sig. a5v.

49. On early modern notions of plagiarism Kewes (2003) and Cherchi (1998); for an example of a dispute, see Jardine (1984). Neither the privilege system nor eighteenth-century copyright law sought to protect originality of expression or of concepts; see Stern (2009).
50. See Lane (1999), ch. 1.
51. Garavini (1992); also Garavini (1994), 75–81; on Montaigne's use of compilations more generally and of Zwinger in particular, see Villey (1933), 2:27–32 and 1:270–71.
52. Zwinger (1565), 447; Montaigne (1988), II.33, 728–35.
53. See Lotspeich (1932), 14–19. I am grateful to Peter Lindenbaum for this lead.
54. Ong (1976), 122–23, referring to Ravisius Textor (1524).
55. Hammond (2003); Tottel (1965).
56. See Paterson (2000).
57. Hoeniger (1575) as discussed in Hieronymus (1997), II, #534.
58. As noted in Nelles (1994), 209; see Hospinianus, *De templis* (1672), 369, and Zwinger (1586), 3816–19.
59. Scaliger (1695), 170, 83, 179–80.
60. Grafton (1997), 153.
61. Mark Pattison, *Isaac Casaubon, 1559–1614* (London, 1875), 123, quoted in Nuttall (2003), 146.
62. De Jonge (1977), 24–25, sigs. B1r–B2r.
63. See J. C. Scaliger (1994), I, 55–56 and 283n431, and III, 231n837. I am grateful to Luc Deitz for these references. On Scaliger's use of florilegia, see Ullman (1928), 162. On Rhodiginus as Scaliger's teacher: see Morhof (1732), I.1.21, sec. 50, 247.
64. J. C. Scaliger (1999), 116. I am grateful to Michel Magnien for this reference.
65. M. Casaubon (1999), 177; see also Feingold (2001), 162–64.
66. Titius (1676), 102; see also Sorel (1673), 8, and Johannes Sturm as quoted in Moss (1996), 150 and quotation #183.
67. Hess (2003), 143.
68. Brinsley recommended the use of pencil to facilitate erasing, as quoted in Sherman (2008), 162. The first known depiction of a graphite pencil was by Conrad Gesner in 1565; Stallybrass et al. (2004), 409. For pencil annotations see: Zwinger (1571a), Magdalen College, Oxford; Zwinger (1586) and Gesner (1583) in Balliol College, Oxford; Rhodiginus (1517) in Bodleian; red pencil in *Polyanthea* (1617) in Jesus College, Oxford. John Evelyn's preliminary notes in pencil were often inked over by himself or others, presumably to make them more durable; see Evelyn, "Miscellaneous notes," British Library MS Add 15950, e.g., 78vff., where Evelyn has inked a list of books first written in pencil; for John Aubrey's inking over Evelyn's notes in a manuscript of his, see Yale (2008), 170–71.
69. Rhodiginus (1666) at Brasenose College (all chapters in bk. 1 are also checked off in the table of contents), and Rhodiginus (1517) at St John's College, Oxford (annotated to p. 55).
70. Henri de Mesmes, *Excerpta*, BnF MS Add Lat. 8726, 105–39 (on the *Suda*) and 139–62 (on Estienne). In the eighteenth century Winckelmann took bulk notes on Bayle and Zedler, see Décultot (2003b), 94.

