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ABSTRACT

This dissertation examines rhetoric's fourth canon—the art of memory—tracing its development through the classical, medieval, and early modern periods. It argues that for most of its history, the fourth canon was an art by which words and knowledge were remediated into visual, spatial forms, either in the mind or on the page. And it was this technique of visualization, I argue, that linked the canons of memory and invention throughout history. In contemporary rhetorical theory, however, memory palaces and mnemonic imagery have been replaced with a conception of memory grounded in psychology and critique. I argue that this move away from memory as an artificial practice has obscured the classical art's visual precepts, consequently severing the ancient link between memory and invention. I suggest that contemporary rhetorical theorists should return to visualization to revitalize the fourth canon in the twenty-first century. Today, digital tools that visualize words and knowledge are ubiquitous. Framing data visualization as a twenty-first century analogue to the art of memory allows us to think about visualization as a tool for invention rather than as a reified representation of data. As creative remediations, memory palaces once allowed rhetoricians to interface with knowledge in an adaptable way and to imagine how knowledge might be assembled together in a new discourse. Thinking about data visualization as a memory palace thus enables us to think not only about representing data but about the new ways we might interface with it in order to generate insight. Data visualization becomes an art to facilitate invention, as the classical art of memory was designed to do.

VISUALIZING WORDS AND KNOWLEDGE: ARTS OF MEMORY FROM THE AGORA TO THE COMPUTER

By

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DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of doctor of Philosophy in Composition and Cultural Rhetoric in the Graduate School of Syracuse University

May 2015

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Introduction

This dissertation provides commentary on the canon of memory and a history of its practice from ancient Greece to contemporary North America. A study of the fourth canon finds a warrant in the increasingly common recognition that, among the five canons of rhetoric, memory has played a marginal role in rhetorical theory throughout the previous centuries (Corbett and Connors, *Classical Rhetoric* 22; Crowley, "Modern" 41-44; Welch, "Reconfiguring"; Pruchnic and Lacey, "Future of Forgetting"). The source and origin of this neglect is often said to be technological: the advent of print leads to the gradual devaluation of oral communication in favor of written composition, resulting in an inevitable decline in interest in the canons—memory and delivery—most relevant to oral discourse. According to others, however, memory has been "eradicated from discussions of writing and reading" (Welch 18) due to the scientific epistemologies that accompanied the rise of print and that emasculated rhetoric generally. The usual villains are summoned: Ramus, Bacon, Vico. Whatever the reasons, the scholarly consensus is that memory has exerted a negligible influence on rhetorical theory throughout most of the modern period.

Since the 1980s, however, calls for the canon's revival have been regularly issued and new theorizations of the canon have been regularly attempted. In "Modern Rhetoric and Memory," for example, Crowley argues for a return to the classical and medieval understanding of memory as a communal storehouse of knowledge to aid invention; framing memory in this way, Crowley writes, is essential for a rhetorical theory built on appeals to community ethics rather than appeals to reason alone (43-44). Crowley also considers how memory might be relevant in the computer age in her textbook *Ancient Rhetorics for Contemporary Students* (co-

1

authored with Deborah Hawhee), noting that computer storage systems and other forms of "electronic memory" represent a "vast improvement" on human memory systems (328). Pruchnic and Lacey similarly look to the past and to the present in their attempt to recuperate memory, arguing that the ancient discourse about mnemosyne ("remembrance") can produce "an expanded notion of rhetorical memory," much needed in response to "the increasing ubiquity of information technology and new media" and their influence on personal memory construction. Collin Gifford Brooke also recognizes the exigency to rethink the fourth canon in the context of new media. He refigures memory as "persistence of cognition," the ability to retain bits of unrelated information in one's mind while browsing the web until one recognizes some pattern that demands more careful attention (*Lingua Fracta* 151).

From Derrida's work on archives to work in Communication Studies on public memorials, a renewed interest in memory has lately permeated the humanities. It is no surprise that rhetoricians have also taken a renewed interest in a subject that was for centuries a part of the rhetorical tradition. My dissertation situates itself in this new concern with the fourth canon and its revitalization, drawing on quantitative methods, close readings, and archival research to analyze memory texts from a range of historical periods.

The dissertation's principal contribution develops an argument made by Brooke in *Lingua Fracta*. "Memory," argues Brooke, "is the one canon whose status as *practice* is in need of rehabilitation" (144). This idea of *memory-as-practice*, I argue, is central both to understanding the canon historically and to reclaiming it for contemporary rhetoric. Memory as practice—and, in particular, a visual practice—is a common theme in the history of the rhetorical memory arts, which were always designed to meet practical intellectual needs. Ancient, medieval, and early modern rhetoricians made a clear distinction between "natural" and

"artificial" memory, the latter denoting various techniques, methods, and habits through which one's natural recollective abilities could be improved. It was the job of the rhetorician to develop and to teach these precepts for artificial memory. In contemporary rhetorical theory, however, the field has generally ignored these precepts and shifted attention to memory in its natural sense. Memory is no longer "a performative technique," writes Bradford Vivian, but an historical and critical "mode of inquiry" (90). Work on the subject draws more often from current psychology than it does from the fourth canon's history; and scholars seem less interested in the development of memory practices than in using memory as a bridge between rhetoric and cultural or critical theory. Although there is plenty of room for such conversations in the field, they have largely eclipsed a view of memory grounded in mnemonic practice. And if we dissociate memory from practice, we dissociate the fourth canon from ninety percent of its history, an archival divorce problematic on its own, but in the process, we also lose the rich intellectual traditions associated with artificial memory throughout the centuries. Historical in its orientation, this dissertation nevertheless keeps an eye on the present moment; the purpose of returning to the fourth canon's history is to reinvigorate discussions about memory as a practice—as an art of memory—for the twenty-first century.

It will be argued that the most valuable insight we might gain from the historical art of memory is its focus on visuality. From pre-Socratic Greece until the early modern era, the art of memory operated upon the principle that words and knowledge could best be recalled if they were remediated into a visual form. "The keenest of all our senses is the sense of sight," writes Cicero in *De Oratore*. "Consequently, perceptions received by the ears or by reflexion can be most easily retained if they are also conveyed to our minds by the mediation of our eyes" (II.357). Converting knowledge into emotionally charged images—housed in spacious memory

palaces on the page or in the mind—was thus a way to turn *thinking* into a form of *seeing*, to translate the semiotics of language into a more palpable semiotics of sight and dimension. This link between memory and visual imagination, it will be demonstrated, was vital to the link between memory and invention. In an era of ubiquitous data visualization tools, I argue, visualizing words and knowledge should once more become a central principle in memory arts designed to facilitate invention. As this dissertation establishes, it is a principle grounded in centuries of rhetorical discourse and practice.

The outline of the chapters is as follows:

Chapter 1 discusses the historical division between "natural" and "artificial" memory, arguing that for nearly two millennia, the latter was synonymous with rhetoric's fourth canon—hence its famous synonym, the *art* of memory. Drawing on the work of Francis Yates and Mary Carruthers—as well as on primary sources, such as *Ad Herennium*, Cicero's *De Oratore*, and a small collection of early modern memory texts recently made available by the Early English Books Online corpus—I will explore the historical conception of memory as a psychological phenomenon on one hand and as artificial mnemonic technique on the other, establishing that the latter was always the proper domain of rhetoricians. That artificial memory was understood as a visual or visualizing art will also be established in this chapter, a point to be elaborated upon in Chapter 5.

After confirming the centrality of artificial memory to the history of the fourth canon, I explore in Chapter 2 the changes undergone by the art of memory in the long transition between the classical era and the Christian middle ages, drawing primarily on the scholarship of Mary Carruthers, James J. Murphy, and David Diringer, among others. Working from the assumption that the field has internalized a connection between mnemonics and rote memorization, I adopt

the frame *memory as mnemonics* to demonstrate that artificial memory techniques are in fact noteworthy rhetorical subjects, implicated, like all rhetorical precepts, in larger ideologies and epistemological outlooks. Nan Johnson argues that all rhetorical precepts are "creatures of historical circumstance," responding to the "changing needs of societies and cultures, accommodating not only an ever-changing theoretical disposition but also an ever-rearranging coalition of 'traditional' and innovative arts" (13). The migration of rhetorical memory arts from the secular agora to Christian monasteries and universities is an excellent example of Johnson's argument, and I explore this transformational era to demonstrate that framing memory as mnemonics, that is, as artificial practice, does not consign scholars to the study of obsolete method but opens up rich possibilities for rhetorical theory as well as for future research in the history of rhetoric. In addition to exploring the history of the visual art of memory, this chapter introduces other artificial memory traditions, as well, such as aural mnemonics and textual segmentation systems inspired by Quintilian.

Chapter 2 also establishes that classical and medieval scholars identified a strong connection between the canons of memory and invention. Part and parcel with the present field's disinterest in mnemonics is the assumption that the fourth canon was used and useful only for the rote memorization of pre-composed orations. While rote memorization was *a* purpose, the art of memory was also used to retain and recall knowledge of all sorts—languages, histories, genealogies, names. Cicero writes that "unless [memory] is applied as a guard over the ideas and words that we have devised and thought out . . . all the qualities of the orator, however brilliant, will go to waste" (I.18). In Cicero's view—and in the view of most other classical rhetoricians—the art of memory was useful for recalling not only pre-written orations but knowledge from a variety of sources to be called upon when constructing new texts or when speaking *ex tempore*.

Artificial memory, in Lina Bolzoni's words, was a system of "ordering" content so that it might "help create content" (*Web* 6). Whether reciting poetry, making the worse case appear the better, arguing before the law courts, or imparting Christian dogma to the faithful, ancient and medieval orators trafficked in words and knowledge and therefore had need of artificial memory techniques, lest they lose their valuable currency to forgetfulness. Artificial memory should therefore not be equated solely with rote memorization of pre-composed words to be delivered orally in a formal context. Rather, mnemonic techniques were valuable for retaining and recalling many types of knowledge for public and private purposes. Tracing the history of mnemonics therefore uncovers not only the means devised to recall knowledge but also the different types of knowledge people have found necessary to recall.

Chapter 3 picks up at the dawn of the early modern period. After its transformations in the monasteries and universities of medieval Europe, artificial memory was to converge with a new intellectual tradition, that of *method*. Drawing on the work of Paolo Rossi, Walter Ong, and Sharon Crowley, this chapter analyzes the consequences of that convergence. Put briefly, the visual precepts of the art of memory, so central to the classical era and the middle ages, are removed in favor of notions of abstract order. Orderly arrangement, of course, had always been a component of the art of memory, through the well-organized placement of images in memory palaces. However, in the hands of rationalist reformers such as Petrus Ramus and Francis Bacon, order becomes the more significant and indeed the only precept. Memory as a rhetorical canon and a visual art is absorbed into logic, put to use as a diagrammatic technique designed to organize scientific knowledge and scientific activity. This notion of memory as orderly arrangement would grow to influence nineteenth century current-traditional pedagogy, as well, in which method becomes a whole theory of composing (Crowley, *Methodical* 35). Placing this

development—much commented upon by Crowley, Berlin, Johnson, and other historians of composition—in its historical context reveals that, surprisingly, current-traditional method does have roots in the classical art of memory. Those roots, however, become more obscured as method erases the classical art's visual precepts and as it severs the ancient connection between memory and invention, supplanting it with a more prosaic connection between memory and arrangement.

Having recovered elements of the fourth canon's classical, medieval, and early modern history, I look in Chapter 4 at how discourse on memory has developed in twentieth century rhetorical theory. Working from analyses of articles published in eight of the field's major journals, I confirm and elaborate upon the argument introduced in the first chapter, that contemporary scholarship has ignored the canon of memory outright or begun to re-theorize it in natural or critical terms. Historical arts of memory are mentioned in passing, when mentioned at all, as a way to introduce the term "art of memory," but the historical, practical, and theoretical details of these arts are generally disregarded. The field has instead defined rhetorical memory to include the many ways humans mediate and recall the past, from public memorials to cemetery plots to community cookbooks. Memory thereby becomes not an art with particular methods but a human impulse to mediate the past with associative objects. The field, it will be shown, is largely concerned with the rhetorics of that mediation, as well as with critiques of the ideologies implicated in it.

In contrast, I argue in Chapter 5 that the field could benefit from reclaiming the ancient conception of rhetorical memory as a practice, and in particular, as a visual art. Doing so reconnects contemporary and ancient rhetoric and suggests interesting possibilities for rhetorical practice. Of course, the social and intellectual ecologies in which contemporary rhetor-writers

operate are different from those inhabited by classical orators. Bringing the art of memory into the twenty-first century does not mean shoehorning the techniques of Ad Herennium or Cicero into the contexts of the present age. Instead, rhetoricians and compositionists interested in new memory practices should begin by asking themselves two questions. First, what are the demands placed on the memories of contemporary writers? Second, how can the traditions of the fourth canon inform the project of developing new practices and tools to meet the demands? Expanding on ideas suggested by Collin Brooke, Jay Bolter, Richard Young and Patricia Sullivan, among others, I answer these questions by pointing to the classical precept of *visualization* as the key to aiding memory in the digital age. In particular, I suggest that text and data visualization tools, such as the Natural Language Toolkit, can be used to provide writers with holistic and novel images of their texts. I also propose that searchable, interactive databases can help students to "recall" and manage more information than their unaided working memory is capable of handling, thus expanding the possibilities for invention and further research. Data visualization, in short, is the contemporary equivalent of an artificial memory practice based on the visual remediation of words and knowledge.

METHODS

At various points in the dissertation—especially in Chapters 3, 4, and 5—I utilize or discuss quantitative methods not widely used in rhetoric and composition. To obviate the need to explain these methods with chapter intermissions, it is necessary to introduce them here in detail and to provide some context for them.

Quantitative and computational methods have a long history in the humanities. In the 1940s, Father Roberto Busa worked with Thomas Watson to lemmatize Thomas Aquinas' works, which allowed scholars to perform searches on that massive corpus of writings. The 1970s and 80s saw scattered attempts at computer aided analysis of individual literary works and large corpora of genres, under the guise of "humanities computing." Developing alongside humanities computing was the sub-field of computers and writing, which focused on the pedagogical and theoretical implications of word processors, hypertext, and electronic mail. Today, the ubiquity and low cost of digital tools has made the computational study of text much easier than it was for scholars in the past. Humanities computing has morphed into the digital humanities, a widespread academic phenomenon that has established itself in various humanities departments. Matthew Kirschenbaum notes, however, that it has primarily taken root in English departments, where the computational study of literature has become an accepted if not a dominant methodology ("What is Digital Humanities?").

Although many intellectual projects can be grouped under the "big tent" of the digital humanities—digitizing archives, corpus linguistic studies, critical analyses of technology platforms (Jockers 12)—this dissertation inhabits the same corner of the tent as scholars interested in what Franco Moretti has called "distant reading" and what Matthew Jockers has called "macroanalysis." Both may be described as the use of quantitative methods to synthesize and to detect patterns across more texts than are typically referenced in a single humanities study. The distant reader begins with the recognition that synthesizing thirty or forty texts is challenging enough—at this modest scale, synthesis still requires the space of an article or chapter to accomplish. Synthesizing two or three hundred sources takes a book or a dissertation, and even then, the synthesis typically proceeds by way of passing reference or selective quotation rather than systematic analysis. But what if one wants to synthesize, say, three hundred texts in a single chapter? Forty texts in a few pages? Thousands of texts in a short book?

are no longer suitable, not because there is anything wrong with these methods but because page space and working memory (both the reader's and the writer's) begin to work against us, like implacable laws of physics. Approaching even larger scales of textuality—tens of thousands or millions of texts—time itself becomes an issue. The academic spirit may be willing, but the flesh won't live long enough to read—let alone synthesize—a hundred thousand novels or even a few thousand rhet/comp monographs¹.

If one wants to synthesize more texts than can be stacked on and under a desk, it won't do simply to ask for additional time, memory, or page space. What are required are new methods. It becomes necessary to adopt methodologies designed to tackle large quantified data sets and to adapt them to the study of texts and words. It becomes necessary, if I may paraphrase Franco Moretti, to stop "reading" texts and to count them, graph them, plot them, and map them instead.

The trouble with close reading . . . is that it necessarily depends on an extremely small canon . . . If you want to look beyond the canon, close reading will not do it. It's not designed to do it, it's designed to do the opposite. At bottom, it's a theological exercise—very solemn treatment of very few texts taken very seriously—whereas what we really need is a little pact with the devil: we know how to read texts, now let's learn how *not* to read them. Distant reading: where distance, let me repeat it, *is a condition of knowledge*: it allows you to focus on units that are much smaller or much larger than the text: devices, themes, tropes—or genres and systems. And if, between the very small and the very large, the text itself disappears, well, it is one of those cases when one can justifiably say, Less is more . . . We always pay a price for theoretical knowledge. ("Conjectures")

¹ Reading ~2,000 monographs would require getting through one per week, every week, for the next 40 years.

Nineteenth century rhetorical history provides an example. Seminal books on the topic—by Nan Johnson, Sharon Crowley, Thomas Miller, James Berlin—each rally fewer than one hundred primary texts to make their claims about rhetoric in the nineteenth century Anglosphere. And yet, as Forrest Huolette has demonstrated in his bibliography of nineteenth century rhetoric, nearly 4,000 relevant texts were published in this century—composition textbooks, grammars, criticism, and so on. How does one "read" 4,000 texts?

One doesn't. Instead, one analyzes, for example, the length, grammatical forms, and most frequent words of their titles, as Moretti does for novel titles in his article, "Reflections on 7,000 Titles." Or, following Jockers' work in *Macroanalysis*, one collects meta-data on the authors, number of editions, or publication circulations of these texts. Or perhaps one copies them into 4,000 plain text files (a time-consuming task in and of itself) and runs them through a topic modeling algorithm such as MALLET, discovering which words frequently co-occur together across these texts. Such analyses would provide a more abstract, data-driven picture of nineteenth century rhetoric, grounded not in anecdote or close reading of selected passages but in word counts, word clusters, author demographics, and publication histories—a less human picture but also a more comprehensive one that yet remains comprehensible. Such analyses also provide a quantitative context into which close readings might be situated or against which theories might be tested.

Of course, when reading texts by means of algorithms, when reducing texts to averages and other statistical measures, it is important to keep in mind that one is working with *proxies* for the desired object of study. Concepts such as theme, plot, trope, or more appropriately, the rhetorical art of memory, do not have weight, dimension, standard features, or even discrete definitions. For that reason, a quantitative study of something abstract must first "operationalize" the concept (Moretti, "Operationalizing"). Operationalizing an abstract literary or rhetorical concept, according to Moretti, means reducing it to a series of data-driven operations. In one of the examples he provides, "character space" in a play becomes the number of words spoken by a particular character divided by the total number of words spoken by all characters. The operation provides the percentage of words allocated to each character, the percentage serving as a proxy for the abstract concept of character space. Of course, the concept might be operationalized in other ways; determining the best way, Moretti notes, is always a matter of debate, dependent on research goals. Whatever operations are used, however, the process is designed to turn a formless concept into a concrete measurement that corresponds to "something in the real world," that is, to quantifiable and verifiable features that are, in most cases, textual in nature (4).

This dissertation explores the abstract concept, *rhetoric's fourth canon*, or *the art of memory*, in various historical eras. I undertake many close readings of primary and secondary material, but at certain points, I also operationalize the concept with computational methods. In each case, texts and their measurable features stand in as imperfect but still revealing proxies for discourse about memory in a particular context. Some of these methods are straightforward and require no explanation beyond the broad apology for quantification presented above. For example, in Chapter 3, I graph the publication sites of 423 early modern memory treatises culled from several bibliographies; the trends captured by these graphs are rallied as evidence for claims regarding political and intellectual influences on the memory arts during the English Reformation.

Other methods, however, will be unfamiliar to most scholars in rhetoric and composition and thus do require an explanation. I discuss the following below: tf-idf score, topic modeling, and natural language processing techniques.

Tf-idf Score

In Chapter 4, I computationally analyze 279 articles from eight of the field's major journals, all obtained from JSTOR's Data for Research (DfR) database. Each article is tagged by JSTOR with ~25 key terms, and I use the terms to sort and compare the articles in various ways. Because they are important to the analyses undertaken, it is necessary to explain how these key terms are generated. They are generated using an algorithm called *term frequency-inverse document frequency*, or *tf-idf* for short. Tf-idf is calculated in the following way:

First, term frequency measures how frequently a term occurs in a document. Because every document is a different length, however, a raw frequency count is useless; to control for document length, tf divides a term's frequency by the total number of words occurring in the document. Thus, term frequency is often called relative frequency.

 $\mathbf{tf}(\mathbf{t}) = (\text{Number of times term t appears in a document}) / (\text{Total number of terms in the document})$

In *The Computation of Style*, Anthony Kenny notes that norming the raw count in this way permits a more meaningful comparison of word frequencies across texts of vastly different lengths (67).

Next, inverse document frequency measures how important a specific term is across all documents in a corpus. When computing term frequency in the previous step, all terms are considered equally important: tf is normed against total document length, which necessarily includes functional but meaningless stop words such as 'is,' 'of,' and 'the'. Inverse document frequency, on the other hand, suppresses the influence of these stop words by computing the

logarithm of the total number of documents in the corpus divided by the number of documents in which a specific term appears.

idf(t) = log_e(Total number of documents / Number of documents containing term t)

Finally, the last step in the process is simply to multiply tf with idf.

 $\mathbf{tf}(\mathbf{t}) \times \mathbf{idf}(\mathbf{t}) = \text{key term score}$

The resulting product is the tf-idf score, which is the same as the key term score. The score will be highest when a term occurs many times in a small number of documents in a corpus; it will be lowest when a term occurs in nearly all documents in a corpus.

A simple example: consider a text containing 100 words. In this text, the word 'memory' occurs 3 times. The term frequency (tf) for 'memory' is therefore computed as (3 / 100) = 0.03. Now, assume this text under analysis is just one in a corpus of 10 million texts. Across the entire corpus, 'memory' occurs in 1,000 of these 10 million discrete texts. The inverse document frequency (idf) of memory is then calculated as log(10,000,000 / 1,000) = 4. Finally, tf-idf is calculated by multiplying tf and idf. The tf-idf score for 'memory' in this case is therefore: 0.03(4) = 0.12. Naturally, the "weight" of tf-idf scores changes depending on the size of the corpus.

DfR's key terms are words with the highest tf-idf scores in each individual article. These terms are the most semantically noteworthy words in the text, after controlling for article length (tf) as well as weighing each word against its use in JSTOR's entire corpus of 8.8 million texts

(idf). Clearly, tf-idf is a better measurement for discovering key terms than a simple frequency tally, which is why I use them to categorize articles in Chapter 4.

Topic modeling

Chapter 4 also uses "topic models" to analyze the 279 rhetoric and composition articles compiled from the DFR database. Topic models can be methodologically dangerous. I utilize a topic modeling program called MALLET—the Machine Learning for Language Toolkit—and "mallet" is a good metaphor for what topic models do: they smash into texts and hammer out results with mathematical force.

Scott Weingart's blogpost "Topic Modeling and Network Analysis" remains one of the most lucid explanations of topic modeling algorithms. To understand topic models, he writes, start with an image of an encyclopedia turned into a spreadsheet: every column is an entry in the encyclopedia, and every row is a word, with each word in the entire encyclopedia given its own row. At the intersection of the row and column is a word's tf-idf score (see above) within a given encyclopedia entry. (Most columns will be filled with zeroes because each entry uses only a fraction of all the words throughout the whole encyclopedia.) Given such a spreadsheet, it would be possible to determine which words are most "related" to other words, by calculating which words occur together within the same entry most frequently and with the highest tf-idf scores. In this framework, every corpus is comprised of two things: documents (such as encyclopedia entries) and words. Topic modeling algorithms, however, assume there is a third component to every corpus: topics. Topics are essentially bundles of words, representing a "middle layer" between the lexical scale and the document scale. In the topic modeling framework, an encyclopedia entry on genetics would be composed not only of words but also of topics, collections of words that have been found to occur together frequently—for example, the

genetics entry might draw from topics such as Genetics, obviously, but also from Evolutionary Biology or Data Analysis. (This example and the image below page are taken from David M. Blei's article "Introduction to Probabilistic Topic Models." Blei is one of the foremost authorities on and developers of topic modeling algorithms.)



To reiterate, these topics are simply bundles of words, such as 'gene', 'DNA', and 'genetic', that have been found by an algorithm to occur together in the same documents—together, 'gene', 'DNA', 'genetic' and other words constitute a single topic that a researcher might call the Genetics topic. The topics do not actually exist, as Weingart emphasizes. They are an imagined middle layer between the words and the documents, a layer that stretches out to cover multiple documents. And each document itself is said to be comprised of multiple topics—the Genetics topic, for example, might constitute 22% of the Genetics encyclopedia entry; Evolutionary Biology might constitute 15% of the entry; and so on.

MALLET and other topic modeling programs run machine learning algorithms (called latent Dirichlet allocation; see Blei et al., "Latent"; also see Underwood, "Topic Modeling") on a corpus of documents to uncover the topics within it. MALLET does not return labeled topics, just the bundles of words that have been found to co-occur. It is up to the researcher to label the topics, a process which can be straightforward or highly subjective. Indeed, it is up to the researcher to determine how many topics the program looks for in the first place—the more topics the algorithm is told to discover, the more fine-grained the topics will be.

Given the slippery signification that can occur when words and phrases are taken out of context, researchers must exercise caution when labeling topics. For example, should a topic consisting of the words 'hot', 'steamy', 'sweat', and 'heavy_breathing' be labeled Exhaustion or Sex Scene? Or what about topics consisting primarily of semantically neutral or widely used words, such as 'way', 'determine', or 'each'? Ben Schmidt's "How Not to Topic Model" offers an in-depth discussion of the various problems that can arise when researchers ignore the context of the words being modeled, but in my view, the best way to control for semantic issues is to ensure that the documents in the corpus have been judiciously compiled—the value of any database, I would argue, is determined by its contents. It is also important that the researcher have a basic knowledge of the possible meanings a word might exhibit within the corpus. Working with topics modeled from a random sample of 1000 books in the Google Books corpus is much more problematic than working with topics modeled from the corpus compiled in Chapter 4—279 articles from rhet/comp journals.

Despite these cautionary caveats, when used carefully, the topic modeling method "gives

us a way to infer the latent structure behind a collection of documents" (Underwood, "Topic modeling"), providing data about theme and content that would be very difficult to obtain with analyses focused on individual words.

Natural Language Processing

In Chapters 1, 3, and 4, I compile word frequency lists and citation counts in various texts. Dissecting the lexical constituents of a single text or multiple texts—analyzing the microscopic scale of words and phrases—is made possible by natural language processing (NLP) techniques. Specifically, I utilize the Natural Language Processing Toolkit (NLTK), a suite of libraries designed to run with the Python programming language.

Simply put, natural language processing means manipulating human language with a computer. In its more complex forms, NLP involves finding ways to make computers "understand" and respond appropriately to language, both spoken and written. However, I use it for much humbler tasks: counting words and locating proper names. In both cases, text must be converted into a format that Python can "read." This requires several steps: first, the texts are saved as plain text files (.txt); second, in Python, the texts are loaded by converting the .txt files into a raw text "string," that is, text that can be manipulated in Python; third, using a simple one-line command, the text string is further converted into "tokens." Tokenization turns each word, symbol, and punctuation mark into its own entity in a long list. Tokenized, the last sentence would exist in Python in the following form:

'Tokenization' 'turns' 'each' 'word' ',' 'symbol' ',' 'and' 'punctuation' 'mark' 'into' 'its' 'own' 'entity' 'in' 'a' 'long' 'list' '.'

Fourth, all the tokenized words are converted into lower case. This step ensures that the NLTK

does not count the same word as two different tokens simply due to orthography. Without lowercasing the text, NLTK will count 'rhetoric' and 'Rhetoric' as different items. Obviously, some research questions would want to take this difference into account, but otherwise, skipping this step might taint results. Finally, in most cases, stop words are removed from the tokenized text with another single command. Stop words, as I explained in the section on tf-idf score, are functional but semantically null linguistic items: prepositions, articles, complementizers, pronouns, and so on. Removing stop words facilitates a purer analysis of a text's semantic content. The final textual result—after loading a .txt file into Python, tokenizing it, lower-casing all letters, and removing stop words—would look like this:

> 'tokenization' 'turns' 'word' ',' 'symbol' ',' 'punctuation' 'mark' 'entity' 'long' 'list' '.'

Once a text file is rendered readable by Python, the whole range of powerful NLTK tools can be applied to it. With the texts broken into readable tokens, it is obviously a simple task for a computer to count which words occur most frequently in a document. Those interested in a line-by-line explanation of this task can turn to Chapter 1 of *Natural Language Processing with Python*, a free textbook available at nltk.org/book.

Finding specific words in a document—such as proper names—is slightly more complex. One (very direct) option for finding names requires deleting stop words but *not* converting words to lower-case. Then, using regular expressions, one can search for all words in a text beginning with an upper case letter:

$< [[:upper:]] \\ w^*$

Of course, this will also collect words beginning a new sentence, but ideally, deleting stop words

will have removed most of those. With this list of words beginning with "UPPER CASE lower case", one can simply disregard whatever non-names have snuck in. The drawback of this method is that it sometimes returns a good deal of false positives; the benefit is that no or very few names will be missed in the analysis, a possibility with the method described next.

A more indirect but much quicker way to compile named entities in a document is to use NLTK's Named Entity Recognition functions. Simply put, these functions a) tag each word in the document with its part of speech, then b) uncover named entities based on the probability that a given noun is indeed a name, taking into consideration such features as capitalization and part-of-speech of words occurring before and after the noun (see Chapter 7 in *Natural Language Processing with Python*). The benefit of this latter method is that it is entirely automated and will likely not return an unwieldy list of false positives; the drawback is that the functions may very well miss named entities that do not fit within its pre-programmed paradigm. When compiling and counting article citations in Chapter 4, I relied primarily on this second method, but I then used regular expressions to check for frequently occurring names that may have been missed.

In Chapter 5, I address other natural language processing techniques not described above, as well as network analysis tools, but in that case, the methods are part of the chapter's overall argument, so there is no need to introduce them pre-emptively.

COMPUTATIONAL METHODS AND THE ART OF MEMORY

I have employed these methods not only because I find them valuable but also because a link exists between them and the classical art of memory. Recall what I said about the art's visual precepts: the creation of images and memory palaces converted the semiotics of language into the semiotics of sight and dimension. Long-term and working memory, it was thought, operate most keenly when occupied with *visual* forms. The images of the classical art of memory are thus similar to the objects created by computational analysis and data visualization. Graphs, charts, networks, dispersion plots, even word lists—these objects distill into a single image a greater totality of words or knowledge than working memory alone could readily synthesize. They are memory aids; and creating them, I suggest, constitutes a memory practice. Like the art of memory, computational methods can be used to visualize words and knowledge and to aid further invention. By incorporating visualizations into the dissertation, I attempt to establish a present-day equivalent of the historical practices discussed throughout the chapters, demonstrating their utility as memory arts for the twenty-first century.

Chapter 1: Natural and Artificial Memory

"MEMORIES. YOU'RE TALKING ABOUT MEMORIES ."

Los Angeles, 2019—Rick Deckard is a private detective paid to kill miscreant androids. It's a risky job. Not only can androids—or *replicants*—be dangerous, they also look and sound just like humans. In Deckard's line of work, "retiring" a human by mistake is a continual hazard. To distinguish the natural humans from the artificial kind, Deckard employs the Voight-Kampff test, which measures involuntary eye movement in response to empathy-inducing questions. After a certain number of questions, twenty or so, replicant empathy weakens, and their eye movements no longer resemble those of humans.

Deckard is dispatched to interview Dr. Eldon Tyrell about the Tyrell Corporation's latest android model, the Nexus 6. Nexus 6 replicants are flawlessly engineered—"more human than human" is Tyrell's motto. But they have also developed a taste for violence. One of Tyrell's employees has been murdered by a Nexus 6 replicant. Several others have escaped an off-world colony, hijacked a space ship, and returned to earth. Deckard wants answers from Tyrell about his newest creations; in particular, he wants to know if the Voight-Kampff test still works on Nexus 6 replicants. Instead of providing direct answers, however, Tyrell provides Rachel—a lovely woman who Deckard assumes is Tyrell's assistant. "I want to see a negative result before I provide you with a positive," Tyrell tells Deckard. Rachel is amused at the prospect of taking a test designed to identify replicants. She humors Deckard as he sets up the test machine and proceeds to ask her a gamut of empathic questions: "You have a little boy. He shows you his butterfly collection, plus the killing jar..."

More than one hundred questions later, Deckard turns off the Voight-Kampff machine. Tyrell asks Rachel to leave the room. "She's a replicant," Deckard announces, visibly concerned. The test has failed to make an efficient identification. The Nexus 6 replicants exhibit human empathy more convincingly and for a longer period of time than older replicant models. Deckard asks Tyrell how it's possible.

"We've gifted them with a past," Tyrell explains, "creating a cushion or pillow for their emotions."

Memories. The key to advancing replicant evolution, Tyrell has discovered, is to implant real human memories, culled from brain tissue, into the replicants' neural systems. "After all, they are emotionally inexperienced, with only a few years in which to store up the experiences you and I take for granted." With built-in memories, however, replicants can learn more quickly and replicate human behavior more accurately. It also makes them easier to control theoretically.

The theory backfires, and *Blade Runner* becomes one of science fiction's most famous explorations of robot desire, a desire fueled by the replicants' *artificial natural memories*. The memories are real; Rachel's memories are the memories of Tyrell's niece. Yet those memories have been implanted into an artificial intelligence. Does a natural memory become artificial when put into a machine? Are memories formed in response to a replicant's experience natural, though enabled by hardware and algorithms? Are mediated memories natural or artificial?

I begin with *Blade Runner* because the questions raised by the film demonstrate a "hard case" for any attempt to distinguish between natural and artificial memory. In the age of computer storage and prosthetic neuronal chips, these questions may become more than science fiction speculation. Yet computer age technologies needn't be invoked to make the point that natural versus artificial memory is an easily contested antithesis. I wasn't alive in the 1860s, yet through monuments and photographs, something like a memory of the Civil War has been

formed—artificially mediated—in my mind and in the minds of others who were not actually there. But can I be said to have a memory of the war just because I've watched a Ken Burns documentary? If not, then how do Americans remember the Civil War long after the death of the last veteran? Answering that question is a complicated task, but for now, the point is simply that all technologies designed to store the past are artificial memory machines, objects we interface with to recall and mediate phenomena deemed too important to let slip into the random noise of forgotten time.

It is important to recognize from the outside that the binary constructed in this chapter begs to be complicated. At various points in other chapters, grappling with this ambiguous area between natural and artificial memory will become a necessity—just as it has been a necessity at times throughout the history of rhetorical discourse on memory. Luckily, however, not all cases are as ambiguous as Rachel's. If only for practical purposes, or for lack of replicant technology, rhetoricians of the past have differentiated between natural memory and artificial memory. In *The Book of Memory*, medieval scholar Mary Carruthers poses three questions that distinguish between the dual approaches to the subject:

> [F]irst, what is the actual origin of information entering the brain; second, how is that information encoded, and is it in a way that physically affects our brain tissue; and third, how is its recollection best stimulated and secured, or what kind of heuristic devices are necessary for us to find it again once it has been stored?

(17)

While Carruther's first questions point to memory as a natural psychological phenomenon, it is the topic of artificial devices for recollection that has concerned rhetoricians throughout history: how are rhetors best to recall words and ideas when delivering a speech, when extemporizing a discourse, when offering a prayer, sermonizing, meditating upon extensive bodies of knowledge, or attempting to discover connections across that knowledge? These are the questions that have motivated the history of the art of memory. That is not to say the questions cannot be informed by inquiry into the natural processes of memory, but simply that the two issues should not be conflated. In the following chapter, this distinction between natural and artificial memory is presented as a basic but vital one for studying the history of rhetoric's fourth canon. The loss of this distinction in contemporary work on memory-or the constant complication of it-is one reason, I suggest, why contemporary rhetoricians have a difficult time knowing what to do with memory in the context of print and new media. The term "art of memory" is invoked only occasionally in recent literature, and even then, emphasis is typically placed on the memory but not on the art, leading scholars into realms psychological, philosophical, and critical—but not often into the realm of rhetorical practice. In this chapter, I begin with an overview of treatments of memory in the contemporary field, demonstrating that artificial memory and the fourth canon's history are often disregarded. I then detail the historical origins and classical developments of the ars memoriae, establishing that the art was primarily a visual and imaginative practice, with its precepts remaining largely intact throughout the centuries. Lastly, I contrast the classical art of memory with conceptions of natural memory in the works of Plato and Aristotle, two authorities more often appealed to in the current age when classical sources on rhetorical memory are sought out.

THE RHETORICAL NOT-SO-RHETORICAL MEMORY TRADITION

Jeff Pruchnic and Kim Lacey's article, "The Future of Forgetting: Rhetoric, Memory, Affect," provides a good example of my argument that memory in contemporary rhetorical theory is often severed from its history as an artificial practice. On one hand, the natural/artificial distinction permeates Pruchnic and Lacey's essay in a series of analogous antitheses: active memory versus passive memory (476); internalizations versus externalizations of memory (475, 481-82); memory's "content" versus memory's "program" (477); the inside and outside of human subjectivity (474). Pruchnic and Lacey use these counterparts to think through the difference between natural and artificial memory in the context of new (especially social) media. In a sense, their article does recognize the ancient distinction and uses it to invent new frameworks for memory in the twenty-first century.

However, throughout the essay, these distinctions are used to deny importance to artificial memory on its own, apart from natural memory; at best, the artificial is enfolded into the natural. For example, the distinction between the internalization and externalization of memory is used to explain how external software, controlled by capital, permeates and negatively affects internal subjective memory, a kind of mediated loop rendered in psychological (or "affective") terms and described entirely with contemporary, psychological sources. Throughout the article, this movement away from rhetoric and toward other intellectual terrain becomes more and more apparent. Indeed, Pruchnic and Lacey forecast the movement from the beginning. Their discussion of memory commences not with Aristotle's terms *mnemes* and *anamneseos* nor with the Latin rhetorical term *memoria* but with the mythical persona *mnemosyne*²:

... *mnemosyne* went through at least four important and often overlapping functions in Greek culture and philosophy: memory as a divine source of creative inspiration and access to "eternal truth" ...; *mnemosyne* partnered with *lethe* (forgetfulness, oblivion) in esoteric rituals focused on death and immortality;

² Tammie M. Kennedy's 2009 dissertation, "Reclaiming Memoria for Writing Pedagogies," also looks to *mnemosyne* for inspiration.

practices of memory and recollection developed by the Pythagoreans and in the writings of Empedocles . . .; and, finally, the Platonic conception of revelation and learning as practices of recollection. (474)

The figurings of memory in the article emerge not from the natural/artificial distinction found in rhetorical treatises but from the milieus described above—mythical, theological, philosophical—whose relation to the art of memory is never made clear. What is made clear, however, is that Pruchnic and Lacey find little value in the archives of the rhetorical art. The term "artificial memory" occurs only once in their article, and it is quickly subsumed within natural memory:

Although such techniques have come to be known as instances of "artificial memory" (Yates), these practices were designed to mimic or amplify what were taken to be the natural (and therefore) familiar processes of thought and communication . . . (477)

That artificial memory practices amplify natural memory processes is true but trivial—how could it be otherwise?—and is like dismissing the methods of athletic training as nothing but natural anatomical movement. In their article's conclusion, Pruchnic and Lacey explain why they want to subsume mnemonics in this manner: to replace rhetoric's historical focus on artificial memory with a focus on memory as a critical tool:

> Whereas in early training in rhetorical memory and mnemotechnics, theories of how memory functions were secondary to the training of internal memory, in the contemporary moment—in which the externalization of memory in media systems and its co-implication in the manipulation of our affective dispositions have become central to culture and politics—it is perhaps the analysis and diagramming of this system of memory itself that should take priority. (487)
This intention to see the fourth canon rendered in non-artificial terms—so that it might be injected into cultural and critical theory—can be found in nearly all recent work on the subject. Virginia Allen, for example, is happy to give mnemonics the cold shoulder:

To maintain that the problems of memory are not our concern or that they more properly belong to other disciplines is to accept the premise that rhetoric is only *techne*, appropriately defined by the how-to books of composition cookery . . . A rhetorical theory that dismisses problems of the nature of mind . . . is a truncated theory. (45-46, "The Faculty of Memory")

Similarly, Bruce Gronbeck writes that artificial memory "lacks an intellectual problematic that can engage rhetoricians," arguing that Aristotle's psychological treatise De Memoria "is a much more theoretically provocative and hence more suggestive work on memory" than rhetorical handbooks ("The Spoken and the Seen" 129). Kathleen Welch agrees with Gronbeck, declaring that "the most important connection that memory as a canon of rhetoric gives us is its explicit pointing to psychology" ("Platonic" 7). Kathleen J. Ryan implies that artificial memory as described in Ad Herennium is responsible for the modern association of memory and memorization, and she argues that "instead of embracing this ancient description of memory," scholars should look elsewhere to "reimagine" a rhetorical memory connected to imagination and invention ("Memory, Literacy, and Invention" 37). And in his discussion of digital writing, Derek Van Ittersum argues that the rhetorical canon of memory is valuable only "up to a point" for understanding writing in the context of new media ("Data-Palace"). Even in his practiceoriented study of writers using bibliography tools, Van Ittersum exchanges artificial memory for a more modern analytical framework, "cultural-historical activity theory," which elsewhere he and his co-authors describe as an "emergent synthesis [of] Vygotskyan psychology,

Voloshinovian and Bakhtinian semiotics, Latour's actor-network theory, and situated, phenomenological work in sociology and anthropology" (Prior et al., "Re-situating"). The motive on display from Van Ittersum and the others seems to be that once we rid ourselves of the notion that memory is just artificial technique, then the fourth canon may be revived as psychology, as criticism, and so on. Bradford Vivian is candid about this motivation. "The flurry of studies in rhetoric and public memory over the past scholarly generation," he writes in a review essay on recent work on memory, "has revived rhetoric's close association with memory in distinctively modern fashion: not as a performative technique but as a critical or historical mode of inquiry" ("On the Language" 90). In no way am I questioning the value of a critical refiguring of the fourth canon—in later chapters, I will participate in it myself. However, if the field dissociates memory from mnemonics, then it dissociates the fourth canon from ninety percent of its history, an archival divorce problematic on its own, but in the process, it loses the rich intellectual traditions associated with artificial memory throughout the centuries.

Another problem with ignoring artificial memory is that scholars end up providing such a general gloss on rhetorical history, moving toward whatever it is they really want to say about memory, that their statements begin toeing the line between forgivable imprecision and blatant inaccuracy. We see both on display in Pruchnic and Lacey's article. An example of imprecision is their commentary on Ramus' influence on the fourth canon:

Ramus reduced rhetoric's share of the canons to only two—style and delivery and, in assigning the remaining canons to the field of dialectic, alternately configured memory as mere memorization or "good memory" as an adjunct to "good judgment." Ramus's reduction of *memoria* . . . to a supporting role in rhetoric and logic would largely set the tone for its subsequent treatment . . . as little more than the practicing of effective mnemonic techniques . . . (205)

In a footnote to this passage, Pruchnic and Lacey point the reader to Paolo Rossi's work on the subject; however, Rossi provides a different historical picture from the one constructed by Pruchnic and Lacey. Chapter 3 in this dissertation explores what happened to the art of memory after Ramus, but for now, it is enough to emphasize that phrases such as "Ramus's reduction of *memoria*" and "little more than the practicing of mnemonic techniques" misrepresent both Rossi's work and the historical record. "For Ramus," Rossi argues, "*memoria* had a very specific task: it was an instrument for introducing order into both understanding and discourse. As such it can neither be omitted nor neglected by the orator" (100). Ramus did not "reduce" artificial memory to memorization; rather, he absorbed mnemonic rules into logic and framed memory as a central topic not only for oratory but also for "questions pertinent to method and logic" (Rossi 102), a move with extensive epistemological implications. Indeed, Pruchnic and Lacey's tendency—ubiquitous in rhetorical theory—to associate mnemonics with mere memorization is probably what led them to dismiss Ramus's treatment of *memoria*.

In addition to their imprecise gloss on Ramus, Pruchnic and Lacey also produce at least one passage that is inaccurate:

> One of the reasons rhetorical memory has been so hard to recuperate is likely that it was already an impoverished concept at the time of its "canonization." Indeed, although scholars typically benchmark the contemporary decline in attention to memory in rhetoric against its treatment in the *Ad Herennium*, the prominence of rhetorical memory in the Roman rhetorical scene already paled in comparison to its previous status in the early Greek cultural scene. (474)

Again, such a statement could only be made after a scholar has decided *a priori* that anything

smacking of mnemonics is "an impoverished concept." For someone interested in memory as a canon of rhetoric, this passage signals that Pruchnic and Lacey are not interested in drawing from rhetorical history in their effort to revitalize memory. Apart from *Ad Herennium*, the primary sources for ancient memory practices are eminently Roman—Quintilian's *Institutio Oratoria* and Cicero's *De Oratore*, which fully recommends the art of memory and mentions its popularity in ancient Rome. Beyond the Romans, the art of memory remained a living practice well into the middle ages—commented upon by Thomas Aquinas—and reached new heights of prominence in the early modern era. As the work of Francis Yates, Paolo Rossi, Lina Bolzoni, and others has attempted to demonstrate, this history does not "pale in comparison" to the treatment of memory in early Greece. At best, Pruchnic and Lacey provide here a normative statement on whether or not a particular area of rhetorical history is worth studying. At worst, this passage is objectively wrong.

I am not calling attention to these passages to question Pruchnic and Lacey's historical acumen but to demonstrate the kind of questionable glosses that occur when rhetoricians attempt to revitalize a canon without taking an interest in the canon's history. In this case, Pruchnic and Lacey are primarily concerned with rebuilding memory on psychological or critical grounds, as a sort of bridge between rhetoric and Theory. When their essay concludes in an extended critique of advertising and political campaigning, one cannot help but feel that memory for Pruchnic and Lacey is not an object of study in its own right but—returning to Vivian's point—a critical mode of inquiry. To reiterate, I believe this critical project is valuable. My analysis notwithstanding, I also believe Pruchnic and Lacey's article provides excellent ideas for it. However, I do not believe the project needs to be undertaken at the expense of history. If we are willing to look, we

will discover that the history of the *ars memoriae* proffers many texts and concepts for a contemporary renaissance of the fourth canon as both a rhetorical practice and a mode of inquiry.

This dissertation attends to memory as a rhetorical canon belonging to what James J. Murphy has called the "preceptive" tradition, that is, the tradition of rhetoric based upon "usable precepts (praecepta) . . . for human discourse" (Middle Ages 4). In other words, the dissertation attends to memory not as a natural, psychological, or communal activity but as a specific rhetorical practice or method. This attention means not conflating natural and artificial memory or subsuming the latter into the former. Contemporary rhetoricians often do both or dismiss artificial memory as an uncritical technique, mistakenly conflating the classical and modern connotations of the word artificial-artificial as a construction of human effort versus artificial as fakery-thereby missing out on the rich theoretical implications of artificial memory and its history. It is the former connotation, however, that one should keep in mind throughout the dissertation and that makes artificial memory worth studying. Rhetorical memory is an (art)ificial practice, requiring human habit and effort—and as a consequence, the art's resultant images and mental palaces are also designedly artificial. But "fabrication and artificiality," writes Bruno Latour, "are not the opposites of truth and objectivity" (*Reassembling* 124). Rather, truth can be approached precisely *because* humans work in artifice, proceeding by way of constructs and concatenation.

The constructs of artificial memory, I suggest, provide an excellent example of Latour's point. Remediated into purposely artistic and memorable sights and sounds, knowledge can no longer exist on a presupposition of direct, reified reference. Quite the opposite, knowledge *qua* mnemonic encourages its own deconstruction and reconstruction; it becomes a thing to be moved around and assembled in new places. Though memories in their natural sense arise with little

conscious effort, eliding their synthetic nature, the objects of artificial memory foreground their own constructedness. Indeed, mnemonic imagery in the classical and medieval periods is intentionally imaginative—and affective. With artificial memory systems, in other words, it is possible to exert a certain amount of agency over memory construction, to decide what is to be stored and what is to be forgotten. Yet artificial memory involves more than *memory-as-storage*, for with its systems, one decides not only *that* memories are to be stored but also *how* or *in what form* they are to be stored. Thus one needn't exchange history for critical theory or psychology to raise issues of memory construction (nor issues related to memory and affect). These issues are embedded in the history of artificial memory itself, from the sophists to the Ramist reformers. For that reason, it is one of the goals of this dissertation to return artificial memory to a central place in rhetorical history and rhetorical theory, ridding the word *memorization* of the pejoratives that often precede it. And so, with a commitment to artificial memory firmly established, we turn now to the classical definition and origins of that art.

ARTIFICIOSA MEMORIA

By tradition, memory is the fourth of rhetoric's five canons. The canons or divisions of rhetoric have been a system of classification at least since 90 BCE, when the anonymous Latin author of the *Rhetorica ad Herennium* laid out the five-part plan explicitly (Murphy et al., *Synoptic* 133). The canons invoked in that text are *inventio*, *dispositio*, *elocutio*, *memoria*, and *pronuntiato* or *acto*. The Greek counterparts are *heurisis*, *taxis*, *lexis*, *mneme*, and *hypokrisis* (Reynolds 1). However, there is no pre-Roman Greek text that groups the five parts of rhetoric into a single system, the way Latin treatises do. Aristotle's *Rhetoric* of course contains many classifications that have survived to the present day—the artistic *pisteis* of *ethos*, *pathos*, and *logos*; the three species of rhetoric, deliberative, judicial, and epideictic; the five parts of

discourse; the *topoi* or commonplaces of argument. However, Aristotle never explicitly enumerates the canons, though Murphy et al. admit that each can be found implicitly somewhere in Aristotle's writings (*Synoptic* 133). In Book 1 of the *Rhetoric*, for example, he uses *heurein*, "to find," to describe the invention of the means of persuasion; this verb continued to be used in later Greek treatises in association with the first canon (see Kennedy's footnote in Aristotle, *On Rhetoric* 38). Therefore, it is not unlikely that the canons emerged in Classical or Hellenistic Greece before adoption by the Romans. However, it is equally possible that the Romans systematized divisions that were only implicit in the Greek texts.

