TOO MUCH TO KNOW

Managing Scholarly Information before the Modern Age

Ann M. Blair

Yale
UNIVERSITY
PRESS
New Haven & London

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 col-

1

loquially, 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

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 notetaking 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 ex-

plain), 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 Skill 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 Ham-

burg—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. Aristotle 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 early 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 always 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 dis-

tribution, 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 notetakers 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 im-

provements, 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.
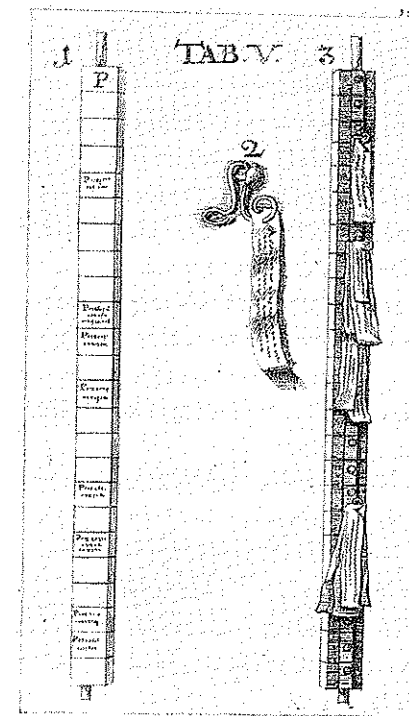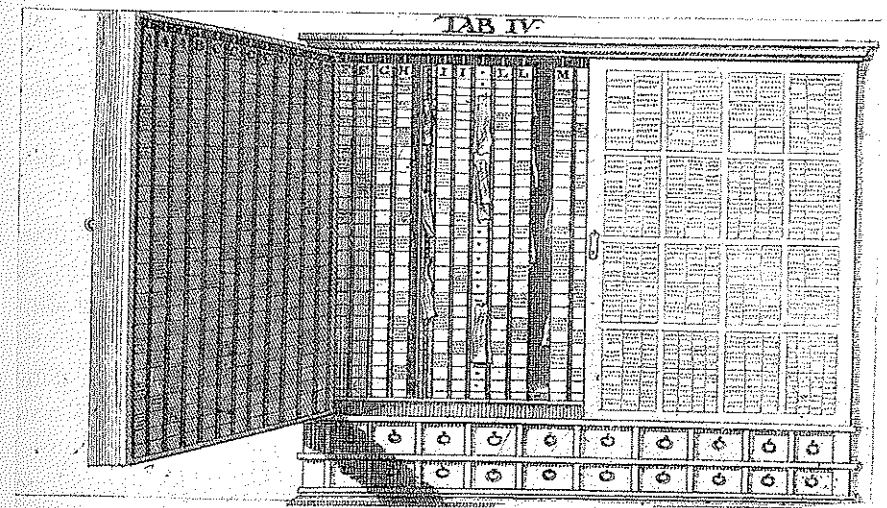
Figures 2.1 and 2.2

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 1548 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

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.

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
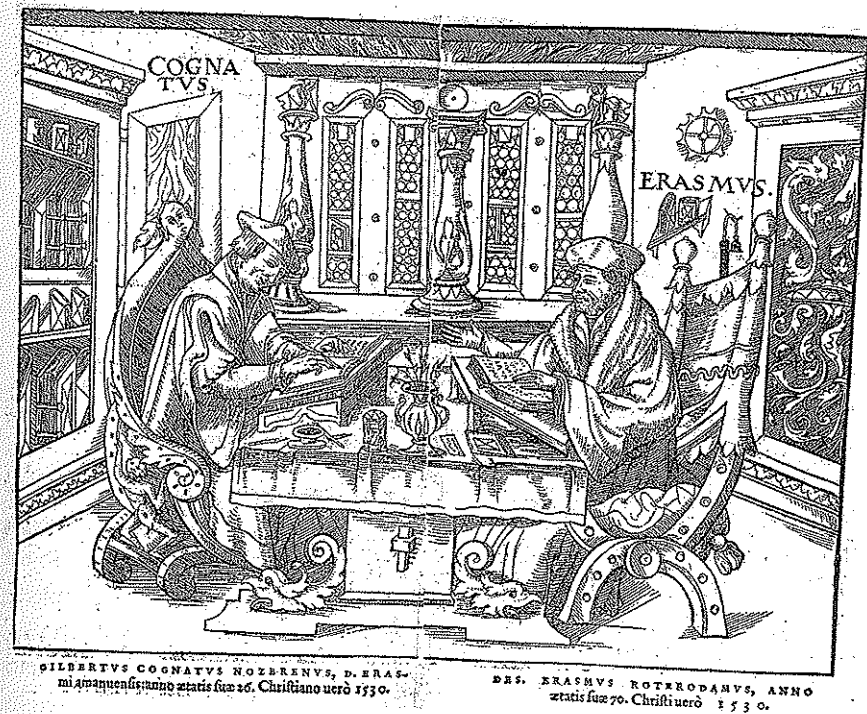
Figure 2.5

"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 it without Erasmus' authorization. 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 text-

books 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 subtractions."[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 indi-

cates 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 safe-keeping 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.

<div style="text-align:center">

3

Reference Genres and Their Finding Devices

</div>

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