71. For example, the reader corrected "Me Sin" to "Muesin" by adding "ue" above the line. See Beyerlinck (1666), VII.T231 at Regenstein Library, University of Chicago.
72. See Zwinger (1565), St. John's College, Cambridge, annotations in index and text. See annotations in Erasmus (1508), as discussed in chapter 3; see also Erasmus (1515) at Houghton Library containing a manuscript list of passages from Homer on the flyleaf.
73. *Polyanthea* (1514) at Trinity College, Cambridge, and *Polyanthea* (1575) at Emmanuel College, Cambridge.
74. *Polyanthea* (1539) at King's College, Cambridge.
75. *Polyanthea* (1503), ccxxxii verso at New College, Oxford. *Polyanthea* (1567), 353, at St. John's College, Oxford. *Polyanthea* (Strasbourg, 1517), cviii verso at the McLennan Library, McGill University.
76. As bequeathed to Jesus College, Oxford, see Fordyce and Knox (1937), 27–28.
77. Zwinger (1575), 2860, at Staatsbibliothek, Munich.
78. Zwinger (1565), 1208, 1213, 1243, at St John's College, Cambridge.
79. See the quarto Lycosthenes (1557) and and vernacular folio Lycosthenes (2007). See Moss (1996), 197: the *Theatrum* went "just about as far downmarket as a work in Latin could go."
80. Zwinger (1586), XV.2, 2978 at Regenstein Library, University of Chicago.
81. Zwinger (1586), 86, 212, at Emmanuel College. Zwinger (1565) Houghton Library for annotations throughout the preface.
82. Zwinger (1575), 17, at Staatsbibliothek, Munich.
83. *Polyanthea* (1539), s.v. "mendacium," at King's College, Cambridge.
84. *Polyanthea* (1613). Hilliard matriculated in 1693 (at Trinity College) and was preacher of a tabernacle in Petticoat Lane in 1699; he was then made prebendary of Lincoln in 1704.
85. Zwinger (1571a), 288 ff., 3191 at Magdalen College, Oxford: the chart of tome XIX is annotated with the page number.
86. See chapter 1 on the valuation of originals in the thirteenth century. On the increased interest in context in the sixteenth and seventeenth centuries and the multiple areas (law, theology, historiography, among others) that contributed to it, see Burke (2002), 154–58.
87. On Ridwan, ibn Jumay, and Erasmus, see chapter 1. See also Antonio Augustin's account of how Festus's abridgment of Valerius Flaccus caused the destruction of all copies but one of the original; Grafton (1983), 134–35.
88. Wheare (1685), 39 (emphasis in original). Baillet (1685), I.11, 453, 457–58.
89. Vincent of Beauvais (1964), col. 8 (prologue, 10).
90. Bayle (1740), III, 53 ("Langius").
91. John of Salisbury (1971), I.2–6, e.g., 14, as discussed in Munk Oslen (1982), 160. *Chartularium Universitatis Parisiensis*, III, ix, ed. Denifle and Chatelain (1894) as quoted in Hamesse (1990), 228.
92. John Locke, *A Paraphrase and Notes on the Epistles of St Paul* (1733), vi–vii, as quoted in Stallybrass (2002), 50. I am grateful to my colleague David Hall for this insight.
93. See De Weerdt (2007a), ch. 5.
94. For Petrarch's critique of relying on "little gobbets," see Quillen (1998), 76. For

eighteenth-century examples, see Byrd (2001), ch. 4. See also Roger Ascham, *The scholemaster* (1570), 42v–43r, as quoted in Baldwin (1956), I.698; Drexel (1638), 58; Sorel (1673), 8–9, as discussed in chapter 2.