The most detailed classical source for memory as a definitively canonical practice is the *Rhetorica ad Herennium*, the same text in which the canons are first schematized. The distinction between natural and artificial memory is clearly articulated even in this early text (circa 90s BCE):

There are, then, two kinds of memory: one natural, and the other the product of art [*una naturalis, altera artificiosa*]. The natural memory is that memory which is embedded in our minds, born simultaneously with thought. The artificial memory is that memory which is strengthened by a kind of training and system of discipline. (III.xvi.28)

In straightforward manner, the anonymous author then explains that artificial memory is a method of improving the memory abilities bestowed by nature, similar to the artificial methods used by athletes to improve their natural bodies. The natural/artificial antithesis is found in many contexts in Greek and Roman treatises. There are, for example, natural things versus artificial things in Aristotle's *Physics*; natural versus artificial divinations in Cicero's *On Divination*; and even natural versus artificial lighting in Hippocrates' *About the Hospital*. A study of the

functions of this antithesis in classical culture would require a separate dissertation, but in general, "artificial" for the Greeks and Romans denotes some deliberate human effort or method meant to supplement or alter what nature has provided. Note that Aristotle's inartistic proofs are merely gathered and reported on by the rhetor, whereas the artistic proofs require deliberate construction with the rhetor's personal skill.

The practice of artificial memory therefore "develops" the natural memory, according to Ad Herennium, "by a method of discipline . . . so as to become exceptional" (III.vxi.29). Like most ancient authors, the author of Ad Herennium recognizes that one must already be endowed with a natural $ability^3$ —a good memory, in this instance—if artificial methods of enhancement are to prove advantageous; however, the author believes it is worth propagating the art of memory "to aid the less well-endowed" as much as possible. In short, the difference between natural and artificial memory is like that between learned and natural ability: "But just as in everything else the merit of natural excellence often rivals acquired learning, and art, in its turn, reinforces and develops the natural advantages, so does it happen in this instance." The suggestion here that natural memory is an ability possessed in greater or lesser degrees demonstrates that the natural memory of Ad Herennium is more associated with what today might be called "having a good memory" than with the psychological process by which senseimpressions turn into memories. Aristotle's De Memoria, to which we shall turn later in the chapter, grapples with both concepts-the ability to remember things versus the process of memory formation-but the author of Ad Herennium seems only to have the former in mind when speaking about natural memory.

As described in Ad Herennium, the method of artificial memory—which will recur in

³ C.f., Isocrates' discussion of natural oratorical ability in *Antidosis* and elsewhere.

multiple forms throughout history—is established from two primary ingredients: places⁴ and images (ex locis et imaginibus). The locus is like a background, a place easily remembered, such as a house, or a courtyard, or an intercolumnar space. Upon each background, one places an image, which is a manifestation of the thing to be remembered. Our Latin author further describes the images as *formae*, *notae*, and *simulacra*. The backgrounds are like wax tablets imprinted on the mind, while the images are like letters engraved upon the tablets. The backgrounds, once firmly implanted in the mind, are always available to be re-used, while the images can be removed and exchanged. Thus, "if we desire to memorize a large number of items, [we must] equip ourselves with a large number of backgrounds" (III.xvi.30). The images placed upon these entrenched *loci*, unlike the places themselves, should be exceptionally designed, "suitable for awakening memory," because humans more easily recall exceptional as opposed to mundane images—Ad Herennium suggests comic, violent, and active images (*imagines agentes*) to arouse the memory. Once the images are positioned in their places, the rhetor can move back and forth between the places—from beginning to end or from one point to any other—and retrieve each image in turn, thus recalling whatever the image stands for.

What each image stands for is a thing (*memoria rerum*) or a word (*memoria verborum*) to be remembered. As Cicero and Quintilian point out elsewhere, images for things—the general content or arguments of an oration⁵—are easier to construct than images for individual words. The author of *Ad Herennium* agrees, but his skepticism of the images-for-words technique appears in a sentence suggesting it was nevertheless a popular practice. There seems to have

⁴ Harry Caplan, in the Loeb Library edition, prefers "background" to translate *locis*, in order to dissociate mnemonic *loci* from the *topoi* of Aristotle and the *loci communes* of Cicero. Following Yates, I will mostly render the word as "place."

⁵ In *The Book of Memory*, Marry Carruthers writes: "the Latin word *res* is not confined to objects of our senses but includes notions, opinions, and feelings" (24-5).

been a Greek tradition, now lost, of creating handbooks filled with images for words:

I know that most of the Greeks who have written on the memory have taken the course of listing images that correspond to a great many words, so that persons who wished to learn these images by heart would have them ready without expending effort on a search for them. I disapprove of their method on several grounds . . . (III.xxiii.38)

Unfortuantely, *Ad Herennium* does not provide a long litany of images for words, but it does provide information about how this technique was to be performed. It was principally a combination of visual association and phonetic similarity, or homophony. For example, to memorize the line of verse

And now their homecoming, the kings, the sons of Atreus, are making ready (*Iam donum itionem reges Atridae parant*)

it is recommended to construct first an image of "Domitius [a plebian] raising his hands to heaven while he is lashed by the Marcii Reges [a member of a higher-ranked family]." The combination of *Domitius-Reges*—in a vivid scene of a public beating—is supposed to bring to mind the first part of the verse, *Iam donum itionem reges*. To memorize the second part, *Atridae parant* (Atreus' sons are making ready), the author recommends, quite sensibly compared to the first suggestion, constructing an image of two famous actors preparing to play the parts of Atreus' sons, Agamemnon and Menelaus (III.xxi.34).

Clearly, remembering an entire oration in this manner would be a laborious chore. The more sensible tactic is to construct images for *res*, that is, things or general content or arguments. This tactic is likewise based upon association and sound resemblance—"visualized homophony," as Mary Carruthers describes it (*Book of Memory* 105)—but in the context of memorizing *res*,

the method seems more straightforward. The example provided by *Ad Herennium* asks the reader to suppose he is defense counsel in a murder trial.

The prosecutor has said that the defendant killed a man by poison, has charged that the motive for the crime was an inheritance, and declared that there are many witnesses and accessories to this act. If in order to facilitate our defence we wish to remember this first point, we shall in our first background form an image of the whole matter. We shall picture the man in question as lying ill in bed, if we know his person. If we do not know him, we shall yet take some one to be our invalid, but a man of the lowest class, so that he may come to mind at once. And we shall place the defendant at the bedside, holding in his right hand a cup, and in his left tablets, and on the fourth finger a ram's testicles. In this way we can record the man who was poisoned, the inheritance, and the witnesses. (III.xx.33-34)

The cup reminds the rhetor of the poisoning; the tablets remind him of the inheritance, the will having been inscribed on a tablet; and the testicles of the ram are to remind him of the witnesses, *testes* bearing a sound resemblance to *testis* (Yates, *Art of Memory* 11). Although we in the twenty-first century are far removed from the psychology of ancient rhetors, it is perhaps possible to imagine how the images presented here could serve as mental prompts for the details of a particular court case. (The busy rhetor would be juggling multiple cases at any given time.)

Whether constructing images for things or images for words, artificial memory operates on these principles of visual and aural association, though the principle of visual association is the more common technique. In both cases, the author of *Ad Herennium* is insistent about the invention of vivid images. Public beatings, famous actors, murder scenes, a ram's testicles elsewhere, the author suggests assigning to images "exceptional beauty or singular ugliness," or disfiguring the images somehow, "as by introducing one stained with blood or soiled with mud or smeared with red paint." In *Art of Memory*—the principle text I have used to guide the preceding description—Frances Yates notes the bizarre and "weirdly populated" visuality of the imagined images: "We feel that we have moved into an extraordinary world," Yates writes, "as we run over his places . . ., imagining on the places such very peculiar images" (10). In other words, the art of memory is a *sensual* and *visual* art. The *Ad Herennium* explains its rationale for visualizing images in such a manner—their affective potential:

When we see in everyday life things that are petty, ordinary, and banal, we generally fail to remember them, because the mind is not being stirred by anything novel or marvellous. But if we see or hear something exceptionally base, dishonourable, extraordinary, great, unbelievable, or laughable, that we are likely to remember a long time. (III.xxii.35)

It is therefore imperative that the practitioner of artificial memory construct exceptional, evocative images in his mind. Otherwise, the images are likely to fade. That the art of memory is a visual art is therefore firmly established in *Ad Herennium*, and it will continue to be so throughout most of its history leading up to the Enlightenment. The importance of this visual precept will be discussed later in the chapter and throughout the dissertation.

THE ORIGINS OF ARTIFICIAL MEMORY

Ad Herennium provides the most detailed description of artificial memory among all the ancient sources for the art. Cicero offers a less detailed overview but a glowing endorsement in Book II of *De Oratore*. Quintilian is skeptical about the art's efficacy, but his *Institutio Oratoria* discusses its techniques and gives more details about the construction of *loci* than *Ad Herennium*. Pliny mentions artificial memory in *Historia Naturalis*, calling it a *memoria technica*. These

Roman treatises are not, however, the oldest sources. Both Frances Yates and Sharon Crowley ("Modern Rhetoric" 37) have noted that the oldest extant description of artificial memory occurs in the *Dissoi Logoi*, a sophistic document dating to ~400 BCE, three centuries prior to *Ad Herennium*. The passage on memory comes at the very end of this document and is short enough to reproduce in full:

A great and beautiful invention is memory, always useful both for learning and for life.

This is the first thing: if you pay attention (direct your mind), the judgment will better perceive the things going through it (the mind).

Secondly, repeat again what you hear; for by often hearing and saying the same things, what you have learned comes complete into your memory.

Thirdly, what you hear, place on what you know. For example, *Chrysippus* is to be remembered; we place it on *chrysos* (gold) and *hippos* (horse). Another example: we place *pyrilampes* (glow-worm) on *pyr* (fire) and *lampein* (shine). So much for names.

For things (do) thus: for courage (place it) on Mars and Achilles; for metalworking, on Vulcan; for cowardice, on Epeus. (translation in Yates, 29-30)

The passage is noticeably incomplete, as are most pre-Socratic fragments; however, even in this scrap of text that has survived the millennia, one can detect the artificial memory rules that *Ad Herennium* describes in more detail. There are images for specific words (the name Chrysippus) and images for general things (courage, metal-working, and cowardice). The images are constructed via the two familiar principles of visual association and sound resemblance. And the first lines of the passage suggest that the author understands *mneme* to be an artificial aid—an

"invention"—useful for enhancing natural memory. In fact, the author describes in the first lines what appears to me like the process of rote memorization. Perhaps the art of memory was seen as a sophisticated alternative to that process.

That the mnemonic art of constructing images for words and images for things, or general knowledge, is recorded in this early sophistic text makes it very plausible that when Plato discusses artificial memory in the Hippias dialogues, he means precisely the same sophistic art that would become classified as the fourth canon (Yates 30). Hippias was a sophist, and in both dialogues bearing his name, Socrates mentions his "artful technique of memory" (*Lesser Hippias* 368d), which enabled Hippias to memorize names, histories, and genealogies after one hearing (*Greater Hippias* 285d-286a).

Both the *Dissoi Logoi* and these early Platonic dialogues date to 400 - 390 BCE, confirming that the practice of artificial memory was well-established during the height of Classical Greece. According to legend, however, the originator of this art is an earlier figure named Simonides, who lived circa 556 – 468 BCE. The story of how Simonides invented the art of memory is attested primarily by Roman sources—Cicero, Quintilian, Pliny, and others. As the story goes, Simonides, a poet from Ceos,⁶ was attending a banquet given by a Thessalonian nobleman. After reciting some ill-received poetry to the noble host and his guests, Simonides was summoned outside the banquet hall by two visitors. During Simonides' absence, the roof of the banquet hall collapsed, killing everyone inside. When relatives came to collect their dead, they discovered that the corpses around the crushed table were so badly maimed that identification was impossible. Simonides, however, was able to recall the place of each guest at the table and thereby identify the bodies. His memory of the places at which the guests had been

⁶ Quintilian thinks this story is nonsense, but the fact that the legend of artificial memory's origins involves a lyric poet suggests that the art was initially developed in a poetic—and perhaps oral—milieu rather than in the law courts.

sitting suggested to Simonides that the orderly arrangement of mental images is the key to good memory. Cicero ends the story:

[Simonides] concluded that those who would like to employ this part of their abilities [memory] should choose localities, then form mental images of the things they wanted to store in their memory, and place these in the localities. In this way, the order of the localities would preserve the order of the things, while the images would represent the things themselves. (*De Oratore*, II. 354)

If this story of Simonides' invention of artificial memory was attested only by Latin sources, we would be forced to employ a degree of skepticism, stick to the extant Greek texts, and place the art's origin in Classical Greece in the late fifth century BCE, just before the dates of *Dissoi Logoi* and the *Hippias* dialogues. However, a Hellenistic source, dating to 264 BCE, also lends credence to the tale. The *Parian Chronicle*, engraved on a stele, reports chronologically on various Greek inventions and discoveries from 1582 BCE onwards. On this stele is found the following chronological marker:

From the time when the Ceian Simonides son of Leoprepes, the inventor of the system of memory-aids, won the chorus-prize at Athens, and the statues were set up to Harmodius and Aristogeion, 213 years [i.e., 477 BCE] (qtd. Yates 28-29)

That the Simonides story is attested by a Greek source a mere 130 years after the *Dissoi Logoi*'s description of artificial memory provides a decent warrant, I think, to push the art of memory's origin back a century earlier, to the era of Simonides, that is, to the beginning of the fifth century BCE or the end of the sixth. Yates sees no reason to doubt that Simonides "really did take some notable step about mnemonics," though she believes that the art of memory was ultimately "derived from an earlier oral tradition" (29).

I follow Yates in believing that Simonides—or some other figure around the turn of the fifth and sixth centuries—likely popularized or codified mnemonic practices that had been in circulation before writing returned to or became widespread in pre-Socratic Greece. From my perspective, I can detect no literate assumptions underlying the Simonides story; nor is there any assumption of literacy in the principles of visual association and phonetic similarity that constitute the precepts for image construction. Also note that the passage from *Dissoi Logoi* tells its readers to remember "what you hear," and that Plato's Hippias announces "Let me hear them once" when asserting he can memorize whatever facts Socrates throws his way. In other words, artificial memory does not seem to rely on literacy. Admittedly, the metaphor of memory as a wax tablet is used in Aristotle's *De Memoria*, but there, the comparison is to the impression of a seal or signet. Plato, who also uses the wax tablet metaphor, likewise speaks of seals and signets but not of letters (*Theaetetus* 191c-d). Ancient signets sport many designs and intricate engravings but not often writing. The metaphor of *letters* on wax appears only in later Roman treatises.

On the basis of extant evidence, then, we can place the origins of artificial memory at the latest around 500 BCE, during the lifetime of Simonides. What is the likelihood that the art was codified in an earlier, pre-literate age? The Greeks adopted the Phoenician alphabet in the early eighth century, so if the originating era is to be oral, we are faced—problematically—with 300 years between Simonides and an entirely oral society. However, in *Written Texts and the Rise of Literate Culture in Ancient Greece*, classicist Harvey Yunis notes that although alphabetic writing in Greece dates to the early eighth century, "writing was exceptional" for its first two centuries, used primarily for inscriptions or dedications on durable objects (4). It was not until the sixth century (500s BCE) that writing saw its first great expansion into the public realm.

Before then, despite the adoption of the alphabet for select practices, Greek life and society continued to develop primarily "without writing, relying on oral communication" (Yunis 5). David Diringer also notes that something like an organized book trade most likely did not arise in Greece until the 400s, and that the oral recitations of the rhapsodes continued to be popular despite the growth of literary writing in the 500s (*Hand-Produced Book* 230). The life of Simonides therefore corresponds to the same century in which Greek writing began to flourish beyond mundane or ritualistic engravings. In other words, to argue that artificial memory developed in a largely oral milieu (as both Yates and I believe is the case), we needn't place its origins 300 years but, more acceptably, only a century or so before Simonides to place it within a principally oral culture. Although 500 BCE remains the most supportable date for the development of some form of artificial memory, arguing for a date circa 600 BCE or earlier is not wild speculation.

Either way, artificial memory is clearly an ancient technique, pre-dating Aristotle's theorization of invention. It would become rhetoric's fourth canon but it may have been the first codified as a technique for orators—first for the poets, then for the sophists, and finally for public advocates. Pruchnic and Lacey write about "looking even further back into the early rhetorical tradition" to rediscover lost approaches to memory (473). They unearth the word *mnemosyne*, with its mythical and philosophical orientation, but ironically, the "impoverished" concept of artificial memory is just as ancient. Looking back into the rhetorical tradition means discovering mnemonics.

ARTIFICIAL MEMORY AS A VISUAL ART

Whether artificial memory originated in a literate or oral milieu is relevant not only to dating the art's origins. The question is also important for establishing the art of memory as a

radically visual and *imag*inative art, a point that will recur throughout the dissertation leading up to the final chapter, in which I will argue for a contemporary art of memory grounded entirely in visualization.

If *Ad Herennium* is the seminal text for understanding the fourth canon—and if *Dissoi Logoi* is its progenitor—it is impossible to deny the canon its visual character. Recall these texts' recommendations for image construction: various gods and heroes, humans soiled with blood, a plebian beaten in public, a ram's testicles—images with "exceptional beauty or singular ugliness." In all ancient treatises, the rhetor is encouraged to practice forming whatever images are to him most evocative. A Renaissance rhetorician would later admit to practicing the art by forming images of beautiful women. And in *Art of Memory*, Yates spends an entire chapter connecting artificial memory with the flourishing of medieval art.

However, certain contemporary rhetoricians ignore, downplay, or deny the visual nature of the fourth canon. For example, drawing on the work of Jack Goody, Joyce Irene Middleton argues that artificial memory is a product of a distinctly literate culture ("Oral Memory" 120). Focusing on the wax tablets metaphor, Middleton denies the art of memory its visuality by claiming a one-to-one correspondence between the construction of mental images and alphabetic writing. "The very notion of memory as 'inner writing,'" she argues, "shows the early influence of literacy on the rhetorical tradition of memory." From my perspective, however, everything about artificial memory suggests the opposite. To reiterate my earlier points, the principles for image construction are based on visual association and phonetic similarity, neither of which presumes literacy; the images themselves are to be unique and evocative, unlike the regularity of alphabetic writing; the oldest sources on artificial memory reference "hearing" but not "reading" things to be remembered; the story of Simonides relies entirely on the visual memory of a wandering poet; and the metaphor of letters—as opposed to signets—on wax tablets does not appear in the Greek texts. Indeed, Aristotle tells us that a memory impression, like a seal impressed on wax, is "some such thing as a picture" (*On Memory*, I, 450a 25).

I leave it to the reader to decide if s/he is convinced that the art of memory pre-dates alphabetic literacy in Greece; however, what is known with certainty is that literacy never completely usurped orality in Greece and, later, Rome. Rather, a culture of writing developed *alongside* traditional modes of oral discourse, "which maintained their centrality long after the introduction of writing" (Yunis 2). Artificial memory is best understood in the context of this lingering orality. Even if one were literate, it was not the practice—as it is the practice today—to recite a poem or deliver an argument while looking at a written text. Even literate rhetors had to commit their orations to memory. It is also worth remembering that texts in the ancient world were not compact or structured enough to be easily organized and sorted through. A Renaissance memory treatise notes that literacy was no substitute for memory:

... although men invented writing, they could not remember everything that they had written. Some time after this, they realized that they could not carry everything they had written around with them, and the things they needed to remember were not always available in written form, and so they invented a subtler art so that they were able to remember many things without any kind of writing, and this they called artificial memory. (qtd. Rossi 24)

Artificial memory was not like another kind of writing because *more writing* does not solve the problem of remembering in a particular moment what has been written. If one does not accept the argument that artificial memory possesses a visual and imaginative quality because it developed in an oral culture, then perhaps one can accept that the art's visual character arose

because rhetors required a semiotic mode that could be recalled and studied more readily than strings of angular letters. Writing, after all, adds an extra layer of convention to the one present in language itself. Associative images, on the other hand, perhaps come as close to unmediated representations as the human psyche is capable of producing. Hence the apparent efficacy of image construction. I would also point out that figuring the art of memory as an extension of literacy leads us to ask why literate rhetors would need an art of memory in the first place if the art operated on the same principles as writing. Rather, I believe the art of memory continued to be practiced centuries after the advent of literacy—and after the advent of print—because it afforded something that writing did not.

Taking the "letters on a wax tablet" metaphor as *the* guiding metaphor for understanding artificial memory is historically debatable, but the deeper issue is that associating artificial memory with writing obscures the imaginative, visual character of the art. Indeed, during the early modern period, the art of memory would be valued precisely because it offered richer semiotic possibilities than not only alphabetic writing but also language itself. Jay Bolter moves in the right direction when he says that the art of memory was designed to address "the gap between writing and memory" and that the way to do this was to write not with letters but with images ("Hypertext" 109). "Artificial memory," says Bolter, "was a method for visualizing one's speech and mapping it into a mental structure." Despite this insight, however, Bolter otherwise conflates writing and artificial memory just as Middleton does—"the art was a kind of mental writing"—so he does not elaborate upon the visual connection, delving instead into issues of linearity. He does not follow up on the generative idea that an art of memory is a way to "visualize" words and knowledge.

Cicero, on the other hand, has much to say about artificial memory's visual character:

As Simonides wisely observed, the things best pictured by our minds are those that have been conveyed and imprinted on them by one of the senses. Now the keenest of all our senses is the sense of sight. Therefore, things perceived by our hearing or during our thought processes can be most easily grasped by the mind, if they are also conveyed to our minds through the mediation of the eyes. (*De Oratore*, II.357)

Frances Yates amplifies the point:

The word 'mnemotechnics' hardly conveys what the artificial memory of Cicero may have been like, as it moved among the buildings of ancient Rome, *seeing* the places, *seeing* the images stored on the places, with a piercing inner vision which immediately brought to his lips the thoughts and words of his speech . . . The ancient memory was trained by an art which reflected the art and architecture of the ancient world, which could depend on faculties of intense visual memorisation which we have lost. (4)

In contemporary rhetorical theory, other scholars in addition to Bolter have also recognized that visual sense is an important feature of memory. Sharon Crowley's essay "Modern Rhetoric and Memory" offers an explicit acknowledgement that classical memory practices suggest a model of the fourth canon that is not "literacy-based" (39-41). Young and Sullivan's "Why Write?" considers the connection between spatial and linguistic memory, arguing implicitly that memory evokes semiotic modes that are not solely linguistic. And in Communication Studies, *Rhetoric, Remembrance, and Visual Form: Sighting Memory* has brought together numerous scholars who, from a critical perspective, are paying attention to the "intersections among visual culture and practices of memory," the "potency and fallibility of images as mediums of the past," and "the

simultaneously authentic yet manipulated qualities of memory as conjured through visual modes" (3). In the introduction to the collection, Bradford Vivian recognizes that memory and images were intimately linked in the classical era's memory practices, contending further that the same can be said for memory practices today:

Individual proficiency in the classical art of memory depended on a host of visual exercises, and contemporary techniques of memory improvement continue to rely on visually-based learning. The *ars memoriae* required orators to conjure elaborate mental images of roomy palaces or public spaces in order to memorize lengthy and complex discourses. Both personal and computational, or artistic and digital, memories find their *raison d'être* in the visual media upon which they rely. To remember, then as now, is to see. $(2)^7$

Reconnecting memory with visual modes of communication—that is, with visual rhetorics—is an active project in rhetorical theory. I would argue that the classical art of memory can both add to the rich discussions about memory and visuality occurring in the field as well as bridge those theoretical discussions with more pragmatic considerations related to rhetorical practice.

IMAGES FOR WORDS

So far, the close readings in this chapter have led me to argue that the rules for places and images are central to artificial memory. However, a close reading is what a reader takes from a page, a section, or a chapter of a text, and this may in fact be a partial selection that has deflected

⁷ Although Vivian makes explicit reference to the art of memory as a visual practice (and to Yates' work on the subject), he also argues that the visual dimension of the art was "a metaphorical substitute for cognitive mental operations" (6). This is perhaps true for Aristotle's discussion of mental imagery, but it is certainly not true for the *ars memoriae*, which took the creation of images quite literally and seriously. Also, although Vivian roots his discussion of memory and visuality in the classical era, none of the collection's thirteen authors do the same. References to twentieth century memory scholars—Yates, Carruthers, Rossi, Bolzoni—or to historical sources appear nowhere else in the text, its authors instead using memory the same way as Pruchnic and Lacey, as a "mode of inquiry" for cultural criticism.

more prominent elements. Texts, after all, are comprised of hundreds, thousands, or millions of words that exist at a scale more microscopic than that of pages, sections, or chapters, scales to which human readers are enculturated but which disguise the lexical totality of which texts are in fact constituted. But how does one gain a vantage point on an entire text? Does it necessarily involve *remembering* an entire text after having read it? That would seem difficult even for short texts, impossible for longer ones. What is needed instead is a complete but intelligible representation—an image—of a whole text, against which close readings might be quickly compared. This kind of representation is possible with natural language processing techniques (see Introduction) as well as with word clouds to visualize the data compiled by the NLP methods. Both the visualization and its back-end statistics provide a condensed image of an entire text against which a close reading can be compared. If, for instance, 'images' or 'places' or 'things' or 'words' do not surface in the top 10 or 15 most frequent terms in Ad Herennium's memory section, then scholars are probably wrong to place the rules for image construction at the center of the art of memory. Perhaps these rules simply form a peculiar and therefore notable section of a text that is otherwise focused on more mundane issues related to memorization. Perhaps scholars have given these rules a more central role in ancient memory practice than they deserve.

Such a finding would be unexpected, and we do not, in fact, find it. Clearly visible in the word cloud (Figure 1.1) are 'imagines', 'locos', 'verborum', and 'rerum'. Images, place, words, things. The close reading reflects the entire text accurately, which is easy to do in this case because the memory chapter in *Ad Herennium* isn't very long. The point is that close readings *need to be checked* against a textual whole to determine whether the reading reflects the whole or only a limited part of it.

Figures 1.2 and 1.3 provide word clouds for the memory sections of Cicero's *De Oratore* and Quintilian's *Institutio*, respectively. Table 1.1 provides the raw word counts and their relative frequencies (defined as the number of times a word appears in a text divided by the total number of words in a text). The word lists are truncated to fit in this space but are designed to put the terms with which this chapter has been concerned into perspective with other words from the texts. *De Oratore*'s most frequent terms more or less mirror *Ad Herennium*'s list. However, in Quintilian's *Institutio*, 'places' and 'images' for 'words' and 'things' appear at a less frequent rate. Although Quintilian is an important source for artificial memory, his description of it comprises a small portion of his chapter on memory (Book 11.2). Quintilian, like most people today, expresses incredulity at the art of memory and those who practice its mental gymnastics. "My precepts on the subject shall be of a simpler kind," Quintilian says, proceeding to describe a commonsense method of memorization with which anyone who has memorized a speech or a poem will be familiar. Nevertheless, in these images of three ancient texts, the precepts for artificial memory emerge as dominant principles.

HISTORICAL TENACITY OF ARTIFICIAL MEMORY PRECEPTS

Rhetorical memory, then, is an artificial method whose precepts are established by classical authorities, including Cicero. The precepts include mnemonic places and images; images for things, images for words; images that are evocative, affective; places that are familiar, orderly, easy to navigate. The nature of the images and places is highly adaptable and dependent on the rhetor's personal associations and inclinations. The nature of what is to be recalled (the words and things) is likewise adaptable and will depend on the rhetor's context. The method, however, is stable. Although the places, the images, and the knowledge remembered will evolve in medieval and early modern Europe beyond anything Cicero could have anticipated, or even



Figure 1.1 Most frequent words in Ad Herennium memory section



Figure 1.2 Most frequent words in De Oratore memory section



Figure 1.3 Most frequent words in Institutio memory section

4	TT
A.	п.

Cicero

Quintilian

imagines 13 / 0.7%	memoria 8 / 1.0%	memoriam 15 / 0.6%	
memoria 13 / 0.7%	locis 5 / 0.6%	memoria 12 / 0.4%	
locos 12 / 0.6%	verborum 4 / 0.5%	magis 10 / 0.4%	
meminisse 11 / 0.6%	memoriae 4 / 0.5%	memoriae 9/0.3%	
verborum 10 / 0.5%	ordinem 4 / 0.5%	rerum 7/0.2%	
locis 10/0.5%	animo 4/0.5%	maxime 5 / 0.2%	
loco 9/0.5%	rerum 4/0.5%	ediscere 5/0.2%	
res 9/0.5%	Simonides 3 / 0.4%	locis 5 / 0.2%	
causa 8/0.4%	imaginibus 3 / 0.4%	animo 5/0.2%	
natura 8/0.4%	imaginum 2/0.3%	loca 4/0.1%	
memoriam 8/0.4%	imago 2/0.3%	verbum 4/0.1%	
imaginibus 8/0.4%		verborum 4/0.1%	
imaginum 7/0.4%		sensus 3/0.1%	
similitudines 6/0.3%		imagines 3/0.1%	
artificiosa 5/0.3%		simulacris 3/0.1%	
		locus 3/0.1%	
		Cicero 3 / 0.1%	

Table 1.1 Most frequent words (count / relative frequency)

intended, the basic precepts of artificial memory will remain stable for centuries, leading up to the Enlightenment, when classical influence wanes and new mnemonic methods are devised to serve an increasingly scientific culture (a story told in Chapter 3).

That the precepts of artificial memory remain stable across the centuries can be demonstrated by looking at word usage in early modern English texts (circa 1500s – 1700s). Searching for 'artificial memory' and its spelling variants (e.g., 'artificiall memorie') in the Early English Books Online database uncovers 38 texts that use this phrase. 9 are stand-alone memory treatises; the remaining 28 come from other genres that flourished during the English Renaissance, from regional histories to treatises on the *ars praedicandi*. The 9 memory treatises' titles and their dates of publication are as follows:

The art of memory, that otherwyse is called the Phenix. A boke very behouefull and profytable to all professours of scyences. Grammaryens, rethoryciens dialectyke, legystes, phylosophres [and] theologiens (ca. 1545)

The arte of rhetorique for the vse of all suche as are studious of eloquence, sette forth in English, by Thomas Wilson (1553)

The castel of memorie wherein is conteyned the restoring, augmenting, and conserving of the memorye and remembraunce, with the safest remedies, and best preceptes therevnto in any wise apperteyning: made by Gulielmus Gratarolus Bergomatis Doctor of Artes and Phisike. Englished by Willyam Fulvvod (1562)

A Helpe to memory and discourse with table- talke as musicke to a banquet of wine : being a compendium of witty, and vsefull propositions, problemes, and sentences / extracted from the larger volumes of physicians, philosophers, orators and poets, distilled in their assiduous and learned observations, and which for method, manner, and referent handling may be fitly tearmed, A Second misselany, or helpe to discourse (1630)

Physiognomie and chiromancie, metoposcopie, the symmetrical proportions and signal moles of the body fully and accurately handled, with their natural-predictive-significations: the subject of dreams, divinative, steganographical, and Lullian sciences: whereunto is added the art of memorie (1653)

Mnemonica, or, The art of memory drained out of the pure fountains of art & nature, digested into three books : also a physical treatise of cherishing natural memory, diligently collected out of divers learned mens writings (1661)

The art of memory, a treatise useful for such as are to speak in publick (1697)

Memoria technica: or, a new method of artificial memory, applied to and exemplified in chronology, history, geography, astronomy (1730)

An artificial memory. Or, an easy method of assisting the memory of those that play at the game of whist. To which are added, several cases not hitherto publish'd (1737)

Instead of providing a close reading of each text to make an argument about the centuries-long stability of artificial memory's precepts, I utilized computational methods—the same ones used in the previous section—to examine the context of each occurrence of 'artificial memory' in these texts. "Context" is defined here as the paragraph(s) in which the phrase occurs, in addition to the paragraphs before and after it. (If the phrase occurred in a chapter or sub-chapter heading, I defined "context" as the two paragraphs following the heading.) The paragraphs surrounding 'artificial memory' were copied into a plain text file, then cleaned, processed, and examined with the Natural Language Toolkit (see Introduction). Treating each collection of paragraphs from these 9 memory treatises as a single text, it is possible to visualize which words are most frequently used alongside 'artificial memory' fifteen hundred years after Cicero and *Ad Herennium*. Table 1.2 provides the raw count; Figure 1.4 displays a word cloud to visualize the relative frequency of terms in the memory passages. Familiar terms surface immediately—almost as if the clouds are of English translations of the Roman texts.

If the same analysis is made on passages from the remaining 28 EEBO texts featuring the phrase 'artificial memory', the lexical signal is diminished but still noticeable (Table 1.3 and Figure 1.5).

From the Mediterranean to the home counties, from 0 CE to 1500 CE, the influence of Cicero and *Ad Herennium* has not been diluted, if we may judge by the word clusters exhibited in these texts. Whatever else it has become in the meantime, artificial memory in these 38 texts remains an 'art' based upon 'places' and 'images'.... But where are the 'words'? Early modern practitioners of the art of memory have seemingly abandoned the (always questionable) technique of devising images for words. Instead, the focus seems to have shifted entirely to images for 'things' or 'ideas'. (The occurrence of 'letters' in both lists is most likely due to the

memory 56	images 11	cicero 8	order 6	practice 5	ladies 4
things 36	nature 11	men 8	rooms 6	read 5	learned 4
places 23	remember 11	names 8	such 6	set 5	number 4
art 17	ideas 10	letters 7	writing 6	commit 4	precepts 4
artificial 16	man 10	many 7	best 5	head 4	self 4
good 15	fancy 9	natural 7	god 5	house 4	upon 4
place 12	mind 9	thing 7	method 5	imagination 4	
art 11	remembrance 9	thomas 7	person 5	king 4	

Table 1.2 Most frequent words appearing alongside 'artificial memory' in 9 early modern memory treatises

memory 87	men 19	images 13	longer 11	body 9	eyes 8
things 46	place 18	learned 13	master 11	discourse 9	labor 8
artificial 38	reason 18	order 13	objects 11	exercise 9	library 8
great 29	thing 18	desire 12	remember 11	love 9	sense 8
books 24	soul 17	good 12	intellect 10	matter 9	thoughts 8
mind 21	help 14	manner 12	judgment 10	power 9	children 7
letters 20	natural 14	easily 11	places 10	creatures 8	god 7
man 20	time 14	learning 11	art 9	distinct 8	imagination 7

Table 1.3 Most frequent words appearing alongside 'artificial memory' in 28 early modern texts



Figure 1.4 Word cloud, visualizing relative frequencies of terms in Table 1.2



Figure 1.5 Word cloud, visualizing relative frequencies of terms in Table 1.3

influence of a later memory artist, Raymond Lull, whose embellishments upon the classical art, discussed at length in the next chapter, included the use of symbolic letters to order knowledge.) Of course, it is not only the lack of images for words that marks a difference in these early modern texts. Returning attention to the titles above, notice as well that memory treatises from the eighteenth century do not address an oratorical art but apply artificial memory to special, non-oratorical subject matter for which images of words in a particular order may not have been altogether useful. And if we look closely at the list in Table 1.3—frequent words in the artificial memory passages in *non*-memory treatises—there is clearly a wider range of subject matter or intellectual influence flowing into these passages ('soul', 'books', 'reason', 'love', etc.) than can be detected in passages from the memory treatises. It is not just rhetoricians or mnemonists who are commenting on the art of memory. The art has clearly met with new intellectual and cultural content.

However, these lists demonstrate nonetheless that the core practice has not changed. As late as the 1600s, artificial memory remains a preceptive tradition derived from the original Greco-Roman art. Even English authors writing in the Lullian memory tradition—authors who rarely cite the classical sources and instead position Raymond Lull as the art's *fons et origo*—are clearly indebted to Cicero and *Ad Herennium*. The Lullian tradition in the texts analyzed above is best represented by Richard Saunders' 1653 treatise *Physiognomie*, which attributes artificial memory to Lull despite offering a definition of the art that could have been taken directly from *Ad Herennium*:

Artificial memory is nothing but an art to assist the natural; for without the one the other cannot subsist: If there were not a natural memory, the artificial would not avail much; but the natural having some inclination to an art or science, doubtless the artificial is very serviceable to it, and by the artificial that may be shortened, which otherwise would take up a long time: and this is it wherein Raymundus Lullius hath bestowed his endeavors, and by his exquisite learning found out the perfection of this . . . artificial memory. (371)

And Saunder's description of this Lullian art—based on symbolic letters—is plainly derived from the ancient precepts for *loci et imagines*.

Being thus exercised in the management of these letters, let him consider what he will profess, and so let him place it. If being a Preacher, he be to treat of Angels, his subject must be placed upon A . . . (375)

The art of memory, like much of rhetoric's preceptive tradition, is remarkably tenacious in the face of transmission and cultural transformation. It has survived the middle ages and been found useful in the early modern world of print and scientific advancement. It has not survived unchanged, of course, but its classical precepts remain largely intact. A traceable intellectual lineage, a chain of influences, exists between these early modern texts and the Roman texts—and, ultimately, the Sophistic *Dissoi Logoi*.

ARTIFICIAL MEMORY, AS OPPOSED TO "NATURAL" CONCEPTIONS OF MEMORY

That said, Pruchnic and Lacey, Allen, Gronbeck, and others are correct that the artificial memory of Cicero and *Ad Herennium* was not the ancient world's only conception of memory. Yet, as I demonstrate in the remainder of this chapter, the other conceptions are different from or tangential to the art of memory. Drawing a line in this manner between memory *qua* preceptive rhetorical practice and other classical discourse about memory serves as an historically grounded argument in favor of revitalizing the fourth canon and its history within the context of artificial memory. I am not arguing that the memory traditions described below have no value. I am

simply demonstrating that they are *different* traditions. Why the field has chosen to privilege these above the rhetorical one is undoubtedly a complicated issue, one that I will not address here. Instead, this section should be read in the context of the dissertation's larger argument for returning to artificial memory in contemporary theory and practice. It can also be read as an implicit challenge to scholars to defend their decision to look outside the rhetorical tradition when revitalizing rhetoric in the contemporary moment.

(a) Mnemosyne

Pruchnic and Lacey's article begins with *mnemosyne*—the personification of memory in ancient Greece, the mother of the Muses, and a powerful figure in Greek theology. Gold tablets found in ancient Greek tombs—often called *Totenpässe*, passports for the dead—reference *mnemosyne* as an immortalizing power which allows the deceased to continue drinking from the well of memory even in death. Classicist Richard Janko provides a translation of one of these tablets of *mnemosyne*, which is representative of the essentially theological or mystical *ethos* associated with her.

This is the tablet of Memory. When he is about to die, let (the initiate) write this . . . (To the initiate:) You will find on the right in Hades' halls a spring, and by it stands a ghostly cypress-tree, where the dead souls descending wash away their lives. Do not even draw nigh this spring. Further on you will find chill water flowing from the pool of Memory: over this stand guardians. They will ask you with keen mind what is your quest in the gloom of deadly Hades. They will ask you for what reason you have come. Tell them the whole truth straight out. Say: "I am the child of Earth and starry Heaven, but of Heaven is my birth: this you know yourselves. I am parched with thirst and perishing: give me quickly chill

water flowing from the pool of Memory." ("Forgetfulness" 99)

Seeking the perpetuation of our mortal memories in Hades, we have traveled far beyond the rhetorician's practice of constructing mental images for words and images for things. She may be a metaphysically stimulating figure, but *mnemosyne* is not the *memoria artificiosa* of Cicero and *Ad Herennium*. A revival of rhetoric's fourth canon that begins with her is not a revival of the fourth canon.

Other commenters on memory do not stray so far from recognizably rhetorical figures. Two texts commonly referenced in relation to rhetoric and memory are Plato's *Phaedrus* (Welch, "Platonic"; Young and Sullivan, "Why Write?"; Bolter, "Hypertext") and Aristotle's *De Memoria* (Allen, "Faculty"; Gronbeck, "The Spoken and the Seen"). I will analyze each in turn.

(b) Plato

In the Platonic framework, memory operates by way of mental images formed via sensory experience. However, for Plato, these sensory images are lesser forms of knowledge compared to the *eidoi*, the Ideas or Forms, the non-sensory essences apprehended by the soul before its descent into the world and to which philosophy compels us to return. More powerful than earthly memory images is the soul's reminiscence of the *eidoi*—indeed, the Forms are what allow one to make sense of earthly memories at all. In the *Phaedo*, Plato introduces this idea that non-sensory essences are what enable humans to decipher sensory experience. Benjamin Jowett condenses the passage:

[E]qual pieces of wood or stone may be associated with the higher notion of absolute equality. But here observe that material equalities fall short of the conception of absolute equality with which they are compared, and which is the measure of them. And the measure or standard must be prior to that which is measured, the idea of equality prior to the visible equals. And if prior to them, then prior also to the perceptions of the senses which recall them, and therefore either given before birth or at birth. (381-82)

It is the *eidos* of Equality which allows humans to recognize material equalities that present themselves to the senses (and which then form images in memory). Both sensory experience and subsequent memory images are therefore part of the shadow world that philosophy is designed to help us escape. "True knowledge [for Plato]," Frances Yates explains, "consists in fitting the imprints of sense impressions on to the mould or imprint of the higher reality of which the things here below are reflections" (36).

In *Phaedrus*, the soul's search for essences remains Plato's central conception of memory. It is not only the *eidoi* of material relations which are presented as superior in this dialogue, but the *eidoi* of all knowledge—material and moral (*Phaedrus* 247d-e). In his famous speech on the soul, Plato's Socrates waxes eloquent on the Platonic conception of memory, equal parts philosophy, myth, and theology, imagining the *eidoi* as truths known in immortality but forgotten on Earth; thus is philosophy figured as the exemplary art of memory by which the essences are recalled, if only dimly.

... A human being must understand speech in terms of general forms, proceeding to bring many perceptions together into a reasoned unity. That process is the recollection of the things our soul saw when it was traveling with god, when it disregarded the things we now call real and lifted up its head to what is truly real instead. For just this reason it is fair that only a philosopher's mind grows wings, since its memory always keeps it as close as possible to those realities by being close to which the gods are divine. A man who uses reminders of these things
correctly is always at the highest, most perfect level of initiation, and he is the only one who is as perfect as perfect can be.

... But not every soul is easily reminded of the reality there by what it finds here—not souls that got only a brief glance at the reality there, not souls who had such bad luck when they fell down here that they were twisted by bad company into lives of injustice so that they forgot the sacred objects they had seen before. Only a few remain whose memory is good enough; and they are startled when they see an image of what they saw up there. (249b-250a)

By the light of this speech, one sees why later in the dialogue Plato's Thamus chastises Theuth for his invention of writing. Writing, Theuth contends, will make men wiser and give them better memories. Famously, Thamus begs to differ:

> this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. The specific which you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of truth. (275a-b)

For Plato, the efforts of memory are to be spent on remembering the soul's beatific vision of true essences. Aids to earthly memories are aids to lesser forms of knowledge, but worse, this particular aid—writing—fosters memorial slothfulness. Instead of seeking the memory of absolutes through philosophy, people will assume they already possess knowledge because it putatively exists somewhere on a papyrus roll.

Aside from the *Hippias* dialogues, Plato never addresses artificial memory directly, so one can only infer what he might have thought about artificial memory, given its method of

populating one's mind with sensory images to recall earthly subject matter. Janet Coleman doubts Plato's support of the technique. Platonic memory, Coleman writes, is nothing less than "the means by which the rational part of the soul can be brought to a conscious reflection" on eternal truths; it is therefore "very different from that other [memory] tradition, according to which the lyric poet Simonides of Ceos invented the mnemonic art of memory" (12-13). Coleman argues that Plato therefore would have "scorned" artificial memory. Frances Yates makes the same argument. Platonic rhetoric, she writes, is at the service of dialectically secured truth: it is "an art of speaking the truth and of persuading hearers to the truth" (Yates 37). As the means by which the soul remembers the *eidoi*, memory is therefore the "groundwork" of Plato's entire conception of rhetoric, not one canon among many but the canon that makes the others possible. And that is why, according to Yates, "artificial memory as used by a sophist would be anathema, a desecration of memory." A Platonic art of memory would not concern itself with phonetic tricks to recall words or visual tricks to recall things; rather, a Platonic art of memory would have to be organized "in relation to the realities"—indeed, it would be nearly synonymous with philosophy itself. St. Augustine, the Christian Platonist, provides a possible clue as to what this Platonic memory might look like. Exploring his memories in the Confessions by using the places and images of artificial memory, Augustine goes looking for the absolute knowledge of God but finds neither place nor image.

> Thou hast given this honour to my memory to reside in it; but in what quarter of it Thou residest, that I am considering: For in thinking on Thee, I have passed beyond such parts of it as the beasts also have, for I found thee not there among the images of corporeal things; and I came to those parts to which I have

committed the affections of my mind, nor found thee there. . . . And why seek I

now in what place thereof Thou dwellest? . . . Place there is none. (qtd. Yates 47) One can imagine Plato saying the same thing about the *eidoi* and about the art of memory's inability to aid one's remembrance of them. The tricks of artificial memory are not designed to recall essences or absolutes.

Along with Kathleen Welch ("Platonic") and Richard Weaver (*Ethics of Rhetoric*) I believe that one can infer from Plato's dialogues a full theory of rhetoric. However, in a Platonic rhetoric, the canon of memory—connected to knowledge of essences—would likely not be synonymous with an art of improving the memory faculty. It would instead point towards theology and, as Welch contends, psychology ("Platonic" 10). So, to contemporary rhetoricians who want to revive the fourth canon without artificial memory, I recommend they heed Welch's call to find a place in the field for Platonic rhetoric. There, they will find texts on memory that do not tarnish themselves with mnemonics.

(c) Aristotle

Recall that *artificial* in the natural/artificial antithesis implies a deliberate human effort or method. It is a learned ability that supplements the abilities bestowed by nature. As such, any art will by necessity share traits with whatever natural function it supplements. It does not follow from this fact that one need attend only to the natural to understand the artificial, or that both are the same sort of thing. When Pruchnic and Lacey write that the art of memory was "designed to mimic or amplify" the natural processes of thought, they are, as I noted, making a true but trivial statement. To repeat my analogy, it is like saying the methods of athletic training are designed to mimic or amplify natural anatomical movement, which is of course true, but it is *not* true—it does not follow—that anatomy and athletic training are the same thing. The latter cannot be enfolded into the former without losing knowledge particular to the training of athletes. Likewise, the art of memory cannot be enfolded into psychology without loss of content. In this analogy, *Ad Herennium* is a book on athletic training and Aristotle's *De Memoria* is a book on anatomy. There is overlap, but any reference to or implication of artificial memory in Aristotle's text is a practical illustration of a more basic psychological argument, as both Yates (*Art of Memory* 35) and Paolo Rossi (*Logic* 7) explicitly acknowledge.

For instance, in *De Memoria*, Aristotle recognizes—as do the memory treatises and as does Plato—that memory requires images (*On Memory*, I, 450a 25-30). But Aristotle is not concerned with the images' creative enhancement for memorization purposes (or with their relation to abstract *eidoi*). Rather, Aristotle—an eminently empirical man—is concerned with how it is that humans think about things that are not physically before them. Sensory experience, he decides, leaves an impression in the mind, like a seal impressed on wax, and this impression is "some such thing as a picture" (*On Memory*, I, 450a 25). Thus, when we remember things, we remember impressions or pictures of former sensory experience. Mnemonic images, in the Aristotelian sense, represent a natural psychological process. But this process raises a pressing question for Aristotle:

But then, if this truly describes what happens in the genesis of memory, (the question stated above arises:) when one remembers, is it this impressed affection that he remembers, or is it the objective thing from which this was derived? If the former, it would follow that we remember nothing which is absent; if the latter, how is it possible that, though perceiving directly only the impression, we remember that absent thing which we do not perceive? Granted that there is in us something like an impression or picture, why should the perception of the mere

impression be memory of something else, instead of being related to this impression alone? (I, 450b 10-20)

Here, Aristotle asks the same question I asked at the beginning of the chapter regarding memories of the Civil War. Does recalling a representation of a past experience count as an unmediated recollection of the experience? But Aristotle asks this question not about commemorative objects but about personal, psychological memory-formation itself! We recall pictures or images of past things, not the things themselves—so how can we be sure that memory of the past bears any relation to the past?

Aristotle, the intellectual optimist, answers by saying that pictures in the mind are like any other kind of picture: they can be viewed as mere pictures—absolute objects of thought in their own right—or as likenesses—relations to some other thing. The image becomes a "mnemonic token" rather than just an image floating in the mind when it is contemplated as a likeness of the actual thing. In *Ancient and Medieval Memories*, Janet Coleman elucidates on Aristotle's idea:

Both memory and thinking require images. Aristotle therefore believes that the material world can be known, the sensible forms and the memory images being true likenesses without the materiality of the external object of sense experience. In fact, he believes that one thinks of certain magnitudes existing outside oneself by means of small scale models created in one's mind . . . So too a memory image of a scene is a copy of that scene. He seems to imply at times that one's memory image is a copy of one's *perception* of that scene rather than of the objective scene itself, so that the memory image agrees with the past *perceiving* of a past object of perception. (17)

Coleman goes on to note that Aristotle nevertheless trusts human sense perception to produce an accurate image of the objects of perception. By extension, memory can be (in theory) trustworthy, as well. The senses perceive an experience; perception forms mnemonic impressions; we contemplate these impressions as likenesses of the past perceiving of sensory experience. Thus memory, in Aristotle's formulation, ultimately "belongs to the sensing faculty" (Bloch, *Aristotle* 120).

When humans contemplate these mnemonic images as likenesses of former perception, they also comprehend that time has elapsed between the perception and their contemplation of the image of the perception—and this combination of elapsed time and past perception is what Aristotle seems to mean when he talks about *memory*. For Aristotle, then, memory is primarily the automatic process by which images or pictures are formed in the mind when we experience something, and secondarily, the elapse of time between the formation of images and ruminations on them.

Memory, however, is different from recollection in Aristotle's philosophy. Recollection "is a deliberate effort to find one's way among the contents of memory, hunting among its contents for what one is trying to recollect" (Yates 34). In other words, memory is passive imprinting but recollection is an active method of thinking and associating; while "memory belongs to the sensing soul, recollection [belongs] to the thinking soul" (Bloch 75). For Aristotle, it is not memory *per se* but the ability to recollect—to move systematically and associatively among the mental images formed by past sensory experience—that enables all rational thought and philosophizing. "Without a presentation [a mental picture], intellectual activity is impossible," Aristotle contends (*On Memory*, I, 449b, 31), and intellectual activity commences as soon as one begins to form logical associations or to construct links between the "presentations."

Given this insistence on the visual character of memory formation and the deliberate, associative movement among mental images during recollection, why shouldn't we classify *De Memoria* as the same sort of memory text as *Ad Herennium*? Isn't Aristotle describing a process similar to the one followed by practitioners of artificial memory? I grant that *De Memoria* bares a much closer resemblance to artificial memory than either Plato's work or the mythics of *mnemosyne*. However, I find three problems with placing *De Memoria* into the same genre as the artificial memory texts described earlier.

First, images for Aristotle result from sense perception; they are not constructed deliberately and are therefore synonymous with the passive imprinting of experience. Images are not mnemonic prompts in the Aristotelian scheme. Aristotle's understanding of *recollection* is something like an art insofar as it requires deliberate effort. However, image construction is no part of recollection; indeed, recollection presumes the existence of images already imprinted on the mind, ready to be traversed in a logical way, that is, via association. There is nothing artistic about image construction in *De Memoria*. In contrast, the construction of images is central to the rhetoricians' art of memory.

Second, the purpose of *De Memoria* is to describe the natural function of the memory faculty. Aristotle is not concerned with practical applications of this knowledge. He is theorizing natural memory based on observations of how memory works, including, to be sure, observation of those who practice artificial memory. In *De Memoria* and elsewhere, Aristotle points to the art of memory as an *example* of what he is talking about regarding memory and recollection. He writes that recollection "depends upon the potential existence of the stimulating cause. For this

reason some use places [*topoi*] for the purpose of recollecting. The reason for this is that men pass rapidly from one step to the next; for instance, from milk to white" (*On Memory*, II, 452a 8-16). Similarly, in *De Anima*, he says that "it is possible to put things before our eyes just as those do who invent mnemonics and construct images" (427b 18-22, qtd. Yates 32). And at the end of the *Topica*, Aristotle compares artificial memory with the principles of argumentation expounded in that text:

For just as in a person with a trained memory, a memory of things themselves is immediately caused by the mere mention of their places [*topoi*], so these habits too will make a man readier in reasoning, because he has his premises classified before his mind's eye, each under its number. (*Topica*, 163b 24-30)⁸

Aristotle thus points to the art of memory as a confirmation of his ideas about natural memory and recollection. However, he does not recommend *De Memoria* as a treatise for improving the memory faculty with artificial means.

Finally, the point at which natural memory formation turns into deliberate recollection that is, the point at which Aristotle introduces something that could arguably be called artificial memory—is the point at which he begins to downplay the role of images and places. Recall that memory for Aristotle is the process by which images of sensory experience are formed, while recollection is the deliberate, rational movement among the images. The first chapter of *De*

⁸ It has been proposed by Sharon Crowley and others that Aristotle's *topoi* are extensions of mnemonic *topoi*, the memory palaces in which images are situated. The passage above from the *Topica* does indicate that Aristotle noticed a superficial resemblance between argumentative *topoi* and the places of mnemonic technique; however, it is an open argument among classicists whether or not the latter somehow prompted or inspired *topoi* in Aristotle's particular dialectical sense. (For an overview of the issues involved, see Iovan Drehe's "The Aristotelian Dialectical Topos," 130-32.) Aristotle himself never claims this. Nor did anyone else until the twentieth century: the suggestion first occurs in Friedrich Solmsen's *Die Entwicklung der aristotelischen Logik und Rhetorik*, a 1975 publication of Solmsen's 1928 dissertation. I remain skeptical. There are hundreds of *topoi* in the *Topica*, and if Aristotle had developed these with mnemonics explicitly in mind, one would expect more than his passing mention at the very end of the text. In addition, Aristotle never makes the mnemonic comparison in other texts wherein he discusses *topoi*, namely, in *Rhetoric*. Nevertheless, if Aristotle's *topoi* are in fact refigurings of mnemonic *topoi*, they are so radically refigured for dialectical purposes that they no longer resemble an art of memory. They are, rather, an art of logic and quasi-logic modeled on the (natural) processes of recollection and association.

Memoria addresses the former. The second chapter addresses the latter, and at times, it does read like a mnemonic treatise, though one quite different from *Ad Herennium* or *De Oratore*, for what we actually discover in this second chapter is an exploration of the logical principles of similarity, dissimilarity, and contiguity:

Acts of recollection, as they occur in experience, are due to the fact that one movement has by nature another that succeeds it in regular order. Whenever therefore, we are recollecting, we are experiencing certain of the antecedent movements until finally we experience the one after which customarily comes that which we seek. This explains why we hunt up the series (of movements) having started in thought either from a present intuition or some other, and from something either similar, or contrary, to what we seek, or else from that which is contiguous with it. Such is the empirical ground of the process of recollection. (II, 451b 10-20)

How the mind moves from one mental point to another via logical relationships is the central concern of *De Memoria*'s second chapter, and, as Yates points out, it contains some of Aristotle's most confusing passages (*Art of Memory* 34). I would argue that the primary reason for the confusion is that Aristotle almost always relies on *non-visual* examples. For instance:

It seems true in general that the middle point also among all things is a good mnemonic starting-point from which to reach any of them. For if one does not recollect before, he will do so when he has come to this, or, if not, nothing can help him; as, e.g. if one were to have in mind the numerical series denoted by the symbols A, B, G, D, E, Z, I, H, O. For, if he does not remember what he wants at E, then at E he remembers O; because from E movement in either direction is possible, to D or to Z. But, if it is not for one of these that he is searching, he will remember (what he is searching for) when he has come to G if he is searching for H or I.

Where are the Grecian palaces? Where are the testicles and famous actors? Where are the gods and heroes? Aristotle's alphabetic association appears quite different from the visual and phonetic associations of *Ad Herennium*.

Later, Aristotle does attempt to spatialize mental images when he talks about their temporal associations, but even here, Aristotle's movement toward the visual takes on an abstract, mathematical character. Indeed, in this section, Aristotle makes a comparison not only between recollection and the art of memory but between memory and geometry: "Things arranged in a fixed order, like the successive demonstrations in geometry, are easy to remember (or recollect) while badly arranged subjects are remembered with difficulty" (II, 452a 1-5). So, although Aristotle does state that mental images are a part of memory, they disappear in his discussion of deliberate recollection. And although Aristotle explains how to move among the mental images, he builds his "places," such as they are, with logical and mathematical relations rather than with architectural imagery. Both points lead me to believe that *De Memoria* is not a treatise on artificial memory at all but a psychological grounding of the methods of logical thought expounded in *Topica* and elsewhere.

Aristotle did, it seems, find value in the art of memory, his references to it being nowhere reproachful.⁹ And according to Diogenes Laertius, he even wrote a treatise on the subject that has since been lost. However, despite Aristotle's beliefs about the efficacy of artificial memory

⁹ However, Roberto Medda points out that Aristotle's allusion to artificial memory in *On Dreams* introduces with a dubitive form the claim of those who use *topoi* to recollect things: "Those, for example, *who believe* themselves to be mentally arranging a given list of subjects according to the mnemonic rule" (qtd. Medda 81, emphasis added).

techniques, I believe *De Memoria* is only tangentially related to rhetoric's fourth canon as developed by the Greek sophists and the Roman rhetoricians. The mental imagery of *De Memoria* is passively imprinted, not actively constructed; movement between images is based on "places" in an abstract mathematical sense, not in a physical architectural sense; and the entire treatise is a description of the natural functions of memory, not an art designed to improve that faculty.

Nevertheless, I grant without condition that one finds in Aristotle's treatise, if not an art of memory, then a *psychological justification* for the art of memory—and this is precisely how scholars would read *De Memoria* in the late middle ages (Yates 32), even as they continued to practice the imaginative techniques of *Ad Herennium*.¹⁰ So, Gronbeck and other contemporary rhetoricians who want to revitalize the fourth canon by returning to Aristotle remain more connected to the canon's history than those who return to the Muses. I would simply reiterate the need to recognize that *De Memoria* is something like a psychological explanation of why artificial memory techniques seem to work but not a source for the techniques themselves, and certainly not a source for rhetorical applications of the techniques.

CONCLUSION

In this chapter, I have argued that the Greeks and Romans distinguished between natural memory and artificial memory, and that artificial memory—the art of memory—was a visual art of constructing mnemonic images for words and images for things and placing those images in ordered architectural spaces, referred to today as *memory palaces*. This memory art was the primary concern of rhetoricians and it was almost certainly the first of rhetoric's five canons to

¹⁰ Ironically, later scholars would look to *De Memoria* as a justification for the art of memory, though Aristotle himself looked to the art of memory as one justification for his ideas in *De Memoria*.

be codified into precepts. Artificial memory is therefore the original "rhetorical memory" in the preceptive tradition. For that reason, it is misguided to subsume artificial memory into natural memory, to demote artificial memory to mere memorization or uncritical technique, or to trade artificial memory for mythical, philosophical, psychological, or critical understandings of memory. To do so severs current revivals of the canon from the canon's own history, as well as from ancient understandings of the relationship between rhetoric and memory.

And not just the ancient understanding. As demonstrated earlier, fabricating images for words and knowledge was to remain the defining characteristic of the fourth canon for centuries to come. Thus, in 1509, when a voice is given to Dame Rhetoric in the allegorical poem *The Pastyme of Pleasure*, she describes the canon of memory in the following manner:

Yf to the orature many a sundry tale One after other treatably be tolde Than sundry ymages in his closed male [bag] Each for a mater he doth than well holde Lyke to the tale he doth than so beholde And inwarde a recapitulacyon Of each ymage the moralyzacyon

Whiche be the tales he grounded pryvely [in secret] Upon these ymages sygnyfycacyon And whan tyme is for hym to specyfy All his tales by demonstracyon In due order maner and reason Than each ymage inwarde dyrectly The oratoure doth take full properly

So is enprytned in his propre mynde Every tale with hole resemblance By this ymage he doth his mater fynde Each after other withouten varyance Who to this arte wyll gyve attenduance As thereof to knowe the perfytenes

In the poetes scole [school] he must have intres (qtd. Rossi 63-4)

This poem, written by Stephen Hawes, is the first extant document to describe artificial memory in English. At the time of its publication, two thousand years had passed since the rules had been set down in *Dissoi Logoi*, rules which are here intact but obviously changed—Moralizations? Memorizing tales instead of poems or arguments? Images taken from the mind and put, materially, into a bag? The fourth canon has been transformed somehow in the intervening centuries. The purpose of the next two chapters is to study that transformation through the middle ages and the early modern period.

Chapter 2: Memory as Mnemonics

In "Memory Issues in Composition Studies," John Frederick Reynolds offers several *memory-as-X* schemes to classify approaches to the fourth canon. One of his schemes serves as the approach adopted in this chapter—*memory as mnemonics*. In the previous chapter, I made a distinction between artificial and natural memory, arguing that rhetoricians historically focused on the former but that contemporary scholarship has broken with that tradition and shifted focus to the latter. In this chapter, I continue to distinguish between the two types of memory, exploring the artificial mnemonic systems devised throughout history "to facilitate thinking, retention, and recall" (Reynolds 8).

The general argument of the chapter is that mnemonics are more than bygone curiosities. Insofar as they have grown from the tradition of rhetoric's fourth canon, they exist, as do all rhetorical practices, at a nexus of historically situated forces. "Every discipline of rhetoric," writes Nan Johnson, "is the creature of historical circumstances" (*Nineteenth-Century* 12). Rhetorical practices transform in tandem with the societies in which they are embedded; they respond to the "changing needs of societies and cultures, accommodating not only an everchanging theoretical disposition but also an ever-rearranging coalition of 'traditional' and innovative arts" (Johnson 13). Commenting upon the canon of invention, Peter Simonson echoes Johnson's argument about the mutability of rhetoric, stating that changes to the first canon track the "articulations" of rhetorical theory and practice within "larger patterns of thought and activity at a particular junction in history" ("Reinventing" 299-300). The same can be said for the canon of memory and its preceptive mnemonic systems, which until recently were understood to be part of the rhetorical tradition. Situated in different eras, places, and cultures, mnemonics reflect the social and epistemological concerns of those who use them and offer an interesting proxy for the ever-changing position and role of rhetoric in society. Studying the ways rhetoric responds to evolving material and social conditions is a central concern of the field, so the historical transformations undergone by artificial memory systems should also be of interest to historians of rhetoric and to rhetorical theorists generally. In this chapter, I provide an overview of several mnemonic systems, then explore how they reflect the social ecologies from which they emerge and in which they are practiced—in particular, the chapter focuses on the evolution of the fourth canon in the long transition between the pagan classical era and the Christian middle ages, beginning with its neglect by the Church fathers, then uncovering its traces in the "dark ages" of the early medieval period, and ending with its reclamation for didactic purposes in the hands of Thomas Aquinas and other Scholastic philosophers. In the conclusion, I explore the influence of mnemonic forms—mentally imprinted sights, sounds, and associations—on emotion, behavior, and ideology.

Before I begin, however, some definitional housekeeping must be attended to. In the last chapter, I described the fourth canon with a few interchangeable terms: artificial memory, the art of memory, mnemonics, and method. In this chapter, I want to begin applying the terms more carefully. The art described in Chapter 1—creating vivid mental prompts from places and images (*ex locis et imaginibus*)—is by no means the only memory system known to history, as the last paragraph has already implied. It is most likely the oldest system, developed and used by the poets, sophists, and orators of classical Greece, but it influenced other systems, as well. For the remainder of the dissertation, I want to reserve "art of memory" for denoting this original mnemonic technique of converting words and knowledge into images and locating those images in ordered mental palaces. In *The Book of Memory*, Mary Carruthers calls this the "architectural"

mnemonic tradition, and I will also use architectural mnemonics interchangeably with art of memory, for both *art* and *architecture* invoke the visual, spatial quality of this memory practice.¹¹ In contrast, "artificial memory" and "mnemonics" will now be general terms to denote precepts or systems, of whatever type, that aid human memory. The art of memory, then, is a specific technique of artificial memory. The term "method" is reserved for another type, one discussed at length in the next chapter.

"THE REPOSITORY FOR ALL THINGS . . . "

Mnemonics are defined here as systems or precepts devised to aid the memory—but the memory of what? It is often assumed that the sole purpose of the classical art was to learn an oration by rote. It is my belief that this erroneous notion accounts for the lack of interest in mnemonics among contemporary scholars in rhetoric and composition. Certainly, rote memorization was *a* purpose. In the middle ages, for example, mnemonic techniques were used to learn scripture word-for-word, memorization of the Psalms being a particularly important requirement for Christians, according to Carruthers (*The Book of Memory* 87). And in the *Ad Herennium*, memory is defined at the outset as "the firm retention in the mind of the matter, words, and arrangement" of a public speech (I.ii.3). However, later in that formative memory text, the author expands his characterization of memory, defining it as "the treasure-house of the ideas supplied by invention" and "the guardian of all the parts of rhetoric" (III.xvi.28), definitions that would resound throughout the middle ages and the early modern period. The author of *Ad Herennium* also professes skepticism (as does Quintilian) about using mnemonic

¹¹ "Local mnemonics" or "method of *loci*" are other terms used to refer to the classical art of memory, but in the middle ages and afterward, especially in the nineteenth century, these terms also refer to simplified arts of memory that retained the concept of *loci* but abandoned the creation of images. More on this in Chapter 3.

images to learn words by rote, arguing that mnemonic images for *res*—things, matter, particular or general knowledge—are much more sensible. Recall *Ad Herennium*'s unforgettable example of a dead body, a last will, and a ram's testicles: these are offered by the author as mnemonic images for remembering, not words to be delivered at a court case, but the issues and context of the case itself. Even this practical handbook suggests that the precepts of the fourth canon are useful for more than rote memorization of speeches, though its techniques could be used for that purpose.

In other classical texts, the art of memory is also prescribed as suitable for purposes beyond memorizing an oration. The Dissoi Logoi, for example, describes the art of memory in the context of recalling names. In Plato's Greater Hippias, the sophist Hippias, who "has the art of memory," states that he can use his art to memorize long genealogies and accounts of historical events (285d-286a). In Natural History, Pliny the Elder provides a list of "memory feats" accomplished by famous practitioners of the art, including the Greek philosopher Charmadas, who knew the contents of all the volumes of a library, as well as Mithradates of Pontus, who used the art to learn 22 languages (qtd.Yates, Art of Memory 41). Quintilian likewise mentions historical figures who used artificial memory techniques to learn languages and dialects (11.2.50-51). These stories, whether or not they are embellished, demonstrate that from its classical conception, the art of memory was used not only to memorize speeches by rote but to retain and recall knowledge of all sorts. This partially explains why Ad Herennium, Cicero, and other historical sources consistently link the canon of memory with the canon of invention. "One must know the whole past with its storehouse of examples and precedents," writes Cicero in De Oratore. "Nor should one fail to master statutes and the civil law" (I.17-18).

He concludes with a rhetorical question that echoes *Ad Herennium*'s description of memory as a treasure-house for invention:

What can I say of that repository for all things, the memory, which, unless it be made the keeper of the matter and words that are the fruits of thought and invention, all the talents of the orator, we see, though they be of the highest degree of excellence, will be of no avail? (I.17-18)¹²

In Cicero's view, the art of memory can be used to recall not only pre-written orations but also knowledge from a variety of sources to be called upon when constructing new texts or when speaking *ex tempore*. Mnemonics should therefore not be equated exclusively with rote memorization of words to be delivered in an official oral context. From the classical era through the Renaissance, the art of memory was valuable for retaining, recalling, and assembling many types of knowledge for public and private purposes. Tracing the history of mnemonics therefore uncovers not only the techniques devised to recall knowledge but also the types of knowledge people have found necessary to recall, as well as the mnemonic forms used to re-construct that knowledge in memory. Artificial memory, in other words, exists at the nexus of a society's rhetorical practice and its epistemological outlook.

MEMORY SYSTEMS

Although this dissertation focuses predominantly on the art of memory—the visual, architectural system—I want to devote part of this chapter to a discussion of other memory systems. These systems play a role in the story of rhetorical memory told in the second half of this chapter and in the following chapter, so they need to be introduced in some detail. (In the

¹² This passage is J.S. Watson's translation. May and Wisse render "fruits of thought and invention" as "the ideas and words that we have devised and thought out."

interest of organizational and narrative clarity, and so the reader has a single reference section, I have elected to introduce these systems all at once.) I have classified the systems separately, but certain ones share obvious similarities, given that all mnemonics operate within the constraints of human psychology. In addition, it should be noted that the following classifications are my own and therefore open to debate. Nevertheless, it is certain that the Greek art of memory is not history's only mnemonic device. Other systems have co-existed as separate traditions, and it is important to recognize them as such. Also, it it is worth discerning how the art of memory bears or does not bear a resemblance to these other mnemonic systems—as the root of the fourth canon's evolution, so to speak, it has exerted influence on most subsequent mnemonic systems. I will discuss the following systems in order: aural mnemonics; systems of textual segmentation; the major system; alphabetic mnemonics; systems of *notae*. I will offer an overview of each system or technique, providing representative examples of each but treating only those details relevant to subsequent sections of the dissertation. More comprehensive work on these systems will be necessary if the field is to have a complete picture of memory practices utilized by rhetors in the past and in the present.

Aural Mnemonics

Recall that the art of memory makes use of phonetic similarities to produce mnemonic imagery—Mary Carruthers calls it "visual homophony" (*Book* 105). The *Dissoi Logoi*, for instance, says that to remember the name *Chrysippus*, one can form an image of gold (*chrysos*) and a horse (*hippos*). The ram's testicles of *Ad Herennium* are suggested because *testes* sounds like *testis*, or witnesses. Similar aural techniques abound in the archives of artificial memory, forming their own mnemonic tradition. Of course, aural tricks pre-date the Romans or Greeks. For example, acrostic verses—in which letters or syllables in a line of verse spell out a word, a message, or a phonetic prompt across multiple lines—are found in the Hebrew Tanakh, specifically in Psalms and the Book of Lamentations (Assis, "The Alphabetic Acrostic"). Acrostic verses are also found in Chinese "ring poems" (Greene, *Princeton Encyclopedia of Poetry* 6) and in Akkadian sources from ancient Mesopotamia (Sweet, "A Pair of Double Acrostics").¹³ However, there is no evidence to suggest that acrostics in these other traditions were used to train the memory.

In contrast, acrostics in European history have long been a popular aural device associated with artificial memory. For example, in a 1683 text entitled *The Divine Art of Memory, or The Sum of the Holy Scriptures*, John Shaw used an acrostic system to order alphabetically all the verses in each book of the Bible (Figure 2.1), which, apparently, was to make the books easier to memorize. Acrostics were also applied to philosophy. William of Sherwood's *Introductiones in Logicam*, composed in the thirteenth century, contains the first extant use of a mnemonic line used as a pedagogical tool for centuries afterward, "B**a**rbara celarent dar**ii** feri**o**," in which the first or last vowel in each word summons one of Aristotle's four valid syllogisms, traditionally indexed as A, E, I, and O. Acrostics—or something like them—have also been applied to music, where the goal is to use syllables to memorize the notes attached to them. The most famous example of this type of musical acrostic is *Ut Queant Laxis*, or the Hymn to John the Baptist (Figure 2.2), in which the first syllables in each line correspond to a note in a major scale.¹⁴ This musical acrostic is attributed to an eleventh century Benedictine

¹³ Some might quibble with my categorizing acrostics as an "aural" mnemonic because acrostics require writing and page space and are therefore visual in nature. It is true that acrostics are inventions of literate cultures, but I would argue that the sound of the letters or syllables is as important to the function of acrostic verse as the layout of graphemes on a page. Because "visual" in this dissertation primarily denotes non-linguistic imagery, I have opted to classify acrostics as a separate, sound based mnemonic technique.

¹⁴ This is the basis of the modern *solfège* music education system.



Figure 2.1 John Shaw, The Divine Art of Memory



Figure 2.2 Hymn to John the Baptist, a musical acrostic

monk named Guido of Arrezo, but today, "re, mi, fa, so, la" is impossible to hear without calling to mind the updated, secular version from Rodgers and Hammerstein's *The Sound of Music*: "*Doe*, a deer, a female deer. *Ray*, a drop of golden sun . . ."—the point of which is to teach children scales in a memorable way. As this example suggests, acrostics, musical or not, remain a popular mnemonic device even in contemporary contexts. The Wikipedia article "List of Mnemonics" catalogs well over one hundred such acrostics, including Every Good Boy Does Fine (to remember lines of the musical staff, from E to F), Do Kings Play Chess on Fine Green Silk (to remember biological taxonomies, Domain, Kingdom, Phylum, and so on.), as well as using the *c* in stalactite and the *g* in stalagmite to remember that stalactites form on the *c*eiling, stalagmites on the ground.

In addition to acrostics, aural mnemonics also make use of rhyme. Rhyming verses were used by young lawyers during the late middle ages to remember canon law; there were rhymed library catalogues to be memorized by monks; Alexander de Villedieu (d. 1240) in his *Doctrinale* provides 4,000 rhymed hexameters detailing the rules of Latin grammar (*Book of Memory* 80; Murphy, *Rhetoric* 146); and the acrostic line mentioned in the last paragraph— William of Sherwood's "Barbara celarent darii ferio"—is in fact taken from a longer rhymed verse in Sherwood's text for memorizing other details of syllogisms. Like acrostics, rhymed mnemonics remain popular pedagogical tools in contemporary contexts. For example, latitude and longitude are often taught in combination with FLAT and LAUNCH to help students remember the direction of each on a map (I have this on good authority from a local fourth grader). And although they are perhaps out of date, the rhymes "In 1492, Columbus sailed the ocean blue" and "Thirty days hath September, April, June, and November" also point to the continuing tradition of rhyme as a mnemonic device. Other contemporary mnemonic devices use neither rhyme nor acrostics but utilize the "visual homophony" suggested in the classical memory treatises. Medical mnemonics offer the most obvious illustrations. For example, the saying "A lady between two majors" is used to remember that the latissimus dorsi is surrounded by two major muscles, the teres major and the pectoralis major—the *lati* is between two *majors* (medicalmnemonics.com). Similarly, "The duck is between two gooses": the thoracic *duct* is positioned between the azygous and the esophagus. And the phrase "You stand on your soles" is used to remember that the soleus muscle is vital for standing and walking. These aural mnemonic tricks are nearly identical to the ones proposed in *Ad Herennium*, suggesting that the interplay of sound and image has for two thousand years been recognized as a valuable means of constructing mnemonic forms.

Segmentation

Quintilian's reasonable advice for memorizing an oration is to divide the whole into smaller parts (*Institutio*, 11.2). The subdivisions should not be too lengthy, but nor should they be too short, according to Quintilian, "otherwise they will be too many in number." It is in this passage that one finds the earliest extant description of a common-sense mnemonic technique familiar to anyone who has memorized poetry or lines in a play: subdivision of a whole into parts. Quintilian is generally skeptical of the art of memory. Segmentation of texts into small, easily digestible chunks is his preferred practice, and he seems to imply that dividing passages literally on the page, in writing, is a good way to go about it. Quintilian admits, however, that one way to remember the location within the whole of a "particularly difficult" segment is to mark it with a shorthand symbol or *notae* (more on which in a moment). Throughout history, however, most rhetoricians and scholars who adopted Quintilian's common-sense mnemonic scheme—most of whom, like Quintilian, eschewed architectural mnemonics—opted to utilize

numbers rather than symbols to mark the subdivisions, whether on the page or in the mind or both.

For the clearest example of a system of numbered segmentations, Mary Carruthers points to a text by Hugh of St. Victor (d. 1141) called "De Tribus Maximis Circumstantiis Gestorum," which she translates as "The Three Best Memory Aids for Learning History."¹⁵ In this text, St. Victor applies the scheme to memorization of the Psalms. The student is to form in his mind a sort of mental grid numbered from 1 to 150, each numbered space corresponding to one of the psalms. Then the student is to attach the incipit of each psalm to its proper number, the incipit being the right amount of text that can be seen in a mental glance. Finally, the student is to form mental grids out of each psalm itself and to further subdivide each into its own numbered segments. Once the Psalms have been judiciously secured in these nested mental grids, St. Victor tells us, one can thereafter "retain . . . the whole series one verse at a time; first by dividing and marking off the book by [whole] psalms and then each psalm by verses." The idea, then, is to divide a text "into a fixed number of sections." What the mind cannot recall in a single expanse it can recall in brief, segmented, numbered units. This scheme utilizing numbered segments, Carruthers argues, extends back to the late Roman Empire, for both St. Augustine (d. 430) and St. Jerome (d. 420) refer to the numbered orderings of the Psalms in such a way that suggests it was a taught mnemonic device (Book of Memory 96-7). The implication is that early Christians were segmenting the Scriptures into numbered "chapter and verse" as a memory practice a thousand years before it became a widespread citation practice.

¹⁵ The "circumstantia" of the title refer to "who? what? when? why?" questions, which were thought of as mnemonic prompts for facilitating invention. This text is a preface to St. Victor's *Chronica*, a history book which supplied visual diagrams for teaching history to young students. For more information, see Carruthers, *Book of Memory* 347. For the text, see Hugh of St. Victor, "Three Best Memory Aids" in *Medieval Craft of Memory*.

This particular mnemonic technique was likely influenced by ancient technologies of page segmentation by which writing was organized on papyrus rolls and, later, on papyrus and vellum codices. Quintilian generally would have been working with papyrus rolls, and these were consciously divided into margins, columns, and lines by those who wrote them. According to David Diringer, the margin and column sizes vary widely in Greek and Latin papyri (*Hand-Produced Book* 137), suggesting that it was already the practice for writers to structure pages according to their own needs rather than to a fixed standard. Quintilian's suggestion to segment an oration on the page, with plenty of space between the subdivisions, would have been congruent with contemporary Roman writing practices. In addition, his suggestion to mark segments with symbolic *notae* finds a parallel in earlier Greek papyri, on which major section divisions are often indicated with a fanciful shape or drawing, called a *coronis* (Diringer 159) (Figure 2.3).

Of course, it is impossible to know whether or not Quintilian had *coronides* in mind when composing the memory section of *Institutio*; nevertheless, as a memory art, segmentation of a whole into parts was certainly enabled by and already implicated in ancient writing technologies. I would argue that these technologies likely influenced the development of mnemonic segmentation. We will return to this subject later in the chapter, when we consider the reasons why the early Christian era generally neglected the visual art of memory in favor of Quintilianesque segmentation systems.

The Major System

While the classical art of memory is designed to memorize and recall knowledge of any kind, the major system is designed to aid memorization of numbers. This system operates on the assumption that recalling words is simpler than recalling numeric information. The practitioner is

10

MUTTAKEDNAJTCHAITCH NOTUNITKOA 53 M A CUC e KAJA RAIJ AC 20 YNGHAYJ -H TY 9673

Figure 2.3 Coronides in ancient Greek manuscripts. Wikipedia, "Coronis"

to associate consonant sounds with each number, 0 - 9, and then, when memorizing long numbers, to form words out of the ensuing consonant clusters, inserting vowels where necessary. Because vowels do not map onto numbers, different strings of numbers can be converted into different words, according to the learner's own preferences. (Some early major systems—for example, the one found in Dr. Richard Grey's 1730 treatise *Memoria Technica*—did attach vowels to numbers, but this was quickly found to be less efficient than attaching consonants only.) Figure 2.4 provides an example of a "key" to a basic major system:

1	2	3	4	5	6	7	8	9	0
T	N	M	R	L	P	F	H	Q	S
\mathcal{D}	Ng	/			В	V	Sh	K	\mathcal{Z}
Th	-1	a. 8.	- 1 i.e			W	Ch	G	
6	- 15 - 2	* # ₁₂	#2				J	£.	

Figure 2.4 Major system. A.E. Middleton, Memory Systems New and Old

Once the number-consonant associations are memorized, it is a simple task to create words to represent even very long numbers or lists of numbers. For example, 123 corresponds in the key above to d-n-m, or *denim*; 32 corresponds to m-n, or *man*; 12,332 corresponds to d-n-m-m-n, or *denim man*. Throughout the eighteenth and nineteenth centuries, many different keys of this type were devised. Nearly all putatively "novel" mnemonic systems published during the nineteenth century were nothing more than major systems with new keys, each purporting to expedite more natural word construction (Middleton, *Memory Systems* 25-51).

The major system is useful only to people who need to memorize long lists of numbers, and unsurprisingly, it was devised in the 1630s by a French mathematician and astronomer named Pierre Hérigone, in his *Cursus mathematicus*. A decade later, in 1648, a German named Stanislaus Winkelmann published this system as a general memory technique in *Relatio Novissima ex Parnasso de Arte Reminiscentiae* (Atkinson, *Memory Culture* 88). However, it must be pointed out that Hérigone's system is nearly identical to the Hindi Katapayadi system, which dates to seventh century India and was also utilized by astronomers and mathematicians (Sarma, "Kaṭapayādi Notation on a Sanskrit Astrolabe"). It is entirely plausible that this system for converting numbers into words was invented in two separate times and places, first by Indian astronomers and much later by a European mathematician; after all, the system operates, more or less, upon a basic mnemonic principle of remediation. However, it is equally plausible that the technique was transferred from India to Europe in a text (probably Arabic) now lost. Hérigone, unfortunately, does not mention the provenance of his system.

Whether or not Hérigone invented the system independent of Hindustani influence, it was not destined to be associated with him; instead, it was to be popularized in the nineteenth century by a printer and mnemonist named Major Beniowski, in his oddly titled *The Anti-Absurd or Phrenotypic English Pronouncing and Orthographical Dictionary*. Today, the "major" system is named after Major Beniowski, and it is popular among participants in memory competitions, including former World Memory Champion Dominic O'Brien ("Dominic system"). Another contemporary mnemonist, Akira Haraguchi, reportedly memorized pi to 100,000 digits by using Japanese kana in his major system (Otake, "How can anyone remember").

Alphabetic Mnemonics

Using letters of the alphabet as the basis for a memory system dates back to *De Memoria*, in which Aristotle describes associative recollection—in his convoluted, non-visual way—with the use of Greek letters.

... as, e.g. if one were to have in mind the numerical series denoted by the symbols A, B, G, D, E, Z, I, H, O. For, if he does not remember what he wants at E, then at E he remembers O; because from E movement in either direction is possible, to D or to Z.

Aristotle, of course, did not intend *De Memoria* to be a treatise on artificial memory, and there is scant evidence to suggest that alphabetic memory systems were widely used in the classical era. However, *De Memoria*, valued in the middle ages as a justification for the art of memory, did motivate the use of letters in later memory systems, all of which presaged contemporary indexing systems for text organization. Mary Carruthers has compiled copious evidence to demonstrate that alphabets-and not just the Latin or Greek-were widely used in the middle ages to order material for recollection. "Tables of Greek, Hebrew, Coptic, runic, and even wholly imaginary alphabets," Carruthers writes, "are found side by side in a number of monastic manuscripts" (Book of Memory 109). Each grapheme taken from the various writing systems was used as a mnemonic form to which words or knowledge was indexed, alphabets serving as alternatives to the imaginary *loci* of architectural mnemonics or the pictorial *notae* of Quintilian. This alphabetic method would continue to be popular well into the early modern era. One of the most famous Renaissance practitioners of artificial memory, Peter of Ravenna (d. 1508), boasts at the beginning of his treatise, The Phoenix, that he "placed" 20,000 legal extracts, 1,000 texts from Ovid, 200 from Cicero, 300 philosophical sayings, and 7,000 biblical passages onto 19 letters of the Roman alphabet (qtd. Carruthers 114). For those with less superhuman powers of memory, more "memory space" was of course required than any single alphabet could provide. Hence why rhetors and writers adopted alphabets from languages they did not speak or invented

their own graphemes.¹⁶

As the middle ages transitioned into the early modern period, memory treatises began to appear that combined alphabetic mnemonics with the visual art of memory. In these treatises, alphabets are converted into images, and each image resembles (or is supposed to resemble) a letter—for example, the end of a pitchfork for M or a horn for C. Thomas Bradwardine, in the 1300s, developed the earliest idea of a "pictorial alphabet" (Carruthers, Medieval Craft 229), but Jacobus Publicius, in the late 1400s, printed the first real example of such an alphabet (Middleton, Memory Systems 12-13). Johannes Host von Romberch's treatise Congestorium artificiose memoriae, one of the most widely circulated memory treatises in sixteenth century Europe (Rossi 20), made use of a pictorial alphabet (Figure 2.5), although Romberch's fame as a defender of orthodox Catholicism against the heretic Martin Luther may have contributed as much to the popularity of his text as the efficacy of his particular mnemonic technique (Grey, "Johann Host" 489). And the Ars Reminiscendi of Giovan Battista Della Porta, published in 1602, demonstrates the use of human figures for its pictorial alphabet (Figure 2.6), harkening back to Ad Herennium's recommendation to form mnemonic images with actively moving humans (Bolzoni, Gallery 98-99).

The Franciscan Ramon Lull, born on Majorca in the thirteenth century, added a spiritual element to the use of letters in a mnemonic system. The Lullian art operates on a multiple indexing and is designed to recall information that is at once very particular and, in Lull's mind, entirely universal: each letter—B through K in Lull's system—is indexed first to a divine

¹⁶ Rhetors using architectural mnemonics would have faced the same predicament: running out of *loci* on which to inscribe mental imagery. Quintilian advises using stops on a long journey as *loci*, and rhetors in later centuries describe how, when traveling, they took mental pictures of locations to be used as new mnemonic places.



Figure 2.5 Visual alphabet. Johannes Romberch, Congestorium Artifocise Memoria



Figure 2.6 Human alphabet. Giovan Battista Della Porta, Ars Reminiscindi

attribute of God (B for *bonitas*, C for *magnitudo*, D for *eternitas*, and so on), then indexed to different logical relationships or qualities (B for *differentia*, C for *concordantia*, D for *contrarietas*, and so on), and finally to different subjects to which the art might be applied, each subject representing a step in the great chain of being (Figure 2.7), ascending from the elements to minerals to vegetables and finally to humans, angels, and the Almighty (Yates, "The Art of Ramon Lull" 116). The idea is to systematize and recall the attributes of God as they exist and interact at different levels of creation. Yates explains further:

The Art works on every level of creation, from God, to the angels, the stars, man, animals, plants, and so on—the ladder of being as envisaged in the Middle Ages—by abstracting the essential bonitas, magnitudo, and so on, on each level. The meanings of the letter notation change in accordance with the level on which the Art is being used. (*Art of Memory* 179)

Yates demonstrates the system in the case of B for *bonitas*, as it moves up and down the ladder of creation.

On the level	Deus	B = Bonitas as a Dignitas Dei				
	Angelus	B = the bonitas of an angel				
	Coelum	B = the bonitas of the zodiac and the planets				
	Homo	B = bonitas in man				
	Imaginativa	B = bonitas in the imagination				
	Sensitiva	B = bonitas in the animal creation				
	Vegetiva	B = bonitas in the vegetable creation				
	Elementiva	B = bonitas in the four elements				
	Instrumentiva	B = bonitas in the arts/sciences				

So indexed, the letters can then be put into a combinatorial wheel and connected to one another in a vast array of permutations, operating like some kind of medieval decoder ring (Figure 2.8) which explains why Lull's art and the systems it inspired are often referenced as *ars combinatoria* as well as memory arts. The letters are to be set out in complex triangulations and combinations in order to visualize "the complex relations of the Names with one another as they are in the Godhead, before extension into the creation, and as aspects of the Trinity" (Yates, *Art* 181). For Lull, a Neoplatonist and Christian mystic, true knowledge of the universe meant knowledge of God's attributes as they exist in creation and in the triune Godhead. His alphabetic system was designed both to aid the memory of and, indeed, to discover this supernatural knowledge. Letters for Lull were therefore not mere *loci* or *notae* as Quintilian or bookish monks might have understood them. Rather, they were indices of universal truths; to recall the letters and their permutations was to meditate upon knowledge of the divine.

Lull's combinatorial art can be made slightly more coherent by comparing it with the less metaphysical versions conceived by Italian rhetoricians in the sixteenth century. The combinatorial systems of these later scholars were known as "rhetorical machines" (Figure 2.9) and were designed to invent arguments from a limited number of principles, just as Lull's art had been devised to discover the complex relations of divinity from a limited number of attributes and logical relations. In her extensive study of the rhetorical machines, Lina Bolzoni points to the sixteenth century humanist Orazio Toscanella as a prime example of a rhetor whose combinatorial system was, in theory, "capable of providing the necessary discourse for any occasion" (Figure 2.9) (*Gallery* 71). Toscanella's system was comprised of four wheels, each wheel further comprised of several interlocking layers and, of course, many associative letters. As with Lull's proto-decoder ring, the wheels' layers could be moved in various directions,



Figure 2.7 Ladder representing the hierarchy of creation. Ramon Lull, *Liber de ascensu et descensu intellectus*



Figure 2.8 Lull's combinatorial system. Cramer, "Words Made Flesh"



Figure 4.9 "Rhetorical machines." Orazio Toscanella, Armonia di tutti i principal retori
resulting in combinations that automatically produced a new statement or proof.

To prove that God is eternal, Toscanella writes, 'I go to the figure that contains universal subjects, with the letter S in the centre, and in chamber B I find God.' ... 'I go back to the figure that contains absolute predicates, with A in the centre, and there I look for the predicate that goes with "eternal," and I find "duration" in chamber D of the above-mentioned figure of absolute predicates; then I get the means in figure A in chamber C for size, and I form the discourse in the following manner: The thing that has infinite size has eternal duration. God is infinite, and therefore God is eternal.' (qtd. Bolzoni 71)

The procedure is automatic. Because subjects and predicates are associatively linked to the letters and symbols, the wheels, when used correctly, "work just like machines for thinking and writing." This idea is a material and very literal application of the way classical orators were to have moved within their memory palaces to facilitate invention.

Although these rhetorical machines and Lull's art enact the classical link between memory and invention, they do not utilize vivid imagery. They are alphabetic and diagrammatic mnemonic systems, devoid of the *imagines* recommended by Cicero and *Ad Herennium*. In the late 1500s, a mystic named Giordano Bruno would return imagery to Lull's purely alphabetic art in the form of occult, astrological figures. We will return later in the chapter to Lull and in the next chapter to Bruno, but for now, it is enough to note that both arts—especially Lull's—can be categorized with earlier memory systems that used alphabets as mnemonic indices for material to be remembered.

Notae

Quintilian seems to be talking about images when he describes the use of notae to mark

segmented passages for remembrance—he suggests, for example, an anchor to mark a passage on navigation. However, in Quintilian's view, as I have already written, the art of memory is more mental trouble than it is worth. His preferred mnemonic system is to segment a text into smaller, easily remembered chunks. (He even reduces mnemonic *loci* to literal places on a written page.) His advice to attach a few pictures, here and there, to particular passages as temporary prompts, is as far as Quintilian goes with the imagery. Quintilian's *notae* are therefore not quite the same thing as the *imagines agentes*—the vivid, active images—of *Ad Herennium* and Cicero. In effect, *notae* for Quintilian serve more as *loci* than as imagery. Words and knowledge are not remediated into images so much as placed beside pictures that function like shorthand notation for a particular passage. Quintilian in fact compares his pictorial *notae* with the shorthand writing of ancient Rome, of which there were two types: the system of *sigla*, single letters used to represent an entire word; and the famous Tironian notes¹⁷, or *notae*, which utilized syllabic abbreviations (Capelli, *Elements* 1). Quintilian's *notae*, then, are shorthand picturesymbols to be attached, if necessary, to certain segments of a subdivided text.

Though his artificial memory advice is not too interesting, Quintilian makes a connection between his pictorial *notae* and another memory system that is perhaps not so dryly useful. Toward the middle of *Institutio*'s memory chapter, Quintilian mentions the artificial memory of Metrodorus of Scepsis, a contemporary of Cicero:

> ... This makes me wonder all the more, how Metrodorus should have found three hundred and sixty different *loci* in the twelve signs of the Zodiac through which the sun passes. It was doubtless due to the vanity and boastfulness of a man who was inclined to vaunt his memory as being the result of art rather than of

¹⁷ Named after Cicero's scribe and slave, Marcus Tiro, who is said to have invented but probably did not invent the shorthand system.

natural gifts. (11.2.22)

The signs of the Zodiac are certainly—or certainly can be turned into—vivid images, but Metrodorus apparently used them as *loci* into which he placed words and knowledge to be remembered. Quintilian also implies in *Institutio* that Metrodorus positioned in his Zodiac *loci* not images but shorthand writing—actual Tironian *notae*. Mentally writing shorthand symbols in the Zodiac, Metrodorus of Scepsis was able to perform many substantial memory feats for which he was famous. (He is mentioned by Quintilian, Cicero¹⁸, and Pliny, among others.)

Metrodorus' technique was clearly inspired by the art of memory, but it is not the same kind of system. It is, instead, a "bastard descendant of the classical art," in Yates' words (*Art* 43)¹⁹. Precisely how did Metrodorus' technique work? There are 12 signs in the Zodiac, each of which governs 30 degrees of celestial longitude. Each sign is further divided into three decans, represented as planets, that govern 10 degrees within each sign. With 3 decans in each of the 12 signs, there are 36 "places" within the Zodiac upon which Metrodorus could have mentally scrawled his *notae*. Quintilian, however, tells us that he in fact found 360 "different localities in the twelve signs of the Zodiac," which leads Yates to surmise that Metrodorus further divided each of the 36 decans into 10 smaller spaces (40). Today, the whole concept seems comically elaborate. But if we exercise our imaginations, place ourselves into a certain classical or, more aptly, a medieval mindset, we can appreciate that a memory system based on the Zodiac "sounds rather awe-inspiring and might give rise to rumors of magical powers of memory" (Yates 40)—

¹⁸ From *De Oratore*: "... and Scepsius Metrodorus in Asia, who is said to be still living ... who used to say that, as he wrote with letters on wax, so he wrote with symbols as it were, whatever he wished to remember, on these places which he had conceived in imagination." (II.360).

¹⁹ One may assume that Quintilian sensed a vague similarity between Metrodorus's system and his own advice about marking passages with *notae*-like pictures because neither system uses *imagines* or *loci* in the fashion suggested by Cicero and *Ad Herennium*. Unconcerned with visualizing knowledge or architectural order, their systems use *notae* as mnemonic prompts. For Quintilian, these are simple pictures to mark particular passages; for Metrodorus, *notae* are shorthand notations in the literal, orthographic sense.

as it did give rise to them.

Notae, in the late Roman Empire and the middle ages, would continue to evolve in a benign direction as shorthand symbols, punctuation, and abbreviations (the *sigla* system). These were understood as memory aids, Mary Carruthers writes, and systems of these marks

were taught as *notatoria* to ancient and medieval notaries and lawyers; students were taught the complex system of Latin abbreviations that we encounter in all medieval manuscripts. Thomas Bradwardine concludes his treatise on artificial memory (c. 1335) by saying that "whoever will learn the notorial art will attain the highest perfection" in the craft of memory. (*Book of Memory* 113)

However, thanks to the *notae* associated with Metrodorus of Scepsis's Zodiac, the classical art of memory was linked with less benign, more occult *notae*, a conflation that would eventually contribute to the vilification of the art of memory. While shorthand was to flourish as a textual memory aid, *notae* in the Scepsian sense were to be associated in the early modern era with a blacker art of memory and all that was wrong with the irrationality and lingering paganism of medieval Catholicism. Place this dual trajectory into the context of Ramus' reforms and the Protestant rejection of medieval imagery, and one can perhaps already intuit why the art of memory was not to survive the early modern period, and why rhetorical memory was to become less visual as it became more "methodical," in Sharon Crowley's sense. We will return to this intricate subject in Chapter 3.

Various systems can be found in the archives of artificial memory. Although I have classified these memory systems separately, certain ones share obvious similarities, given that all mnemonics operate within the limits of human psychology. Furthermore, any single memory treatise may combine techniques to make a unique contribution. For example, Carruthers describes a fourteenth century treatise titled *The Form of Preaching*, which combines segmentation, vivid imagery, and aural acrostics in its memory system. In this text, a sermon on the Passion is segmented into five parts, each corresponding to one of the five wounds of Christ's crucifixion. Onto this division is imposed a further division of five vowels, each corresponding to the first letter of a particular Scriptural passage to be elucidated within the particular segment of the sermon. Five segments; five wounds; five vowels—each representing a different mnemonic technique. Insofar as these and the other systems evolved out of the Greek tradition of artificial memory, each can be said to form one branch in the "family" of rhetoric's fourth canon.

The proliferation and popularity of these systems from the classical era to the Enlightenment remind us that a strong memory was a prized possession throughout European history, and that neither the technology of writing nor of print was seen as a replacement for the ability to recall information, whether musical, numeric, or linguistic. Lacking this mnemonic ability, one could not hope to "bring together" information from disparate locations in order to invent something new (Carruthers, *Book* 1-2). (I would argue that the same can be said today.) However, it is clear that mnemonics have had a life of their own outside the rhetorical tradition. Like style, memory inspired many treatises devoted solely to itself. And while style remained anchored to linguistic production, artificial memory's concern with visualizing knowledge in a general sense made it valuable to audiences who might not have adopted rhetorical precepts otherwise.

THE ART OF MEMORY TRANSFORMED: MNEMONICS IN THE MIDDLE AGES

The art of memory was developed by the poets and sophists of pre-Socratic Greece, then adopted by those Hellenes and Romans whose professions demanded quick and robust recall of information for composing new texts or speaking *ex tempore*. Whether reciting poetry, making the worse case appear the better, or arguing before the law courts or the senate, these ancient orators trafficked in words and knowledge and therefore had need of artificial memory techniques, lest they lose their valuable currency to forgetfulness. However, with the end of the *pax Romana* came an end to the social cohesion that secured the public spaces in which certain classes of people might speak, listen, and debate. "In the barbarised world," Francis Yates writes, "the voices of the orators were silenced" (*Art* 53). But the rhetorical tradition proved tenacious—though not immune to change—as the social ecologies of the classical world gave way to the new ecologies of the medieval world, as the precepts of artificial memory exited the agora and entered the monasteries. The transformation undergone by mnemonics during this migration offers a clear example of Nan Johnson's argument that rhetorical practice, "a creature of historical circumstance," responds and adapts to the contingencies of new environments. It is therefore worth paying special attention to this transformational moment in the history of artificial memory.

For the most part, speaking before assemblies or composing original arguments was no longer a required task in the monasteries. Nor were monks concerned with remembering the secular and political knowledge that had concerned their pagan forebears. What use, then, did the monks find for classical mnemonics? What were the things and words the pious middle ages wished to remember? Frances Yates answers:

> Surely they were the things belonging to salvation or damnation, the articles of the faith, the roads to heaven through virtue and to hell through vices. These were the things which it sculptured in places on its churches and cathedrals, painted in its windows and frescoes. And these were the things which it wished chiefly to

remember by the art of memory, which was to be used to fix in memory the complex material of mediaeval didactic thought. (*Art* 55)

Artificial memory, in other words, was thoroughly Christianized, put at the service of a more spiritual and less public life.