95. "De Latinae linguae studio perfecte instituendo didactica dissertatio," in Comenius (1986), 366–67, as discussed in Mejor (1994), 658.
96. See Montaigne (1988), III.13, 1069, and Burton (1927), 20 ("Democritus to the Reader"). Jonathan Swift, *Tale of a Tub* (1958; first published 1704), 148, as quoted in Yeo (2004a), 10.
97. Malebranche, *Recherche de la vérité* (1674), IV.8.3, cited in Compagnon (1979), 233.
98. See Décultot (2003a), 22–25.
99. Naudé, *Apologie des grands hommes* (1625), 641–42, as discussed in Bianchi (2001), 44.
100. Moss (1996), 277. Moss notes that Lamy exempted Alsted's *Encyclopaedia* from his criticism.
101. Baillet (1685), I.11.467 and 462.
102. On historical reasoning in this period, see Grafton (2007) and Burke (1969).
103. For an example of such a rivalry, see Haugen (forthcoming) ch. 4 (on Temple).
104. As quoted in Grafton (2003), 39.
105. Richard Montague, *Diatribe upon the first part of the Late History of Tithes* (London, 1621), 415–16, as quoted in Feingold (2001), 163.
106. On the figure of the pedant, see Royé (2008).
107. Ménage (1715), I, 137.
108. Huet (1722), 171–73 (#74): causes de la décadence des lettres. On Huet, see Shelford (2007).
109. Descartes (1996), 10:497–98.
110. Baillet (1987), VIII.3, in 2:469.
111. On the quarrel, see Perrault (1964); Fumaroli (2001); Levine (1991) and Haugen (forthcoming). On the curriculum at Paris, see Brockliss (1987).
112. Hazard (1935). For a critique, see Mesnard (1985); for a more recent interpretation of this period, Israel (2001).
113. A work entitled *Polyanthea hoc est florilegium seu opusculum continens suavissimos sententiarum flores . . . ab authore collectore congestum qui ex Thom. a Kempis amat nesciri* (Cologne: Johannes Petrus Muller, 1735) is a different, anonymous work, much shorter than Nani Mirabelli's *Polyanthea.* I am grateful for copies from it from the library of the University of Illinois at Urbana-Champaign.
114. Labarre (1975), 104–9.
115. Furetière (1690), preface.
116. Diderot and d'Alembert (1751–80), 4:958, article "Dictionnaire" (signed "O" for d'Alembert); see Kafker (1988), 2.
117. On the long career of Latin in the modern educational Europeans systems, see Waquet (1998). On the *Gradus*, see Compère and Pralon-Julia (1992), 98–108. On Stendhal's reliance on a tool like the *Gradus*, see Didier (1996), 14; on Jules Vallès's, see Waquet (1998), 171.
118. See Price (2000), 71.

119. M. Cohen (2003) and Cochrane (1992).
120. Modern examples range from Andreas Birch, *Variae lectiones ad textum Evangeliorum* (1801) to Raphael Rabbinovicz, *Variae lectiones in Mischnam et in Talmud Babylonicum* (1867–86).
121. Wild (2001); Beugnot (1981).
122. On the persistence of commonplacing, see Havens (2001) and Herrick (1998). Edith Wharton, E. M. Forster, Katherine Mansfield, and W. H. Auden kept commonplace books; in the United States the scrapbook eclipsed the commonplace book in the nineteenth century. On the early modern beginnings of commonplacing in the vernacular, see Moss (2005), 47–48.
123. Yeo (2001), 116.
124. Furetière (1690), preface, sig. *[4]r. See Merlin (2003).
125. Furetière (1690), sig. *3v.
126. See A. Miller (1994). On the other principal rival work, the *Dictionnaire de l'Académie*, see Quemada (1998).
127. See, e.g., Lorenzo Cresso, *Elogi d'huomini letterati* (Venice, 1666). On French lives of philosophers, see Ribard (2002), ch. 4. On the production of German *Gelehrtenlexika* from funeral orations, see Nelles (2000), 56. More generally, Yeo (2001), 17–18, and Yeo (1996). Already in the Middle Ages there were collections of lives of saints, doctors, or local eminent figures but without the trappings of a reference book.
128. A. Miller (1981), 15–24.
129. Van Lieshout (2001), 104, 256.
130. Gasnault (1988), 143. On ownership of this work, see Mornet (1910), 460. On how Parisians read Bayle, see Labrousse (1987).
131. For points of entry into the large literature on the *Encyclopédie* and its context, see Kafker (1988) and (1996), Darnton (1979) and (1982); most recently Leca-Tsiomis (1999). On cross-references, see Darnton (1985), 200; on Jaucourt's tacit use of Locke, Edelstein (2009), 15–16 and app. C.
132. See Didier (1996). In 1762 one contemporary commented that the German term "Enzykoplädie," almost unknown ten years earlier, was all the rage. Friedrich Molter, *Kurze Encyklopädie oder allgemeiner Begriff der Wissenschaften* (Karlsruhe, 1762), Vorrede, as quoted in Dierse (1977), 4.
133. Rétat (1984), 189. Kafker (1994b), 391–92: The *Encyclopédie méthodique* (1782–1832) consisted of 158 volumes of text and 51 of plates; the *Oekonomische Encyklopädie* (1773–1858) spanned 242 volumes.
134. Available online at http://mdz10.bib-bvb.de/~zedler/zedler2007/index.html. Quedenbaum (1977), 299 specifies that the *Universal-lexicon* comprised 125,142 columns; I have estimated eight words per line and sixty-seven lines per column, for a total word count of 67,076,112. See Schneider (2004); Carels and Flory (1981). For the *Encyclopédie* I am grateful to Matt Loy for a count of 19,104 pages in twenty-one volumes of text (including the four volumes of supplements), with two columns and seventy-four lines per page and nine words per line.
135. But the *Deutsche Encyclopädie* (1778–1807) mentioned Alsted; see Goetschel et al. (1994), 268.