This transition, however, was a slow one. The work of both Yates and Carruthers has demonstrated that the art of memory—that is, the visual, architectural mnemonic of Ad Herennium and Cicero—was not adopted immediately by the new Christian world. Segmentation was in fact its preferred artificial memory system. Part of the reason for this is that the art of memory was already an unpopular practice in the last centuries of the Roman Empire, among a certain subset of rhetoricians, at least. Quintilian, writing as early as the first century after Christ, did not altogether approve of the art of memory. Julius Victor, in the second century, also offers a less than glowing endorsement: "For the obtaining of memory," Julius writes, "many people bring in observations about places and images which do not seem to me to be of any use" (qtd. Yates 54). Two recently translated Greek rhetorical treatises, dating from the second and third centuries after Christ, make no mention of artificial memory at all but focus heavily on controversies relating to invention and stasis theory (Dilts and Kennedy ix-xi), suggesting that memory no longer stood at the center of Greek rhetorical theory as it had done in the classical era. Thomas Conley's overview of Byzantine rhetoric likewise suggests that the canons of invention and style were more important than memory to later Greek rhetors who took their inspiration not from Roman treatises but from Hermogenes, Apthonius, and Menander (Rhetoric *in the European Tradition* 53-65)²⁰. Then there is Martianus Capella, a rhetorician writing at the bitter end of the Roman Empire, sometime during the middle of the fifth century. In his outline

²⁰ Conley also informs us that George of Trebizond (d. 1473), the Cretian responsible for introducing Hermogenes to the West, considered memory to be a gift of nature, a "matter of talent" more than learning or art (*Rhetoric* 116).

for a liberal arts education, he discusses the five canons of rhetoric and provides a brief but complete discussion of the art of memory's precepts for *loci* and *imagines*. These precepts, however, "require much practice and labour," according to Capella, which is why "it is customarily advised that we should write down the things which we wish easily to retain, so that if the material is lengthy, being divided into parts it may more easily stick in memory" (qtd. Yates 51). Capella is following Quintilian, and he repeats Quintilian's advice to mark particular passages with *notae* if necessary. That "it is customarily advised" to eschew the art of memory in favor of Quintilian's technique of segmenting the page demonstrates quite forcefully that the art of memory had fallen into disuse by the end of the Roman Empire.

Further evidence for the greater popularity of Quintilian-esque segmentation compared to memory palaces comes from Augustine and Jerome, both of whom, as I wrote earlier, refer to the numbered orderings of the Psalms in such a way that suggests it was a taught mnemonic device (Carruthers, *Book* 96-7). At this same time, shorthand systems—both the *sigla* system and Tironian *notae*—flourished, increasing their inventory of symbols from several hundred to several thousand. It is as though artificial memory, before entering the monasteries, had already been adapted to a budding tradition of *writing* that was to become the medieval manuscript tradition. Memory arts that took their techniques and metaphoric conceptualization from the written page—segmentation and shorthand—were, by the Roman Empire's end, already seen as more valuable than the mental imagery of the architectural system, which had evolved in an oral context.

The adoption of segmentation makes particular sense in the context of early Christian writing technologies and cultures. The Christians, David Diringer tells us, were early adopters of codices in preference to rolls. While the pagan world continued to utilize papyrus rolls well into

the fourth century C.E., papyrus codices were used by Christians in the first half of the second century. This adoption is not surprising given the centrality of the written word to the spread of Christianity. Compared to the roll, the codex facilitates continuous reading, cross-reference, and transcription, all of which would have been vital to a community whose existence depended on the collection and circulation of the sayings, stories, and letters of a single prophet and his disciples (Diringer, Hand-Produced Book 203). Though the codex was not a Christian invention, "it was most promptly employed by the Christian community, and it was the growth of this community which brought it into prominence" (162). Along with this new medium came new practices for organizing page space, and I would argue that codices, even moreso than rolls, lend themselves to the sort of quadrilateral page design that facilitates thinking about artificial memory in terms, not of imagery but of segmentation (especially segmentation into grids, as in Hugh of St. Victor's twelfth century system). The margins of the codex page, Diringer explains, were determined by holes pricked with an awl, and by lines drawn from hole to hole with a wooden or iron stylus and a ruler. Guide lines were also ruled for the individual lines of writing; these were imprinted with a stylus, leaving furrows in the parchment for the writer to follow. The writing itself was ordinarily arranged into two columns, though early codices are sometimes found with three or four columns. As with papyrus rolls, paragraphs were divided by a horizontal stroke or a single wedge line inserted at the beginning of the new paragraph. (Later, the first letter of a new paragraph was written in a larger style and made to project into the margin.) A system of points and lines to divide clausal elements—what we would call punctuation—was already in place in the Roman era, as well, and it continued to be used in the early Christian era. Indeed, the interrogative mark and the inverted semi-colon (something between the semicolon and comma) seem to have been invented during the 700s. And most importantly, pre-arranged

spaces were always left for illuminations, titles, and headlines, which were added by illuminators and rubricators after the text itself had been copied (*Hand-Produced Book* 210). "The basic page design," Rowan Watson succinctly contends, "took place at the writing stage" (*Illuminated Manuscripts* 62). By the 1100s, the production of manuscripts was given to all sorts of in-text instruction, templates for illustration, planned grid structures and margin design (see Alexander, *Medieval Illuminators and Their Methods* 35-72), and this scribal culture was already in incubation in the monasteries of the late Empire and early middle ages. Given the importance of codex design to the new monastic culture, it makes sense that mnemonic segmentation would find a natural home in this milieu.

In addition to codex page design, the devotional aspects of scribal copying, I would argue, also cemented the preference for mnemonic segmentation over memory palaces and mnemonic imagery. The tedious, detailed work of scribes quickly developed into a form of devotional duty in the monasteries. Codices were highly valued, and their production came to be considered a virtuous practice. (The late middle ages provide better evidence than do the early centuries for the link between moral virtue and scribal labor, but I see no reason to be skeptical about the existence of this link in the first monastic orders.) A twelfth century preacher describes the moral implications of the scribe's effort, and his description provides a view not only of the link between book production and virtue but between the technology of the codex and the early middle ages' preferred artificial memory technique²¹:

Let us consider then how we may become scribes of the Lord. The parchment on which we write for him is a pure conscience, whereon all our good works are noted by the pen of memory, and make us acceptable to God. The knife

²¹ Though written much later (1492), Trithemius' *De Laude Scriptorum* provides even more extensive praise of scribal labor as a way to know and remember the scriptures.

wherewith it is scraped is the fear of God, which removes from our conscience by repentance all the roughness and unevenness of sin and vice . . . The ruler by which the line is drawn that we may write straight, is the will of God . . . The tool that is drawn along the ruler to make the line, is our devotion to our holy task . . . The ink with which we write is humility itself . . . The diverse colours wherewith the book is illuminated, not unworthily represent the multiple grace of heavenly Wisdom. (qtd. Diringer, *Hand-Produced Book* 206-7)

"The pen of memory" is of course an echo of the wax tablets metaphor—memory as a material inscription—and it demonstrates that the memory faculty was emblematically connected with manuscript production in the middle ages. The entire passage demonstrates that the ostensibly mundane practice of constructing and structuring the codex page was in fact brimming with purpose and righteous metaphor. Given this moral commitment to the technology of the book, it is no wonder that textual segmentation was the preferred mnemonic technique of the early middle ages because, to reiterate, this form of artificial memory is more suited literally and metaphorically to the ruled, quadrilateral space of the codex than is the technique of constructing elaborate memory palaces and visually striking *imagines*.

Speaking of *imagines*, however, a final point to be made about the preference for mnemonic segmentation over mnemonic imagery in the early Christian centuries has to do with illumination. Does not the nature of illumination recall the affective and active imagery of the art of memory? To be sure, there is evidence that illumination was considered a mnemonic device in certain contexts, and I will turn to that evidence later on. However, as a general rule, the middle ages placed constraints on individual artistry in the context of illumination. Jonathan J. G. Alexander explains that both scribes and illuminators were under the authority not only of abbots but of the wealthy patrons who typically ordered the manufacture of manuscripts. Especially when expensive materials such as gold or lapis lazuli were to be used, the creators of the book were not given free reign to invent their own designs and images. Of course, there was a tension between artistic constraint and license, and there are many examples, particularly in the later middle ages, of scribes and illuminators exercising creative agency over their manuscripts. However, "there can never be a carte blanche," Alexander writes, "for the artists to do anything they liked." Constraints were enforced by context, legibility, and by the "artistic repertoire available at any particular historical junction" (92). To an extent, these constraints are at odds with mnemonic imagery in the classical sense, which was to be entirely personal, constructed so as to be memorable to the individual practitioner and his or her own emotional inclinations. As I will discuss below, it is an open question whether or not the precepts of the art of memory circulated very widely in the early middle ages at all, but wherever they were in fact known, the injunction to form personal and affective images in the mind would not have suggested an immediate equivalency to the illumination of manuscripts, a practice circumscribed by the demands of patrons and by the limits of acceptable semiotic expression inherent in any particular creative *zeitgeist*.

Beyond the influence of writing technology and practice, another reason why one finds a decreased interest in the art of memory in the transition between the Roman and the middle ages was the controversy over whether or not pagan learning had any place in the new Christian order. In *Rhetoric in the Middle Ages*, James J. Murphy draws on multiple sources, from Tertullian to Augustine, to demonstrate that early Christian opinion of rhetoric was at best ambivalent and at worst hostile (42-65). Augustine, of course, found a place for rhetoric in the spreading of the gospel, but as I discussed in Chapter 1, Augustine's understanding of memory is Platonic. For

Augustine, memory is connected with immortality and divinity; there is no place in his rhetoric for gimmicky mnemonic tricks. The early middle ages thus lacked a Christian authority to recommend rhetoric's full range of precepts, including the art of memory. Indeed, the style of preaching favored by early Christian orators was a plain and unembellished one. This was a deliberate antagonistic choice on the part of Christian speakers, Murphy suggests, a statement against both their rhetorical training and the larger oratorical culture, which, following the Second Sophistic, remained synonymous with figuration and embellishment. For a representative example of this simple style of sermon, Murphy points to Chrysostom's first Homily on the Statutes²²:

The sermon has no proper beginning or end, and might satisfactorily be ended at any point without damaging the speaker's point; the use of figures is

comparatively restrained, and there is virtually no repetition for emphasis. (56)

The method of preaching exemplified by Chrysostom was, in Murphy's words, nothing more than "a close oral examination of Scripture," perhaps of the sort familiar to anyone who has attended a contemporary Bible study. "This method," writes Murphy, "made the text [i.e., the Scriptures] the organizer of the discourse," and following this method likely "relieved the preacher of most memory and arrangement problems" (299). With Christian orators reigning in the rhetorical excess of the pagan orators, it is easy to see why an art of memory may not have been altogether defensible or even useful. Delivering structurally and stylistically simple homilies, drawing upon scripture alone, with no need to attend to the complex issues of a court

 $^{^{22}}$ D.F. Buck offers some background: "In the spring of 387, the Emperor Theodosius I imposed a new and severe tax. In Antioch, the protests against the levy degenerated into a riot in which the statues of the imperial family were cast down and abused. Roman emperors did not view the crime of lèse-majesté lightly and for some weeks thereafter the Antiochenes dreaded that Theodosius would destroy their city in retaliation. It was in the aftermath of the Riot of the Statues that Chrysostom delivered a series of lenten sermons which have come to be known as The Homilies on the Statues" ("St John Chrysostom" 452)

case or Roman law, with no need to meet the oratorical expectations of a pagan audience, Christian rhetors apparently saw no reason to construct and furnish elaborate memory palaces it is therefore not surprising that the late (Christian) Roman Empire produced no new treatises on artificial memory.

This general neglect of the fourth canon continued into the early middle ages. In his Institutiones Divinarum et Saecularium Litterarum, Cassiodorus (d. 583) has much to say about invention but wastes no ink on the canon of memory, referring the reader instead to the earlier Ars Rhetorica of Fortunatianus to learn about that lesser subject (Murphy, Middle Ages 66).²³ Isidore of Seville (d. 636) mentions notae but nothing like a full art of memory in his Etymologiae (Carruthers 113). Nor does the Venerable Bede (d. 735) mention anything about artificial memory in his educational works, including the *De schematibus et tropis sacrae* scripturae, a work devoted to the uses of rhetoric in the Bible. Alcuin (d. 804), an Englishman called upon by Charlemagne to restore a system of classical education, seems to have no knowledge of the precepts of the art of memory. When discussing the canons in his dialogue Disputatio de rhetorica, Alcuin is asked by Charlemagne about memory, which Charlemagne "deems to be the noblest part of rhetoric." Alcuin quotes from Cicero's De Inventione that memory is indeed the treasure-house of all things, without which the orator's rhetorical inventions will suffer. However, when Charlemagne inquires after precepts by which the memory might be strengthened, Alcuin responds as follows:

We have no other precepts about it, except exercise in memorizing, practice in writing, and the avoidance of drunkenness. (qtd. Yates 53)

Alcuin recognizes memory's importance, but for him, the preceptive tradition of artificial memory has disappeared entirely. According to W. S. Howell, in the introduction to his

²³ The third book of Fortunatianus' Ars Rhetorica (c. 400s) contains a full discussion of the art of memory.

translation of *The Rhetoric of Alcuin and Charlemagne*, Alcuin compiled his rhetoric from only a few sources: Cicero's De Inventione, Julius Victor, Cassiodorus, and Isidore of Seville. Cicero discusses the rules for places and images in *De Oratore*, not *De Inventione*, and the other sources, I have pointed out, do not discuss the precepts of the art of memory. Julius mentions them in passing, in derogatory terms, and without any details. Cassiodorus refers his readers to Fortunatianus for an explanation of the fourth canon, and Alcuin did not have access to that text. Alcuin's reference to "practice in writing" is perhaps an echo of Quintilian's memory system segmenting the written page into memorizable chunks—but Alcuin's reference remains vague, lacking even basic precepts about notae. Alcuin's failure to invoke any system of artificial memory is made curious by the fact that several ninth century copies of Ad Herennium exist, none of which are missing the section on memory (Yates 54). This quintessential text on rhetorical memory was at least in limited circulation during Alcuin's day. Not all medieval monks were aware of the precepts of the art of memory, but some undoubtedly were. And yet, according to Harry Caplan in Of Eloquence, it is not only Alcuin who remains silent on the art. Most medieval commentary on the Ad Herennium, according to Caplan, ignores that text's memory section. The early medieval commentators who were in possession of Ad Herennium are silent on the precepts of the art of memory.

All this would seem to contradict my claim about rhetoric's adaptability to new environments. Artificial memory—and the art of memory in particular—was designed by and for a secular oratorical culture, not a monastic one. It seems that as the latter emerged and the former receded, the oratorical world's mnemonic practices receded with it. However, despite the vanishing of artificial memory from manuscripts of the early middle ages, there is ample evidence to suggest that classical mnemonic aids—beyond shorthand *sigla*—were still in circulation during this time. Cassiodorus, for example, does not discuss artificial memory in the rhetoric section of *Institutiones*, but elsewhere in that same text, he explores the functions of natural memory, saying that memory makes use of "places" and the ordered storage of material (Carruthers, *Book of Memory* 33). Though admittedly vague and severed from rhetoric, the precepts for the art of memory do surface in Cassiodorus' text.

Alcuin provides another example of an early medieval scholar who clearly knew about artificial memory even though he (and his culture) had forgotten its rhetorical provenance. In his handbook of rhetoric, Alcuin informs Charlemagne that no precepts for strengthening the memory exist. Yet in his religious writings, Alcuin interprets the Psalms based on their numbered subdivisions, which, as I have already pointed out, were understood to be memory aids during the time of Augustine. Also, in a letter to a friend, Alcuin describes his use of written summaries as memory aids: "the memory," he writes in that letter, "often loses what it should retain unless it is kept safe in a treasury of writings" (qtd. Dales, Alcuin 155). Here is an interesting fusion: memory as a treasure but a treasure of *writing*, as if Alcuin had synthesized Cicero and Quintilian. Elsewhere, and more tellingly, Alcuin comments on the ability of the mind to process what it receives through the senses, as if "messengers" are running into and out of the mind, filing away "figures" of what the senses have encountered, storing them away in the treasury of the memory-this is why, according to Alcuin, "human beings think in images" (qtd. Dales 214). Alcuin himself is reported to have had a robust memory, and to have practiced the ancient link between memory and invention by weaving together collects and psalms into his personal meditational life (Dales 175). Such inventive "weaving together" was a popular devotional exercise in the middle ages. Hugh of St. Victor, writing a few centuries later, describes it in poetic detail:

Meditation is a regular period of deliberate thought. It takes its start from reading but is not at all bound by the rules or precepts of lecture. For it delights to run freely through open space . . . , touching on now these, now those connections among subjects. (qtd. Carruthers, *Medieval Craft* 2).

On one hand, then, we find Alcuin telling Charlemagne that rhetoric's canon of memory is devoid of precepts. On the other hand, we find Alcuin using memory aids and discussing memory in visual terms that are Aristotelian and Ciceronian in nature. What we learn from Alcuin is that the classical conception of memory—in its natural and artificial senses—had filtered into the general intellectual consciousness without the aid of authoritative texts or a continuing tradition of memory treatises. The absence of textual evidence for early medieval mnemonics, in other words, is not evidence of absence.

Mary Carruthers points also to the works of Hugh of St. Victor, who wrote circa 1096 – 1141, prior to the Scholastic revival of the art of memory. St. Victor makes no reference to *Ad Herennium*, *De Oratore*, or, of course, Aristotle, but his description of memory and his advice on how to strengthen it are clearly inspired by the classical art of memory. As I wrote earlier, St. Victor's "De Tribus Maximis" reads very much like an artificial memory treatise. It describes a system for segmenting the psalms into smaller and smaller units, each carefully stored within a numbered mental grid. The principle of mnemonic imagery likewise makes its ways into St. Victor's text:

Have you ever noticed how a boy has greater difficulty impressing upon his memory what he has read if he often changes his copy [of a text] between readings? Why should this be unless it is because, when the image-receiving power of the heart is directed outward through the senses into so many shapes from diverse books, no specific image can remain within [the inner senses] by means of which a memory-image may be fixed? . . . Therefore it is a great value for fixing a memory-image that when we read books, we strive to impress on our memory through the power of forming our mental images not only the number and order of verses or ideas, but at the same time the color, shape, position, and placement of the letters. ("The Three Best Memory Aids" 39)

The view of mnemonic images on display here seems related more to Quintilian's idea about visualizing page space than to the *imagines agentes* of *Ad Herennium*; nevertheless, the illuminated codices with which St. Victor would have been working likely gave him more cause than Quintilian to recognize that "color, shape, position, and placement" of writing should all be taken advantage of when forming mental images of the page. More interestingly, the psychology underlying Victor's description of memory formation is Aristotelian, despite the fact that he could not have had access to *De Memoria*. This suggests that at least certain features of classical memory discourse remained in oral circulation in St. Victor's day.

In another text, *De arca Noe mystica*— "A Little Book About Constructing Noah's Ark," as Caruthers translates it—St. Victor takes his reader on an ordered, visually imaginative, and surprisingly detailed tour of the Ark, which then becomes the model for an allegorical and ethical interpretation of the vessel. According to Carruthers, this method of "architectural exegesis" was popular during St. Victor's time—the ark, the Tabernacle, Solomon's temple, and the Heavenly Jerusalem are all used in other texts to guide readers through a physical and then a spiritual understanding of the structures. Reading through St. Victor's ark, one cannot help thinking that he guides us through a memory palace, through mnemonic *loci* of the sort recommended by the

classical orators, with the words and knowledge of the Greco-Roman world replaced by those of the medieval Christian world:

> These are in the inscriptions of the rooms: on the right side of the first room "FAITH" is written, on the right side of the second room, "HOPE," and on the third room, "CHARITY." ("A Little Book" 57)

St. Victor nowhere mentions the classical art of memory or its authorities; nor does he explicitly recommend architectural exegeses as a memory system generally. However, the text's introduction suggests that the ordered places of the ark and the vivid images therein were designed to aid the reader's memory of the didactic material for which it all stood. "I depict it as an object," Hugh of St. Victor proclaims, "so that you learn outwardly what you ought to do inwardly, and so that, once you imprint the form of this example in your heart, you will be glad that the house of God has been built inside of you" ("A Little Book" 45). The Ark as a series of places and images²⁴, the forms of which are to be imprinted on the heart—the language is Christian, but the technique, I believe, would have been familiar to a pagan orator. Although St. Victor is silent on the source of his architectural exegeses, and although he does not cite classical inspiration for the mnemonic system in "De Tribus Maximus," it seems obvious that artificial memory—and something quite like the art of memory itself—was alive and well, in practice if not in theory, throughout the "dark" intermission of the early middle ages.

Lastly, Carruthers points to the Bestiary as an early medieval genre that likely had mnemonic functions. The progenitor of the medieval bestiary is an Alexandrian text called the *Physiologus*, published originally between the second and fourth centuries after Christ. It

²⁴ Much later, the Jesuit memory artist Athanasius Kircher (d. 1680) would also use the ark as a giant memory palace and an "organizer of a grand encyclopedic museum" (Bolzoni, *Gallery* 258).

contains descriptions and lavish illustrations of animals, birds, and magical beasts, along with didactic lessons to be learned from them. The Physiologus was to be reprinted, added to, and elaborated upon throughout the early middle ages (Figure 2.10)²⁵, inspiring the bestiary tradition passed down to contemporary times. In the middle ages, according to Carruthers, the bestiary "was thought of as a beginner's book," a popular and entertaining medium by which moral lessons might be taught and retained; bestiaries were commonly found in monastic libraries, even the libraries of those orders, such as the Cistercians, who frowned upon iconography and imagemaking (Book of Memory 126). Most of the earliest bestiaries make no mention of their mnemonic uses, but according to Carruthers, texts from the later middle ages strongly suggest that such uses were explicitly understood and put into practice. A bestiary composed by Philippe de Thaon in 1130, for example, "is preceded by a mnemonic rhyming poem on the dating of Easter . . . [and] in each of its 'pictures' of the animals, its verses admonish the reader to remember particular pieces of the description as well as the whole: 'Aiez en remembrance, eco est signefiacnce,' 'Hold in memory, this is important'" (127). Writing in the 1230s, John of Garland offers the first explicit suggestion to use bestiary images as mnemonic indices. He does so in his commentary on Ad Herennium, found in Parisiana poetria, Garland's textbook for Latin prose. In this text, Garland seems confused about how to interpret Ad Herennium, contorting its rules for the classical memory art to fit a manuscript-based system of grids and segmentation with which he would have been more familiar. Garland can hardly be blamed for his confusion—as far as contemporary scholars can tell, he was among the first to comment on Ad Herennium in over a thousand years (Caplan, "Introduction" xxxv). However, Garland's

²⁵ Book XII of St. Isidore's *Etymologiae*, dating to the early 600s, contains a bestiary. The *Bern Physiologus* dates to the middle 800s.

berodi diaboli ficate & dic und pulli & incante cifcanticorum captenobir undperexterminan teruneam degua unea daunddixit



OEANIMALE QUI DICT PANTIBER Propheta sic dicto sactussium sicut partier indomo effrem Physiolocus sic testisticat departier io quitalle e natura eus ut omnum animalium sit amicus jnimicus auté é draconis. Yar une enim aspectus illus sicut tonica ioseph Liam Ltorus variusest. Cactur nume animal Rmanswerus val de Suist manducaverit Lacitus siverit dormit un si a spe una Ltoradie exsurge desomno Lcumsur exe rit delocosio Storis exierit vociserat vocemagna

Figure 2.10 Panther. Bern Physiologus

confusion reveals valuable information about the mnemonic systems with which he was familiar and, by extension, the systems employed during the early middle ages. In Garland's system, the student is to segment manuscript page space into a grid-like structure—similar to the system recommended by Hugh of St. Victor, and, ultimately, Quintilian. But while St. Victor's grid system does not incorporate imagery, into Garland's grid goes not only the textual information to be memorized but the beasts of the bestiary. The voces animantium, the habits and physical features of the creatures, are now placed beside words and knowledge to serve as vivid prompts "that would stick in the memory and could be used, like homophonies, *imagines rerum*, and other sorts of notae to mark information within the grid" (Carruthers, Book 127). Certainly, with his use of bestiary creatures as mnemonic imagery, Garland may have been offering an original contribution to the artificial memory tradition; however, given that the precepts occur in a beginner's textbook on Latin prose, it is more likely that Garland was teaching an inherited practice. Carruthers goes on to provide more evidence, drawn primarily from scattered medieval exegesis, to demonstrate that the bestiary had all along possessed a secondary purpose as a pictorial inventory of mnemonic notae or indices. She also points out that later mnemonic alphabets, such as the one devised by Johannes Romberch, often twisted animals into letter-like shapes.

Related to the bestiary is the *ysopet*, a collection of didactic fables (usually Aesop's) in medieval French literature, and here one finds more evidence that illuminated manuscripts designed to teach moral lessons sometimes possessed mnemonic intentions. Commenting on the manuscripts of Marie De France's *Fables*, an *ysopet* composed between 1167 and 1189, Logan E. Whalen notes that the scribes and illuminators of this particular manuscript went to great visual lengths to ensure that the morals of the fables would be committed to memory by their future readers ("Visualizing Morality" 299). "Almost all of the extant manuscripts of Marie's fables," Whalen writes, "visually emphasize the moral of the story in some fashion, either through illuminations, historiated or flourished initials, rubrics, or marginal markings" (299). Whalen argues that the visual quality of this ysopet was suggested by Marie's prologue to the fables:

For the ancients who wrote down these good proverbs that they heard did so for the purpose of moral edification, in order that those who set their mind upon the good might improve themselves. (qtd. Whalen 299)

Whalen contends that medieval scribes and illuminators would have read this passage as an explicit exhortation to memorize—to "set the mind upon"—the fables' moral lessons, as brought to life in the animals and objects of the fables. These animals and objects, like the beasts of the bestiary, are thus made visual in the illustrations and layouts of the manuscripts, so that their abstract lessons might more easily "penetrate the memory" and remain there (303).

The bestiaries and the *ysopet*, the works of Isidore, Alcuin, Cassiodorus, Hugh of St. Victor—these and other early medieval texts remain silent on or profess ignorance about artificial memory. Yet throughout these texts one finds use of or reference to precepts clearly inspired by classical memory techniques—Alcuin's "thinking in images," as well as his written summaries; the *loci* of St. Victor's ark; illustrated beasts as embodied forms of didactic lessons to be remembered by the young. From whence the disconnect? According to Mary Carruthers, a clue lies in the fact that wherever one does find mnemonic principles in these early manuscripts, they are wholly severed from rhetoric.

The absence of explicit, theoretical discussion of the art of memory in the early middle ages, Carruthers suggests, is likely due to the fact that it had lost its status as a rhetorical art—

indeed, that it had lost its status as an art of any sort. James Murphy's investigation of medieval rhetoric aligns well with Carruther's suggestion. The arts of rhetoric in the early middle ages, Murphy explains, had been adapted to three fields: to verse writing, as the *ars poetriae* (135); to letter writing, as the ars dictaminis (194); and to preaching, as the ars praedicandi (269). The ars *poetriae* was synonymous with discussions of style and tropes, and with scholarly argument over the tension between "language as a whole on one hand, and particular purposive uses of language on the other" (191). Although many treatises on the ars poetriae seem to take inspiration from Ad Herennium's theorization of style, rarely is that text's section on memory brought to bear on issues of poetic or prosaic language use. The ars dictaminis, for obvious reasons, also failed to produce extended discussions of memory techniques.²⁶ The art of letter writing was principally concerned with the construction of models letters ready to be sent to different people in the social hierarchy; it was also concerned with the creation of templates for the sections of a letter salutation, conclusion, and so on. Lastly, the ars praedicandi, as I have discussed, emerged from a patristic antagonism toward the oratorical excesses of the Second Sophistic, and the art of memory certainly would have been tainted with pagan associations. Had St. Augustine-the ultimate authority on preaching throughout the middle ages—suggested the art of memory as a useful technique, a more robust tradition of mnemonics for preachers may have blossomed during the early medieval period. However, Augustine is silent on *memoria*, save for his Platonic rumination on the memory of God. (Also, as Carruthers argues, Augustine would have been much more likely to use a Quintilian-esque system of segmentation, used for chunking Scriptures into "chapter and verse.")

²⁶ An interesting exception is a brief nod to "the utility of sound in aiding sense, attention, and memory," found in the *Dictaminunm Radii* of Alberic of Monte Cassino, written circa 1087 (qtd. Murphy 205). Did Alberic have in mind something like the "visual homophony" of the classical art of memory as a technique somehow valuable for letter writing?

The rhetorical tradition is a collection of precepts for the creation of human discourse, and in the early middle ages, versification, letter writing, and preaching replaced public declamation as the central contexts of human discourse. As the precepts of classical rhetoric were adapted to these new arts, somewhere along the way, the art of memory—the canon not dealing with language *per se*—was severed from the canons of invention, arrangement, and style. At the same time, as previously discussed, non-visual memory systems that made use of page space supplanted the architectural art of memory in day-to-day practice. The result, Carruthers argues, is that the art's precepts began to circulate as a *studium*, a set of useful guidelines but not in any sense an ars, as it had been in classical Greece and republican Rome (Book of Memory 145). Something like a visual art of memory was indeed practiced during the early middle ages, and in the works of Alcuin, Hugh of St. Victor, and in the bestiary tradition we catch glimpses of how it was adapted to the didactic and devotional needs of the monasteries. However, because this and other memory techniques were not considered arts, and because they had lost their rhetorical provenance—Cicero's *De Oratore* and Quintilian's *Institutio* were materially lost to most scholars during the early middle ages-they were not given extended discussion in written treatises. No ink was wasted on them. Therefore, between 500 and 1200, the histories of the art of memory and of artificial memory systems in general must remain "dark." Mnemonic techniques were certainly practiced during this time, but they lacked a philosophical or theological foundation, which, according to Carruthers, explains why the learned men of these centuries saw no reason to make formal pronouncements on them, any more than they would have found reason to write treatises on, say, best practices for ink storage. Such subjects were left to oral transmission.

The classical world, in contrast, had forged a durable link between the art of memory and rhetoric—and, via rhetoric, between the art of memory and the practical, political life of the community. The classical rhetors also recognized a strong link between the canon of memory and the canon of invention, placing the art of memory at the center of rhetorical theory and practice. These links between the art of memory and greater social and rhetorical matters were severed in the early middle ages. Artificial memory systems were viewed as convenient techniques, not systematic arts with underlying theories. Until the middle ages built a theoretical foundation for memory systems, the treatises would continue to be silent on them.²⁷

That foundation was constructed in the thirteenth century by Albertus Magnus and Thomas Aquinas. It is important to reiterate, however, that Aquinas and Magnus did not "rediscover" artificial memory—whose techniques had been in circulation since the decline of Rome—but rather that they rediscovered for the medieval world a philosophical reason to make artificial memory a topic of serious (and pious) discussion.

The thirteenth century corresponds to the flourishing of Scholasticism, the recovery of ancient Greek and Roman texts, and a renewed appreciation for pagan learning not shared by the early church fathers. In this new environment, the orators of the classical world, including Cicero, were granted a new level of authority by educated monks. And according to the medieval manuscript tradition inherited by Magnus and Aquinas, Cicero was the author of two works: *De Inventione* and *Ad Herennium*, generally referenced, respectively, as the First Rhetoric and the Second Rhetoric of "Tully."²⁸ Today, scholars are confident that Cicero did not write *Ad*

²⁷ Even Cicero, who saw such value in the art of memory, suggests that its precepts were familiar enough that commenting on them in a written treatise was perhaps unnecessary: ". . . I don't want to talk too much or be obtrusive while the subject is so well known and common" (*De Oratore* II.358).

²⁸ Marcus Tullius Cicero.

Herennium (Caplan, "Introduction", vii-xiv); however, in the thirteenth century, this faulty attribution of authorship was precisely what prepared the way for a renewed flourishing of artificial memory.

De Oratore is the text in which Cicero provides his extended commentary on the art of memory. However, neither Magnus nor Aquinas made use of that text. Nor apparently did they use or have access to Quintilian's *Institutio*, with its more practical and skeptical analysis of the art's benefits and drawbacks. Magnus and Aquinas worked instead with *De Inventione* and *Ad Herennium* as the primary texts on rhetorical memory. And here is what they noticed: In the First Rhetoric—*De Inventione*—Cicero admonishes rhetors to use their oratorical inventions to treat of virtuous subject matter. Cicero lists the virtues as Prudence, Justice, Fortitude, and Temperance. Of prudence, says Cicero, there are three parts: *memoria, intelligentia,* and *providentia.*

Prudence is the knowledge of what is good, what is bad and what is neither good nor bad. Its parts are memory, intelligence, and foresight. Memory is the faculty by which the mind recalls what has happened. Intelligence is the faculty by which it ascertains what is. Foresight is the faculty by which it is seen that something is going to occur before it occurs. (*De Inventione*, II.159-160)

The idea is that one develops prudence by properly weighing what has occurred in the past in order to determine what sort of outcome a present action might or might not lead to. With memory thus established in *De Inventione* as a vital part of the virtue of prudence, Cicero's Second Rhetoric—*Ad Herennium*—provides rules for strengthening the memory. And so, observed Magnus and Aquinas, here is Cicero in his First Rhetoric placing memory at the service of prudence, and here is Cicero in his Second Rhetoric providing rules on how to strengthen the

memory. The obvious conclusion, to their Scholastic way of thinking, was that Cicero intended the art of memory to be used, ultimately, to strengthen one's exercise of prudence. Aquinas succinctly explains his reasoning in Part II of the *Summa Theologica*:

> Tully places memory among the parts of prudence . . . Prudence regards contingent matters of action . . . Now in such matters a man can be directed . . . by those things which occur in the majority of cases: wherefore the Philosopher [Aristotle] says that "intellectual virtue is engendered and fostered by experience and time." Now experience is the result of many memories as stated in *Metaphysics*, i.I, and therefore prudence requires the memory of many things. Hence memory is a part of prudence. (qtd. Carruthers, *Book* 67)

Mary Carruthers informs us that throughout this passage, "Thomas clearly means not just the natural power of the sensitive soul described by Aristotle but trained memory, the memory which is a treasury of many memories" (67).

Magnus and Aquinas thus forged a connection between ethics and artificial memory not altogether intended by the authors of the classical texts. Although mistaken, their reasoning can be appreciated nonetheless for its simplicity. Magnus and Aquinas lacked not only multiple descriptions of the art of memory, in Quintilian and in *De Oratore*, but also a complete historical picture of the contexts, practices, and purposes of this rhetorical art. They would have known about artificial memory techniques, but they would have known them in the devotional and didactic contexts described previously (weaving together personal prayers; mnemonically indexing biblical passages with letters and symbols; architectural exegesis of scripture; vivid illustrations of beasts to create memorable moral lessons). "The ethical or prudential interpretation of artificial memory," writes Yates, "was already there in the earlier middle ages" (*Art* 57). Given the moral purposes to which memory techniques had been put for centuries and given the assumption that *Ad Herennium* and *De Inventione* were written by the same authority, it is no wonder the Scholastics saw a bridge between ethical behavior and the art of memory. And thus, following the works of Magnus but especially of Aquinas, artificial memory, already divorced from rhetoric, became firmly ensconced in ethical theory.

"Die Mnemotechnik," writes Helga Hajdu in her early study of the art of memory, "ist nicht mehr die Kunst des 'Rhetors' und wagt sich nicht mehr an das Unterfangen, Hilfe für das Auspeichern eines trockenen, lexicalischen Vielwissens zu bieten" (Das Mnemotechnische 134). The art of memory was no longer the art of 'rhetors' but of the Christian faithful; and the knowledge for which it was to be used was no longer the civic sort of knowledge recommended by the classical treatises but knowledge necessary to vouchsafe one's soul. The *imagines agentes* of Cicero and Ad Herennium—images from the pagan world designed to recall secular knowledge for civic or political ends—were replaced with what Aquinas calls "corporeal similitudes," incarnated forms representing the abstract virtues that lead to heaven and the vices that lead to hell. (One thinks immediately of the animals of the bestiary and the French ysopet as examples par excellence of corporeal similitudes.) Prudent or imprudent behavior has eternal consequences; the art of memory is thus to be used to impress on the memories of Christians the rewards of one versus the penalties of the other (Yates 85). It is perhaps no coincidence, Yates remarks, that the century following Aquinas's ethical theorization of the art of memory witnessed a flourishing of carefully ordered didactic imagery in literature and in art—a feature exemplified most unmistakably by the Divine Comedy's ten-part orderings of Heaven, Hell, and Purgatory, each place subdivided further into smaller places, each corresponding to a particular moral theme clothed in vivid metaphoric imagery. Dante's famous poem, Yates suggests, is

perhaps the epitome of a Christianized memory palace, a collection of mnemonic images arranged in their supernatural *loci*, signifying the complete religious rebirth of the pagan art of memory²⁹.

A detailed discussion of late medieval theories of ethics and memory—both natural and artificial—is beyond the scope of this chapter³⁰. For my purposes, it is enough to note that the wider circulation of classical texts and the authority granted them by the Scholastics created an environment in which Magnus and Aquinas could return the scholarly world's attention to the art of memory as a true *ars* with important purposes. This new foundation laid, the art of memory slowly returned to its former prominence, re-emerging as a legitimate system for recollection and invention. Yet the *ars memorativa* did not emerge from the middle ages unchanged. Migrating from the agora to the monasteries, it transformed from a practical art useful for publically engaged citizens to an art put at the service of religious education, religious devotion, and religious behavior—useful, in theory, for anyone who did not want to lose his or her focus on the narrow road to Heaven. Put another way, Greco-Roman memory palaces had been exchanged for the nine circles of Hell. Images of plebeians, famous actors, and rams' testicles had been replaced with incarnations of Charity or Envy. Memory of secular words and knowledge had been replaced with memory of spiritual words and knowledge.

It is with this transformation in mind that we can appreciate the emergence of Ramon Lull's art, which adopted mnemonic precepts to accomplish nothing less than the complete ordering of knowledge of God's attributes manifested in nature. Lull (d. 1315) and his art shared

²⁹ Lina Bolzoni draws a similar conclusion about Dante in *Web of Images* (8, and at various points throughout the book). See also Harald Weinich, *La Memoria di Dante*.

³⁰ See Carruthers' *Book of Memory*, Chapter 2; Yates' *Art of Memory*, Chapter 3; and although she does not discuss the Scholastics, Marion Joan Francoz provides some commentary that relates to Scholastic memory in her *College English* essay, "Habit as Memory Incarnate."

the impulses of his age—an "intense piety combined with rigorous method," born from a desire to see the truths of Christianity converted into the same logical form as Aristotle's newly rediscovered philosophy (Yates, "The Art of Ramon Lull" 115). Yet Lull looked not only to Aristotle for inspiration; he looked also to the tradition of artificial memory, once more a topic of meaningful inquiry. The precepts of Lull's art are no trifles; through them, divine knowledge is secured in fallible memory. The art of Ramon Lull represents the first attempt to convert the precepts of the art of memory into a complete method for discovering not only the words and knowledge of a personal memory system but a complete knowledge of God and His universe. Yates describes Lull's conviction about the value of his art:

> Lull believed that he had discovered, or had had revealed to him an Art of thinking which was infallible in all spheres because based on the actual structure of reality, a logic which followed the true patterns of the universe. He valued this infallible Art most for its virtue in the theological sphere, on which level he believed that it could "demonstrate" the truth of the Incarnation and the Trinity to unbelievers. But it could also work with precision in other spheres. ("The Art of Ramon Lull" 117)

Magnus and Aquinas framed artificial memory as a subject belonging to ethics; Lull framed it as a subject belonging to logic, as a tool for rationally convincing non-believers of the truths of Christianity. This leap from ethics to logic is a small one in the context of the Scholastic era. The essential project of Aquinas and others was to derive moral laws by logical analysis, a project following directly from Aristotle's own ethical/logical project in the *Nichomachean Ethics*. Kevin L. Flannery, professor of philosophy at the Pontifical Gregorian University, writes that both Aristotle and his thirteenth century followers sought to "apply a method developed within a mathematical science [to] the field of ethics," tracing logical connections from posited conclusions to moral principles and back again (*Acts Amid Precepts* 69, 75). Once the art of memory had been connected to ethics, it was a small and perhaps inevitable shift to using the art's precepts as a sort of "logic." Lull, however, was as much a mystic as a logician. His art is "a logic but yet differs fundamentally from ordinary logic, because it combines logical processes with metaphysics" (Yates, "Art" 156). I have already described the general mechanisms of Lull's art. It draws from the mnemonic tradition of alphabetic indexing, in which practitioners used real or imaginary letters as simplified *loci* to which they attached words and knowledge. In Lull's art, each letter is to index either a divine attribute, an element in the hierarchy of being, or a logical relationship. It is by combining the attributes and elements in various "logical" permutations that one can approach a total knowledge of God's universe and its workings. Indexing concepts to letters is intended to make the knowledge more manageable, and to make their combinations easier to visualize and thereby conceptualize (and easier to teach to non-believers).

Though born from mnemonic precepts, Lull's system—as a method for discovering universal knowledge, both natural and supernatural—incorporates, takes inspiration from, and seeks to advance many other scholarly domains. For example, in the *Tractatus Novus de Astronomia*, Lull uses combinatorial letters to represent planets and the elements to work out problems in astrology (Yates, "The Art" 119-120). Lull's importance in a history of the art of memory is therefore not his contribution to rhetorical theory *per se* but his realization that mnemonic techniques were useful for organizing knowledge in a more universal sense and for discovering new things about the world. Indeed, Lull's system of interlocking letter-indices is recognized today not as a rhetorical memory art but as "the forerunner of modern symbolic logic and computer science," for both symbolic logic and information science likewise operate upon a "systematically exhaustive consideration of all possible combinations of material, reduced to a symbolic coding" (Schuchard 73; also see Pring-Mill 547-51; Bonner 12). Ultimately, this influence entered circulation through the work of Gottfried Leibniz, who wrote a dissertation on the Lullian *ars combinatoria* in 1666. Lull's mnemonic letters were not typical linguistic signs, Leibniz realized, for their significations were not prone to semantic slippage; rather, the letters and their combinations were schematic remediations of concepts. Inspired by Lull's system, Leibniz undertook the project of remediating knowledge into symbols so that one could perform a calculus on non-numerical information—thus can an influence be followed from the precepts of artificial memory to the advent of symbolic logic. We will return to this story in the next chapter, for it is part of the larger narrative of how memory systems were enfolded into "method" in the early modern period.

CONCLUSION: MNEMONICS AND AFFECT

Memories, as I discussed in the first chapter, exert an enormous influence on human life but are typically constructed and reconstructed in one's mind without conscious effort. With artificial memory systems, however, it is possible to exert a certain amount of agency over memory construction, to decide what is to be stored and what is to be forgotten. And yet artificial memory is not just about *memory-as-storage*, for with its systems, one decides not only *that* memories are to be stored but also *how* or *in what form* they are to be stored. Most mnemonic techniques involve a double construction—the construction of the memory is associated. It is this latter construction, in my view, that makes mnemonics an interesting locus of rhetorical activity. The visually stimulating *imagines agentes* of the art of memory, the Zodiac of Metrodorus, the visual homophony of medical acrostics, the *voces animantium* of the bestiary, Lull's mystical alphabet, Aquinas' corporeal similitudes of virtue and vice, St. Victor's allegorical ark, Dante's supernatural *loci*—what all these mnemonic forms have in common, I would suggest, is their ability to create an affective or emotionally charged disposition in the mind of those who use them. Pruchnic and Lacey ("The Future of Forgetting") utilize critical and psychological discussions of affect to subsume artificial memory into natural memory, but I argue that artificial memory practices themselves implicate the affective elements of human psychology.

The most common complaint about mnemonic systems, today and throughout history, is that it is more effort to learn their precepts than to learn whatever needs to be learned by brute force of memorization. However, this complaint betrays a lack of understanding about artificial memory's core insight, namely, that by using imagery, sounds, or associations charged with affective energy, mnemonic techniques should require little effort on the part of the learner. This is why the author of *Ad Herennium*, who well understood the principle, recommends that his reader construct images possessing "exceptional beauty or singular ugliness."

> When we see in everyday life things that are petty, ordinary, and banal, we generally fail to remember them, because the mind is not being stirred by anything novel or marvellous. But if we see or hear something exceptionally base, dishonourable, extraordinary, great, unbelievable, or laughable, that we are likely to remember a long time.

It should require minimal effort to populate a memory palace, to conjure *notae*, or to remember an acrostic verse, so long as one constructs mnemonic forms that viscerally and instantly stick in the mind. It is only a lack of imagination that inhibits the ease of mnemonic technique.

In an essay on mnemonics used by medical students, Columbia University psychiatrist Anne Skomorowsky elaborates on the relationship between affect and mnemonics. She begins by recounting a lecture given by a famous doctor and memory expert. Not long after beginning his lecture, Skomorowsky recalls, the doctor burst abruptly into a fit of yelling and profanity. After a moment of this, the doctor "stopped, grinned, and predicted that no one would remember anything about his talk except his yelling and cursing—and he was right. The speaker's sudden burst of rage left an indelible memory trace, while the rest of his talk faded away" ("Big Boobs"). The lesson was that memory is always "bound up with affect" and that mnemonics, if they are to work and to work effortlessly, must "take advantage of the benefits of affectively charged material." For another example of such material, Skomorowsky points to the same Renaissance mnemonist I mentioned previously, Peter of Ravenna, who used images of "beautiful virgins" in his memory palace. Mnemonics used by medical students, Skomorowsky explains, are likewise often charged with sexual (and sometimes outright sexist) energy. Earlier, I provided benign examples of medical acrostics, but Skomorowsky tells us that the vast majority are quite vulgar. For example, to remember the 12 cranial nerves—Olfactory, Ophthalmic, Oculomotor, Trochlear, Trigeminal, Abducens, Facial, Acoustic, Glossopharyngeal, Vagus, Accessory, Hypoglossal—the most popular acrostic is "O, O, O, To Touch And Feel A Girl's Vagina, Ah Heaven!" And to remember whether each of the 12 nerves is a Sensory nerve, a Motor nerve, or Both, medical students use the acrostic, "Some Say Marry Money; But My Brother Says Big Boobs Matter Most." There are, according to Skomorowsky, less sexual acrostics—such as learning the cranial nerves with "On Old Olympus's Towering Top, A Finn and A German Viewed A Hop"—but these are far less popular because they simply do not sink into memory as well as the dirty ones. Why not? They are less affective, Skomorowsky answers.

They fail to provide a "shock" and would fade too quickly to be useful as mnemonics. In other words, shocking the sensory system is the first and most important step in the construction of effective mnemonic forms. (For classical rhetors, shocking the visual system in particular was understood to be the best way to ensure a robust construction of memories.) Mnemonics may be interpreted as gimmicky tricks, but if effective, they will populate one's mind with emotionally charged sights, sounds, and associations-and they may be charged in different ethical directions. This is why Aquinas and the high middle ages created memory images that were entirely didactic—images of virtues and their heavenly reward or vices and their eternal punishment. These were the only images proper for a Christian's mental palace, because the medieval art of memory, writes Lina Bolzoni, was assumed to be a sort of "code with precise features for acting on the mind, creating mental images capable of influencing the faculties of cognition and will"; in other words, memory arts were literally thought to "mould the mind." Uses of it were therefore designed only to "spiritually elevate" its practitioners (Web 2-4). Bolzoni even forges a link between the didactic intents of mnemonic imagery and later religious exhortations against art depicting cruel or atrocious things-except, of course, where they depicted "the horrors of Hell," because such scenes could serve to persuade or dissuade behavior with incomparable efficacy. The assumption motivating such exhortations, Bolzoni argues, is that "an image vividly present in the imagination can in the end impress itself upon the flesh, transgressing the limits between reality and imagination, between the body and the mind" (Web 183). In the light of such a doctrine, it makes sense that religious scholars in the middle ages and early modern period would have circumscribed the use of mnemonic imagery to prescriptive visions of virtue and vice.
The sexual affect and sexist bent of medical mnemonics offer a stark contrast to the holy imagery of medieval memory—but these, too, are not without effect. Sexualized mnemonics used by medical students, Skomorowsky suggests, may "contribute to a culture which allows male physicians to see women as sexual toys." Indeed, a Google search for sexism in medicine returns a plethora of blogposts, magazine articles, and sociological studies examining the subject. Sexualized mnemonics, it would appear, emerge from, reflect, and perhaps further encourage an underlying medical school culture of juvenile chauvinism.

However, Skomorowsky also notes that grossly sexualized mnemonics make it easier for medical students—of both genders—to learn material that accentuates the mortality of their own bodies and of the bodies they must poke, prod, and probe. Turning medical knowledge into a series of dirty jokes, Skomorowsky argues, not only makes it easier for medical students to memorize that knowledge but to accommodate the students, through humor, to what they are "seeing, smelling, and touching every day—bodies." By remediating the knowledge of medical education into shockingly dirty jokes, by populating their minds with humorously charged mnemonic aids, medical students find it psychologically easier to learn uncomfortable and at times mortally grim information.

And now we are in a place, I hope, to confirm the argument with which the chapter began: that artificial memory systems are rhetorical precepts allowing us to track the sorts of affectively—and perhaps ideologically—charged material with which certain segments of a society populate their minds. The history of mnemonics uncovers not only the different types of knowledge people have found necessary to recall but also the affective forms used to reconstruct that knowledge in memory. Situated in different eras, places, and cultures, the sights and sounds of mnemonics thus reflect the social, epistemological, and ideological concerns of those who use them, which is why framing memory as mnemonics means more than a study of dry technique. In this chapter, I have offered a broad overview of a transformational moment in the history of rhetorical memory practices, demonstrating how the transformation mirrors larger social, material, and intellectual changes. But just as importantly, I hope I have demonstrated the value of mnemonics as a theoretically rich subject of inquiry for rhetorical theory.

Chapter 3: Memory as Method

THE ART OF MEMORY TRANSFORMED AGAIN

The first great transformation undergone by the art of memory occurred when it migrated from the agoras of the classical world to the monasteries of the Christian world. The second transformation occurred when the art exited the monasteries and found itself once more servicing non-religious needs.

This second transformation was more radical than the first. Although the art of memory lost its rhetorical provenance during the early middle ages, its precepts for places and images remained largely intact. Along with Quintilian's textual segmentation, alphabetic indices, and symbolic *notae*, the art of memory during the middle ages and early Renaissance did not change form so much as purpose. Its precepts were put at the service of didactic pedagogy and moral virtue, and these ends, to be sure, were quite different from the ones for which the art had been originally intended. Nevertheless, I imagine that Cicero would have recognized, for example, Hugh of St. Victor's allegorical ark as an edifice constructed with the same precepts developed by the sophists and poets of ancient Greece. However, by the 1500s, as mnemonic precepts were once more found useful for secular purposes, the precepts themselves began to take on a different character. Artificial memory and the art of memory in particular were connected with and finally subsumed within a new intellectual tradition—*method*. The art of memory, as such, was not to survive the convergence.

The chapter's narrative can be summarized as follows: the principles underlying the art of memory (and other memory systems) were found valuable to the new rationalist projects of reformers such as Ramus, Bacon, and Leibniz. In various ways and to various extents, these and other thinkers enfolded artificial memory into logic, and more specifically, into the idea of

method. Artificial memory precepts were suddenly valued not only for recollecting whatever specific knowledge a person might find necessary to recall but also for the impersonal recall of knowledge across all the sciences. In the hands of rhetoricians, this convergence of method and memory would lead to the forms of current-traditional composition pedagogy critiqued by Sharon Crowley and James Berlin, among others. In the hands of logicians and natural philosophers, method and memory would be associated with an ordered procedure for external activity that was to become inseparable from *scientific* method. In this latter case, artificial memory was not to survive as an independent technique or object of inquiry. Elsewhere, artificial memory was to survive in the writings of "occultists," who, I will discuss at length, mounted a defense of the visual precepts of the classical art before its final demise in the eighteenth century.

I argued in previous chapters that an essential element of the art of memory is its emphasis on imagery to facilitate invention. Classical and medieval memory palaces were housed with all manner of artistic constructions, their purpose being to turn memory and thus thinking into a more palpable visual faculty. Cicero, *Ad Herennium*, and Aquinas all agree that the art of memory works by way of sight—humans remember most clearly that which is visually memorable; the best way to ensure quick and easy access to the materials of one's inventions, the reasoning goes, is to remediate words and knowledge into a visual form. The *imagines agentes* of the art of memory were not like an inner writing so much as an inner visual art, a precept well understood and put into practice not only in the classical world but during the middle ages, in the form of "corporeal similitudes" of virtue and vice. Throughout the chapter, I particularly want to highlight the disappearance of these visual and inventive tenets from the memory arts, for in the fifth and final chapter, I will argue that it is time for rhetoricians to return to the fourth canon as a visual practice to facilitate invention. I begin the chapter at its historical endpoint, with a discussion of nineteenth century European memory culture, a direct ancestor of the banal self-help "improve your memory" handbooks one can find in any Barnes and Noble's. The story of memory and method that unfolds during the rest of the chapter will have more impact, I believe, if the reader is aware from the beginning of what the memory arts will eventually evolve into.

ENDGAME: NINETEENTH CENTURY MNEMONICS

In midsummer of 1888, the New York Supreme Court issued a preliminary injunction against one George S. Fellows to stop printing a tract he had written entitled *Loisette Exposed*. The suit had been brought against Mr. Fellows by Professor Alophonse Loisette, author of *Instantaneous Art of Never Forgetting*, which Loissete had advertised as an original and unique system for strengthening one's memory. In the professor's own words, the Loisette system was "the first and only system that really rests on nature" and "a unique and original device, or method of fixing in mind the things to be remembered" and "wholly unlike mnemonics in conception" (qtd. Middleton 107). According to Professor Loisette, Fellows' little tract was a complete reprint of his—Loisette's—original memory system. *Loisette Exposed* amounted to little more than "literary piracy." The New York Supreme Court initially agreed:

Ordered, that the said defendant, George S. Fellows, . . . and all others acting in aid or assistance of him . . . are hereby restrained, prohibited, and enjoined, under the penalties by law prescribed, from printing, publishing, selling, or giving away or delivering a printed or other copy of any part of the plaintiff's system of teaching memory mentioned in the complaint, published by the defendant, entitled 'Loisette Exposed' . . . *This injunction is granted on the ground that the plaintiff has a right of property, as the author of his system for teaching memory.*

(qtd. Middleton 111, italics added)

During the ensuing legal battle, the defendant, George Fellows, argued that he had every right to reprint Loisette's "original" memory system because there was nothing original about it. Loisette could no more claim ownership of his memory system than a math teacher could claim ownership of calculus. The purpose of Loisette Exposed, Fellows explained, was to alert the paying public to the fraudulent claims made by Alphonse Loisette. The so-called "Loisettian School of Physiological Memory, or Instantaneous Art of Never Forgetting" was nothing more than a modification of memory systems dating back centuries. To make his case, Fellows and his counselors rallied encyclopedia entries both recent and historical (including one from Chambers Cyclopaedia of 1728) attesting to the ancient provenance of artificial memory systems based on associations logical, alphabetic, and phonetic. Submitting testimony on behalf of Mr. Fellows were men of such eminent office as Thomas H. McKee, assistant librarian to the U.S. Senate, and Charles W. Johnson, Chief Clerk of the Senate (Middleton 109-110). The suit ended with a mutual settlement between George Fellows and Professor Alphonse Loisette-or, more precisely, it ended with a settlement offered by Professor Loisette that Mr. Fellows refused to sign. The professor withdrew his suit anyway. Mr. Fellows continued to publish Loisette *Exposed* and even rewrote it for a more widely circulated volume entitled *Memory Systems New* and Old, published in 1888 by A.E. Middleton.

This is an interesting story because it tells us something about mnemonics at the dawn of the twentieth century in America. It tells us that there was a large enough market for artificial memory systems that Professor Loisette felt his livelihood threatened by the "libelous" claims of George Fellows. Several thousand dollars were involved in the suit, not a trivial sum at the time: a lawyer operating on behalf of Loisette offered six thousand dollars to Fellows to take *Loisette* *Exposed* from the market. An article in the *Westminster Review* claims that Loisette had previously lectured in London, where the popularity of the lectures had earned him "a large fortune" ("Memory" 184). That a man could make a living teaching artificial memory is interesting enough. More interesting is that several government officials were concerned enough about the history of artificial memory to become involved in the case against Professor Loisette's claims to originality. Here, at the turn of the century, in New York City and Washington D.C., a small drama played out over whether or not one could copyright a mnemonic system. Far from being forgotten to time, artificial memory was still on the intellectual radar—not in the universities as it had been during the Renaissance or in the monasteries as in the middle ages, but, as during the classical era, in the hands of itinerant teachers and politicians.

Yet studying Loisette's memory system, one notices straight away that his is not quite synonymous with the Greco-Roman art of memory, with its precepts for locating memorable images in organized architectural spaces. Rather, Loisette's system is based primarily on what the nineteenth century knew as "association of ideas," the notion that one might move logically between disparate words or facts via a connotative chain. For example, to connect *coal* with *time*, one simply needed to follow a chain such as this one: *coal—fire*; *chimney—mantel*; *clock on the mantel—time*. Loisette and many other nineteenth century mnemonists simply apply this idea— which Loisette calls "correlation" and which, to be sure, is not entirely removed from the principle underlying the *loci* of the classical art—to the recollection of various facts and figures. Loisette provides a list of basic words and teaches his students how to move between them "correlationally" and how to create correlations between the words and whatever specific facts one needs to remember. The closest Loisette comes to using classical precepts is his utilization of homophony to form correlative chains: for example, at one point, he offers the chain *cloth—*

sack-cloth—Saxons to remember that the Saxons were one of three tribes that conquered England. The other part of Loisette's system is identical to the major system described in the second chapter—converting numbers into letters (consonants only) and forming words out of the ensuing consonant clusters.

Loisette mentions but does not utilize a system of places and images. For him, the art of memory is an historical reference point but not a living practice. Word association and remediation of numbers into letters are his preferred "modern" techniques. And he is not alone. In Memory Systems New and Old, Middleton provides a descriptive bibliography of 56 "modern mnemonical systems" (i.e., nineteenth and late eighteenth century systems), each devised and published by a different memory artist. The majority are variations on either the correlationist technique or the major system; others make use of aural techniques, that is, rhymes and acrostics. Only 7 of the 56 systems described by Middleton make use of something similar to the classical art of memory, which Middleton variably calls the "topical" or "locality" system, a reference to the *topoi* or *loci*—the places—of the art of memory. However, these modern locality systems operate primarily on the principle of ordered arrangement rather than affective and personally constructed imagery, and are thus more similar to systems of grid-like segmentation than to the art of memory. Only the system popularized in 1807 by a German named Gregor von Feinaigle offers an art similar to the one described by Cicero and Ad Herennium. (Feinaigle's system will be discussed later in the chapter.) Many locality systems were designed also to remember very particular sorts of knowledge, such as numbers or dates. A few descriptions of these systems will be illustrative:

1849, William Day, "The New Mnemonical Chart and Guide to the Art of Memory." The author . . . elaborated the topical method to the extent of locating

one thousand consecutive objects in ten rooms. The ten rooms were named respectively—the Index Room, Dame's Room, Nurse's Room, Model Room, Riding Room, Library, Chapel, Conservatory, Waiting Room, and Portrait Room. The initials of each room represented the numerals 0 to 9. Each room had ten divisions, and ten objects were located in each division . . . The first room, for instance, would have ten divisions, under the title of Dame, Nurse, Music, Rosebush, Lamp, Gentleman, King, Fireplace, Painting; and each of these would be associated with ten other objects, having some association with them. (Middleton 39)

1867, Thomas A. Sayer, "Aids to Memory." The locality system consists of ten places, with ten objects in each, arbitrarily arranged, the tenth object being a substantive supposed to suggest the number of the locality. A tree represented the first locality because its initial represented 1; a boat the second from its having two oars; a parlor table third because it has three feet; a horse with four legs represented four . . . (Middleton 47)

1870, William Hill, "Local Suggester." [The arrangement] consisted of dividing the interior of a room into 50 spaces, and arranging a series of alphabetical words in each. To these words were connected the idea or fact to be remembered. Music, French, Quadrilles, &c., were taught by this method, rhyme also being used as an aid. (Middleton 60)

In addition to these topical systems—with their dry, impersonal, and not terribly affective visualizations—Middleton also references several "pictorial alphabets" similar to those alphabetic indices developed in the middle ages and popularized during the Renaissance by authors such as Johannes Romberch. Middleton also describes a system devised in 1875 by W.H. Courtley that taught French grammatical genders by "ingeniously associating [them] . . . with the Queen's head on a penny piece." But these systems and Feinaigle's system are as near as Middleton comes to describing a memory art built explicitly on visual precepts. Very few systems in Middleton's bibliography make use of affective imagery or visual association. None, as far as I can tell, recommend the use of one's imagination to create images best suited to one's own emotional disposition, as the classical sources had done. Most importantly, however, none of these systems suggest the use of artificial memory to facilitate the invention of new discourse, which was the entire purpose of the classical art. The link between memory and invention is entirely severed.

The modern mnemonists who devised these systems seem to have been itinerant teachers or regional pedagogues (headmasters and such) who, like the Greek sophists, peddled their arts to whoever was willing to pay for their "courses." Middleton tells us about the following memory teachers:

> In 1807, Gregor von Feinaigle, a native of Baden, visited Paris, and delivered lectures on his "New System of Mnemonics and Methodics." These lectures were very successful, and were followed by the public performance of remarkable mnemonic feats by his pupils . . . Feinaigle's course of instruction consisted of fifteen or sixteen lectures, for which he charged a fee of five guineas. (Middleton 27-28)

William Stokes has, for above thirty years, been one of the hardest workers in the cause of mnemonics. Lessons are given only on condition that they are not to be divulged, a fee of five guineas being the ordinary charge . . . He lectured in the famous Colosseum from 1861 to 1863, afterwards at the Polytechnic till it was closed a few years ago, and thereafter at the Westminster Aquarium. (42)

Mr. Woollacott has been teaching Major Beniowski's system for some time, but it was only in 1882 that he published details in a sixpenny pamphlet, entitled "Phrenotypics, or the Science of Memory." Mr. Woollacott has taught the art very successfully, and recently one of his pupils repeated before a public meeting from memory the head lines of each paragraph in a copy of the Globe newspaper a few hours after publication, a feat which he has frequently performed. (34-45)

... This was the system elaborated by the Rev. T. Brayshaw, who was for some time head master at Keighley Grammar School. Before his appointment, Feinaigle's system had been partially used at the school, and Mr. Brayshaw applied himself to the task of improving upon the German's system. (39)

A study of this memory culture and its place in nineteenth century Britain and North America would be interesting in its own right, but for my purposes here, the most significant thing to note about lecturing mnemonists such as Feinaigle, Stokes, Woolacott, and Brayshaw is that they thought of their memory systems as *scientific* and not just *artistic* schemes. The nineteenth and late eighteenth centuries, after all, were nothing if not self-consciously scientific. In his

"Bibliography of Mnemonics, 1325 – 1888," George Fellows lists 115 memory texts published in English between 1780 – 1888, and looking at the most frequent words in these 115 titles (Table 3.1), one can detect the scientific postures adopted by the traveling memory teachers and regional pedagogues who wrote them. Apart from 'art' and 'memory', the most frequent words in these titles demonstrate an attempt to make the art sound more technical: 'memoria technica', 'method', 'mnemotechny', 'applied', 'phrenotypics', 'science', 'new', 'systematic'. Even the word 'mnemonic/s' itself points to a new rationalist mindset about artificial memory. 'Mnemonic/s' is rarely used in memory treatise titles prior to the eighteenth century. Of the hundreds³¹ of treatises published between 1430 and 1700, only five utilize that Greek root: the anonymous Gymnasium Mnemonicum (1610), John Henry Alsted's Systema Mnemonicum (1610), the anonymous Artis Mnemonica Explicatio (1611), Henry Herdson's Ars Mnemonica (1651), and John Willis's Mnemonica, or the Art of Memory (1661). All the others are ars reminiscindi or artificiosae memoriae. In 1730, the first treatise to use the word 'mnemonics' in seven decades is published: Mnemonics delineated in a small compass and easy method, for the better enabling to remember what is most frequently wanted, and most difficultly retained or recollected. This text seems to mark a turning point in the word's popularity, for in the middle of the eighteenth century, 'mnemonic/s' and 'mnemotechny' become exponentially more popular in the titles of memory treatises. It as though practitioners of artificial memory, responding to the increasing centrality of science in the surrounding culture, felt a need to *technologize* their techniques. They seem to have grasped onto the hitherto unpopular term 'mnemonic' to signal that their arts, too, were grounded in scientific principles. Indeed, the correlationism or association of ideas described a moment ago is a practical application of concepts emerging from

³¹ See note on page 197 for a list of bibliographies consulted.

memory 60	aid/s 7	language 4
mnemonic/s 22	phreno/typics 7	dates 3
art 14	method/ic 6	forgetting 3
system/s/atic 14	improve/d 6	helps 3
new 9	artificial 5	instantaneous 3
history 8	chronology 5	natural 3
memoria 8	science/s 5	
technica 6	applied 4	

Table 3.1 Most frequent words in 115 memory treatise titles (1780 - 1888)

faculty psychology and British empiricism, whose relationships to rhetorical theory both Virginia Allen ("The Faculty of Memory" 52-54) and Sharon Crowley have discussed extensively. The associationist idea, Crowley writes, is that "minds work according to innate principles of association." She quotes Locke, who, working from Aristotelian principles, says the following about associationism:

[In] the sequences that occur in trains of memory or imagination or thought . . . one such experience follows another through certain definite relationships. Thus, one idea may serve to recall another which resembles it or which was contiguous to it in former experience. (qtd. Crowley, *Methodical Memory* 18)

Locke is describing here the same principle upon which Loisette's and other nineteenth century mnemonists' systems operated. Crowley and Allen demonstrate that this principle also influenced current-traditional composition pedagogy (a point to be elaborated upon later in the

chapter). Thus Alexander Bain, writing in *English Composition and Rhetoric*, sounds just like Locke when describing the operation of memory:

The ability to retain successive impressions without confusion, and to bring them up afterwards, distinguishes mind; it is a power familiarly known as Memory. Now, the chief way in which memory works is this: impressions occurring together become associated together, as sunrise with daylight; and, when we are made to think of one, we are reminded of the accompaniments. (21)

Artificial memory, then, is still on the intellectual map in the late nineteenth century, but it has become synonymous with psychological, pseudo-scientific principles that emphasize order and succession over visuality and affect. The classical art—the *imagines* of Cicero and *Ad Herennium*—has been eclipsed by other, less imaginative systems. The term mnemonics has been adopted in these systems to denote formal methods for memorizing facts and figures. And most significantly, artificial memory has been severed from its original purpose of facilitating invention. Rhetorical memory, in short, has been made wholly *methodical*. Surveying the causes and consequences of this transformation is the goal of the rest of the chapter.

THE CONVERGENCE OF MEMORY AND METHOD

Simply put, memory became methodical in the hands of early modern logicians and natural philosophers. We thus begin with the threshold difficulty of explaining how logic, natural philosophy, and artificial memory came together in the first place, given that memory systems had accumulated centuries of religious and (following Lull) supernatural baggage. What use would the new philosophers—men like Ramus, Bacon, or Leibniz—have for such precepts? It is the case, however, that science and "magic" are often found intertwined in early modern Europe. When he was not inventing calculus, Newton was working at alchemy; Giordano Bruno, popularized in the television series *Cosmos* for being an early proponent of Copernicanism, was also famous in his day (c. 1548-1600) for writing esoteric tracts on Hermeticism and the occult (Yates, *Giordano Bruno*); and though Francis Bacon opposed the magical-alchemical tradition on moral grounds, wanting the pursuit of knowledge to be cooperative, not secretive, he was nevertheless "influenced by the occultists' dream of a renovation of knowledge and by their assertion that human beings can command and perfect nature" (Mebane, *Renaissance Magic* 3; see also Rossi, Francis Bacon 21). Metallurgic alchemy—the possibility of the transmutation of gold—was a "dominant" theme in Bacon's work, according to Benjamin Farrington (The Philosophy 51), and Doina Cristina Rusu has argued that Bacon's posthumously published Sylva sylvarum is best understood as an exhibition of Bacon's own "science of magic" ("From Natural History to Natural Magic" 7). Bacon was not alone. Throughout the early modern period, natural philosophers sought to place alchemy among the branches of the tree of knowledge. Bruce Moran writes in *Distilling Knowledge* that the corpuscular theories of the Enlightenment—the influential idea that all matter is composed of minute particles—was in fact nothing more than an extension of alchemical theory, which had long considered the possibility that distilling increasingly minute particles of lesser metals would eventually leave behind the purest of metals, gold (36). The impulse behind both magic and science—or, more appropriately, natural philosophy—was to understand nature more fully and thereby to exert mastery over her. Until natural philosophy had proved itself the more reliable of the two approaches, it made sense to dabble in those occult and putatively ancient ideas that had re-emerged in the early modern period. The medievalist C.S. Lewis once put it this way:

There was very little magic in the Middle Ages: the sixteenth and seventeenth centuries are the high noon of magic. The serious magical endeavour and the

serious scientific endeavour are twins: one was sickly and died, the other strong and throve. But they were twins. They were born of the same impulse. I allow that some (certainly not all) of the early scientists were actuated by a pure love of knowledge. But if we consider the temper of that age as a whole we can discern the impulse of which I speak. (*Abolition of Man* 87-88)

The impulse of which Lewis speaks is described by Paolo Rossi when he writes that Bacon borrowed from the magical tradition

> the idea of science as the servant of nature assisting its operations and, by stealth and cunning, forcing it to yield to man's domination; as well as the idea of knowledge as power. (*Francis Bacon* 21)

Alchemy in particular "did not attempt to impose, contrary to nature, a change of one thing into another" but sought a "catalyst" that would assist nature's operations or "hurry nature along," in Bruce Moran's words (*Distilling* 29). Understanding and discovering how to exert some agency over natural processes was likewise the goal of the natural philosopher. And so one finds rationalists of the early modern period writing as often about ancient magical methods for gaining knowledge as about their own, proto-scientific methods³². Sometimes they are critical about those older traditions, but the fact that Francis Bacon found any moment whatsoever to pronounce on alchemy demonstrates that the scientific and the magical worlds shared some common ground. Thus and similarly does one find early modern thinkers writing about the art of memory, sometimes in a critical way, often giving it a new rationalist sheen, but always under the assumption that mnemonic precepts are, at the very least, worth considering.

³² Brian Vickers has challenged the line of reasoning unfolded here, arguing that the influence of occult practices on the development of modern science is "wholly unfounded" (*Occult and Scientific Mentalities* 6). However, the argument is not that one *directly influenced* the other in terms of theory or practice but simply that both science and occultism had similar unmet goals in the early modern era and that scholars of the time can be found dabbling in both worlds.

Worth considering for what? Of the many cultural and intellectual projects undertaken during the early modern period, a central one was the creation of what might anachronistically be termed knowledge management systems. Today, we take for granted not only the massive amounts of information housed in books and databases but also the management systems designed to index and facilitate access to that knowledge: encyclopedias, bibliographies, library catalogues, Wikipedia, internet search engines. However, early modern intellectuals lacked any such device or means by which knowledge might be systematically retrieved, compared, and used for invention. The encyclopedic arts, the combinatorial arts of Lull, the art of memory and other mnemonic techniques all intersect in this project of *cataloguing knowledge*. As new and old texts became more widely circulated post-Gutenberg, and as new trade routes and imperial ventures flooded Europe with new objects of inquiry, a taxonomic impulse arose among Western intellectuals. (In England, this impulse took shape most clearly in the "invisible college" that came together to found the Royal Society.) It was believed that to discover root truths or new insights about the sciences—all the knowledge discovered and re-discovered after the middle ages-one first needed to organize that knowledge. Early modern scholars realized that the precepts of the art of memory—with its ordered visual, symbolic, or alphabetic associations were, in Lina Bolzoni's words, "a structure that both orders and helps create content" (Web 6). Memory arts could be useful for creating an ordered image of the universe, either in the mind, on the page, or, in the case of a sixteenth century Italian named Giulio Camillo, in a physical memory palace built to scale (see Bolzoni, *Il Teatro*). It has also been argued that Renaissance Wunderkammern—cabinets of curiosity—were likewise influenced by the idea of a physical memory palace to house newly discovered knowledge (Bolzoni, Gallery 255; Westerhoff, "A World of Signs"). The art of memory is thus implicated in the development of ordered systems

or taxonomies of knowledge that were to be a hallmark of Renaissance and Enlightenment thought.

(a) Lull and Leibniz

Using the precepts of the art of memory to order the universe begins with Ramon Lull. Recall Lull's art as described in the last chapter, comprised of alphabetic associations and an "ordered succession of steps" on the ladder of creation, offering "a hierarchical and organic image of the universe" (Rossi, Logic 36). Lull's importance in a history of the art of memory is his realization that mnemonic techniques could be used to organize the universe of knowledge and to discover new things about that universe-indeed, as Lull and his later disciples saw it, the goals of organization and discovery were one and the same, for they and he believed that all knowledge was somehow unified and that there existed a logic, "a single law, key or language" through which one might apprehend that unity: and Lull's system of combinatorial letters (or later elaborations of it) was the key. For Lullists, the *ars combinatoria*, applied across the hierarchy of creation, was not only a memory art but also a logic (and a far better one than the dry syllogisms of the Scholastics) designed to discover immutable truths. Thus was Lullism, born from mnemonic precepts, considered a "memorative logic." This "substantial affinity," writes Paolo Rossi, "between logic and the art of memory underlies the continued attempts in European intellectual culture, from the early sixteenth century to the time of Leibniz, to use the Lullian art to construct both an ars generalis, designed to unify the field of knowledge, and a systema mnemonicum, or encyclopedia of the sciences" (Logic 59). In other words, the art of memory and the Lullian combinatoria were seen by many as the key tools for constructing a representation of universal knowledge. The combinatorial "rhetorical machines" analyzed by Bolzoni are another, less mystical example of this thinking.

The "logic" of Lull's art both organized and mirrored the structure of the real world— Lullists believed in a perfect correspondence between the structure of knowledge and the structure of the universe, between logic and ontology. This is why they believed the structure of Lull's art mirrored the structure of the real world (Rossi 61). The ordered *loci* on the ladder of creation, the associative alphabet—following Lull, these were no longer *just* mnemonic precepts but also components of a "'mirror' or 'artificial theater' of reality" (80). At least, such were the associations that grew up around the memory arts after Lull, to the point where, in the late seventeenth century, it was customary to use the terms "artificial memory," "mnemonic system," and "memorative logic" to denote both large-scale encyclopedic works as well as straightforward artificial memory treatises (Rossi 44-45).

We need not fully understand what Lull was on about to appreciate that he and his disciples found artificial memory techniques useful for ordering what they assumed was the entirety of knowledge about the universe. This explains why the Lullists often moved within the same cultural milieu as the encyclopedists, the "encyclopedia" being likewise equated, as one Renaissance author put it, with "the whole world of the sciences," or, in the words of another, with "an ordered classification of all the elements of reality" (qtd. Rossi 38, 40). For example, a seventeenth century German named Daniel Georg Morhof, who published that country's first complete survey of European literature as well as an eleven-hundred page general encyclopedia, was also an alchemist and a dedicated Lullist. His final published work, *De Acuta Dictione*, was a rhetorical handbook which utilized Lull's combinatorial memory art (Cramer, *Words Made Flesh* 58). The chief difference between the metaphysical Lullists and the encyclopedists—where any difference existed at all—was that the former, to reiterate, saw a perfect symmetry between their particular ordered classification of reality and reality itself, whereas the latter saw no such

oneness. Both the Lullists and the encyclopedists, however, believed in a unity of knowledge, and that there was some key or method operable across all branches of knowledge, a key which might unlock the secrets of each. The Lullists thought they already had the key—Lull's alphabetic permutations, whose principles were rooted in ancient mnemonic technique.

Today, Lull's alphabet, with its supernatural and neoplatonic associations, may not seem like a key to anything; nevertheless, it exerted an influence far beyond the Lullist tradition. Like medieval mnemonic alphabets, Lull's letters were symbols standing in for particular concepts. In Lull's system, however, these symbols were to be combined in many different ways, the permutations thus realizing more complex information than any single symbol could evoke on its own. This idea—a limited set of symbols-*cum*-concepts, capable of being combined in more and more complex ways—was eventually elaborated upon in Gottfried Leibniz's 1666 dissertation, *Dissertatio de arte combinatoria*, in which Leibniz worked from Lull's system to posit a whole ordered ontology which utilized combinable symbols.

Leibniz would later disparage his dissertation as "immature," but his ruminations on Lull's associative alphabet clearly foreshadow his *characteristica universalis*, or universal character, a kind of ideographic writing that was to be the basis of

> a new way of calculating, suitable for matters which have nothing in common with mathematics, and if this kind of logic were put into practice, every reasoning, even probabilistic ones, would be like that of the mathematician. (qtd. Strickland 355)

Leibniz's universal character was to be a set of symbols that could, by virtue of their transparent associations, be "read" by all regardless of the language they spoke and that could be used to undertake a sort of algebra of non-mathematical issues. Leibniz explains further:

For let the first terms, of the combination of which all others consist, be designated by signs; these signs will be a kind of alphabet . . . If these are correctly and ingeniously established, this universal writing will be as easy as it is common, and will be capable of being read without any dictionary; at the same time, a fundamental knowledge of all things will be obtained. The whole of such a writing will be made of geometrical figures, as it were, and of a kind of pictures — just as the ancient Egyptians did, and the Chinese do today. Their pictures, however, are not reduced to a fixed alphabet . . . with the result that a tremendous strain on the memory is necessary, which is the contrary of what we propose. ("On the Art of Combination" 10-11)

Leibniz intuited something like the ancient connection between memory and invention—that is, he intuited a connection between the ease with which his signs might be remembered and the ease with which they might be used for knowledge construction. The reference to hieroglyphics and Chinese logograms also demonstrates that Leibniz wanted his alphabet to be more visually oriented than the Roman alphabet, and indeed, his characters for the elements, earth, water, air, and fire, are entirely pictorial. Then again, in the quote above and elsewhere, Leibniz indicates that in addition to "a kind of pictures," his universal alphabet would be formed of points, lines, angles, and so on—more *diagrammatic* than visual in the way the art of memory was visual, though, to be sure, diagrams are a form of visualization. (Lull's art also did not use affective images, and is likewise more of a diagrammatic method than an artistic one.)

Leibniz, unfortunately, never completed his universal character. In 1714, he wrote to a friend complaining that people pay no more attention to the idea "than if I had told them about a dream of mine" (qtd. Loemaker 656). However, the idea of a combinatorial symbolic alphabet

exerted an influence, directly or indirectly, on the development of future intellectual projects semiotics, of course, but also logical positivism and Boolean algebra. Florian Cramer, a design professor at Rotterdam University, even argues in *Words Made Flesh* that the Lullian art that inspired Leibniz is an early example of a fully computational, algorithmic system (36). Thus can a line of influence be traced from mnemonic alphabets—in which a letter or symbol denotes a quantity of knowledge—to the formal ontologies of both philosophy and information science. In the middle of this line stands the mystic Ramon Lull and his unique idea that mnemonic alphabets and the information for which they stand might be combined in myriad ways not only to manage complex permutations of knowledge but also to facilitate the invention of new knowledge that hitherto had been overlooked.

However, Lull's use of mnemonic principles—and Leibniz's use of Lull's principles also reveal the ease with which artificial memory precepts can be absorbed into larger projects, to a point where the precepts become inseparable from the new projects themselves. The connection in Leibniz's work between memory and his *characteristica* is there but admittedly faint; and today, the suggestion that memory arts have something to do with the procedures of semiotics or information technology sounds a bit odd. Though vital to all sorts of intellectual endeavors, systems of "information recall" seem all too ready to fade quietly into the background as they serve their purpose of facilitating some other intellectual work. Indeed, the better the system functions, the more likely its users are to forget it entirely. (When was the last time you thought of the Google search bar as a mnemonic device?) The method of Petrus Ramus provides another example of this process, by which the memory arts are absorbed so deeply into a new project or practice that they cease to be independent techniques or objects of inquiry in their own right.

(b) Ramus

In rhetorical theory, "method" is most associated with Petrus Ramus, who famously argued that the canons of invention, arrangement, and memory belong to dialectic, while the canons of style and delivery are rhetoric's only proper domain. Walter Ong describes Ramist method as "the arrangement of arguments," or more thoroughly, "the arrangement of various things brought down from universal and general principles to the underlying singular parts, by which arrangement the whole matter can be more easily taught and apprehended" (*Ramus* 245). Ramist method is explicitly not concerned with invention. That canon, for Ramus, is the proper domain of moral and natural philosophy. Instead, method concerns itself with the careful management and arrangement of truths already discovered.

Ramus provides an example of method applied to grammar in the 1546 edition of *Training in Dialectic*:

Let us suppose that all the rules, definitions, and divisions of grammar have been ascertained, that all the examples used in grammar have been found, and that all these things have been truly and correctly "judged." Let us suppose that all these prescriptions are written out, each on a separate little ticket, and all of these thoroughly mixed in an urn . . . Now I ask what part of dialectic would teach me how to put together all these mixed-up precepts and to reduce them to order. There is no need here of dialectical invention to discover the precepts, for all have been found and all the parts tested and judged. There is no need here of syllogism, because what is true here is already understood. Therefore method and a sure way of arrangement alone is required, and art (doctrina) shows us the one simple method which locates the universal and general things first, then the special and

secondary afterwards. Let our dialectician, then, by the light of method first pick out from the urn the definition of grammar, because nothing in all these prescriptions is more general, and set it in the first place . . . Next let him look for the parts of grammar in the same urn and locate them in the second step, after the universal definition. The parts of grammar are four: orthography, etymology, syntax, and prosody. Then let him separate out the definition of these parts . . . (qtd. Ong 245-46)

Method, in short, is the ordered and orderly arrangement of knowledge, from generals to specifics. Thus can Ramus say that arrangement is a part of dialectic; methodical arrangement follows invention; without it, one's inventions or discoveries cannot be effectively published, comprehended, or more importantly, taught. From this concept of method are born Ramus's famous dichotomies and their corresponding visual diagrams, in which knowledge is set out on the page from the general to the specific (Figure 3.1). Naturally, Ramus was not the first to organize material in page space, but Ramist method was certainly influenced by the Gutenberg era's "preoccupation with space as a vehicle of intelligibility," which in turn can be framed as a literal extension of the *loci* of the art of memory, especially in Quintilian's sense of the term. The printers and authors of the period had an "inexorable disposition," Ong writes, "to represent thought and communication in terms of spatial models and thus to reduce mental activity to local motion, given body in a limitless number of images" (Ramus 76, 119). However, in the hands of Ramus and other scholars of the early modern era, these spatial models are neither imaginative nor affective but merely ordered—nor are they designed to facilitate invention, for that, again, is the job of philosophy. In mnemonic terms, the classical rule for *imagines et locis* is reduced by

Ramist method to an utterly simplified rule for *locis* on the page—a rule which Quintilian had ironically championed over a thousand years earlier.

In his *Scholae in liberales artes*, Ramus remarks on the ineptitude of the visual rules for memory laid down by Metrodorus and Simonides, quoting, as well, Quintilian's recommendation "of a simpler way of memorising through dividing and composing the material":

> The art of memory (says Quintilian) consists entirely in division and composition. If we seek then an art which will divide and compose things, we shall find the art of memory. Such a doctrine is expounded in our dialectical precepts . . . and method . . . For the true art of memory is one and the same as dialectics. (qtd. Yates, *Art* 233)

Ramus thus links his dichotomous method with memorization of its content. Method aids memorization, to the point where both are one and the same, in Ramus's mind. This is the true art of memory. Placed historically, of course, Ramist method is but one part of the art of memory. It has retained the notion of "space as a vehicle of intelligibility," to use Ong's description, in the form of a print-enabled, technologized system of *loci* (Figure 3.1). But Ramus, like Quintilian before him, has wholly rejected the *imagines* of the classical art as well as their inventive purposes. Like Quintilian, Ramus has forged instead a connection between memory and arrangement; the images are removed and *loci* are figured as places on the page. What remains is precisely the Ramist system of segmentation, of "division and composition," which Ramus calls method—"the true art of memory."

"[Ramus's] conception of method," writes Paolo Rossi, "as the *systematic and ordered disposition of notions* absorbs many of the 'rules' of mnemotechnics" (*Logic* 101, italics in original). Ong puts it this way: Ramus can adopt memory into dialectic because his entire topically conceived logic is itself "a system of local memory" (*Ramus* 280)—a system inspired, however, by Quintilian and not by Cicero, *Ad Herennium*, Metrodorus, or any other classical or medieval source for the architectural, visual art. Only one of the "rules" for the art of memory has in fact been absorbed into method; the more essential ones about affective imagery and invention have simply been dropped. The result of this dual absorption/deletion can perhaps best be demonstrated by juxtaposing Ramist dichotomies with other knowledge visualizations based on the imaginative memory art (Figures 3.1 to 3.6).

In the Ramists' hands, the art of memory has been disembodied—in some cases, that statement is literal, for using body parts as mnemonic *loci* was a valuable technique for imparting knowledge of bodily sin (Bolzoni, Web 180-81); such images continued to be used in the early modern era to order secular knowledge, as well (Figure 3.6). Whether disembodied is taken literally or metaphorically, however, it is evident that the imaginative constructs inspired by the classical art have been reduced by Ramism to diagrams whose utmost purpose is orderly arrangement. To be sure, arrangement was always one of the underlying principles of the classical art. Recall Simonides, who remembered the names of the dead dinner guests by reconstructing their places around a table. However, spatial order was but one element in a system that was, in its totality, imaginative and affective, whose resultant constructs were decidedly personal—few memory treatises prior to the Renaissance recommend what mnemonic images should look like; it was assumed the individual practitioner knew best how to excite his or her memory. In addition, it was not the ordered *loci* of the classical art but its *imagines* agentes, the images that remediated knowledge into a visual form, that linked memory with invention. The images were housed in the *loci* of memory palaces in a certain logical arrangement, but this arrangement of images was not set in stone, as it were, even though the *loci*



Figure 3.1 Ramist dichotomies. Johann Thomas Freige, Professio regia



Figure 3.2 Rationarium Evangelistarium, a reprint of Ars Memoranda³³

³³ See Henri Bouchot and Anton Einsle, *The book: its printers, illustrators, and binders* (13)



Figure 3.3 Johann Thomas Freige, Professio regia



Figure 3.4 Stanislaus Winklemann, Logica memorativa



Figure 3.5 Pre-Ramist "tree" from Rudolf Agricola, Della inventione dialettica

Thesauri memorix artificiose



Figure 3.6 Cosmas Rosselius, Thesuari memoriae artificiosae

themselves should be more or less permanent. Indeed, the entire purpose of familiar architectural *loci*, according to *Ad Herennium*, is to facilitate the rearrangement, deletion, and addition of *imagines*. Like letters on wax tablets, mnemonic images are mutable: "for the images, like letters, are effaced when we make no use of them, but the backgrounds, like wax tablets, should abide." This explains why it was the principle of visualization, and not orderly arrangement, that linked memory and invention in the classical world. The *imagines* were the elements that made knowledge fluid; they encouraged the construction—the weaving together, the composition, the assemblage—of knowledge and new patternings of that knowledge. Once *imagines* were jettisoned, following the absorption of artificial memory into Ramist method, memory arts inevitably resigned themselves to issues of arrangement, leaving invention to the natural philosophers.

The importance of this shift from a visual/personal memory art to a diagrammatic/ impersonal art lies in the tendency of diagrams to reify their content and their contents' interconnections. By virtue of their creativity, mnemonic images such as those found in Figures 3.2, 3.4, and 3.6 foreground their own thoroughly constructed nature; they invite their own reimagining. By extension, they invite the rhetor to imagine new ways to disassemble and reassemble the knowledge with which the images are associated, to consider new contacts between individual pieces of information, and to contemplate how information might be artfully added to (or taken away from) the existing image. Put another way, mnemonic imagery encourages its own deconstruction and reconstruction in a way that Ramist diagrams do not. No knowledge is reified when put into such imaginative forms. In contrast, the ordered hierarchies of Ramist dichotomies resist their own reworking. To modify the Ramist edifice is to deform its methodically formed knowledge and to invalidate its logical progressions. The Ramist dichotomy does not even allow the creative "geometric arrangement of words in space" that one finds in earlier attempts at visualizing logical relationships, images which presage contemporary network maps (Figure 3.7) (Ong 82).



Figure 3.7 Geometric logic. Tartaret, Expositio

Thus, to reiterate, concurrent with the shift from mnemonic images to ordered mnemonic diagrams is a decoupling of memory and invention. When Ramism jettisons images, Yates writes, the use of the imagination goes with it: "Gone in the Ramist system are the emotionally striking and stimulating images the use of which had come down through the centuries from the art of the classical rhetor. The 'natural' stimulus for memory is now not the emotionally exciting mental image; it is the abstract order of dialectical analysis" (*Art* 234). After Ramus, the art of memory becomes more and more synonymous with ordered *loci* alone—the canon of memory becomes synonymous with the canon of arrangement. So strong is this understanding of memory in certain quarters that Francis Bacon, writing many decades after Ramus, can equate artificial memory solely with order:

The memory-aids perform the following function: they help one to draw up a particular history whose parts are disposed in a particular order from the immense multitude of particular facts and from the mass of general natural history. The order of the particular history makes it easier for the intellect to work on the materials and execute its proper functions . . . Firstly, the things to be investigated for a given problem should be set out in the same way that one sets out topica. Secondly, one should arrange and subdivide the material into tables . . . (qtd. Rossi, *Logic* 119)

Of course, it was not only Ramus who emphasized the importance of methodical order. Method was also implicated in the practices of early modern natural philosophy and alchemy. The natural philosopher and the alchemist—Bacon included—worked not only by passive observation but by active experiment; and if one was to learn anything from artificial experimentation—in which the truth was coaxed out of nature, so to speak—one needed "to follow a particular method of

inquiry," as Bruce Moran puts it, in order to organize the facts one observed. Otherwise, it would be impossible to repeat the experiment and to develop theories from those recurring observations (133). Experiment was thus grounded in "processes and procedures [that] acquired the status of artifacts" through their methodical and replicable regularity (Moran 42). With the rise and dominance of natural philosophy, it was perhaps inevitable that memory would lose its status as an art of invention and be relegated to an art of reconstructing ordered activity and thought. After two millennia of a memory art that combined order with affective and generative images, the sixteenth century began to reduce memory to order alone. The resultant discourse on memory was wholly impersonal, rational in its orientation, and severed from artificial memory's original purpose of facilitating invention³⁴.

The Ramist rejection of mnemonic imagery was not only a matter of shifting intellectual currents. It had obvious social overtones, as well, specifically in the context of Catholic and Protestant struggles in England. Thomas Conley notes that in the middle and latter 1500s Ramism took root mostly in Calvinist circles at St. Andrews, and in Puritan circles at St. John's College, Oxford, and Magdalen College, Cambridge (140). Outside these circles, Ramism did not at first exert much influence; one thus finds the classically oriented Thomas Wilson—whom Conley compares to Erasmus in his Ciceronian outlook—providing a full description of the imaginative, architectural art of memory in his 1553 *Arte of Rhetorique*. By the 1600s, however, once Protestantism (and Puritanism in particular) "had gained the upper hand in English literary and political affairs," Ramist method began to attract more serious attention across the entire

³⁴ It must be pointed out that the early modern period, especially the eighteenth century, did witness the proliferation of knowledge visualizations in the form of *trees of knowledge* (see Lima, *Book of Trees*; Weingart, "From Trees to Webs"). However, knowledge trees had a cultural ancestry very different from memory palaces and mnemonic imagery. While the art of memory was always situated in rhetoric and discourse, knowledge trees came out of Aristotelian classification and Biblical/royal genealogy, and were thus rarely framed as *memory arts*. There is, of course, much to be said about the overlap between mnemonic imagery and knowledge trees, but I leave it to future study.
Anglosphere (Conley 143). And as we shall see later in the chapter, this trend corresponds to a dramatic decrease in the publication of memory treatises. Wilson's *Arte*, for example, went through 8 editions between 1553 – 1585, but not a single new edition was published during the 1600s (Green and Murphy, *Renaissance Short-Title* 462).

In England, then, Ramism and Protestantism were linked; and I would argue that the link was forged in part by their shared rejection of imagery, for imagery, in Protestant England, was synonymous with Catholic religious practice, idolatry, and all manner of irrational superstitionholy relics, indulgences, the veneration of saints. Perhaps the crucial event for understanding this link is Henry VIII's dissolution of the monasteries, an episode that saw a literal smashing of the idols—"an orgy of iconoclasm," in Leanda de Lisle's words (Tudor 244)—with books burned, altar-pieces ripped out, stained glass windows shattered, and art destroyed. The destruction wrought during this period was driven as much by opportunistic plundering and political intimidation as by abstract theological conflict, but the result was the same. Writing not long after those events, the antiquarian John Stow would write that the Protestants "judged every image to be an idol" (qtd. de Lisle 244), resulting in the loss of some ninety percent of medieval art housed in England (de Lisle, "A sad reminder"). In such an environment, precepts for affective imagery are dead on arrival. As one Ramist wrote in condemnation of the art of memory: "A thing faigned in the mind by imagination is an idol" (qtd. Yates 278). We will return to this link between Protestant and Ramist rejection of imagery when we turn to the debate between Ramist and occult memory artists.

(c) Nineteenth Century Rhetoric

This Ramist refiguring of memory gave rise eventually to the "methodical memory" of eighteenth and nineteenth century composition pedagogy, analyzed extensively by Sharon

Crowley. "Eighteenth-century discourse theorists," Crowley tells us, "adapted method to their own uses ... They employed it in their rhetorical systems primarily as a means for arranging arguments in such a way that they reflected the progress of the investigation that had given rise to them. In this way method became a theory of composing" (Methodical 35). Implicit in Crowley's assessment here are two slightly different notions of method, which she calls "initiative" and "magistral" (37). One is the progress of an investigation; the other is the means for arranging arguments in such a way that they reflect the progress of that investigation. Ong defines these two types of method as "an order of procedure in external activity" versus "the logical organization of science" (Ramus 229); he associates the former with the advent of scientific method and the latter with a "rhetorically-oriented logic" that would become synonymous with "organizing a composition" (Ong 307)—or "a theory of composing," in Crowley's words. It is the difference between the method of investigation itself (including experimentation, which I mentioned a moment ago) and the method one follows to organize that investigation on the page so as to later impart or teach what one has investigated. The latter is Crowley's methodical memory.

For the Ramists, method *qua* arrangement still entailed the creation of visual diagrams, preserving an inkling of the classical insight that spatializing words and knowledge aids recollection and clear thought. For later discourse theorists, rhetoricians, and compositionists, however, even this fragile retention of visual technique was largely given up. The only current-traditional technique in which one finds an echo of Ramist visual diagramming—to say nothing of the classical art's *imagines agentes*—is of course the technique of outlining. Crowley defines current-traditional outlining as "a graphical representation of the process of analysis" that displayed "the workings of the methodical memory . . . for all to see" (82). She points to several

authors, including George Campbell, who explicitly describe outlining as an aid to memory (84). Crowley herself notes that current-traditional manuals for outlining remind her of "the dichotomous divisions of which Peter Ramus was so fond" (85). In composition handbooks that do not utilize outlining, however, there is no retention whatsoever of classical mnemonic precepts. A striking example of this erasure is John Quincy Adams' 1810 *Lectures on Rhetoric and Oratory*, which has been called by James Berlin the nineteenth century's most "comprehensive" (*Writing Instruction* 15) rhetorical treatise inspired by classical sources— Aristotle, Cicero, Quintilian. But even Adams finds nothing to say about memory's preceptive tradition. Adams devotes hardly a paragraph to the fourth canon:

Memory is the firm possession and ready command in the mind of the thoughts, arrangement, and words into which the discourse has been reduced. (*Lectures* 171)

Further searching³⁵ the nineteenth century rhetoric/composition handbooks analyzed by Crowley, one continues to find in these texts a complete absence of artificial memory precepts. Crowley cites 45 handbooks published between 1800 – 1910, and in Appendix A, I have transcribed all passages using the word 'memory' in 23 of these texts³⁶. Reading through the passages, two obvious patterns emerge. First, their authors consistently (and expectedly) link memory with organizational concerns; memory and invention are wholly unrelated topics in these handbooks. Thus Henry Coppee in *The Elements of Rhetoric*:

³⁵ With the Google Books corpus.

³⁶ These numbers, of course, are miniscule compared to the total number of handbooks published in the nineteenth century. Forrest Houlette's bibliography lists 870 general rhetoric/composition texts, as well as 3,000+ more texts covering grammar, style, Business English, and so on. Future "distant readings" of these texts will be necessary to confirm or to complicate the trends uncovered in Crowley's references, which are, with some exceptions, the same texts referenced in Nan Johnson's *Nineteenth Century Rhetoric in North America* and Thomas P. Miller's *Evolution of College English*. To date, studies of nineteenth rhetoric and composition have barely scratched the surface of the archive.

Memory being simply the firm retention by the mind of the things and words, applied to Invention, has come now to take its place in the domain of intellectual philosophy — a science very indeterminate in Cicero's day: memory is consequently eliminated from his division of Rhetoric. (43)

And later in the same text:

It has not been unusual to classify, as one of the parts of a discourse, what is called the Recapitulation; or a brief but comprehensive summary in proper order of the discourse itself: to refresh the mind on all its points, and fix it in the memory. (255)

Or John F. Genung in The Practical Elements of Rhetoric:

Extended paragraph topics are a needless burden to the reader's mind and memory; and it is the feeling that too much is demanded of his interpreting powers that causes his dislike of a solid page. As a rule, paragraphs of over a page in length should be avoided. (193)

The second obvious pattern emerging in these 23 texts is that when they do find occasion to discuss memory and imagination, the discussion is invariably placed into the context of style—certain authors stress that if a composition is to stick in a reader's mind or to inspire the reader's imagination, the writer must construct memorable images with his words. Thus Henry Noble Day writes in *The Art of Discourse*:

Secondly, in this use of language, the imagination is directly addressed and put in play. The hearer fixes his eye on the sensible object or scene, and his imagination forms the picture of the thought. He thus becomes himself a creative artist . . . Interpreting a mere language of signs, where words only stand for ideas, and do

not represent them through sensible objects, is, on the other hand, a dull exercise of memory. (254)

One senses here a vague connection to the art of memory via the psychological principle that humans think in images, but the authors seem oblivious to the fact that this principle once had implications for both strengthening the memory and facilitating invention.

Another and perhaps more noteworthy change one notices in these handbooks—a change undoubtedly implicated in Ramist method itself—is that their primary concern becomes impressing ideas upon *the memory of the reader* through clear organization and memorable word-imagery. Genung again: "It is the reader's memory, most of all, that we are to consult: in developing the thoughts that compose our theme we are to choose such natural and sequent order as shall be convenient for him to retain and recall" (273). The possibility that *writers* might need an artificial memory system for themselves—for purposes of invention—is never entertained. Indeed, I would argue that here one locates the endgame of Ramist method as it relates to memory and composition: an emphasis on guiding the *reader's* memory of the text. Such an emphasis is important, certainly, but in these handbooks, it seems to mask the possibility that a writer's memory of her text and her storehouse of knowledge might be an important consideration when teaching the process of composition.