136. Mouchon (1780).
137. On eighteenth-century compilers, see Brot (2006), 87–93, and Edelstein (2009); on authorship in the *Encyclopédie*, Schwab (1969) and Kafker (1988). Warm thanks to Frank Kafker for helpful conversations on this point.
138. The chevalier de Jaucourt employed one such anonymous secretary; see Perla and Schwab (1971), 451.
139. Volpilhac-Auger (2003), 87.
140. Voltaire, "Livre" in *Dictionnaire philosophique* as quoted in Désormeaux (2001), 61. On Voltaire's methods of writing, see Ferret et al. (2007).
141. Jouffroy-Gauja and Haechler (1997).
142. Georg Philip Harsdörffer, *Delitiae* (1653, repr. 1990), 57, as quoted in Zedelmaier (2001), 22. *OED*, "look" g. Consulter: "Il faut que je consulte mes Livres." Furetière (1690), "consulter."
143. Boswell (1934), 2:365 discussed in Kernan (1987), 213–14.
144. Boswell (1934), 4:308. On Johnson's debt to Morhof, see Boswell (1835), 2:336–37 (appendix 2, reprinting an account in the *New Monthly Magazine*, December 1818), as discussed in Evans (1977), 143.
145. W. R. Keats, "Two Clarissas in Johnson's Dictionary," *Studies in Philology* (1957): 429–39, as quoted in DeMaria (1997a), 89, 100.
146. Boswell (1934), 3:284–85, as discussed in Lipking (1991), 159.

EPILOGUE

1. On the technological developments before the telegraph, see Headrick (2000); from the telegraph to silicon chips, satellites, and cell technology, see Feather (2004). For information management in the office, see Beniger (1986) and Yates (1989). On the memo, see Guillory (2004).
2. Schofield (1999), 96.
3. Trolley and O'Neill (1999) and Wouters (1999).
4. Rayward (1975) and Levie (2006). I am grateful to Alex Csiszar for advice on Otlet.
5. Bush (1945). For a sobering assessment of Vannevar Bush, see Buckland (2004); on the origins of the Internet, see Gillies and Cailliau (2000) and the Web site of its principal founder, Tim Berners-Lee: http://www.w3.org/People/Berners-Lee/ (consulted July 2008).
6. Quotation inVarlejs (1999), 53. See Yeo (2007a), 40 ff.
7. Cady (1999).
8. Whitrow (1999).
9. Cochrane (1992), 13. My figure of hours worked may be an underestimate because it is based on current standards of an eight-hour, five-day workweek.
10. See Menzies and Hu (2003).
11. See Starn (1975).
12. Levy (2001), 101–3; on decontextualization, Mayer-Schönberger (2009), 78.

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Jean de Hautfumey, index to the Vincent of Beauvais's *Speculum historiale*, MS Lat 14355 and 14356.

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