Of the several dozen handbooks cited by Crowley, only John Bascom's *Philosophy of Rhetoric*, published in 1872, comes close to theorizing memory in a way similar to the classical treatises. Indeed, the fourth chapter of Bascom's text, "Memory and Imagination," sounds Ciceronian in parts. Visualizing knowledge, Bascom recognizes, facilitates one's ability to recall and conceptualize that knowledge:

Among the instrumental faculties there are two which the orator has constant

occasion skilfully to employ—imagination and memory. For carrying on the processes of thought, these faculties are fundamental. That the mind should have power to retain and present to itself its conceptions is essential to all movement and clearness of thought. While, therefore, the imagination and memory are not active for their own sakes, their action is requisite for all the ulterior ends of thinking and feeling. (114)

Bascom goes on to define imagination in Aristotelian terms as "the power by which, through memory, we restore sensible phenomena to the mind; or by which we construct images under kindred forms, subject to desire." He then quotes Cicero indirectly, writing that "no form of knowledge is so full and determinate, so immediate in its hold on the mind, as that received through the senses," which is why, according to Bascom, "there is an effort constantly made to present all the difficult matter of science through diagrams, models, . . . and specimens; since anything offered to the eye is thought of more avail than the most comprehensive description" (115). This comes near as one can expect from a current-traditional handbook to a reclamation of the classical idea that visualizing knowledge facilitates discourse. From here, however, Bascom returns to a discussion of imagination in stylistic terms, whereby an oration is made memorable to the audience. Nevertheless, Bascom never quite treats memory as *method*. When he links memory and arrangement at the end of his chapter, he does so in terms that evoke the spatial and material order of memory palaces:

The memory recalls objects by a variety of relations, but always proceeds on some definite connection. We may restore in memory the persons at any time present in an assembly by the order in which they were seated, by the time of their entrance, or by the part which they took in the proceedings. The connection of place, time, resemblance, cause and effect, dependence, are among the leading ones employed by memory . . . Any relation . . .which makes of the treatment of a chain of linked ideas, will impart ease and certainty to the mind in traversing it, and compactness and power to the impression. (118)

The implicit invocation of Simonides' invention of the art of memory demonstrates that Bascom is not only acquainted with the art but finds value in its precepts even for modern students. *Philosophy of Rhetoric* thus stands as a striking exception that proves the rule about memory in current-traditional handbooks—in which memory is typically treated in Ramist fashion as the methodical presentation of ideas, that is, as a subject subsumed by arrangement. At best, memory is cast in these handbooks as a matter of creating memorable word-pictures for an audience.

METHODICAL MEMORY VERSUS MAGICAL MEMORY

Ramus's influence, however, was neither immediate nor universal. Returning once more to the sixteenth century, we discover an Italian neoplatonist named Giordano Bruno and his disciples defending the imaginative precepts for memory against the Ramist reformers. It is worth devoting a significant portion of the chapter to this story because in it we observe again that the precepts of rhetoric are always implicated in cultural trends—the religious revolutions of the sixteenth and seventeenth centuries, in this case. The story also demonstrates how rhetorical precepts—ideologically neutral on the surface—nonetheless become associated with particular systems of belief, either to the detriment or to the benefit of the precepts' future circulation and development (their survival, if I may be indulged a Darwinian metaphor).

Giordano Bruno (d. 1600) was a Dominican friar born in Nola, Italy. He wrote on mathematics, geometry, and Hermeticism, but he also acquired an interest in the art of memory, inspired by Lull's combinatorial art as well as by Aquinas' writings on the classical art. Bruno recognized that Lull, unlike Aquinas and the Greco-Roman rhetors, did not use images in his system. Bruno sought to combine Lull's alphabetic mnemonic technique with the images and places of the art of memory. The simple solution Bruno devised for combining the two systems, writes Yates, was "to put the images of the classical art onto the Lullian combinatorial wheels" (Art 211). The art eventually developed by Bruno was thus a highly complex scheme comprised not of combinatorial letters but of combinatorial images and symbols. Bruno, however, had a mystic orientation, as I have already implied, and he saw magical rather than practical potential for the memory arts—just as Lull had done. It is for that reason that neither Lull's nor Bruno's system is what Paolo Rossi calls a straight mnemotechnic. Throughout the early modern period, hundreds of memory treatises were published across Europe, and a good many presented the classical art or some other mnemonic technique as a pragmatic tool with which common men and women-merchants, preachers, students, those involved in any number of civic activitiescould remember the words and ideas relevant to everyday living and broad intellectual pursuits. The Congestorium artificiosae memoriae of Johann Romberch, for example, "addressed itself to theologians, preachers, professors, jurists, physicians, judges, procurators, notaries, philosophers, ambassadors, and merchants" (Rossi, Logic 20). A small treatise by a man named Girardi claims to instruct its readers "in the memorization of textual authorities, everyday speeches, the contents of letters, collections and books of history, scientific and philosophical discourses and arguments, and foreign poetry and linguistic terms." And Peter of Ravenna's The Phoenix-in which one finds the famous suggestion to use maidens as images—is a modestly written, practical handbook that doubtless for that reason was the most widely circulated and repeatedly re-issued memory treatise in the sixteenth and seventeenth centuries; it was even translated into English in 1548 by Robert Copland as An Art of Memory That Otherwise Is Called the Phoenix.

Peter himself entertained royal audiences with his prodigious memory, gaining wide acclaim across western Europe (Rossi 21). Petrus Ramus's methodical memory system was likewise designed for practical pedagogical ends (Ong, *Ramus* 160). Alongside this straight mnemotechnic tradition, however, there existed a tradition of memory as a magical art that allowed its adepts to master spiritual or occult words and knowledge. Made popular by Lull at the end of the middle ages, this tradition was exemplified by Bruno in the early modern period. Although they are a minority among memory treatises, these occult mnemonic texts were the only ones that implicitly or explicitly pushed back against the rationalist reforms to the art of memory undertaken by Ramus and others.

The particulars of Bruno's art, as I said, are highly complex, and I will not detail them here³⁷. Like Lull's art, it consists of a series of concentric, interlocking circles or wheels, something like a giant decoder ring, but Bruno increases the size and scope of the wheels to thirty segments and 150 divisions. Into these divisions go, not letters, but 150 images, detailed and artistically imprinted in Bruno's text *De umbris idearum*. What are these images precisely? They are "images of the decans of the zodiac, images of the planets, images of the mansions of the moon, and images of the houses of the horoscope" (Yates 212-13). According to Yates, Bruno's most direct influence for using zodiac and astrological imagery is Cornelius Agrippa's *De occulta philosophia*. However, Bruno's interest in the classical memory arts surely sent him in search of a Greek or Roman authority whose system was neither as dry as Quintilian's nor as civic-minded as Cicero's but rather whose art portended magical applications. That authority was Metrodorus of Scepsis, who used the zodiac as *loci* in his artificial memory scheme (see Ch. 2). Not only does Bruno utilize zodiac symbols as images in his combinatorial wheels, he also

³⁷ See Francis Yates, *Giordano Bruno and the Hermetic Tradition*, as well as Ch. 9 in *Art of Memory*. Commenting upon Bruno's art, Yates tells us that modern scholars will "never understand the thing in detail" (*Art* 214).

contends in *De umbris idearum* that uniting one's psyche with the "astral order" entails ordering one's mind inwardly just as the heavenly zodiac is ordered:

There is in your primordial nature a chaos of elements and numbers, yet not without order and series . . . There are, as you may see, certain distinct intervals . . . On one the figure of Aries is imprinted; on another, Taurus, and so on for the rest of the signs of the zodiac . . . This is to form the inform chaos . . . It is necessary for the control of memory that the numbers and elements should be disposed in order . . . through certain memorable forms [i.e., the images of the zodiac]. (qtd. Yates 217)

"The Metrodorian system" Yates writes, has inspired "a magical system." Quintilian is the key source from which we learn about Metrodorus's system, and he gives no reason to suspect that Metrodorus himself saw anything supernatural about turning the zodiac into a series of mnemonic places. For Bruno, however, that ancient technique sanctioned the use of the zodiac in his mystically animated art of memory.

Further sanction for the coupling of memory and astrology Bruno likely found in the *Ars Notoria*, a spell book dating to the twelfth century. In their study of medieval magic, Anne Lawrence-Mathers and Carolina Escobar-Vargas write that the *Ars Notoria* "promises the acquisition of advanced academic learning through the ritual use of prayers and figures (or diagrams). It is these which give the work its name, since they are called *notae*" (*Magic* 37). The "academic learning" promised to the adept include an enhanced memory in and of itself but also a complete memory or knowledge of all the liberal arts. "This would be accomplished," continue Lawrence-Mathers and Escobar-Vargas, "through the intercession of angels and the Holy Spirit, following the performance of a complex series of rites involving . . . orations and invocations,

together with meditation upon the relevant images or *notae*." In manuscripts of the *Ars Notoria*, these *notae* are found to be quite visually complex (Figures 3.8 – 3.10). On all the *notae* are scrawled prayers or "orations" consisting of long series of invented names—of angels, presumably—with exotic sounds, though many of these names are abbreviated with Greek or Hebrew letters because they are too sacred to be uttered by profane tongues (*Ars Notoria* 11; 32; 39; 42). As the adept recites the corresponding prayers and (abbreviated) names, he is to "look into" or "inspect" each *notae* in a meditative state; the adept is to do this "at certain determinate times of the moon" (8), corresponding, naturally, to different days of the month. Offering a vague explanation for the importance of the lunar sequence, the *Ars Notoria* invokes the moon's interaction with a Christianized zodiac, empowered by the Holy Spirit:

... because we have touched something of the course of the Moon, it is necessary that we shew what her course signifies. The Moon passeth through 12 Signs in one Moneth; and the Sun through 12 Signs in a year; and in the same term and time, the Spirit inspireth and illustrateth them; whence it is said, that the Sun and the Moon run their course. (18)

This astrological connection is reiterated throughout the text. Observe the combination of Christian and zodiac imagery in Figure 3.10.

There is a precise lunar position, prayer, and *notae* for memory in the *Ars Notoria* (45), which is repeated in various sections of the text:

I Beseech thee, O my Lord, to Illuminate the Light of my Conscience with the Splendor of thy Light: Illustrate and confirm my Understanding, with the sweet odour of thy Spirit. Adorn my Soul, that hearing I may hear; and what I hear, I may retain in my Memory. O Lord, reform my heart, restore my senses, and



Figure 3.8 Notae of the Ars Notoria



Figure 3.9 Notae of the Ars Notoria



Figure 3.10 Notae of the Ars Notoria

strengthen them; qualifie my Memory with thy Gifts: Mercifully open the dulness of my Soul . . . Thou who art the Fountain of all Goodness; the Original and Spring of Piety, have patience with me, give a good Memory unto me, and bestow upon me what I pray of thee in this holy Oration. (11-12)

However, the mechanism of the entire ritual is a memorial one. In most of the orations, the adept is to beseech the Lord for a strong memory in general as well as for memory of some specific subject within the liberal or manual arts. Thus, for eloquence: "glorify thy Holy and unspeakable Name this day in my heart, and strengthen my intellectual understanding; increase my Memory, and confirm my eloquence; make my tongue ready, quick, and perfect in thy Sciences and Scriptures" (30).

The *Ars Notoria* represents a nexus of several strands in the history of artificial memory. There are visual forms corresponding to specific types of knowledge, harkening back to the *imagines* of the classical art. Traversing these forms are names abbreviated in foreign letters, and these combinations of visual form and abbreviation are called *notae*—harkening back to Quintilian's *notae* as well as to the shorthand *sigla* taught as memory aids throughout the middle ages as the *ars notatoria* (Carruthers, *Book* 113). Lastly, harkening back to Metrodorus of Scepsis, there is an explicit invocation of the zodiac; the movement of the moon through the zodiac guides the entire cycle of the rite by which the adept's memory is to be granted eidetic powers. All these links—between visual representations of knowledge, alphabetic shorthand, the zodiac, and robust powers of memory—are thus cemented as early as the 1100s. The *Ars Notoria* offers an evocative glance into some magical mnemonic milieu developed in those silent medieval centuries that left behind few extant texts detailing the development of memory arts. *Notoria* had been condemned by the Church, as some began to suspect the "unutterable" names of angels were really names of demons (Lawrence-Mathers and Escobar-Vargas 38)—so Lull was careful to limit his art to meditation on knowledge of God alone, as well as to omit imagery from his art³⁸. Two centuries later, in the post-Reformation world, Giordano Bruno and his followers obviously felt confident enough to reclaim this magical mnemonic tradition in its entirety, though Lull's art and the occultism of Corenlius Agrippa undeniably remained their most direct influences.

It will now make sense when I say that when one of Bruno's followers found himself in a war of words with a Ramist in England in 1584, the Ramist pejoratively styled his Brunian nemesis a "Scepsian," and the Brunian proudly christened himself "Heius Scepsius." By the end of the sixteenth century, the art of Giordano Bruno had become synonymous with occult, zodiacal memory practices ascribed anachronistically to Metrodorus of Scepsis. In the ever more rationalist world of sixteenth century England, this association was obviously not conducive to the survival of memory arts that utilized images and visual precepts.

Yet, as paradoxical as it sounds at first, the Ramist and the Scepsian did hold some common ground. I wrote earlier that magic and rationalism were intertwined in the early modern period, and this disputation between a Ramist named William Perkins and a Brunian named Alexander Dicson well illustrates the point. Dicson was a Scottish Catholic spy in the employ of Franics Hay, Earl of Errol, who was involved in the Spanish attempts to sieze the throne of Queen Elizabeth I. William Perkins was a famous Cambridge theologian, a staunch Puritan and Calvinist; he is known today for having tutored and influenced John Robinson, founder of the Congregationalist Church and pastor of a small group of separatists who left on the *Mayflower* to

³⁸ Lull's works were nevertheless condemned as heretical by the Inquisition in 1376; however, during his lifetime, Lull remained in good standing with the Church.

settle at Plymouth; Perkins has also been noted as a major influence on the theology of Jonathan Edwards (Weber, "The Trinitarian Theology" 303). Dicson and Perkins were therefore not peripheral peddlers of fringe ideas but well educated and well connected scholars, the former a Catholic and a mystic interested in the occult, the latter a Puritan and a Calvinist interested in the logic of double predestination. That both men wrote treatises on artificial memory attests to its centrality in the early modern intellectual environment; that both men could enter into a meaningful (though heated) debate attests to the fact that the occult memory of Bruno and the methodical memory of Ramus retained a mutual point of contact as "memorative logics" designed to order the universe of knowledge. As a Ramist and a Protestant, Perkins of course would have considered himself a reformer of knowledge-but so too would have Discon, for Bruno himself, writes Rossi, did not pursue his occult mnemonics as an "indulgence" but as a legitimate and more promising alternative to the deductive procedures of logic and method that impelled Ramism and the encyclopedic tradition; in its stead, Bruno "proposed a gradual approach to the rational faculties via the imagination and memory. He preferred fleeting images to the rigid concatenation of causes, a radical diversity of meanings rather than the reduction of all consciousness to intellect" (Logic 82). His art of memory was not developed against but explicitly and consciously implicated in the contemporary intellectual project of constructing ordered systems of knowledge so that humans might know and thereby master all of nature (84). The difference between Bruno and Ramus—and between Dicson and Perkins—can be construed, therefore, as a debate over tactics as opposed to ends, method as opposed to purpose. This explains why the two sides found it possible to hold court.

Methods and tactics, however, are just as important as a common goal, and at some point, one begins to suspect that dissimilar methods actually do implicate dissimilar goals. This was as true for debates about mnemonics as for debates about religion—and as I implied earlier in the chapter, the debate between Dicson and Perkins, mirroring the debate between methodical memory and imaginative memory, was at bottom a religious one (Yates, *Art* 267). Protestants and Catholics both claimed to follow the same God, but they followed Him in such radically different ways that each doubted the salvation of the other. Similarly, both the Brunian Dicson and the Ramist Perkins claimed to be seeking after true knowledge but in such radically different ways that each doubted the authenticity of the other. Imagery stood at the center of the debate over memory and method; and, while not central, it was also an important element in the Protestant and Catholic battle for England's soul.

Let us turn now to their dueling memory treatises. Dicson's treatise is called *De umbra rationis*, the title a clear reference to Bruno's *De umbris idearum*³⁹. In the treatise, Dicson offers a retelling of the famous dialogue between Thamus and Theuth, as found in Plato's *Phaedrus*, in which Theuth, the inventor of writing, has come to show the Egyptian King Thamus his brilliant new aid to memory. Yet Thamus tells Theuth that writing will not improve memory but destroy it—writing "will introduce forgetfulness into the soul of those who use it. They will not practice using their memory because they will put their trust in writing, which is external and depends on signs that belong to others, instead of trying to remember from the inside, completely on their own" (*Phaedrus* 275a-b). A Platonic art of memory, I tried to explain in Chapter 1, would not trifle with imagery and memory palaces; however, Dicson retells the story as though Plato (or King Thamus) does mean the images of the classical art of memory when he says "remembering from the inside." Mnemonic imagery is thus figured in Dicson's text as something like an embodiment of the Platonic *eidoi*—corporeal similitudes, to borrow Aquinas' term, of the

³⁹ The *umbra* are the astrological images of Bruno's art; *umbra* are also "shadows of the light of the divine mind," Dicson tells us (qtd. Yates 268).

abstract knowledge known in its true essence before the soul descended to earth. Speaking on behalf of this Platonic inner remembrance, in Dicson's retelling, is Hermes Mercurius, another inventor. Mercurius is Theuth's foil, the maker, not of letters, but of the "inner writing' of the art of memory" (Yates 269), a superior means for attaining divine powers of memory. Theuth sells "a bad aid for memory"—writing—which has "brought in superficiality and quarreling and made men little better than beasts." Mercurius' images, on the other hand, written "in the places of memory," allow the soul to re-ascend to the spheres, where it casts off its material form and and is filled with power. Remembering with Bruno's magical symbols and images, Discon is telling his readers, is the truer and more efficacious art of memory.

One can imagine how a Puritan might react to this invocation of pagan symbols and heavenly spheres, and to this denigration of writing: *what is this Brunian twaddle come north from Italy?* In response to *De umbra rationis*, Perkins pens his *Antidicsonus*, enumerating the following faults in Dicson's art of memory, so-called:

> That [Dicson's] use of the celestial signs in memory is absurd. That all such nonsense should be thrown out, for logical disposition is the sole discipline for memory, as Ramus teaches. That Dicson's soul is blind and in error knowing nothing of the true and the good. That all his images and 'umbrae' are utterly vain. (qtd. Yates 273)

And quoting Antidicsonus further:

Whatever of art may help the memory is the order and disposition of things, the fixing in the soul of what is first, what is second, what third. As to those places and images which are vulgarly spoken of, they are inept and rightly derided by any master of arts. How many images would be needed to remember the Phillipics

of Demosthenes? Dialectical disposition alone is the doctrine of order; from it alone can memory seek aid and help. (qtd. Yates 274)

The eager connection of memory and arrangement is on full display: "the order and disposition of things" is what "helps the memory," the orderly "fixing in the soul" of what is first, second, and third. This is all an unambiguous appeal to the Ramist movement from the general to the specific. Of course, Dicson's segmented *umbra* on their interlocking wheels represent a kind of arrangement, but there the combinations are imaginative and are designed to generate new knowledge. The Brunian circles retain that ancient link between memory and invention, a link expectedly absent in Perkins' attack on Dicson. For the Ramist Perkins, memory is to be aided by dialectical disposition alone, "the doctrine of order."

Later in the text, Perkins merges his Ramist and Puritan identities, questioning the morality of using affective images in a memory system. Here the religious undertones of Perkins' quarrel with Dicson bubble to the surface. In *De umbra rationis*, Dicson speaks of "animating" the memory images, an allusion to the classical precept about *imagines agentes*, the idea that mnemonic images should be striking, emotionally charged, and if possible, materially active. (Recall *Ad Herennium*'s trampled plebian and the famous actors preparing for a play.) Perkins rightly intuits that such images are designed to arouse the passions, but for him, this affective intention makes the entire art morally reprehensible. To prove his argument, he looks no further than the lecherous imagery of Peter of Ravenna. "Such an art," Perkins writes, "is clearly not for pious men, but has been made up by impious and confused people who disregard every divine law" (qtd. Yates 274). In yet another text, *Prophetica*—the first English work to apply Ramist principles to preaching—Perkins continues to rebuke the art of memory on religious grounds:

The animation of the images which is the key of memory is impious: because it calls up absurd thoughts, insolent, prodigious, and the like which stimulate and light up depraved carnal affections.

Placed historically, this censure stands as a striking example of the influence of shifting intellectual tides on rhetorical precepts, as well as of the stark divide that had come to exist between Protestant and Catholic thinking. Here is the Calvinist Perkins decrying the impiety of affective imagery in memory systems, though a few centuries earlier Catholics as authoritative as Aquinas and Dante had utilized such imagery to fill the minds of the faithful with corporeal similitudes of virtue and vice, spiritual aides-mémoires of the eternal consequences of one versus the other. To be sure, Peter of Ravenna's immensely popular treatise-still in wide circulation in Perkins' day, fifty years after Ravenna's death—had disposed Perkins to see the negative potential in mnemonic imagery. (Perkins, of course, was probably disposed to dislike anything dreamt up by a pre-Reformation Catholic). Nevertheless, Perkins seems incapable of recognizing that the affective power of such imagery might be channeled in more holy directions. Memory, to Perkins, means dialectical order-memory as arrangement. In Perkins, one thus detects the dual Ramist and Protestant influence I discussed earlier, each leading to a rejection of imagery (the dissolution of the monasteries had occurred just fifty years prior to Perkins' denouncement of Dicson). Earlier, I quoted an unnamed Ramist who condemned mnemonic imagery with the statement, "A thing faigned in the mind by imagination is an idol." It should now come as no surprise that the unnamed Ramist was William Perkins.

Dicson responded to Perkins with *Defensio pro Alexandro Dicsono*, a text written as though by a third party come to Dicson's defense—one Heius Scepsius. In this text, Dicson doubled down on his imaginative art of memory and its occult ethos, adopting with pride the abusive appellation—Scepsian!—extended by Perkins in *Antidicsonus*. However, Dicson's faith in his system and its teacher, Giordano Bruno, could save neither the system nor its teacher. At the same time as the debate between Perkins and Dicson (c. 1584), Bruno himself was in England, a visitor at Oxford and a houseguest of Michel de Castelnau, French ambassador to Queen Elizabeth. (Bruno's presence in England almost certainly sparked the Dicson/Perkins controversy in the first place.) Yet Bruno, unluckily for his art of memory, was to leave a thoroughly negative impression on the English scholars and nobles with whom he came in contact.

While in England, Bruno wrote a number of treatises and dialogues while attempting unsuccessfully to secure an appointment at Oxford. In "Expelling the Beast: Bruno's Adventures in England," Anthony Wiener tracks Bruno's failures in England as evidenced in this series of treatises, from their initial missionary zeal to win converts to his occult ideas, to their complete retreat into the safety of an uncontroversial neoplatonism. One of the major turning points in Bruno's English career was his lecture on a heliocentric universe, given at Oxford. A believer in the Copernican system, Bruno found little favor in the eyes of Oxford's Aristotelian faculty (a tale presented in the 2014 *Cosmos* television series as an alternative to the more well known Galileo story). One of the men present at Bruno's lecture was George Abbot, Master of University College and future Archbishop of Canterbury. Abbot recalls the lecture in an anti-Catholic treatise penned in 1604:

> When that Italian Didapper, who intituled himselfe, *Philotheus lordanus Brunus Nolanus, magis elaborata Theologia Doctor, &c.*, with a name longer then his body, had in the traine of Alasco the Polish Duke, seene our Vniversity in the yeare 1583, his hart was on fire, to make himselfe by some worthy exploite, to

become famous in that celebrious place. Not long after returning againe, when he had more boldly then wisely, got vp into the highest place of our best & most renowned schoole, stripping vp his sleeues like some Iugler, and telling vs much of chentrum & chirculus & circumferenchia (after the pronunciation of his Country language) he vndertooke among very many other matters to set on foote the opinion of Copernicus, that the earth did goe round, and the heavens did stand still; wheras in truth it was his owne head which rather did run round, & his braines did not stand stil. When he had read his first Lecture, a graue man, & both then and now of good place in that Vniversity, seemed to himselfe, some where to haue read those things which the Doctor propounded; but silencing his conceit till he heard him the second time, remembered himselfe then, and repayring to his study, found both the former and later Lecture, taken almost verbatim out of the workes of *Marsilius Ficinus*. Wherewith when he had acquainted that rare & excellent Ornament of our land, the Reverend Bishop of Durham that now is, but then Deane of Christs-Church, it was at the first thought fit, to notifie to the Illustrious Reader, so much as they had discovered. But afterward hee who gaue the first light, did most wisely intreate, that once more they might make trial of him; and if he persevered to abuse himselfe, and that Auditory the thirde time, they should then do their pleasure. After which, *lordanus* continuing to be *ide lordanus*, they caused some to make knowne vnto him their former patience, & the paines which he had taken with them, & so with great honesty of the litle mas part, there was an end of that matter. (qtd. McNulty, "Bruno at Oxford" 302-303)

In the eyes of the Oxford faculty, Bruno turned out to be not only a silly believer in the

Copernican model but a plagiarist at that. The mixture of annoyance and amusement evident in Abbot's text demonstrates that Bruno was not even taken seriously as a heretic. He was merely a superstitious fool, with a silly Italian accent, whose own head, and not the sun, "rather did run round."

After Bruno failed to obtain a position at Oxford, Wiener tells us, an increasing desparation to find a private patron began to creep into his treatises. Bruno had been dedicating his treatises to various nobles and bishops, to no avail. Ineffective at finding a benefactor, Bruno eventually dedicated a treatise—the *Cabala of the Horse Pegasus*—to "a nonexistent abbot of a nonexistent abbey and a nonexistent bishop of a nonexistent bishopric." The point is clear enough, writes Wiener: "from the response he has gotten from his previous dedicatees, [Bruno] might as well have dedicated those works to no one" (12). In another treatise, On the Infinite Universe and the Worlds, Bruno portrays himself as a "miserable wanderer," who is "hated in the academies, the adversary of every accepted doctrine, praised by the few, approved by none" (qtd. Wiener 9). Outside the circle of self-professed Brunians—such as Alexander Dicson—it appears that Giordano Bruno was never fully accepted in Protestant England. Perhaps the disinterest in Bruno's ideas can be represented best by the poet and historian Samuel Daniels, who had met Bruno and later remarked that the Italian's love for images, in the form of astrological signs and Egyptian hieroglyphics, was unsound. Pronouncing such images "unperfect, by reason of the diuersitie of the natures of beastes and other things which they figured," Daniels instead praised Latinate letters, which "disclose their intent by a more perfect order" (qtd. Wiener 1).

Thus did Bruno's imaginative philosophies fall on the dry soil of an increasingly rationalist, Ramist, and iconoclastic England. Branded a plagiarist and a superstitious man,

Bruno returned with Castelnau to France. He wandered from university to university for several years—Marburg, Wittenberg, Padua—but could find no permanent position. (He applied for a chair of mathematics at Padua, but was turned down; the following year, the chair went to Galileo Galilei.) Nevertheless, like his apprentice Dicson in the face of Perkins' criticism, Bruno seems to have doubled down on his occult ideas, becoming more and more heretical, to the point at which the Inquisition could no longer ignore him. In 1592, while teaching the art of memory to a Venetian nobleman, Bruno was handed over to the Inquisitors. After seven years of trials and imprisonment, Bruno was eventually declared a heretic by Pope Clement VIII, and in 1600, Giordano Bruno was burned at the stake.

This, unluckily, was the man whom the Anglosphere had now associated with an art of memory based on images, imagination, and the invention of knowledge.

Although Bruno's art of memory was not on trial at Oxford or before the Inquisition, the rejection of Bruno's whole corpus of ideas meant that any memory art using imagery was unavoidably tainted with a Brunian association. If this weren't damning enough, such memory arts were tainted already by virtue of using imagery in the first place in such a highly Protestant and iconoclastic age. Inevitably, the art of memory, with its precepts for constructing memory palaces and all manner of affective imagery, began its retreat in England.

This retreat can be detected at a large scale. Using three bibliographies⁴⁰, I tracked down 423 memory treatises published between 1430 and 1850 (261 of which were published between 1430 and 1800). Graphing the treatises' dates and places of publication, a striking trend emerges: Between the years 1551 – 1600, England keeps pace with the publication of memory treatises on

⁴⁰ Lawrence D. Green and James J. Murphy, *Renaissance Rhetoric Short-Title Catalogue*, 1460-1700; Heinrich F. Plett, *English Renaissance Rhetoric and Poetics: A Systematic Bibliography of Primary and Secondary Sources*; George S. Fellows, "Bibliography of Mnemonics," published in A.E. Middleton, *Memory Systems New and Old*; the British Library's *Incunabula Short Title Catalogue*.

the continent (Figure 3.11). Between the years 1601 – 1650, however, with memory treatises flourishing in France and Germany, the publication of treatises in London slows down greatly (Figure 3.12). This is made especially curious by the fact that 1601 – 1650 marks the entrance of London as a major publication center. Before 1600, England was producing fewer than 160,000 books per year, compared to 700,000 per year in France and Germany and 800,000 in Italy. After 1601, however, England caught up to the continental powerhouses, publishing ~700,000 books annually from 1601 – 1650 (Buringh and Van Zanden, "Rise" 418). Yet the genre of the memory treatise saw no corresponding rise in publication numbers. Indeed, looking at the total number of memory treatises published in Europe by half-century (Figure 3.13), the lack of London contributions between 1601 – 1650 appears even more remarkable, for those decades correspond to artificial memory's most popular period, judging by raw publication counts. I don't think it is a stretch to propose that this stoppage in English memory treatises was due in large part to the specific influence of Bruno's bad name and the general influence of Anglo-Protestant iconoclasm.

Clearly, there is a delay to be explained when it comes to the latter influence⁴¹. The dissolution of the monasteries took place between 1536 - 1541, so the question is why the decline in interest in artificial memory cannot also be detected in the period 1551 - 1600. One reason, of course, is that some of the treatises represented in Figure 3.11 were published in the early part of the century, such as Stephen Hawe's *The Pasttime of Pleasure*, a 1509 poem

⁴¹ Two other issues raised by the graphs are why Catholic Italy likewise experienced a drop in memory treatise publications between 1601-1650 and why Protestant Germany did not. I leave this issue to future research. However, in regards to Germany, I suspect it has something to do with German Lutheran tolerance toward imagery; fits of iconoclasm and the destruction of monasteries had been outright condemned by Luther, and thus iconoclasm, as far as I can tell, never took root in Germany the way it did in England and in more radical Protestant locales, such as Geneva or the Netherlands. For Luther's and Lutheran views on imagery, see Neil Leroux, *Luther's Rhetoric* (73-95).



Figure 3.11 Memory treatises published, by country, 1551 – 1600



Figure 3.12 Memory treatises published, by country, 1601 – 1650



Figure 3.13 Memory treatises published in Europe, by half-century

wherein the art of memory is first described in English. (This poem was, however, reissued in 1554 and 1555.) Another reason is that some of these treatises *had* already begun to downplay the role of imagery in their systems, in favor of other precepts, foreshadowing a trend that would become the norm by the 1700s. One such example is William Fulwood's *The Castel of Memorie*, a 1563 translation of a text by the Italian botanist and alchemist Gulielmus Gratarolus. This text is comprised almost entirely of medicinal potions for curing or strengthening memory; the classical precepts for places and images are cited but fleetingly in the last chapter. However, the most simple and obvious reason for the delay in iconoclastic influence is that few historic causes *immediately* affect the direction of intellectual trends. In the midst of the "iconoclastic orgy," there were many dissenters. Henry VIII's decision to disband the monasteries was met with multiple popular uprisings, such as the 40,000 strong occupation of the Lincoln Cathedral and the 9,000 strong Pilgrimage of Grace (see Dodd and Dodd, The Pilgrimage of Grace 1536-1537). Although the literal smashing of images in the monasteries was devastatingly swift in certain places, any implications iconoclasm had for artificial memory systems-removed from more exigent political and theological concerns—took time to be recognized by scholars, and to trickle into general intellectual awareness. A delay is sometimes to be expected, in my view, when tracking the influence of large-scale political or economic upheaval on something like rhetorical precepts. The dry spell between 1601 – 1650 thus represents a generation of scholars and authors who had grown up with a rationalist and Protestant influence firmly established and certainly it can be no coincidence that this period, which saw so little English interest in the art of memory compared to the rest of Europe, also saw the incubation of an obscure parliamentarian named Oliver Cromwell.

CONCLUSION: METHOD TRIUMPHANT

There is another insight to be gleaned from graphing memory treatise bibliographies: the lack of interest in artificial memory that defined England from 1601 – 1650 was followed by an even greater lack of interest throughout the whole of Europe between 1650 – 1700 (Figure 3.13). I have made a case explaining why the subject failed to flourish in England specifically, but without Bruno or iconoclasm, the Anglosphere would have dropped the art of memory in the long run anyway. 1650 – 1700 saw the continued frenzy of publication activity in England, France and Germany; England and France each came close to publishing 100 million books during these decades. These decades also saw the growth of other publication centers, in Ireland, the Netherlands, Sweden, Spain, and Poland (Buringh and Van Zanden, "Rise" 418). And yet, instead of keeping pace with those raw publication trends, or holding steady against them, the number of memory treatises published during the late sixteenth century dropped precipitously from its zenith in the first half of the century.

Memory treatises rebounded, slowly, in subsequent decades. However, treatises emerging in the 1700s—the dawn of the modern period—were quite different from their earlier counterparts. They were prototypes of what became in short order the pseudo-scientific, psychological, and technologized mnemonic handbooks analyzed at the beginning of the chapter, in which visual precepts are restrained and artificial memory loses all relevance to the construction of knowledge.

I have already pointed out that as early as 1563, William Fulwood had consigned mnemonic imagery to a brief mention in the last chapter of his memory treatise, *The Castel of Memorie*. Marius D'Assigny's *Art of Memory*, published in 1697 and one of the most popular memory treatises in the early 1700s, likewise spared only a single page at the end of his text to the *locis et imagines* of the classical art. The rest of D'Assigny's treatise, despite its title, has little to do with memory as a visual art to facilitate invention. Instead, one finds chapter titles such as the following:

The Temper or Disposition of the Body best and worst for Memory, with the natural Causes and Reasons of both . . . Some General and Physical Observations and Prescriptions for the remedying, strengthening, and restoring a Memory injured by the ill Tempter of the Body, or the Predominancy of one of the four Qualities in the Brain . . . Of such Natural Things as may be assisting to, and may comfort Memory.

A later chapter discusses, more promisingly, "Rules to be observ'd for the Acts or Practice of Memory." Here, the reader is given 18 precepts, most of which are banal: memorize in a quiet place or at a calm part of the day; recite things out loud; don't try to remember too much at any time; study diligently. Certain classical precepts do find their way into this chapter, but they are quite muddled:

Let every thing we desire to remember, be fairly written and distinctly, and divided into Periods with large Characters . . . Let the first Letters or Words of every Period, in every Page, be written in distinct Colors; yellow, green, red, black . . . for by this means we shall the more readily imprint the Matter and Words in our Minds, the more remarkable the Writing appears to the Eye. Therefore Cicero tells us: That the Eyes of the Understanding (and consequently the Memory) are carried more easily to things that are seen, than to those that are heard. (D'Assigny 56)

This is a curious passage indeed. Cicero's explanation of mnemonic imagery has suggested to D'Assigny that one should a) divide writing into "periods" and b) make letters big and colorful.

Here, D'Assigny unwittingly conflates Cicero's art of memory with Quintilian's advice to memorize text segmented on the page, a recommendation also echoed in St. Victor's instruction to form images of the "color, shape, position, and placement of the letters" on a manuscript page ("Three Best Memory Aids" 39; see Ch. 2). For St. Victor, who would have been working with intricate illuminated manuscripts, connecting mnemonic imagery with ornament on the page would have made a certain amount of sense, but it is an odd piece of advice in 1697. D'Assigny is citing Cicero to demonstrate Quintilian's idea, even though Quintilian's idea represents a complete rejection of Cicero's mnemonic imagery. This is a remarkable conflation. It demonstrates how quickly and completely the visual art of memory had disappeared by the 1700s, crowded out by other artificial memory precepts. Naturally, of course, D'Assigny offers a much clearer exposition when it comes to memory in its Ramist, methodical sense:

Let there be a Method and convenient Order observ'd, and a Coherence in the Discourse we design to deliver; for it will be far more easy to mind and remember things that have a mutual dependence on one another, than such as are without Order or Method. (D'Assigny 55)

D'assigny's *Art of Memory* saw three printings by 1706 (Middleton 125) and a German translation in 1720. Another popular memory treatise to appear at this same time was Richard Grey's *Memoria Technica; or a New Method of Artificial Memory, applied to and exemplified in Chronology, History, Geography, Astronomy.* Grey's text is an explication of the "major" system" (not yet known as such; see Ch. 2), with its remediation of numbers into consonant clusters, to be formed into words. Grey has nothing to say about the art of memory, not even in its simplified form as a "locality" system (which, per Middleton, retains ordered mental rooms but jettisons the imagery; see above, pg.). Although his technique had been known in Europe

since the works of Pierre Hérigone in the 1630s and Stanislaus Winkelmann in 1648, Grey's treatment of it was to be immensely influential. It inspired and instigated more than a century of memory treatises focused solely on the most efficient means of remediating numbers into letters and words. *Memoria Technica* went through multiple editions and was still in publication as recently as 1880 (Middleton 24), allowing A. E. Middleton to suggest that the history of modern mnemonics was largely a succession of improvements on Grey's eighteenth century numerical system (27)—a system better suited to a scientific age that had abandoned visual precepts and any inventive purposes for artificial memory.

And yet, in *Words Made Flesh*, Florian Cramer provides reason to think that at least small pockets of scholarly interest in visual, inventive memory practices still existed into the 1700s. For example, the German encyclopaedist mentioned earlier, Daniel Georg von Morhof, published his Lullian-inspired rhetorical treatise in 1702, and this text makes explicit use of Lull's combinatorial wheels for invention. Cramer also points to *Gulliver's Travels*, which contains a telling satire on what appear to be *real* rhetorical machines, popular in theory but not in reality in the sixteenth century. Were rhetorical machines being built in the 1700s?

> The first professor I saw was in a very large room, with forty pupils about him. After salutation, observing me to look earnestly upon a frame, which took up the greatest part of both the length and breadth of the room, he said perhaps I might wonder to see him employed in a project for improving speculative knowledge by practical and mechanical operations. But the world would soon be sensible of its usefulness, and he flattered himself that a more noble exalted thought never sprang in any other man's head. Everyone knew how laborious the usual method is of attaining to arts and sciences; whereas by his contrivance the most ignorant

person at a reasonable charge, and with a little bodily labor, may write books in philosophy, poetry, politics, law, mathematics, and theology, without the least assistance from genius or study. He then led me to the frame, about the sides whereof all his pupils stood in ranks. It was twenty feet square, placed in the middle of the room. The superficies was composed of several bits of wood, about the bigness of a die, but some larger than others. They were all linked together by slender wires. These bits of wood were covered on every square with paper pasted on them, and on these papers were written all the words of their language, in their several moods, tenses, and declensions, but without any order. The professor then desired me to observe, for he was going to set his engine at work. (qtd. Cramer 60)

The scene occurs in the fictional academy at the fictional city of Lagado, a Swiftian parody of futile science in general and the Royal Society in particular. But what is interesting in this parody is that it proves that combinatorial memory arts had not disappeared entirely as late as 1726, the publication date of Swift's stories.

However, the fact that we find this reference to a rhetorical machine in a popular satire and *Gulliver's Travels* was an order of magnitude more popular than any eighteenth century memory treatise—also proves that rhetorical machines and combinatorial arts were perhaps not taken seriously in the Age of Enlightenment. Even if they were, it remains difficult to ascertain whether or not these machines were recognized as having origins in the precepts of artificial memory. Did the late dabblers in combinatorial arts still see themselves as memory artists? Did they still acknowledge the intimate link between memory and the discovery of knowledge? Or had the inventive purpose of such a machine become synonymous with the scientific notion of *discovery* and the material definition of *invention*? That is the more likely scenario, in my view, given that reference to inventive memory arts of any sort are sparse in the 1700s. Cramer himself acknowledges as much. "After Swift," he writes, "[these arts] survive only in the niches of literature and speculative poetic science" (63). As I discussed earlier in the chapter, whatever mnemonic precepts had been appropriated for rationalist pursuits were soon transmuted into Science or Method, leaving behind once-vital features—mnemonic imagery, combinatorial wheels—as a sort of residue to be cast into the outer darkness of fringe pursuit and dusty archives.

As near as I can tell, the last work to take seriously a visual art of memory—though one severed from any inventive purposes—is Gregor von Feinaigle's The New Art of Memory, published in 1812. Feinaigle's treatise has much in common with other "technologized" mnemonic treatises popular at the time; he describes his own version of a major system and discusses faculty psychology. However, Feinaigle also reclaims the use of vivid *imagines* (Figure 3.14), a technique from the medieval and classical worlds that had been dormant for decades, if not a century. Nevertheless, like Bascom's Philosophy of Rhetoric, Feinaigle's The New Art of *Memory* is an exception that proves the rule. Beginning at some point in the 1700s, continuing well into the late 1800s, the vast majority of treatises and handbooks on artificial memory take their cues from the scientific, psychological discourse about memory unfolding around them. They say nothing of facilitating invention, the entire *raison d'être* of the classical art of memory. They rarely if ever make use of affective mnemonic imagery. Architectural *loci* are reduced to locality systems, systems of dry and orderly arrangement, perfectly congruent with the methodical memory of composition textbooks. The convergence of memory and method begun in the middle 1500s has thus largely completed its work by the eighteenth and nineteenth

centuries: as a memory art, visualizing words and knowledge has become a fringe technique, even as information visualization continues to be important in the sciences (see Lima, *Trees of Knowledge*).

And, of course, as Figure 3.13 demonstrates, artificial memory itself was becoming a relatively unpopular topic. By the late 1800s, the number of memory treatises published remained lower than the number published during the art of memory's prime in the early 1600s. Viewing this trend in the context of increasing literacy rates and a constantly expanding publishing industry, it appears that the genre has simply stalled out by 1700, thereafter beginning its decline into the prosaic handbook tradition analyzed at the beginning of the chapter. This tradition has continued into the twenty-first century, with self-help titles such as *The Organized Mind* or *Power Foods for the Brain* or *Your Memory: How It Works and How to Improve It*. An ignominious end, so it seems, for an art once valued by the likes of Cicero, Aquinas, and Leibniz for its creative, moral, and epistemological potential.


Figure 3.14 Gregor von Feinaigle, The New art of Memory

Chapter 4: Memory in Contemporary Rhetorical Theory

Leaving the past behind, this chapter observes the evolution of the fourth canon in the twentieth and twenty-first centuries by looking at the discourse of academic rhetoricians and compositionists. The previous chapters demonstrated that artificial memory did not fall into disuse at the end of the classical era, the middle ages, or the early modern period. Neither writing nor print hastened its demise. To the contrary, rhetorical memory arts adapted their forms as they migrated into new ecologies, so that well into the nineteenth century, it is possible to locate memory texts whose influences, though muddled, extend back through history to the fourth canon's naissance in ancient Greece. Can similar connections be found in academic rhetoric? Given the fourth canon's tenacity outside explicitly rhetorical contexts, it would be surprising to find the canon disappearing in contemporary rhetorical theory, an intellectual environment in which memory should presumably flourish, a new and fertile ground compared to the banal handbooks of the nineteenth century.

However, the assumption in the field is that memory and delivery have in fact been far less valuable to twentieth century rhetoricians than the canons of invention, arrangement, and style. For example, in their textbook *Classical Rhetoric for the Modern Student*, Connors and Corbett famously dismiss memory's utility in an age of widespread print:

Of all the five parts of rhetoric, *memoria* was the one that received the least attention in rhetoric books; . . . [A]fter rhetoric came to be concerned mainly with written discourse, there was no further need to deal with memorizing. (22)

Having declared that memory will be given no brief in their textbook, Connors and Corbett proceed to dismiss delivery as well. In the context of written rhetoric, they argue, the canon of

style has *de facto* taken the role once assigned to the fifth canon:

Writers lack the advantage a speaker enjoys because of their face-to-face contact with an audience and because of their vocal delivery; the only way in which

writers can make up for this disadvantage is by the brilliance of their style. (23) Put more bluntly, memory and delivery have no place in a writing-based rhetoric. In general, this seems to be the assumption made or the assumption pushed against in contemporary rhetorical theory. John Reynolds, contra Corbett and Connors, pushes against it in the edited collection *Rhetorical Memory and Delivery*. Citing the work of Kathleen Welch, Reynolds laments that in rhetoric and composition, "the first three canons—invention, arrangement, and style—are used to organize the materials presented in the vast majority of the textbooks, but the last two—memory and delivery—are typically ignored or, worse, deleted without a word of explanation" ("Memory Issues" 3). One can only assume that Reynolds is thinking here about Corbett and Connors' quick dismissal of the two canons. His edited collection is gathered with the explicit purpose of remedying the oversight and returning memory and delivery to the theoretical toolbox of contemporary rhetoricians. Even in a print or digital context, he and his co-authors argue, memory has a role to play.

Other scholars have downplayed print's role in the erasure of memory, focusing instead on the ideologies which accompanied print. In "The Future of Forgetting: Rhetoric, Memory, Affect," the essay with which I began Chapter 1, Pruchnic and Lacey agree with Reynolds and Welch that memory has been often discarded by rhetoricians historical and contemporary—"of the five traditional canons of rhetoric," they write, "memory has by far suffered the largest scholarly decline." However, Pruchnic and Lacey argue that memory's abandonment can be explained by the prior emasculation of rhetoric generally in the hands of Renaissance and Enlightenment thinkers. They summon the usual villains: Ramus, Vico, Bacon. Making a similar argument, Sharon Crowley argues that memory's demise should be blamed not only on cheap, widespread print but on the ideologies of past rhetoricians themselves, specifically the "modernist" ideology that entrenched itself after the Enlightenment in Western Europe and North America. Crowley writes that for eighteenth and nineteenth century modernists, who anchored rhetoric firmly to written discourse, rhetoric was properly concerned with three ideals at odds with the art of memory: the transmission of empirical knowledge; the *sui generis* work of individual authors; and the representation of thought, or the construction of "faithful pictures of reality," with words ("Modern Rhetoric and Memory" 41-42). In short, rhetoric for the moderns was put at the service of reconstructing a unique and orderly investigation of an empirical subject. In this methodical scheme, the moderns had no use for memory as understood by classical and medieval orators. The canon was neglected. According to Crowley, that neglect has continued late into the twentieth century (43).

I have argued in Chapter 3 that "methodical" memory practices can in fact be situated within the intellectual lineage of rhetoric's fourth canon; they are simplified and, in my view, corrupted arts of memory, but they should not for that reason be defined against rhetoric's classical memory tradition. Here, I am simply calling attention to contemporary claims that memory has been neglected not only by past rhetoricians but by twentieth century scholarship. Are these narratives true? Or has contemporary rhetorical theory been a more fertile environment for the proliferation of memory work than scholars recognize? In this chapter, I begin my study of memory in contemporary rhetoric by testing this narrative about the canon's neglect. Analyzing six of the field's major journals, I compare the number of articles addressing the fourth canon with the number of articles attending to the other canons. The canonical terms will

be the focal points of each search. Following the comparison, I analyze 297 memory articles to discover how this subject has taken shape in the field, and whether or not it differs from the conception found in artificial memory treatises. This latter analysis will be aided by natural language processing techniques—counts of frequent words and citations—as well as by topic modeling with latent Dirichlet allocation (see Introduction). In each case—as has been the case throughout the dissertation—texts and their measurable features stand in as imperfect but still revealing proxies for discourse about memory in a particular context.

MEASURING MEMORY'S "NEGLECT" IN CONTEMPORARY RHETORIC

The first operation is designed to test whether or not memory in contemporary rhetorical theory, as many have argued, has been less important than the other canons, particularly invention, style, and arrangement. Using JSTOR's Data for Research (DfR) database, I search and compare texts in *College Composition and Communication (CCC)*, *Rhetoric Society Quarterly (RSQ)*, *Rhetoric Review (RR)*, *College English (CE)*, *English Journal (EJ)*, and *Philosophy and Rhetoric (PR)*⁴². Each is searched from its founding year until 2010. These journals were chosen because they are the primary rhetoric and composition journals available in JSTOR's database. This is obviously an incomplete list of periodicals relevant to the field. In "Dappled Discipline at Thirty," Janice Lauer lists 24 journals broadly associated with rhetoric and composition, and to her list one could add half a dozen online journals. Clearly, all claims made in this chapter are apt for complication or confirmation. However, not all journals in the field are equally likely to publish scholarship on the canons *per se*. Adding articles from *Assessing Writing or Journal of Business and Technical Communication*, for example, might add

 $^{^{42}}$ Later analyses with NLP and topic modeling include articles from the *Journal of Advanced Composition (JAC)* and *Rhetorica (Rh)*. However, these journals were not available in JSTOR's database when I undertook this analysis comparing the prevalence of canons.

more noise than signal. In addition, the journals analyzed in this chapter have the benefit of being well-established, widely circulated, or both. None are new or niche journals whose representativeness might be questioned.

Searching for words like 'memory' or 'delivery' or 'arrangement' via Google or other general search engines would return numerous results unrelated to the canons. The value of a database is always determined by its contents. Thus, searching for the canonical terms in a database of rhetoric and composition journals should control for the terms' many possible meanings. This control is especially operative if we use DfR's interface to search not only specific journals but their articles' *titles* and *key terms*. (My assumption is that rhetoric and composition articles whose titles or key terms include 'invention', 'delivery', 'memory', etc., will be referencing rhetorical canons more often than not.) I begin with an analysis of the canonical terms in *CCC*, walking through the search process step-by-step for this journal to demonstrate (and to refine) the methods employed. Then I will present results from the five other journals and comment on the trends uncovered.

For purposes of this study, the five canonical terms will be used as search terms, as will terms synonymous with them. According to Reynolds, invention is sometimes referred to as discovery; arrangement is sometimes referred to as organization; and although Reynolds does not mention it, mnemonics is another word for memory in a rhetorical context. Neither style nor delivery has synonyms (1-2).⁴³

A search for *CCC* titles containing the canonical terms returns the following results: **Invention/Discovery – 20 titles Arrangement/Organization – 17 titles Style – 37 titles**

⁴³ I will, however, complicate this assumption over the next few pages.

Memory/Mnemonics – 2 titles

Delivery – 2 titles

Of course, these raw numbers might be misleading. The database being searched is very particular, but nevertheless, the terms may not in each case have anything to do with the canons. Looking closer at the 78 titles, two issues emerge. (See Appendix B for complete list of titles.) First, and most unambiguously, despite the fact that this database is comprised of rhetoric and composition articles, certain incidences of the canonical terms do not denote a canon as such. This issue may be designated *faulty denotation*. In this case, 'organization' suffers most from faulty denotation (Table 4.1; superscripted FD = faulty denotation). There are 2 occurrences of 'arrangement', and both correctly denote the canon; however, only 3 of 15 occurrences of 'organization' denote the canon. As seen in the table below, the others reference the organization of classroom content. The original count—17—must be reduced drastically to 5. The lesson here is that sometimes casting a wider net brings up obfuscating mud, not hidden results that might have been overlooked. Less metaphorically, it would be better to search 'arrangement' only, instead of both 'arrangement' and 'organization.' In this case, the difference between a count of 2 and 5 is more acceptable than the difference between 5 and 17. The former loses nuance; the latter is simply misleading.

Memory and delivery meet the same fate as organization. The two results for 'memory' are memorial tributes to deceased academics ("In Memory of Edward P.J. Corbett" and "In Memory of James Berlin"); the result for 'delivery' denotes the implementation of a program ("Reflections on the Missouri CWA Surveys, 1989-2001: A New Composition Delivery Paradigm").

Invention and style are not affected by faulty denotation. When authors in CCC use these

Teaching Arrangement: Defining a More Practical Approach Identifying and Teaching Rhetorical Plans for Arrangement The Music of Form: Rethinking Organization in Writing The Organization of Impromptu Essays Objectives and Organization of the Composition Course: The Report of Workshop No. 3 ^{FD} Organization and Administration of the Course: Universities FD Organization and Administration of the Course: Colleges FD New Directions in Course Content and Organization: Communication FD Devices for Teaching Organization in Elementary Composition Objectives and Organization of the Communication Course: The Report of Workshop No. 4 FD Organization and Administration of the Freshman Composition Course: Report of Workshop No. 4, Section B FD New Directions in Course Content and Organization: Composition FD Organization of the Communication Course: The Report of Workshop No. 4 FD Organization and Use of a Writing Laboratory: The Report of Workshop No. 9 FD Organization and Administration of the Freshman Communications Course: The Report of Workshop No. 4, Section A FD The Organization and Use of the Writing Laboratory: The Report of Workshop No. 9 FD The Organization and Use of a Reading Clinic: The Report of Workshop No. 10 FD Table 4.4 Titles with 'arrangement' or 'organization' in CCC titles

Teaching the Teaching of Composition: Evolving a Style Response to William E. Coles, Jr., "Teaching the Teaching of Composition: Evolving a Style" Metaphysics in the Criticism of Style The Bamboo Style of English Response to Louis Milic, "Metaphysics in the Criticism of Style"

Table 4.2 Sense ambiguity with 'style' in CCC titles

words in their titles, they mean the canons.

However, even this claim can be pushed against. A more subtle issue to emerge upon closer examination of the titles is that some of the terms, while denoting the canons in a general sense, might not reference them explicitly enough to "count" as scholarship on the canons. This issue—which can be designated *sense ambiguity* (Table 4.2)—primarily affects style. For example, 'style' in one article means something like a marked form of interaction, as in "The Bamboo Style of English," an article about a pidgin that developed between American GIs and Koreans during the Korean War. In another article, it alludes to a teaching style. Luckily, however, sense ambiguity affects only 5 of the 37 titles containing 'style'. The lesson here—one that I've confirmed multiple times working with corpora of specific genres—is that sense ambiguity is a minor problem compared with faulty denotation, i.e., that a term denotes something unambiguously different from what it was assumed to mean (as seen with 'organization'). Even if the 5 titles affected by sense ambiguity were removed, style would remain the canon most frequently invoked in *CCC* titles by far.

Controlling for these two issues, then, new counts emerge:

Invention/Discovery – 20 titles Arrangement/Organization – 5 titles Style – 37 titles Memory/Mnemonics – 0 titles Delivery – 0 titles

The count for arrangement has changed dramatically; the counts for memory and delivery have been reduced to zero. However, this amended tally allows us to draw the same conclusion drawn before the titles were analyzed more closely—memory and delivery are neglected in *CCC*, while invention and style are given extended treatment in this journal. Arrangement falls closer to memory and delivery. Refining the data in this case did not change the implications of the data. This is another conclusion I've often reached when working with corpora. On the first try, measurements are crude and in need of refinement; however, refining the results, manually or computationally, rarely leads to a complete rejection of the original data. Broad-spectrum patterns stand, though sometimes less strongly.

So far, then, Reynolds and the others seem to be correct. Not a single article with the word 'memory' in its title turns up in *CCC* in its entire history up to 2010.

A more subtle way to mine articles in JSTOR's database is to search the key terms attached to the articles. In the DfR interface, each article is tagged with approximately 25 key terms, generated using an algorithm called *term frequency-inverse document frequency* (see Introduction). The idea here is to search for articles whose key terms contain one of the canons.

Expectedly, articles with canonical terms in their titles—the articles uncovered previously—are also caught in the key terms search, but many new articles appear. Whether or not these new articles discuss a rhetorical canon at length depends on how high the canonical term appears in the key terms list. If a canon appears toward the bottom of the list, it is likely used only a few times in the article and constitutes a marginal theme. "Counting" these articles as instances of scholarship on the canons would be open to debate. However, if a canon appears near the top of the list, the word likely occurs throughout the article and represents a central theme.

In Figure 4.1, I provide a graph of the total number of *CCC* articles with a canon appearing anywhere in their key terms lists. Note that these numbers do not control for overlap—e.g., both 'invention' and 'style' might occur in one article's key terms, meaning the article is

counted twice, once in the invention column and once in the style column. Though this decision has likely generated somewhat inflated tallies, the other option—counting articles only once—would mean ignoring relevant scholarship in a select number of articles.

The issues of *faulty denotation* and *sense ambiguity* are still in play here. However, because key terms do not advertise their denotations as noticeably as words in titles, deciding which articles to discard would require scanning abstracts or even skimming the articles themselves. However, given what was discovered when looking closely at titles, it is safe to assume that 'organization,' 'memory,' and 'delivery' are once more affected by faulty denotation, that 'style' is affected only slightly by sense ambiguity, and that 'invention' and 'discovery' are not affected by either issue. (Recall, also, that faulty denotation has a far greater influence on the data than sense ambiguity.)

Even with these caveats, the trend occurring here is broadly similar to the one that occurred when tallying titles: style and invention are the canons most frequently written about in *CCC*, with memory and delivery again falling in last place. Counting arrangement alone, however, memory fares sligthly *better* than arrangement according to tf-idf score—but recall that memory also suffered from faulty denotation in the title search. For these tf-idf results, then, let us simply conclude that memory and delivery are much neglected compared to style and invention, and that arrangement lies somewhere between these pairs in terms of popularity in *CCC*.

New synonyms for canonical terms surface when searching articles by key terms: 'heuristics' emerges as a word related to invention, as in the titles "Heuristics and Composition," "A Tagmemic Heuristic for the Whole Composition," and "Structured Heuristic Procedures: Their Limitations." Also, 'circulation' emerges as a word related to delivery, as in the title





"Composition and the Circulation of Writing." Because invention is already well represented in the tally above, it does not matter if searching titles and key terms for 'heuristics' would lead to an even larger tally. However, perhaps ignoring 'circulation' throughout this search has led us to underestimate how often scholars in the journal discuss delivery. Or perhaps not. After adding 'circulation' to the searches, delivery still remains at the bottom of the list. Only 2 titles contain the word 'circulation'; only 5 articles contain 'circulation' as a key term. A very slight improvement, but nothing drastic enough to complicate the trend.

It can be concluded that, between 1950 and 2010, *CCC* has published far more on the canons of invention and style than on the canons of memory, delivery, and arrangement, though memory has fared somewhat better than delivery. Because *CCC* is the center of gravity for the composition studies cluster within rhetorical theory, it is not problematic to extrapolate from these results and claim, with Reynolds, that within a large swathe of the field memory and delivery are "typically ignored or, worse, deleted without a word of explanation," or with Kathleen Welch, that memory and delivery have been "eradicate[d] from discussions of writing and reading" ("Reconfiguring" 18). Nevertheless, the extensive coverage of JSTOR's database allows us to continue searching, to determine whether or not this pattern holds across other journals.

The following graphs display raw and average data from *College Composition and Communication, Rhetoric Society Quarterly, Rhetoric Review, College English, English Journal,* and *Philosophy and Rhetoric*. The method described above for *CCC* was used to collect data from these journals, as well, with a few minor alterations: Given the faulty denotation that occurred when initially searching 'organization' in *CCC*, I elected to search only for 'arrangement' when compiling these graphs; however, I continued to search for 'invention' and 'discovery', 'memory' and 'mnemonic', 'delivery' and 'circulation'—when relevant, the graphs are visualized as stacked graphs, with the corresponding legend showing the numerical split between the dual canonical terms. Instances of faulty denotation have been manually culled from the tallies, to the best of my ability.⁴⁴ (Almost all of the articles culled were book reviews, memorial tributes, or administrative reports of some kind.) Instances of sense ambiguity have been retained due to the subjective nature of deciding whether or not a particular article addresses a canon *qua* canon.

Like all averages, those in Figures 4.4 and 4.5 are artificial numbers that simultaneously clarify and obscure trends existing within the data which constitute the averages. (See Appendix C for graphs of each journal individually.) Nevertheless, as clarifying abstractions, the figures visualize an interesting trend. Although the narrative of scholarly neglect is attached most firmly to memory and delivery, *arrangement* in fact emerges as a neglected term in each graph. Arrangement is sometimes listed with invention and style as a popular canon in contemporary academic discourse, but across these six journals, the narrative is not confirmed. (It must be granted, however, that at least one scholar, Reynolds, provides his canon comparison in the context of textbooks, not scholarship. Were I to perform this analysis on chapter titles in pedagogical handbooks, I may indeed find arrangement and memory swapping places.) However, in this context, the fact that arrangement is not at all a prevalent canon confirms the argument of scholars who *have* pointed to a neglect of arrangement—such as Collin Brooke in "Making Room, Writing Hypertext" and Jeanne Fahnestock in her *Encylopedia of Rhetoric and Composition*.

⁴⁴ To reiterate, faulty denotation means that usage of the canonical term is unambiguously unrelated to a canon, as we saw with 'memory' and memorial tributes to deceased academics.



Figure 4.2 No. of articles with canons in titles (total across 6 journals)



Figure 4.3 No. of articles with canons in key terms (total across 6 journals)



Figure 4.4 No. of articles with canons in titles (average across 6 journals)



Figure 4.5 No. of articles with canons in key terms (average across 6 journals)

Style and invention emerge as the most popular canons in the journals, style taking the top spot with a bullet. Memory falls somewhere between style/invention and arrangement/ delivery in terms of popularity in these six journals. In other words, although the narrative of memory's neglect is true relative to treatments of style and invention, it is not true relative to arrangement. The narrative of delivery's neglect appears to be much more accurate than that of memory's neglect.

Nevertheless, the common refrain that twentieth century rhetoric has ignored the canon of memory can be vindicated by looking at publication dates of the articles represented in the Memory bar of Figure 4.3. The majority of the 299 articles with 'memory' or 'mnemonic' in their key terms lists were not published until the middle of the 1970s or afterward, with the 1990s and 2000s corresponding to the greatest sustained interest in the canon (Figure 4.6). This same trend appears even if we graph articles published in the field's longest running periodicals, *English Journal* and *College English* (Figure 4.7), so we can be certain that the increasing interest in memory issues is not solely a function of more journals being published in the latter decades of the twentieth century.

This trend is even more striking if we look at titles. In the 6 journals analyzed above— *College Composition and Communication (CCC), Rhetoric Society Quarterly (RSQ), Rhetoric Review (RR), College English (CE), English Journal (EJ),* and *Philosophy and Rhetoric (PR)* there are 42 articles with 'memory' or 'mnemonic' in their titles. If we extend our reach by including articles up to 2013 as well as articles in the *Journal of Advanced Composition*⁴⁵, and by searching for the stemmed term 'memor'⁴⁶, that number increases to 64 articles. It turns out that the vast majority of these articles were published during or after the 1990s (Figure 4.8). The

⁴⁵ JAC is not available in JSTOR's DfR database.

⁴⁶ In order to include words such as 'memorial' or 'memorize'.



Figure 4.6 Publication dates of articles with 'memory' or 'mnemonic' in key terms



Figure 4.7 Publication dates of EJ and CE articles with 'memory' or 'mnemonic' in key terms



Figure 4.8 Publication dates of articles with 'memor' or 'mnemonic' in title

decades prior saw the publication of hardly any articles that addressed memory issues explicitly enough to warrant using the term in their titles. John Frederick Reynolds ("Memory Issues"), Sharon Crowley ("Modern Rhetoric"), and Kathleen Welch ("Reconfiguring") made their claims about memory's neglect in the late 1980s and early 1990s, and at that point, the narrative was largely true. Prior to 1980, the word 'memory' had been used in only four article titles despite the fact that, by the same year, *EJ* and *CCC* had been in publication for multiple decades, and *PR* and *RSQ* had been in publication for over a decade. However, in 1999, when Corbett and Connors argued in the 4th Edition of *Classical Rhetoric for the Modern Student* that memory has no place in contemporary rhetoric, the claim was already becoming problematic. And Pruchnic and Lacey, writing in 2011, are generally wrong to suggest that memory is still a neglected canon a decade into the twenty-first century. As early as 2005, other scholars, such as Elizabethada Wright, were already and correctly identifying a surge in interest in memory: "Relationships between memory and rhetoric," she wrote, "have become increasingly studied in the late twentieth and early twenty-first centuries" ("Rhetorical Spaces" 52).

The idea that memory is a neglected canon in rhetoric and composition is historically true, but interest in it has grown steadily over the last twenty years. Of course, compared to style and invention, it does remain a relatively undiscussed canon; however, since the 1990s, memory has in fact become more popular than both delivery and arrangement. We can conclude that the canon of memory was indeed a dormant topic throughout much of the last century but that contemporary rhetoricians have "rediscovered" the canon—and since that rediscovery, academic discourse on memory has blossomed. However, I still have said nothing about the *content* of that discourse. Wright tells us that "relationships between memory and rhetoric have become increasingly studied," but what does that relationship look like? What precisely is being studied? Can we track the influence of the fourth canon's past into its present? Or has the field's discourse about memory taken shape on its own, disconnected from the history of artificial memory, influenced instead by other conceptions of what memory is? To gather information about the field's rediscovery of memory, we need to do something more than count articles. What is needed is a way to measure and visualize the words of the articles themselves.

DISCOURSE ABOUT MEMORY IN RHETORICAL THEORY

Let's stay with titles to start with. In 7 of the field's major journals (including *JAC*), there are 64 articles with 'memor' or 'mnemonic' in their titles. Here are the forms taken by memory in those titles:

Memory(ies) – 50 Memorial(s) – 7 Memorization – 3 Mnemonic(s) – 3 Memory-Keeping – 1 Memory-Making – 1 Memoryscapes – 1 Memoria – 1 Memoire – 1 Mnemotechnics – 1

After removing stop words and controlling for capitalization, a quick inquiry with the text analysis tool Auto Map uncovers 268 unique words—including the forms of memory listed above—in the 64 titles. The majority of these unique words, 219 of them, occur only once. 49 occur at least twice.

It is worthwhile to look at these repeated words, for they are the ones used most

frequently alongside 'memory' in article titles (Table 4.3). They offer a preliminary glance at the discussions of memory occurring in the field. Does this word list confirm or not confirm that the historical art of memory has had an influence on the contemporary rediscovery of the fourth canon? What I notice first⁴⁷ in this list is a good deal of lexical diversity. From 'Plato' to

memory 47	time 3	national 2
rhetoric 8	art 2	places 2
public 7	augustine 2	plato 2
rhetorical 6	autobiography 2	present 2
memorial 4	cemetery 2	reading 2
poetry 4	civil 2	reflections 2
age 3	composition 2	remembrance 2
classroom 3	concepts 2	richard 2
contemporary	discourse 2	rights 2
cultural 3	education 2	rodriguez 2
forgetting 3	history 2	some 2
holocaust 3	human 2	states 2
memorials 3	identity 2	using 2
memories 3	invention 2	war 2
memorization 3	media 2	writing 2
space 3	mnemonic 2	
teaching 3	modern 2	

Table 4.3 Most frequent words, 64 titles containing 'memor' or 'mnemonic'

⁴⁷ Some other things to notice about the list: there are obviously terms here that would occur in any word list assembled from rhet/comp journals—'rhetoric', 'composition', 'writing', 'teaching' and so on. Also, some of these words may tell us more about the style of humanities articles than about memory discourse. For example, 'age' occurs in the following three titles, each published since 2004: "Forgetting to be (Post)Human: Media and Memory in a Kairotic Age," "Between Archive and Participation: Public Memory in a Digital Age," and "Global Memoryscapes: Contesting Remembrance in a Transnational Age." On one hand, these titles tell us that memory scholarship has recently concentrated on memory in digital and transnational contexts. On the other hand, the particular term 'age' in Table X has nothing to do with memory per se but seems to be part of an expression in vogue at the moment: a(n) ______ age.

'classroom' to 'holocaust' to 'poetry', the list suggests that memory is associated with multiple disciplinary discussions, a point to which I will return in a moment. I also notice that 'public' and 'memorial/s' appear near the top of the list, indicating that an important aspect of current scholarly discussions is public memory—indeed, 5 of the 12 memory articles published in these journals since 2010 reference 'public memory' specifically (see complete title list in Appendix D). Noticeably *absent* from the list, however, are words that I have suggested are central to the fourth canon—'artificial', 'art', 'image', 'visual', 'invention', and 'method'. Nor do I see synonyms for these words. Has the connection between memory, visualization, and invention been mostly forgotten? It seems so, judging by this word list. However, the list does contain other words familiar in the context of previous chapters—'art', 'mnemonic/s', and 'places'. Perhaps these terms point to articles discussing artificial memory, thus establishing a genealogy of influence between the historical fourth canon and the contemporary one.

As it turns out, 'art' comes from book reviews of Paolo Rossi's *Logic and the Art of Memory* and Frances Yates's *Art of Memory*, which means that although these seminal texts have been reviewed in the field, the term 'art of memory' has not been favored enough by scholars to appear in an article title. 'Mnemonic/s' appears in 3 titles: a 1957 article called "Mnemonics," which is not an article at all but a little mnemonic verse to remember elementary school material; "Modern Poetry in the Classroom: Exploring Memory: Li-Young Lee's 'Mnemonic'"; and "I Remember Mamma: Material Rhetoric, Mnemonic Activity, and One Woman's Turn-of-the-Twentieth-Century Quilt." 'Place' appears in two titles: "Rhetorical Spaces in Memorial Places: The Cemetery as a Rhetorical Memory Place/Space" and "Places of Public Memory: The Rhetoric of Museums and Memorials." And although not listed in Table 4.3, 'images' does in fact occur in one title: "Forgetful Memory and Images of the Holocaust." The articles named here may or may not cite historical sources on artificial memory, but artificial memory is not their primary subject matter. Judging by the titles, they do not seem to discuss a memory practice inspired by the techniques of the historical art; none seem to develop a particular method, system, or practice of memory.

That said, what strikes me about these titles is that although their topics are at first glance quite varied—a poem, a quilt, cemeteries, Holocaust images, museums and memorials—they do in fact share a commonality that, I argue, characterizes the field's current discourse about memory. Each title is, in its way, invoking not a memory art but a memory object, an artificial representation designed to mediate and recall something about the past. A cemetery plot recalls dead individuals; quilts often recall family histories; memorials and Holocaust images recall public, traumatic events. In addition, the Lee-Young poem referenced above explores the difference between ordering one's memories and allowing them to remain chaotic. Asking these titles to stand in as representative anecdotes, it appears that the field is not concerned with artificial memory as a particular technique, an art of memory, but with the things and places people use to remember the past-memory objects, in other words, of either ordinary and individual events (quilts, cemeteries) or momentous and public events (memorials, museums). It appears as though the field has reinvented memory along lines suggested by a nineteenth century mnemonist named Francis Fauvel-Gourad, who argues that the Greco-Roman technique and all its subsequent enhancements are based on a universal human tendency to remember via association. Insofar as "mnemonics" simply denotes the use of objects or places to recall the past, writes Fauvel-Gourad, then "mnemonics has been practiced in all time and by all people . . . as if by an intuitive sentiment" (49, 52). Contemporary rhetoricians offer a similarly broad interpretation of memory: not memory as an art of visualization to facilitate rhetorical invention

but memory as a human impulse to mediate the past with associative objects. The field is largely concerned with the rhetorics of that mediation.

However, I would argue that the field's understanding of memory is probably even broader. Bradford Vivian has written that memory in rhetorical studies is a "critical mode of inquiry." I take Vivian to mean that memory is *a way into* diverse topics and subject matter, a kind of framework used to approach and analyze certain facets of those subjects. But the subjects needn't be "memory objects" even in the broad sense outlined in the last paragraph. Take the following titles, for example: "Cultural Memory in the Classroom: Public Space," "A Recipe for Remembrance: Memory and Identity in African-American Women's Cookbooks," and "The Rhetoric of Memory-Making: Lessons from the UDC's Catechisms for Children." Classrooms, cookbooks, and catechisms are not generally defined as memory objects, especially in comparison with tombstones or memorials. However, the field seems to welcome analyses of these everyday objects in terms of memory—memory, again, defined broadly enough to encompass all sorts of human activity; indeed, memory as a mechanism which accompanies human activity itself.

Looking at names appearing in these titles is another way to gauge how extensive the interpretation of memory has become in the field: Toni Morrison, Richard Rodriguez, Paul Riceour, Julian of Norwich, Booker T. Washington, Shakespeare, Isocrates, Gloria Naylor, Louise Erdrich, Plato, Li Young-Lee, Anne Sexton, St. Augustine, and Pedro Albizu Campos all appear in titles alongside 'memory' or one of its derivations. Quite a range—poets, novelists, political leaders, an ancient Greek educator, a Christian mystic, and a continental philosopher. However, judging by titles alone, memory in the field has completely detached itself from the historical authorities on the art of memory—*Ad Herennium*, Cicero, Quintilian, Aquinas,

Magnus, Lull, Bruno. Not a single one is named in the 64 titles. This is further confirmation of Vivian's point, that memory in rhetorical theory is not a specific technique, practice, or collection of knowledge but a mode of inquiry adaptable to any topic. The 219 words occurring only once in the titles serve as further evidence for this claim. Table 4.3 above provides the 49 words occurring more than once, and already, a degree of terminological diversity surfaces in that list. Creating a word cloud of all the other terms demonstrates even more forcefully the diverse range of subject matter that has in some sense "attached itself" to rhetorical memory (Figure 4.9).



Figure 4.9 Words appearing once in titles with 'memor' or 'mnemonic'

Of course, diversity of subject matter is a noted feature of rhetoric and composition. In his study of citations in CCC, Derek Mueller discovers a "long tail" when graphing citation counts, an extended list of references that occur once and nowhere else in the journal. Mueller's data show that of 8,035 unique references in the journal, 5,761 occur once and only 1,287 (16%) occur more than three times ("Grasping" 209). Mueller takes these statistics as evidence that the scholars served by the journal must examine a wide range of subject matter. "It is in this long, flat expanse of unduplicated references," he writes, "that we can begin to assess just how broadbased the conversations [in the journal] have grown—and just how much the centered, coherent, and familiar locus of conversation . . . has slid" (211). My own work graphing citations and word frequencies in abstracts from CCC, RSQ, and RR has led me to the same conclusion (Long, "Lexical Diversity"): rhetorical scholarship, in general, invokes and investigates an impressively diverse assemblage of material. Whether or not this fact suggests a robust discipline or a fractured one is not at issue here. I call attention to Mueller's study because it strongly suggests that the diversity of words appearing in Table 4.3 and Figure 4.9 is almost certainly a function of the field's tendency toward topical diversity in general.

Nevertheless, one might expect that operationalizing a particular subject, like memory, could provide counter-evidence to Mueller's study, which counted citations across all *CCC* articles but did not code data by theme. Perhaps graphing citations by theme—as indicated by article titles—could shorten the long tail. However, a long tail still emerges when graphing the citation counts in the 64 memory articles under analysis here (Figure 4.10). There are 654 unique citations in the articles. 41 appear three times or more; 613 occur only once or twice. From this graph we can conclude that even when isolating a specific theme, such as memory, the field produces a body of scholarship marked by broad-ranging auxiliary topics. In this case, the

existence of such broad-ranging topics indicate once more that memory, in contemporary rhetorical theory, is not a well-defined art, as it once was. Instead, memory in the field has become a mode of inquiry into the act of remembering or mediating the past, an activity so universal that it encompasses most forms of human behavior.

However, the fourth canon's past has not been *completely* severed from its present. Examining the most frequent citations in the 64 articles, some familiar names appear (Table 4.4). Despite the many topics on which memory has been brought to bear, Ad Herennium and Cicero, two key sources for the historical art, escape the long tail of citations: *Herennium* is cited in six articles, Cicero in three. However, the early modern influence is absent (unless it surfaces second-hand via Yates), as are the medieval influence (unless it surfaces second-hand via Carruthers) and the Enlightenment influence (unless it surfaces second- hand via Crowley). Searching the long tail of the citation list uncovers Quintilian but not Aquinas, Bruno, or any of the other practitioners of artificial memory discussed by Yates or Carruthers. Peter Ramus appears in the long tail, but his Enlightenment followers—Bacon, Descartes, and later, Blair and Campbell-do not. In other words, there are some key names at the head of the citation distribution, as we see, but throughout the long tail, there is a notable dearth of historical figures. I can't help wondering how deeply the articles citing Cicero, Ad Herennium, Yates, and Carruthers ground their discussions in artificial memory. Do they instead reference the ancient texts in passing, as we saw with Pruchnic and Lacey's article? Do the authors provide a nod to the canon's history before discarding it and embarking on an exploration of memory in a much broader sense, one informed by psychology, philosophy, theology, or critical theory? Surely, it is telling that Aristotle and Plato are the most frequently referenced authorities in these 64 articles, and that Derrida, Foucault, and Zelizer occur more frequently than Quintilian, Cicero, and



Figure 4.10 Unique references, articles with 'memor' or 'mnemonic' in title

Reference	Frequency
aristotle	9
plato	8
blair_carole	7
carruthers_mary	7
ad_herennium	6
barthes_roland	6
burke_kenneth	6
halbwachs_maurice	6
havelock_eric	6
nora_pierre	6
ong_walter	6
yates_frances	6
young_james	6
zelizer_barbie	6
casey_edward	5
crowley_sharon	5
derrida_jacques	5
foucault_michel	5
glenn_cheryl	5
huyssen_andreas	5
sturken_marita	5
bodnar_john	4
foss_sonja	4
hasian_marouf	4
haskins_ekaterina	4
lacapra_dominick	4
reynolds_john	4
browne_stephen	3
cicero	3
dickinson_greg	3
hauser_gerard	3
johnson_nan	3
kennedy_george	3
leff_michael	3
lyotard_jean	3
mitchell_w	3
neel_jasper	3
ricoeur_paul	3

Table 4.4 Most frequent references in articles with 'memor' or 'mnemonic' in title

Aquinas.

To demonstrate how these citation data might be generated in the 64 articles, I offer Elizabethada Wright's article, mentioned earlier, as a representative anecdote. Here is how Wright uses the historical sources:

The connections among memory, space and rhetoric go back centuries. As the fourth canon of rhetoric, memory has been tied to rhetoric since the beginnings of both as an art. And the connections between both and physical space have existed just as long. The beginnings of "ars memoria" supposedly go back to the ancient Greek Simonides who remembered every person attending a banquet by recalling exactly where each person sat. The ties between memory and space continued in the classical treatise on memory, *Rhetorica Ad Herrenium* [sic], which explained that to remember ideas or things, one should visualize them in a specific location in an imagined place.

The ties between memory and space have also been important in the twentieth century as historians have realized the importance of materiality on memory. For example, many theorists have observed the impact of physical statues and memorials on public memory (e.g., Cohen, Driggs et al., Jacobs, Levinson, Middleton, Savage, Schwartz) (52).

From one paragraph to the next, Wright moves from Simonides and *Ad Herennium* to six twentieth century references. This is the only reference to *Ad Herennium* in the article. Wright references Frances Yates, as well, but that reference also occurs only once, in a footnote pointing the reader to *Art of Memory* to learn about "the beginnings of rhetoric and memory" (72). The rest of Wright's article focuses on cemeteries as memorial "places/spaces." If Wright's tactic

here is a common one in the 64 articles compiled, it would explain how *Ad Herennium* and Yates end up escaping the long tail and (partially) how the long tail itself is created. Scholars invoke certain primary or secondary sources once on their way to a wider collection of more contemporary sources brought to bear on a unique topic.

Wright's move from the *loci* of artificial memory to the physical *space* of the cemetery may also be representative of how the field treats the historical art of memory. The move is intriguing, but it is made entirely in the space between the paragraphs quoted above. No rationale is provided for linking *loci* and *space*—which leaves me wondering about two related issues: How do mnemonic *loci* enhance the notion of rhetorical space as theorized by scholars such as Nan Johnson (*Gender and Rhetorical Space in American Life*)? And what differences between *loci* and rhetorical space have been elided, given that one is a technique for visualizing knowledge and the other is a framework for analyzing social constructions of physical settings? These and other questions are left unanswered in the article. The relationship between *loci* and rhetorical space—that is, the relationship between the old fourth canon and the new one—is fashioned as a superficial etymological link, with *Ad Herennium* offered as a passing reference on the way to a discussion developed from other, contemporary sources.

Taken together, the 64 articles' titles and citations suggest that the field's rediscovery of the fourth canon has given rise to a discourse that does recognize and incorporate part of the canon's history (primarily the original Greek and Roman influence). But this discourse seems to incorporate the canon's past in a marginal way, figuring memory in much broader terms than were typically adopted in artificial memory treatises. When it comes to memory, academic rhetorical theory seems to be drawing most of its influence from sources other than or tangential to the sources I have tracked in previous chapters. And the idea that the art of memory is a visual art to facilitate invention—despite the centrality of that understanding throughout history—has mostly disappeared from the scene.

Admittedly, this conclusion is being drawn from limited textual evidence: the titles and citations of 64 articles. Titles and citations are not the full text. And 64 articles is an undeniably small corpus, barely large enough to be appropriate for macroanalytic methods. A more robust method for mining these journals is to construct topic models from the full text of as many articles as possible. That is the goal of the final section of this chapter.

For the following topic modeling analysis, I searched 8 rhet/comp journals and compiled articles containing 'memory' or 'mnemonic' in their key terms lists. The journals searched were *CCC*, *CE*, *EJ*, *JAC*, *PR*, *RR*, *RSQ* and *Rhetorica* (*Rh*). I then requested and received from JSTOR the full text of all articles compiled during the search. JSTOR initially delivered 310 articles, many of which had been OCR'd and some of which were all but unreadable. Inadequate OCR will obviously affect quantitative results, but as long as the issues are minor, the effects will be acceptably marginal. In this case, articles with the most atrocious OCR were culled from the document collection. I culled 31 files, leaving a corpus of 279 articles to be topic modeled with MALLET.

Running the corpus through MALLET's algorithm (see Introduction), I asked the program to return between 10 and 30 topics, with more topics corresponding to a more fine-grained analysis. Two issues emerged. First, some topics returned by the algorithm were derived from periodical metadata (see *Macroanalysis* 135); in this case, the metadata forced MALLET to return clusters of masthead information or words such as 'issue', 'page', or 'volume'. Second, some topics returned by the algorithm were simply impossible to interpret in a lucid way. Noting the same problem in his topic models, Jockers suggests that uninterpretable topics are better

discarded than shoehorned into coherence (128). For example, here is one of the topics—one of the word bundles—returned by a 30-topic run:

part make words point con ways question work fact kind good made give idea find makes hand

As Jockers says about his own word-salad results, "an uninhibited reader might be able to make an argument for the interpretability of this topic," but clearly, these words do not form a coherent theme as do other topics returned during the same run, such as the following:

story film narrative stories characters action play time character drama events world author cycle reader dream short fiction plot

This second topic displays an obvious unity of theme, which we might label *Narrative* or *Story*. Only topics that display this level of coherence have been considered in my analysis.

The words in each topic have been found to co-occur across the documents and should be analyzed as a whole; however, the words at the beginning of each list have a higher relational score, that is, they are more related than the words toward the end of each list. (Jockers visualizes this relation by creating word clouds and changing the words' font sizes to correspond with their relational scores.)

The 10-topic run provides the broadest overview of themes appearing in the 279 articles (Table 4.5). Labeling these topics is not a straightforward procedure, but for most of them, the range of possible options is limited. Debate about topic labels, Jockers notes, will center around precision and emphasis but not underlying content (*Macroanalysis* 130). The key to labeling
0 composition writing rhetoric english language cognitive university communication research teaching brain classical psychology theory

1 memory public rhetoric rhetorical political south memorial past collective history war rights civil cultural memories media politics

2 memory experience sense language time knowledge mind book words texts text important point form meaning fact

3 rhetoric rhetorical cicero invention memory aristotle classical locus delivery plato tradition loci greek theory speech

4 time poem poetry story poet man past life death present modern world lines action film mind form characters

5 writing text writers process writer reading students sentence student reader grammar language composition words system research program computer

6 memory women space rhetoric cemetery addams rhetorical holocaust century place events sappho public event history quilt images

7 students writing school class english reading read write student books people teachers book teaching high year teacher time children

8 story life past stories history family women diana american woman autobiography mother personal cultural literacy narrative college

9 food women los_alamos memories american recipes memory space cookbooks family cook film eating time african cooking world scientific

Table 4.5 Topic list, 10-topic run in MALLET on 279 memory articles.

topics is to strike a balance between precision and generality—too precise, and one invites more debate than clarity; too general, and the topics lose their interpretive power.

In my view, the only uninterpretable topic in the list above is Topic 9. It looks as though

words from a few specific articles ('recipes', 'los_alamos') have been lumped together with

language from across the corpus ('women', 'time'). This is the sort of topic that should be

discarded. Topic 2 presents a subtler problem. It is clearly interpretable, and the occurrence of 'experience', 'language', time', 'meaning', and 'knowledge' inclines me to label it something like *Memory and Epistemology*. However, the other words occurring in this topic—particularly 'text/s', 'book', 'words', 'point', and 'important'-make me wonder if this topic has simply discovered the book review register in these journals, or even a more general academic register surfacing across many articles. Now, it is very possible that this topic has been returned due to an interesting connection between epistemological content and a specific register or style, indicating, for example, that many reviews in this corpus are of books on the epistemology of memory. The fact that Aristotle and Plato are the most frequently cited figures in the 64 articles analyzed earlier (Table 4.4)⁴⁸ leads me to believe that a *Memory and Epistemology* topic is not at all unlikely. (The connection I am drawing is that Aristotle and Plato are much more concerned with the epistemological and philosophical aspects of memory than with the rhetorical art of memory.) That said, Topic 2 deserves interpretive caution. It could represent a significant theme in the corpus, but it is equally possible that a stylistic quirk has forced MALLET's algorithm to layer a topic onto a recurrent register that has nothing to do with underlying content. I will label Topic 2 as *Memory and Epistemology* but with an asterisk to indicate that this topic may not represent a cohesive theme.

The other topics, though quite broad at times, remain well within the range of interpretability. I have labeled them as follows: Topic 0 (*Language, Communication, and Psychology*); Topic 1 (*Public and Collective Memory*); Topic 2 (*Memory and Epistemology**); Topic 3 (*Classical Rhetoric and Memory*); Topic 4 (*Memory and Narrative*); Topic 5 (*Student Writing*); Topic 6 (*Gender and History*); Topic 7 (*Education*); Topic 8 (*Life Stories*).

⁴⁸ The articles analyzed earlier are in the corpus modeled here.

These 10 topics provide evidence for the argument I have been making about memory's status in the contemporary field. The fourth canon's history is not forgotten—Topic 3 contains 'cicero', 'loci/us', 'invention', and other words indicating that the historical 'tradition' of the fourth canon continues to influence current dialogue. However, that tradition, if not forgotten, has been marginalized as the field has expanded its definition of rhetorical memory to include a profusion of activities and spaces. A vivid way to illustrate the argument is to graph the prevalence of the topics across all 279 articles. With MALLET, it is possible to create a spreadsheet showing what percentage of each topic comprises each article. The spreadsheet takes the form, Article Name: Topic 1, Percentage; Topic 2, Percentage; and so on, allowing one to count which topics occur most often at the highest percentage in an article. Figure 4.11 shows where Topic 3—*Classical Rhetoric and Memory*—falls in order of predominance. In the 279 articles compiled, Topic 3 is the most predominant topic in only five articles, causing it to be the least popular topic from which all the articles draw. Simply put, *Classical Rhetoric and Memory* is a marginal theme in the corpus. In contrast, Memory and Epistemology^{*}, Education, and Memory and Narrative occur in many texts, suggesting that these themes form the core discourse about memory in the field 49 .

Compiling words into more than ten topics forces the algorithm to return more granular topics—for example, the *Narrative* topic seen above. However, if too many topics are compiled,

⁴⁹ Some more comments on Figure 4.11: In light of the earlier title analysis that unveiled words such as 'memorial' and 'public', it is surprising that *Public Memory* is not a more popular theme; however, it was also noted that public memory began appearing in titles relatively recently, since 2010. I imagine the comparative prominence of the *Education* theme is in some measure due to the fact that *English Journal* and *College Composition and Communication*, two journals with pedagogical *ethea*, have lengthier publication histories than the other journals do, which likely means they contributed more documents to the corpus. The range of topics from *Memory and Narrative* to *Language, Communications, and Psychology* may provide a better summary of the themes in *RR*, *RSQ*, *Rh*, and *JAC*. But note that *Student Writing* is also a theme in the middle part of the graph, suggesting that even when focusing on a subject not inherently pedagogical, such as memory, the field continues to bring pedagogy to bear on the subject. However, no matter how we analyze the middle and upper ends of the graph, *Classical Rhetoric and Memory* remains the least prominent topic in the corpus of memory articles.

the results move further and further from broad trends and toward the individual documents within the corpus. Weingart, Jockers, and Underwood all note that there is no "correct" number of topics to compile and that the best number will depend on the size of the corpus. After multiple runs with MALLET's algorithm, I determined the optimal number for this corpus was no more than 30 topics. At this range, the topics seemed to be cohesive, and to strike the best balance between breadth and precision.

For the 30-topic run (Figure 4.12)⁵⁰, the more general topics that occurred during the 10-topic run (Figure 4.11) have been scattered and regrouped into word bundles corresponding to more precise themes. For example, during the 10-topic run, MALLET returned a topic titled *Classical Rhetoric and Memory*:

rhetoric rhetorical cicero invention memory aristotle classical locus delivery plato tradition loci greek speech

During the 30-topic run, MALLET isolated words from topic above as well as other words and returned the narrower topic *Cicero and Artificial Memory*:

cicero locus de loci rhetorical rhetoric theory speech ad rhetorica

After isolating this narrower topic, MALLET also found a separate word bundle that corresponded to rhetorical history but not artificial memory. I've called it *History of Rhetoric* (in the earlier topic model, this word bundle must have been suppressed by the more dominant topics):

⁵⁰ I have only displayed topics that constitute a predominant theme in at least 3 separate articles (see Appendix E for the topic word lists).



Figure 4.11 Most popular topics in 279 memory articles (10-topic run)



Figure 4.12 Most popular topics in 279 memory articles (30-topic run)

rhetoric memory rhetorical classical aristotle tradition delivery julian text history university invention discourse

Also note that *Memory and Epistemology* has re-occurred in Figure 4.12. This time, however, it represents fewer articles and has been narrowed to a much more coherent topic than the earlier one, which is why I have removed the asterisk. Here is the refined *Memory and Epistemology* topic:

memory sense time experience form language present world order nature human life attention mind works meaning terms place

The conclusion to be drawn here is that the first *Memory and Epistemology** topic was indeed capturing a recurrent theme in the corpus, but that the theme is not as prevalent as it first appeared, nor is it attached to a more general academic register. In Figure 4.12, *Memory and Epistemology* is the most predominant topic in 16 articles, as opposed to 80+ in Figure 4.11. This result also corresponds more closely to the number of articles in which Aristotle and Plato appear as references (Table 4.4)

Searching for more granular topics, then, MALLETT was able to isolate only one narrower theme related to the historical art of memory. The other topics in Figure 4.12 represent the wide ranging themes that occur in the 297 memory articles, confirming my argument about memory in contemporary rhetorical theory. The most dominant theme to emerge during the 30-topic run was *Personal Memories*, and in my view, it epitomizes the broad definition given to memory by scholars today:

time life people years memories home man day english find place remember mother story words father memory world

CONCLUSION

In this chapter, I have attempted to operationalize an abstract concept—discourse about memory in contemporary rhetorical theory—by counting articles, counting words in titles, counting citations, and topic modeling⁵¹ full text of articles. The conclusion I have drawn is that rhetorical memory has taken on a far more expansive definition than it possessed in the past. For centuries, rhetorical memory was a well-defined practice—an art of remediating words and knowledge into various mnemonic forms. It had rules and precepts that, even while transforming according to the needs of rhetors at different times and in different places, remained highly influenced by the precepts laid down in the Greek and Roman treatises. Today, however, rhetorical memory no longer denotes a particular art or even a particular method for representing knowledge. Instead, the field has focused its attention on the many ways humans mediate and recall the past, a universal art of memory not reducible to a fixed practice or body of knowledge. Rhetorical memory now encompasses a broad range of human objects, activities, and places, from cookbooks to cemeteries. Since its "rediscovery," the fourth canon for academic rhetoricians has been-to repeat Vivian's description-a mode of inquiry rather than a practice to visualize text, to aid invention, or to pursue other rhetorical activities.

This enlarged interpretation of the fourth canon is a new development not only in the

⁵¹ In topic modeling studies, it is often the practice to correlate topics with the publication dates of documents. This method allows the researcher to visualize the ebb and flow of themes over time. However, the publication dates of nearly all the documents in this corpus—that is, the publication dates of the 297 articles in the 8 journals searched— are recent enough to make a time graph unnecessary. Recall the publication dates of the 64 articles with a form of 'memory' in their titles (Figure 4.8): before the 1980s and 1990s, 'memory' was nearly non-existent in rhet/comp titles. The dates of documents in this corpus largely fall in line with that trend, confirming the implications of the earlier result: the field did not rediscover the fourth canon until the end of the twentieth century, but since then, discourse on memory has flourished.

history of rhetoric but in the contemporary academic field. Throughout most of the twentieth century, the field did indeed ignore the fourth canon-as Crowley, Reynolds and others have noted—even as the canon continued to be practiced in highly altered form outside the context of academic rhetoric. Rhetorical theory "neglected" the canon. However, thirty years ago, the field rediscovered rhetoric's old link with memory, and with each passing year, the narrative of memory's neglect becomes more an historical observation and less a description of the canon's current status, circa 2015. How might the field's understanding of rhetorical memory evolve in the coming decades? I offer no predictions. However, with this chapter, I have laid the groundwork for the argument developed in the next chapter, which is that rhetoricians should return to the ancient conception of memory as an artificial *practice*, a visual art to facilitate the operation of memory during invention. Much excellent work has been pursued by expanding the definition of rhetorical memory to analyze the myriad ways humans artificially mediate the past. Nevertheless, as the field continues to frame memory as a mode of inquiry into diverse topics, it could also benefit from more concrete conceptualizations of the canon. As Collin Gifford Brooke argues in Lingua Fracta, memory "is the one canon whose status as practice is in need of rehabilitation" (144). Framing the fourth canon as a practice, and in particular, as a visual practice, is the goal of the next and final chapter.

Chapter 5: Arts of Memory for the Digital Age

"I WILL LOOK UPON IT, THAT I MAY REMEMBER"

In an 1813 book entitled *Mémoire sur les Manuscrits d'Herculanum*, M. Morgenstern, professor at the University of Dorpat, argues that it was not the Greek lyric poet Simonides but the ancient Egyptians who first developed an art of memory based on imagery. Today, Morgenstern's book, published prior to the translation of the Rosetta Stone, appears to suffer from an excessively ideographic understanding of hieroglyphics. That the Greco-Roman art of memory had origins in Egypt has never been established; this nineteenth century speculation is likely a holdover from the occult memory arts, which, in addition to Zodiac imagery, utilized and venerated Egyptian hieroglyphs. Taking a broader perspective, however, it must be admitted that Morgenstern is correct—humanity used images and items as memorial prompts long before the era of Simonides. One of the most famous visual tokens of remembrance, for example, can be found in the ninth chapter of Genesis:

¹² And God said, This is the token of the covenant which I make between me and you and every living creature that is with you, for perpetual generations:
¹³ I do set my bow in the cloud, and it shall be for a token of a covenant between me and the earth . . .

¹⁶ And the bow shall be in the cloud; and I will look upon it, that I may remember the everlasting covenant between God and every living creature of all flesh that is upon the earth.

The rainbow is the visual reminder of God's covenant with Noah. A similar reminder of the purifying effects of a great flood is found in the much earlier Epic of Gilgamesh—there, the *aide-mémoire* is a lapis lazuli necklace instead of a rainbow. The ancient world, far more ancient

than the world of the pre-Socratics, was well acquainted with the use of images, items, or places as representations of things that needed remembering. In *Memory Systems New and Old*, A. E. Middleton points also to the memorial stones in the Book of Exodus (10).

Unquestionably, artificial memory as established in Greece and Rome is a very precise art, and certain elements of it seem *sui generis*—the deliberately evocative nature of the images; the employment of mental imagery instead of material objects; constructing images based on phonetic resemblance; using associative images to visualize words and knowledge relevant to everyday endeavors rather than to remember exceptional events or covenants with the Almighty; and, of course, the use of mnemonic forms to facilitate the invention of discourse. Nevertheless, although the Greek art of memory offers some novel developments, they are novel developments of a timeless principle: if you need to remember something, visualize it.

The art of memory as a visual art—this idea was established in Chapter 1, recurred in Chapters 2 and 3, and in this chapter it will be the foundation for an art of memory for the twenty-first century. Refiguring the fourth canon as a visual art reconnects contemporary rhetoric with the techniques of ancient orators and suggests interesting possibilities for rhetorical practice. Of course, the social and intellectual ecologies which contemporary rhetor-writers inhabit are different from those inhabited by classical orators or Renaissance occultists. Bringing the art of memory into the twenty-first century does not mean shoehorning the techniques of *Ad Herennium* or Giordano Bruno into the contexts of the present age. Instead, rhetoricians and compositionists interested in new memory practices should begin by asking themselves two questions. First, what are the demands placed on the memories of contemporary writers? Second, how can the traditions of the fourth canon inform the project of developing new practices and tools to meet the demands?

These questions are open-ended and, I hope, generative. They are certainly not exhaustive; there are many other questions we might ask about memory practices. In the context of technical communication, for example, John R. McNair asked two decades ago how the classical art of memory might inform the design of desktop icons and other components of digital interfaces ("Computer Icons"), a question even more interesting today, given the increased sophistication of interface design and human-computer interaction. Although the questions posed above suggest a focus on writers while writing—and that is in fact the focus of this chapter—composition in the digital age involves sites and forms of memory strain that are not related to writing per se. The concept of artificial memory may prove to be useful in a variety of domains associated with rhetoric and composition. Although much work has been done to turn memory into an historical and critical "mode of inquiry" to explore how humans recall and mediate the past across a braod spectrum of activities and rituals (Vivian, "On the Language of Forgetting"), it is equally important to think about memory as a method to aid the memories of writers and rhetors in a more "applied" or "practical" range of contexts; artificial memory from ancient Greece onward has after all been a technique designed to meet practical intellectual needs.

Memory, writes Collin Gifford Brooke in *Lingua Fracta*, "is the one canon whose status as *practice* is in need of rehabilitation" (144). By inquiring into the demands placed on contemporary writers' memories, I am attempting to return the field's attention to this practice-oriented conception of the fourth canon. In the following section, I explore two types of memory strain faced by contemporary writers. The first involves what Christina Haas calls "a sense of the text," and is framed as an issue relevant to *writing*. The second involves the so-called "information overload" that has defined the internet age, and is framed as an issue relevant to

reading and research. In subsequent sections, I explore how rhetoricians and compositionists can develop aids for these memorative efforts, arguing that the fourth canon's history points to the principle of visualization as the key to artificial memory.

DEMANDS ON WRITERS' MEMORIES

(a) A sense of the text

I stand by my argument in Chapter 1 that equating rhetorical memory with psychology is a problematic approach. However, the argument does not preclude exploring psychology to learn how writers' natural memories might be aided. And both psychologists as well as process compositionists have long recognized that the operations of short and long term memory are central to the writing process. Deborah McCutchen's review essay—"From novice to expert: Implications of language skills and writing-relevant knowledge for memory during the development of writing skill"-provides a rich overview of research into memory operations during composition. The dexterity with which a writer can generate text, according to McCutchen, is circumscribed by short term memory, or working memory.⁵² Multiple studies have found that, across races and age groups, a larger working memory span is implicated in the production of more successful and complex texts. The larger the memory span, the greater the ability to connect ideas at the levels of the sentence, the paragraph, and the whole text (McCutchen 57). In addition, skilled writers have stored in their long term memories information relevant to genre knowledge and discourse forms, and can access that information with ease during composition (58). The simultaneous management of text-level linguistic elements in

⁵² In the psychological literature, short term memory and working memory are often differentiated according to the types of mental processes they involve, but for purposes of this chapter, which does not rely on fine-grained distinctions, short term memory and working memory will be used interchangeably. See Nelson Cowan's "What are the differences between long-term, short-term, and working memory?"

working memory and the accessing of genre information stored in long term memory are vital to the writing process.

In Writing Technology, Christina Haas reaches a related conclusion about the importance of short term memory to writers. She posits the phrase "sense of the text" to describe the complex process by which writers "develop some understanding—some representation—of the text they have created or are creating" (117). This representation includes not only the linguistic elements pointed out by McCutchen but also a text's semantic content, rhetorical context, and overall structure. Developing text sense means coming to an "understanding of the structure of [a text's] arguments," an understanding which aids further invention as well as revision. This sense of the text, Haas explains, exists as a distinct mental entity separate from the material artifact that writers produce. Collin Gifford Brooke notes that memory is clearly involved in the mental formation of text sense (Lingua Fracta 32), and Haas herself writes that text sense "seems to include both a spatial memory of the written text and an episodic memory of its construction" (Writing Technology 118). Developing a sense of the text, in other words, is a writer's attempt at recalling the text composed so far. In one study, Haas explores this development by comparing writers using pen and paper with writers using a word processor. She discovers that writers using pen and paper more easily develop a sense of their texts compared to writers using a computer. Because a sense of the text exists separately from the text itself, the ability to interact materially with a text seems to facilitate writers' attempts to match their composition with their mental image of it. Haas lists distancing, pointing, changing perspective, and tactile manipulation (such as spreading pages on a table) as physical interactions favored by writers using pen and paper. These interactions were much less operable for the online writers, who consistently complained

about the difficulty of "getting a perspective" on their born-digital texts (120-22).⁵³

When it comes to remembering a text composed so far, writers' short term memories are taxed in different ways and to different extents depending on the type of text being composed. In their essay "Why Write?", Richard Young and Patricia Sullivan observe that certain writing tasks put hardly any strain on short term memory because the tasks allow writers to chunk a text into smaller units or steps that can be forgotten as soon as they are completed. One example of such a task is a description of a house or an apartment, in which the writer can provide a "verbal tour" of the dwelling. Once a room or a hallway has been described, the writer can move to the next place without needing to recall prior descriptions-making connections between things is not a necessary feature of descriptive tasks. Another example of a writing task that can be chunked into smaller steps is an informal letter, where genre features such as salutations, introductory sentences, and closings provide writers with a template. Studies of writers carrying out these modest tasks demonstrate that they rarely revise the sections or steps once they have been completed. Young and Sullivan take this as evidence that at least certain genres are fundamentally paratactic. They do not require complex hierarchy, connectivity, or cohesion and therefore do not entail the acute workings of short term memory (though they may rely on long term memories of genre conventions).

Although writers have commonsense strategies for dealing with routine writing tasks that "could be spoken as well as written," Young and Sullivan ask what happens when we "engage in a kind of thinking that is still more sophisticated, when we must hold in our minds many units of

⁵³ I imagine that most writers under the age of 35 are so habituated to composing on computers that the problems of developing text sense on a word processor—which were acute for writers in Haas' study 20 years ago—go completely unnoticed. However, my own experience as a teacher and a writer leads me to believe that the ability to remember the text composed so far—to form a mental representation of the shape of the text and its arguments—is still vital to the construction and revision of a complex, cohesive piece of writing. Like Haas' subjects who wrote on computers, I often find myself printing pages when I need to re-read and revise.

information and their relationships, as we must when we are creating, say, a sonnet or a philosophical argument?" They answer:

We look for a pencil and paper. . . .We exceed the capacity of short-term memory. What is at issue here is not the number of units of information one can isolate in a completed discourse or the length of the discourse, but the number of units and their relationships that must be juggled at any moment as we shape the poem or argument. (222)

Here, Young and Sullivan contend that even if a description of a building requires thousands of words, as long as it is acceptable to describe the building step by step, room by room, the writer's memory will never require aid because each descriptive step can be mentally discarded as soon as it has been written. However, most genres faced by writers in professional, civic, and academic contexts are not so paratactic. More often, each "step" in the invention or revision process—each phrase, each clause, each paragraph, each argument—demands the recall of information from multiple other steps. The "number of units and their relationships" that must be elicited by writers during invention or revision begins to increase rapidly. Writers' working memories begin to be strained. This strain, as described by Young and Sullivan, is in my view the same sort of recollective effort implicated in the construction of text sense, though Haas' notion would also include rhetorical context as one of the elements managed by the writer.

One thing a new art of memory needs, therefore, is a set of strategies to aid the development of text sense, that is, to aid the working memories of writers who must mentally "juggle" their words and ideas when composing or revising complex texts. (If the pieces are dropped, the result is a text in which no one takes pleasure, such are its cohesive defects.) In the next section, we will look at digital tools that can potentially meet this need. But before we move

on, I want to introduce one other demand placed on the memories of writers: the so-called data glut. While developing a sense of the text is a problem relevant to writing, dealing with information overload, as I understand it, is a problem relevant to reading and research.

(b) Information overload

That society produces more information than any individual can process is a criticism that existed long before twentieth century media. Indeed, the story of memory and method told in the third chapter is, to a degree, a story about humans dealing with the problem of remembering—systematically—all the knowledge discovered, rediscovered, and multiplied in print throughout the early modern era. Long before the Renaissance, however, literate peoples bemoaned the drawbacks associated with too much information. Seneca the Younger (d. 65 CE) writes in his *Epistulae Morales* that it is better to make one's acquaintance with a few "master thinkers" than to move willy-nilly from one book to the next. "Reading too many books," gripes Seneca, leads to a distracted and unsteady mind (7). Across two millennia, the voice of the Stoic echoes in writers who argue that information overload in the digital age is making us all stupid. To navigate the online data flood, their observation goes, we have opted for shallow surfing practices instead of deep involvement. James Sosnoski uses the term "hyperreading" to denote these digital reading practices, which include search queries, skimming, hyperlinking, and filtering by keywords. To this list N. Katherine Hayles (who is not as bearish as others on the effects of digital reading) adds switching between browser windows and scanning blog aggregators ("How We Read" 66).

Professional techno-downer Nicholas Carr argues that such practices harm a reader's "capacity for concentration and contemplation" ("Is Google Making Us Stupid?") and that too much data "impedes the formation of memories and makes learning more difficult" (qtd. Collins, "Email Has Turned Us Into Lab Rats"). Carr's book *The Shallows* rallies an assortment of cognitive studies to ground his argument that digital reading practices can in fact degrade textual comprehension rather than enrich it. In partial support of Carr's position, Hayles points to work undertaken by cognitive scientist Stanislaus Dehaene, who has demonstrated the salutary neurological effects of traditional reading. Just as habitual, repetitve motor action can retrain neural circuits for new activity, so too can the repetition of careful reading enhance synaptic connectivity within the brain ("How We Read" 69). Hyperreading, in contrast, does not facilitate repetitive meditation on individual passages; instead, the online hyperreader responds to information overload by clicking too much, reading too litle, and remembering even less. Thus the problem of hyperreading, according to Carr, is ultimately a problem for memory; specifically, it results in a failure to transfer information from working memory to long-term memory. Hayles summarizes Carr's line of thought:

Material is held in working memory for only a few minutes, and the capacity of working memory is severely limited. For a simple example, I find that if I repeat [phone] numbers out loud several times so they occupy working memory to the exclusion of other things, I can retain them long enough to punch the number. For retention of more complex matters, the contents of working memory must be transferred to long term memory, preferably with repetitions to facilitate the integration of the new material with existing knowledge schemas. The small distractions involved with hypertext and Web reading—clicking on links, navigating a page, scrolling down or up, and so on—increase the cognitive load on working memory and thereby reduce the amount of new material it can hold. With linear reading, by contrast, the cognitive load is at a minimum, precisely

because eye movements are more routine and fewer decisions need to be made about how to read the material and in what order. Hence the transfer to long-term memory happens more efficiently, especially when readers reread passages and pause to reflect on them as they go along. (68)

Contra Carr, I would suggest that the problem of transfering information from working to longterm memory is implicated in reading itself and is not a challenge arising from digital media *per se*. Overburdening one's memory with words and ideas can occur not only in the context of blog pingbacks or Google search results but at the scale of the individual text. How often do we flip backwards to recall some train of thought in an article or to remind ourselves of some minor character in a novel? How often do we mark or highlight books to give ourselves a prompt for later recollection? That readers have developed these sorts of strategies suggests that working memory can be overloaded even by single texts. Viewed from this perspective, overloading one's memory with information seems to be related to the same mental phenomenon described by Young and Sullivan in the context of composition: "What is at issue is . . . the number of units and their relationships that must be juggled at any moment." The difference here is that the "units and their relationships" are not of a writer's making but come from the texts of others, either a single text or multiple texts. It is the difference between the operations of working memory while writing and the operations of memory while reading.

To be fair to Carr, however, it must be granted that reading or researching a large collection of texts increases exponentially the units and relationships with which a reader's working memory must cope. At some point, the shift to multiple texts represents a difference in kind, not merely degree, in comparison to the relationships within a single text. For example, JSTOR's Data for Research database contains more than 8 million articles, including, as we saw

in Chapter 4, every article published in multiple rhetoric and composition journals. Navigating this database requires more than a digital highlighter. Past a certain point, even the most robust working memory can no longer keep all the units and ideas connected. The chance that any single connection makes its way into long term memory decreases with each increase in textual data. Although information overload is a problem with reading in general, most literate adults have developed strategies for coping with information at the scale of individual texts. The problem of coping with information at the scale of hundreds, thousands, or millions of texts is an unresolved one, and it is typically this scale of information that people (and surely Carr) associate with information overload. I will therefore restrict my discussion of information overload mostly to this macro-scale of textuality.

I also don't want to overstate the comparison between digital texts and print texts. Carr argues, and I would agree, that the medium of information affects what information overload looks like and how it shapes reading practices and cognitive processes. An overload of books or papyri, in other words, does not lead to the same practices associated with an overload of digital data:

My mind now expects to take in information the way the Net distributes it: in a swiftly moving stream of particles. Once I was a scuba diver in the sea of words. Now I zip along the surface like a guy on a Jet Ski. ("Is Google?")

On one hand, clicking between webpages is no more or less difficult than flipping pages in a book (or unrolling the next part of the papyrus roll, in Seneca's day), but computer interfaces admittedly invite a certain quickness of cognition and attention. For example, switching between dozens of websites is a simple task with browsing tabs, but I have yet to see the device or method that allows one to move as effortlessly between dozens of books spread on a desk⁵⁴. When researching, I admittedly find myself moving more rapidly between texts open in Google Chrome than I do between books that I have to reach for physically. Nor do books allow users to click on references at the bottom of the page to be whisked away to other books. I am certainly more apt to chase links in an online environment than I am to chase references when reading print texts.

Carr's discussion of the medium of information overload, however, is as normative as it is descriptive. Collin Brooke's *Lingua Fracta* presents a more positive view of the new reading practices facilitated by the digital medium. Whereas Carr believes that surfing across texts decreases one's "capacity for concentration and contemplation" and "impedes the formation of memories," Brooke argues that the "impulsive" reading enabled by digital interfaces is a perfectly legitimate precursor to more "in depth" or "reflective" reading. Indeed, the art of "skimming" requires its own proficiency, developed by all skilled readers not only in digital but also in print contexts:

[I]t is not unusual for us to scan a table of contents, bibliography, or index to determine whether a text is likely to be of value to us. Nor is it unheard of that we might scan the first and last few paragraphs of each chapter, hoping to piece together enough of a [cognitive] fabric that we can decide whether to pursue a text further. (*Lingua Fracta* 155)

Skimming printed texts (or surfing the web) represents a "pragmatic" style of reading that is just as useful as close reading. It emphasizes the discovery of patterns via the retention of "particular ideas, keywords, or concepts across multiple texts . . . or chapters of the same book" (157).

⁵⁴ Actually, this isn't entirely true. Renaissance "book wheels" were invented precisely to aid this movement between multiple texts. But book wheels were large and unwieldy, and wouldn't fit in an average university office.

Brooke coins the term "persistence of cognition" to describe this style of impulsive, inductive reading, noting that it bears some relation to the workings of short term memory (157). Persistence of cognition is a valuable skill for readers dealing with multiple complex texts, Brooke argues. He agrees with Carr that new media influence how people approach and read texts, but rather than deliver a negative or nostalgic analysis of the effects, Brooke asks how new media interfaces can make it easier for readers to exercise their persistence of cognition across large quantities of textual information. He points specifically to blog aggregators and tag clouds, both of which enable readers to take a snapshot of texts that can then be bookmarked for later reading in a more comprehensive mode.

Like Carr, Brooke believes that "the question of information overload is a question of memory":

Cursed with "finite perception systems," when data exceed our ability to grasp them, we find ourselves in the position of overload . . . Shenk (1997) cites the work of memory expert Robert Bjork and explains that the more things we have to remember or learn, "the lower the probability that you'll remember any one of them" . . . [M]emory is not simply a matter of filling our minds until they are full. The presence of too much information, according to both Bjork and Shenk, "just overloads the system." (153)

While Carr and Brooke hold different views about the mental effects of information overload in the context of digital media, they both recognize that the finite nature of human working memory is an important part of the issue—both would agree that navigating information prior to and during composition is a task that strains writers' memories. Carr, the technology skeptic, believes that new media encourage navigation practices that hinder the ability to remember what has been read (among other problems). Like Brooke, however, I believe that impulsive navigation or hyperreading—surfing, skimming—is an important counterpart to close reading, and that it is as much a function of print as digital text. That is not to deny that medium matters. Both Brooke and Carr acknowledge that medium influences reading practices, but Brooke, with a more generative approach, acknowledges the effects of medium in order to call attention to the practices that have been and might still be developed to cope with and make better use of online information. Instead of calling for a return to meticulous reading of books in isolation—as if readers could ever isolate a page or paragraph from its intertextual connections—Brooke asks what tools and practices new media afford to supplement our "persistence of cognition" across whatever information we encounter, navigate, and assemble. I believe this is the right question to ask. It is the same sort of question as the one posed at the beginning of the chapter: what can be done to meet the demands placed on writers' memories?

Answering that question is the subject of the next section.

VISUALIZATION AS A MNEMONIC AID

If you need to remember something, visualize it. Such is the recommendation given by Cicero to orators in need of a more vigorous memory.

> As Simonides wisely observed, the things best pictured by our minds are those that have been conveyed and imprinted on them by one of the senses. Now the keenest of all our senses is the sense of sight. Therefore, things perceived by our hearing or during our thought processes can be most easily grasped by the mind, if they are also conveyed to our minds through the mediation of the eyes. (*De Oratore*, II.357)

The art of memory was from its origins an intensely visual art. For the Greeks and Romans, the visual effort was imaginative. For later rhetors, the images and places of artificial memory leapt from mind to parchment in an intriguing assortment of visual prompts (Figures 5.1). For most of its history, the fourth canon has been an art of visualizing words and knowledge, either imaginatively in one's mind or materially on the page.



Figure 5.1 Guilelmus Leporcus, Ars Memorativa

In a context completely independent from that of ancient oratory, information scientists have come to the same conclusion about the benefits of visualizing linguistic knowledge, specifically large quantities of text that overwhelm individual working memory. In their early study of information visualization, "Visualizing the Non Visual," James Wise and his colleagues at the Department of Energy sound much like Cicero when talking about the benefits of viusalizing text. Recognizing that "the need to read and assess large amounts of text . . . puts a severe upper limit on the amount of text information that can be processed," they argue that true text visualization cannot simply oblige users "to read in the manner that text normally requires." The alternative, they say, is to overcome constraints to memory through "content abstraction and spatialization," transforming documents "into a new visual representation that communicates by *image instead of prose*" (51, italics added). Reading or researching large numbers of texts, Wise et al. conclude, is best facilitated by transforming textual information into "a spatial representation which may then be accessed and explored by visual processes alone," allowing readers to use "their primarily preattentive, parallel processing powers of visual perception" to explore patterns in the texts (51).

In this article, Wise et al. make a nearly identical argument to the one made in the first chapter: to be advantageous, artificial memory must look for semiotic modes other than writing (or even language) because *more writing* does not solve the problem of remembering writing—it does not solve the problem of how to juggle the language-based "units and relationships," as Young and Sullivan describe them, attended to by writers during the process of invention or revision. A different medium for knowledge is required—a visual medium. Jay Bolter makes the argument succintly: the way to address "the gap between writing and memory," he writes, is not

to write with letters but to write with images, that is, to "visualize one's speech" ("Hypertext" 109).

For most neuro-typical humans, knowledge that is primarily linguistic or logical ("by reflexion," as Cicero says) will be a second-order knowledge compared to knowledge of purely sensory information. No matter how many times I have read Burke's *Rhetoric of Motives*, the knowledge therein is not imprinted in my memory with the same clarity—nor is it as easy to recall and meditate upon—as experiences during which I saw, touched, moved within, or somehow manipulated something material. Both thinking and seeing imprint memories, but when it comes to memorative clarity and ease of recall, for most of us, I imagine, seeing is far more powerful than thinking. That is the insight behind visual mnemonics. They attempt, in the words of Scott Weingart, to make thinking a form of seeing ("Review of Book of Trees"). They attempt to turn linguistic or logical knowledge into a form that is visual and material, thereby making that knowledge more substantial within and easier to recall from our memories. They translate information from a semiotics of logic and language to a semiotics of sight and dimension. It was pointed out in Chapter 3 that the current-traditional method of outlining retains a subtle hint of the ancient technique of visualizing text in order to remember it, but even this strategy employs writing as its primary instrument, which, I believe, explains its limited usefulness. Memory aids today—what few there are—simply update the concept of the outline. What is required instead is a new medium (or media) for memory, one not solely reliant on more words. Needless to say, I believe the history of artificial memory suggests that the medium should be visual. If we are to take anything from the history of the fourth canon, it is that the sense of sight is a valuable asset for remembering words and knowledge, and that it is beneficial to make full use of the semiotic possibilities enabled by the visual faculty when transforming

knowledge into memorable images. Simply put, I argue that we should follow the example of past rhetoricians, figuring visualization as a key technique for aiding the memories of writers and rhetors.

DEVELOPING A SENSE OF THE TEXT

Let's return to *Writing Technology*, in which Haas discusses her comparative study of writers using computers and writers using pen and paper. The following remarks, Haas reports, were made by writers who found it difficult to develop a sense of their texts when composing on a computer:

"I have to print it to get a perspective on it."

"Seeing it on the screen isn't really seeing it."

"It's hard getting your center of gravity in the writing."

"My text is hard to pin down online."

"I get a printout just to see that it's developing right."

"When I write on the computer, I have a hard time knowing where I am."

"I can't get any distance from it when it's here." [points to the screen]

"I need to see if it's still on track." (120)

The spatio-visual metaphors are obvious—get a perspective on it; center of gravity; hard to pin down; to see that it's developing; knowing where I am; get distance from it; still on track; and, most fascinatingly, seeing it on screen isn't really seeing it. Working from these and other observations, Haas argues that writers develop a mental representation of their texts as "spatial and physical object[s]" (119). The work of constructing these representations is what Haas means by developing text sense, in which the efforts of memory are clearly involved: "Text sense," she writes, "is constructed in tandem with the written text and seems to include . . . a spatial memory of the written text" (118).

In my experience, the impulse to spatialize or visualize a text as one writes and revises it is a very real phenomenon. This impulse almost certainly stems from the visual nature of writing itself. Post-Derrida, writing is more than language made visible, but whatever else it may be, writing remains language made visible. The technologies of punctuation, paragraph layout, and font also augment writing's visual character.⁵⁵ It is thus no surprise that when juggling the units and relationships within our texts, we try to visualize what we are juggling. We try to put everything into space. However, if my own experience or Haas' subjects experiences are any indication, writers too often visualize their writing ineffectively by re-visualizing it *as text* that has been placed in some indefinite mental location "up there" or "down there" or "over on that other page." Not a very helpful technique.

As the anonymous author of a Renaissance memory treatise keenly acknowledged, "although men invented writing, they could not remember everything that they had written" and thus they recognized the need to invent "a subtler art so that they were able to remember things without any kind of writing" (qtd. Rossi, *Logic* 24). Remembering without any kind of writing that's the key. Cicero advocated it; Wise and other information scientists have programmed software for it; and Jay Bolter recognizes the benefits of it when describing the art of memory as "a method for visualizing one's speech and mapping it into a mental structure" not by "writing" but by constructing images. This tactic seemed to work for past rhetoricians, and with the help of new media, I believe it can work for contemporary writers, as well, in their efforts to develop text sense.

⁵⁵ Recall from Chapter 2 that during the late Empire and middle ages, these "notational" technologies were explicitly understood as memory aids (Carruthers, *Book of Memory* 113).

A personal example: In Chapter 1, I juggled multiple arguments about the fourth canon, and one of my chief goals was to demonstrate the visual quality of artificial memory as practiced in antiquity. While I re-read and revised the chapter, developing a more robust sense of the text, coming to be satisfied with its overall structure, something continually seemed wrong with the chapter's final pages. I couldn't pin it down. I scrolled up and down, zoomed in on specific passages, but the problem remained difficult to articulate. Read in isolation, the final section seemed adequate. Read in connection with the entire chapter, however, or even in connection with the preceding section, the flow of the argument simply broke down. Somewhere along the line, I had dropped units and/or relationships, and my text sense—my spatialized memory of the text—was not robust enough to point me toward the missing elements. All I had was my intuition of incompleteness, a feeling every writer experiences during revision. One reads along, everything clicks into place, the words and ideas unfold with the magic of good writing, but then, all of a sudden, from one paragraph to the next, everything falls apart. The flow is dammed up, and the magic disappears. Something's gone wrong. But what is it?

So I followed my own (and Cicero's) advice. I visualized the text. Using the Natural Language Toolkit, an open-source tool for corpus linguistics and natural language processing, I visualized the words of the first chapter that I intended to be the most central, assuming those would be a good place to start. And on the first try—the first visualization—there it was. "Seeing it on the screen isn't really seeing it," complained one of Haas' test subjects, and if the person meant "seeing the text in the word processor isn't really seeing it," in this case, I agreed completely. Seeing it instead in a visualization tool, the text was much easier to get a sense of, and the problem that I could not articulate, only intuit, showed itself plainly. About a quarter of the way into the text—as seen in Figure 5.2—I introduce the visual argument with words such



Figure 5.2 Visualizing locations of words in Chapter 1 (Before)





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as 'visual', 'visualization', and 'imaginative'. Toward the middle of the text, I develop the idea in more detail. But then, at the end, 'visual,' 'visualization', and 'imaginative' are completely absent. Re-reading the final section, I discovered that although I *was* continuing to connect artificial memory with visualization, I was doing so in a style altogether too implicit. With so many units and relationships in the air, I had dropped—that is, I had failed to remember and therefore failed to use—some of the language used previously. Changing a few words and adding a few explicit sentences returned balance to the final section (Figure 5.3). The argument seemed to flow much better.

Naturally, this solution seemed obvious once I implemented it. How could I have forgotten about words like 'visual' or 'imaginative' in the chapter's conclusion?! Why would I have replaced them with vague synonyms?! I never claimed to have a good memory. All I claim is that the solution seemed obvious only once I visualized the text. "Perceptions received by the ears or by reflexion," Cicero contends (in J.M. Watson's translation of *De Oratore*), "can be most easily retained if they are also conveyed to our minds by the mediation of our eyes." And for those without intense visual imaginations, visualization tools can do the trick. It is much easier to remember the elements juggled in a text when they are there, in front of the eyes all at once, in a non-linguistic image.

Anyone who can learn to navigate Twitter can learn enough about the Natural Language Toolkit to construct these visualizations, called dispersion plots. However, the point is not to learn a specific tool but to reconnect rhetorical memory and visualization, broadly construed, by asking how we might aid writers' memories with visual methods. And even more importantly, the point is to reforge the ancient link between memory and invention *through* visualization. The ultimate purpose of text visualization is to spark generative conversations: If the text is put *into* this form and looked at in this way, what insights are discovered, and what new inventive acts do they compel? Visualizations, in this sense, are similar to the "algorithmic criticisms" and "potential readings" discussed by Stephen Ramsay in *Reading Machines*. Visually transformed, Ramsay argues, a text potentially "assumes a different organization than it had before. Once a new aspect/pattern has been discovered, one begins to test the viability of that pattern. How often does it appear? How generally does it apply? Further alteration of the text is unavoidable at this stage" (48). With this goal in mind, one realizes that even a basic interface like Microsoft Word offers possibilities. I often ask my composition students to use Word's multi-colored highlighter to track word usage across their own or others' texts (Figure 5.4), a practice that partially replicates dispersion plots. To begin with, I ask students to choose a few key words or phrases that appear in the first paragraph of a text and to highlight each with a separate color. Then, I ask them to continue highlighting the same key words or phrases (or obvious synonyms) across several pages. They can then zoom out and see how the colors ebb and flow, wax and wane. I have found that even this simple method is beneficial for getting students to develop a spatiovisual sense of their texts, which, in turn, sparks conversations about where to go next with the compositions.

Images of course are but one half of the classical art of memory. There are also *loci*, the places in which images are situated. Recall from Chapter 1 that mnemonic places should be modeled after a familiar architectural space, easy to navigate, in any direction, to make collecting the associative images an efficient and rational process. In short, the classical *loci* suggest the notion of *traversing* a textual space. Looking back at the dispersion plot and the color-coded text, the images seem rather static. Focused on representations of words or phrases as disconnected entities, they do not encourage writers to view the text as an object through which one might

Figure 5.4 Replicating "dispersion plots" with MS Word

persona mnemosyne terms mnemes and anamneseos nor with the Latin rhetorical term memoria but with the mythical movement from the beginning. Their discussion of memory commences not with Aristotle's intellectual terrain becomes more and more apparent. Indeed, Pruchnic and Lacey forecast the (or "affective") terms and developed entirely with contemporary, psychological sources. negatively affect internal subjective <mark>memory</mark>, a kind of mediated loop rendered in psychological is used to discuss how external computerized programs, controlled by capital, permeate and their article does recognize the ancient distinction and uses it to invent new frameworks for between <mark>natural</mark> and a subjectivity (474). Pruchnic and Lacey use these counterparts to think through the difference memory's "content" versus <mark>memory's</mark> "program" (477); the inside and outside of human passive memory (476); internalizations versus externalizations of memory (475, 481-82); essay in a series of analogous antitheses constructed by the authors: active memory versus Memory, Affect," is a case in point. On one hand, the natural artifi <mark>natural</mark>. For example, the <mark>distir</mark> THE RHETORICAL NOT-SO-RHETORICAL MEMORY TRADITION Throughout the article, this movement away from the rhetorical and toward other However, throughout the essay, these dist Jeff Pruchnic and Kim Lacey's RSQ article, "The Future of Forgetting: Rhetoric, in the 21" century, frameworks to which I will return in Chapter 5. memory on its own apart from natural memory; at best, the artificial is enfolded into the inspiration and access to "eternal truth" . . . ; mnemozyne partnered with lethe functions in Greek culture and philosophy: memory as a divine source of creative . . тиктолупс went through at least four important and often overlapping <mark>ial memory</mark> in the context of new (especially social) media. In a sense, <mark>tion</mark> between the internalization and externalization of <mark>memory</mark> ions are also used to deny importance to pial disti on permeates the

with a focus on memory (primarily <mark>natural</mark> memory) as a critical tool: to subsume mnemonics in this manner: to replace rhetoric's historical focus on <mark>artificial</mark> memory anatomical movement. In their article's conclusion, Pruchnic and Lacey explain why they want it be otherwise?—and is like dismissing the methods of athletic training as nothing but <mark>natural</mark> That memory" occurs only once in their article, and it is quickly subsumed within natural memory Pruchnic and Lacey find little value in the archives of the rhetorical art. The term "artific whose relation to the art of <mark>memory</mark> is never made clear. What is made clear, however, is that rhetorical treatises but from the milieus described above—mythical, theological, philosophical— The figurings of <mark>memory</mark> in the article emerge not from the <mark>natural artificia</mark> memory practices amplify natural memory processes is true but trivial—how could have become central to culture and politics—it is perhaps the analysis and systems and its co-implication in the manipulation of our affective dispositions how memory functions were secondary to the training of internal memory, in the taken to be the natural (and therefore) familiar processes of thought and Although such techniques have come to be known as instances of "artifi contemporary moment—in which the externalization of memory in media Whereas in early training in rhetorical memory and mnemotechnics, theories of memory" (Yates), these practices were designed to mimic or amplify what were practices of memory and recollection developed by the Pythagoreans and in the (forgetfulness, oblivion) in esoteric rituals focused on death and immortality; communication learning as practices of recollection writings of Empedocles . . .; and, finally, the Platonic conception of revelation and ction of

move—*movement of the text* being another way to describe not the "units" described by Young and Sullivan but the "relationships," the patterns and connections that emerge from lexical items interacting across an entire composition. A moment ago, I noted that anyone who writes on a word processor is likely familiar with the impulse to spatialize one's text, with phrases like "up there" or "down on that other page." Sometimes, the impulse is toward temporal metaphors with phrases such as "earlier in the text" or "later on." Either way, the implication of the metaphors is that writers want to get a sense of their texts, not as static surfaces or series of detached units, but as dynamic objects consisting of connected points or places through which one might move, like the *loci* of ancient orators.

One way to turn a piece of writing into a visualization that can in some sense be traversed is to remediate it into a network. Text network analysis is a method of visualizing connectedness between words in a text. Which words are most often connected with one another? Which words connect with the largest number of other words throughout a text? Text networks provide visual answers to these and other questions of textual connectivity. The method was developed by information scientists in the 1990s (Wise et al., "Visualizing"), but it also bears some relation to semantic word databases, such as WordNet, developed in the 1980s. The proliferation of online text in the twenty-first century has made text network analysis a basic method used by data miners studying everything from social networks to terrorist cells (Diesner and Carley, "Using Network Text Analysis"; Ressler, "Social Network Analysis"). Recently, websites such as **textexture.com** have created copy-and-paste interfaces that allow users to create their own text networks in a matter of seconds. And easily navigable open-access interfaces, such as Gephi, allow users to create professional grade networks free of charge. Text networks today are ubiquitous and relatively simple to learn; there is no reason why the liberal arts should shy away from them.

The first network (Figure 5.5) on the following pages shows which words appear most often beside 'rhetoric' in *Rhetoric Society Quarterly* abstracts, from 2000 until 2011. The large red node is 'rhetoric' and the smaller green nodes are other words, such as 'history' or 'theory'. The closer a green node appears beside the center node, the more often its word appears beside 'rhetoric' in the abstracts. This informs us indirectly about rhetorical issues favored by authors in *RSQ*. The subsequent networks above are more complex. Figure 5.6 shows a network of Elliot Rodger's⁵⁶ manifesto—the nodes and edges of the lower blue half display domestic descriptions of his home life; the upper red half displays sexually frustrated and misogynistic descriptions of his relationships (or lack thereof) with girls. Figure 5.7 shows a network of Nabokov's *Lolita*, with the expected "pervy" pathways of meaning. Unlike the network of *RSQ* abstracts in the first image, these latter two networks use color rather than distance to visualize lexical co-occurrence.

To reiterate, visualizing a text as nodes and edges allows it to be viewed as an object through which one might move, and through which meaning circulates. Indeed, *moving through* a text means navigating its cohesive meaning-making structures. To navigate a text means to follow the different circulations of meaning within it—its patterns, its connections, the intratextual relationships of its lexicon. In terms of composition, it is nearly impossible with working memory alone to recall at any given moment during invention or revision all the word clusters and circulations of meaning that one has constructed. The value of a text network is that it visualizes this semantic interconnectedness. Network visualization interfaces such as Gephi allow users quite literally to pilot this interconnected space, to move through it, to get various perspectives on it (Figure 5.8).

⁵⁶ Elliot Rodger was the young man who went on a killing spree in Santa Barbara, California in May 2014.



Figure 5.5 Text network of RSQ abstracts



Figure 5.6 Text network of Eliot Rodger's manifesto



Figure 5.7 Text network of Lolita



Figure 5.8 Moving through a text network in Gephi
Two of the more interesting network styles display nodes with the highest levels of *betweenness centrality* and the highest levels of *degree centrality*. The latter measures how many total connections a node has to other nodes—a node with high degree centrality will simply be connected to many other nodes. Betweenness centrality, on the other hand, measures whether or not a node is connected to other nodes that themselves have many connections—a node with high betweenness centrality will in essence be an important passageway between communities within the network. A word with high betweenness centrality is a word through which many meanings in a text circulate. Both principles are illustrated in the figure below (Figure 5.9). Node *x* is connected to more nodes than node *n* and so has a higher level of degree centrality. However, to follow any edge from Cluster A to Cluster B requires going through node *n*; node *n* therefore has a higher level of betweenness centrality than node *x*.



Figure 5.9 Centrality

Applying the principles either of degree or betweenness centrality can result in different text networks. For example, Figures 5.10 and 5.11 provide two different networks of the same text, the Unabomber manifesto. (The images are zoomed-in to fit the space here.) The first image visualizes nodes in terms of degree centrality; the second, in terms of betweenness centrality. It turns out that 'psychological' has a relatively high degree centrality in the manifesto but not a high betweenness centrality—it appears as a large node in the first network but not in the second. This lexical item was therefore used frequently and connected to many different words, in bigrams such as 'psychological techniques' and 'psychological methods'. However, the words to which psychological is connected—e.g., 'techniques' and 'methods'—do not themselves connect to many other words or clusters. They do not perform much semantic work elsewhere in the text. Words like 'psychological' are essentially productive creators of bigrams but not pathways of meaning. In contrast, the words 'people' and 'society' not only have a high degree centrality but also a high betweenness centrality. The words they connect to have robust connections themselves (that is, they form their own clusters) and therefore do perform semantic work elsewhere in the text. 'People' and 'society' can be viewed as passageways between different idea or meaning clusters developed in the manifesto, and with Gephi, it is possible actually to see what semantic clusters connect via these words.

Relying on working memory alone, it would be impossible to develop a sense of the networked aspect of a composition. Text network interfaces make it possible. Text networks tell writers what words or phrases are doing the most work in their texts. They also tell writers which words are doing work together and which ones never or rarely cross paths. They are more dynamic forms of dispersion plots, visualizing the semantic connections that emerge across an entire text, inviting writers to move between idea clusters much like ancient orators moved



Figure 5.10 Text network of Unabomber manifesto (degree centrality)



Figure 5.11 Text network of Unabomber manifesto (betweenness centrality)

between *loci* in their memory palaces. Gaining a perspective on this meaning-making movement is vital to developing a sense of the text, but it would be difficult to do by juggling words in one's mind, placing them in vague mental locations, attempting to recall as much of the edifice as possible while writing and revising. Text networks provide a snapshot of the edifice. Interfaces such as Gephi's allow writers to interact with it, to reinvent it, to rework the connections discovered within it. Text networks are therefore a valuable aid for developing text sense, and more importantly, for facilitating further invention.

Thus far, I have discussed visualizations as aids to develop a text sense grounded in linguistic constituents and structures—individual words, their relationships, and their dispersion in a text. Even text networks, though dynamic, visualize interactions of discrete words or phrases. Put into terms of artificial memory, I have discussed constructing *images for words*. McCutchen's and Young and Sullivan's work demonstrates that memory of these linguistic constituents is vital both to invention and revision; however, Haas argues that text sense also includes a composition's overall argument and rhetorical content. What practices are available for supporting the development of this more holistic text sense, what classical orators called *res*, that is, the general things or content of a text?

I would contend that teachers who ask students to remediate their texts into photographs, posters, websites, or short videos are asking students to create images of their texts' *res*. Typically, however, remediation exercises are capstone projects, the culmination of a student's writing efforts. Creating the image is not a practice to aid a student's memory of what has been written or to provide a novel textual view in support of additional revision and invention. Nevertheless, in my experience, such exercises lead to a memorative effect whether or not they are designed to do so. From a teacher's perspective, I find it is easier to remember student work

while I am grading (or when I am thinking of examples for new students in later semesters) if I have seen a paper remediated into a visual form. The paper entrenched most firmly in my long term memory is one that the student turned into an animation. It was a short clip, only a few minutes, but it contained a particular image that immediately summons to mind the thrust of the paper's argument. The argument compared infanticide and exposure in the classical world with twentieth century eugenics and abortion; the image was a well-drawn scene of Romulus and Remus being thrown into the Tiber but in an ahistorical rendering in which the weaker brother is eaten by wolves and the stronger brother raised by them. This image is exactly the sort of evocative figure recommended by the Greek and Roman memory treatises. And yet, to once again link the canons of memory and invention through visualization, the student's animation also suggested new questions about her argument: did the wolf represent some sort of "natural selection," and if so, how did that fit with infanticide, eugenics and abortion, all of which are artificial means of demographic control? Neither the devoured brother nor the one who survived exercised any agency; but isn't agency exercised when it comes to infanticide, eugenics, and abortion? Whose actions are deliberate, whose constrained, and does it matter? All questions that could have propeled the student's position in new directions or served to clarify and reinforce arguments already made. A remediation exercise can thus be considered an inventive memory practice when implemented in the earlier stages of composition instead of at the end. Its intent would be to help the writer construct a sense of her text's overall argument or emphasis as it takes shape, in order to facilitate further invention and revision.

Placing a visual remediation project into the middle of an assignment rather than at the end also avoids some of the pedagogical problems inherent in remediation. Collin Brooke rightly notes that asking students to convert essays or other written assignments into pictures, videos, blogs, or websites assumes that new media and Word documents both facilitate the same tasks. Different media, however, enable different practices. It makes little sense to ask for a clear thesis or a single argumentative viewpoint in the context of hypertext or iMovie. Doing so prevents teachers and students from embracing the possibilities of new media (*Lingua Fracta* 21). However, these issues are largely avoided when remediations are there to provide novel perspectives on a student's writing (or whatever texts are analyzed in a pedagogical context). The idea is to use visual remediations to prompt generative questions, similar to the ones asked in the context of dispersion plots and text networks: Why did you put the text *into this form* and emphasize *these particular elements*? When put into this form, which aspects of an argument are selected and which deflected? What insights are discovered, and what additional work do they compel? To reiterate Stephen Ramsay's point: visually remediating a text should coincide with possibilities for further textual alteration.

INFORMATION OVERLOAD AND DATA VISUALIZATION

Insofar as text sense involves managing and forming a mental image of a text's units and relationships, it is a similar process to navigating information overload online. What is at issue in both cases, to paraphrase Young and Sullivan, is the number of units and relationships that working memory can capably handle and that long term memory can access. As I wrote earlier, the difference between developing text sense and dealing with information overload is that the "units and their relationships" are composed by us in the former context and by others in the latter context. It is the difference between the operations of memory while writing and the operations of memory while reading. Given that both operations involve short and long term memory of a range of units and relationships, the visual tools used to develop text sense can also be used to develop a sense of others' texts.

However, I also argued in the earlier section that although memories are taxed at the scale of individual texts, information overload typically refers to the scale of hundreds, thousands, or millions of texts. Developing text sense means recalling a single text while it is composed—an article, a chapter, a book. In contrast, information overload entails an exponential increase in the number of texts that must be managed by working memory and subsequently shuttled from working memory to long-term memory. Though it is possible to visualize a thousand texts with graphs, dispersion plots, or text networks, the resultant objects are different from graphs, networks, or plots of a single text. They represent a drastically altered scale of textuality and thus implicate a more comprehensive mode of knowledge than can be encapsulated in a phrase like "sense of the text." In the following section, rather than providing another overview of tools and visualizations, I want to discuss the shift in ontology and epistemology that coincides with this shift in scale, from visualizing small data sets to visualizing more extensive ones.

The shift is important to emphasize because it takes us from the humble practice of developing text sense to a practice that could justifiably be compared to the early modern memory methods discussed in Chapter 3, whose goal was nothing less than to order the universe of knowledge and to establish "a universal calculus . . . for the solution of all problems" (Yates 383). Associating the ability to visualize large quantities of data with knowledge mastery is a move made even in Wise et al.'s early research on text visualization. The conclusion to their article strikes a tone that, if not perfectly analagous to that of early modern occultists and natural philosophers, is certainly simpatico with it:

It is evident that the potentials of text visualization are just beginning to be explored and realized. With them, the incredible diversity and volumes of written information available around the world may yet be made more accessible and comprehensible through this perceptual restructuring. And the limitations of an Information Age will not be set by the speed with which a human mind can read ("Visualizing" 58).

Taking this line of thought several hundred steps further, Kurzweilian techno-booster and bestselling author Steven Kotler has recently commented on the possibilities of developing a dynamic awareness of the units and relationships contained within hundreds or thousands of complex logics and texts. He begins by noting that prescriptive genres such as the five-paragraph essay and principles such as the Rules of Seven or Three are formulated under the assumption that humans can only process and recall so much information at a time. Go beyond that amount and, as both Kotler and Brooke explain, the memory system is overloaded (c.f., *Lingua Fracta* 153). But Kotler envisions an era in which technology enhances human working memory, thereby increasing its ability to navigate and overcome information overload with critical intelligence.

Consider that every second of every day our senses are bombarded with information. This is the data that underpins our decisions, our actions, our way [of life]. As a result, every bit that comes in must be evaluated. Is this information accurate? Am I being deceived? Am I misinterpreting something? Do I have enough information to make this judgment call? . . . Every tidbit of salient information that enters our brain is subjected to a rigorous truth detection process. It's a fundamental property of being human. But this process is also limited by the limits of our working memory . . . But soon we'll be able to augment our working memory, boosting the brains internal processing limit and, by extension, our truth detection capabilities . . . What happens when our working memory can hold the whole argument, can fact check in real time, can use cloud-based supercomputing capabilities to massively extend what has forever been an exceptionally limited truth detection capacity. Imagine, what happens when augmented cognition allows the rule of three to become the rule of three thousand, three million, three billion . . . ("Steve Jobs")

In this futuristic framework, an art of memory provides an intelligible vision of all the data needed to make decisions and in effect turns humans into super-computers, like HAL 9000 or Heinlein's Minerva. Yet for all its sci-fi caprice, there are similarities between Kotler's article and the endgame envisioned four centuries ago by Descartes, one of the early promoters of this Promethean compulsion towards total knowledge. In "the true art of memory," writes Descartes, "out of unconnected images should be formed new images [so] that one image should be made which should have reference not only to the one nearest to it but to them all" (qtd. Yates 373). As I discussed in Chapter 3, Descartes and other forerunners of modern science valued artificial memory because it enabled its practitioners to reflect the whole world in memory and thereby discover new knowledge about it (Yates 369). The goal was to construct an encyclopedia—literally, "complete knowledge or instruction"—in the truest sense of the word. And as Paolo Rossi notes, consistent with Kotler's argument, the problem of constructing lucid representations of large bodies of knowledge was and continues to be "inextricable from the question of memory" (Rossi, *Logic* 115).

If they work, memory aids for vast quantities of information are undeniably powerful objects. This explains why they have been depicted throughout history as magical instruments or associated with pagan devilry. Today, visual memory aids for dealing with information overload are called "big data visualizations," and those who produce them are valued for their high-tech wizardry. They are given jobs at newspapers, at technology firms, at government laboratories. Sometimes, they are given research funding. In 2014, the CUNY Graduate Center received a \$15 million grant to open a center devoted wholly to big data visualization (O'Connel, "CUNY To Open A Center For Visualizing Big Data"). A Google search for the phrase turns up titles such as "Big Data Visualization is the Future—Here's Why" (an article at Forbes), "Big Data Visualization: Turning Big Data Into Big Insights" (an Intel white paper), and *The Visual Organization: Data Visualization, Big Data, and the Quest for Better Decisions* (a new book by management expert Phil Simon). Has Descartes' dream come to fruition? Have new media interfaces and databases made it possible to create images that recall an entire universe of knowledge?

A single step back from hubris and toward humility reveals that images of vast amounts of information always remain circumscribed. First, a data visualization recalls only what has been compiled in the data or what has been put into a database; and few databases can claim n=all. Second, visualizations, if they are to be useful, will recall only certain elements of their underlying data; they both *select* and *deflect* information. Third, data visualizations are interfaces that mediate between data and human users; they are thus susceptible to the same issues of slippery interpretability as any signifying object; indeed, data visualizations add an extra layer of semiotic difficulty because their interpretable elements (proximity, juxtaposition, color, hierarchies of space and size) may be artifacts of the visualization process and not inherent in the data at all (Drucker, *Graphesis* 66). For these reasons, it is important to recognize that visualizations do not provide unmediated access to their underlying data. They are, instead, interpretations of data open to interpretation.

Let's look at each of these points in turn. First, data visualizations only visualize data that have been selectively accumulated. A visualization recalls its database—and even today, few databases can claim total ontological coverage⁵⁷. For example, JSTOR's Data for Research website, with its 8 million articles compiled from hundreds of academic journals, cannot claim to represent the total universe of academic discourse. It contains only periodicals, not books, monographs, or conference proceedings. It cannot even claim to represent the total universe of *periodical* academic discourse. For copyright reasons, its coverage extends only to 2010. Nor does the DfR database contain all academic journals (absent from the field of rhetoric and composition are newer online journals such as *Present Tense*). Much larger than JSTOR's database is the ever-expanding Google Books corpus, yet visualizing all the English books scanned by Google—hundreds of billions of words, from 1800 to 2014—can still not be called an image of all the books published in English during the last two centuries. Both the depredations of time and limited publication runs have ensured that countless titles have not been scanned and cannot be scanned simply because they no longer exist.

A second reason why data visualizations are always circumscribed is that even if a database can claim universal coverage—as data sets sometimes can—a visualization still recalls only those features of the database that its visualizers have told it to recall. The early modern occultists and philosophers desired an art of memory that could reduce the complex universe of knowledge to a single image (such as Lull's combinatorial wheels) from which all other knowledge might be generated. To reprise Descartes: "out of unconnected images should be formed new images [so] that one image should be made which should have reference not only to the one nearest to it but to them all." An interactive data visualization, in other words. What

⁵⁷ There is also the problem of determining what "counts" as data in the first place: what heuristics, in other words, are used to approach and to classify some phenomenon?

Descartes should have realized, of course, is that gaining breadth of knowledge in a single space necessarily means losing depth of knowledge. Anyone who has attempted to create data visualizations has learned this lesson—creating an image of data means selecting certain features to visualize or emphasize and deflecting everything else. Attempting to visualize too much data inevitably puts one in the same predicament as the imperial cartographers in Borges' story, "Of Exactitude in Science"—by creating a perfect topographical image of the empire, the cartographers simply recreated the empire.

This point can be illustrated with visualizations of word usage in CSPAN's Inaugural Address Corpus, which contains every inaugural address from George Washington to Barack Obama and can thus claim total coverage of this limited textual universe. Reading all the inaugurals back-to-back would quickly put one's working memory into a state of information overload, but with the Natural Language Toolkit, one can construct images that reduce the database to patterns of word use across time (Figure 5.12). Looking at the image in Figure 5.12, one might want to make a claim, in a burst of intellectual confidence, about the loss of a sense of 'duty' in twentieth century America. However, such a conclusion would be making a fallacious leap. What, after all, does the image do? It recalls from the database exactly what it was asked to recall: incidences of the words 'duty' and 'duties' in inaugural addresses over time. What the image therefore *does* is . . . to provide information about the words 'duty' and 'duties' in inaugural addresses. Nothing more. Between this image and claims about twentieth century culture lies an extremely large argumentative gap. Yet in her much-discussed article, "The Changing Psychology of Culture From 1800 Through 2000," psychologist Patricia Greenfield makes this same fallacious leap. Working with images of n-grams in the Google Books corpus, she undertakes a grand argument regarding contemporary American culture. Asking Google

Books to recall information about the frequency percentages of 'give' and 'get' (Figure 5.13), among other words, Greenfield argues that increasing selfishness and decreasing communal values define the current cultural landscape. The obvious problem is that Greenfield, like Descartes, wants to associate a single image with an entire universe of knowledge. Greenfield forgets that an image of a cultural database is not an image of culture nor even an image *of the database* but an image of those features that have been recalled from the database. Recalling other features from the Google Books corpus, as Tom Chivers notes ("Society is going to hell"), might have led to different conclusions about selfishness and the loss of communal values words such as 'responsibility', according to Chivers, have in fact *increased* in usage over the last century. The same point might have been made regarding alternative words recalled from the inaugural address corpus (Figure 5.14). Greenfield was tracking a shift in linguistic style, not a shift in cultural values.

Lastly, data visualizations are always epistemologically limited objects because they are *interpretations* of data that are themselves open to interpretation, a point Johanna Drucker makes at length in *Graphesis*. (This point applies equally well to visualizations of single texts or multiple texts, to small and large data sets.) A visual interpretation of data is not the same as the data, anymore than data are unmediated representations of pre-existent conditions (125). Rather, visualizations allow readers to *interface* with data. And like all interfaces, they operate by way of visual signs, communicating by way of certain graphic principles that should not be mistaken for unmediated signals received from data themselves. Drucker describes the three most common principles:

[Visualizations utilize] *the rationalization of a surface* (setting an area or space apart so that it can sustain signification), *the distinction of figure and ground* (as



Figure 5.12 Occurrence of 'duty/ies' in Inaugural Address Corpus



Figure 5.13 Google N-gram chart. Patricia Greenfield, "The Changing Psychology of Culture From 1800 Through 2000"



Figure 5.14 Occurrence of 'duty' and 'responsibility' in Inaugural Address corpus

elements of a co-dependent relation of forces and tensions in a graphical field), and *the delimitation of the domain of visual elements so that they function as a*

relational system (framing or putting them in relation to a shared reference) (71). Practical illustrations of these principles include hierarchies of space and size, proximity of elements, contrasts in color, and other such juxtapositions that influence how a reader interprets an image, which, in turn, influences what a reader assumes about a visualization's underlying data. To provide a more explicit example, recall the image in Figure 5.6, which displays a text network of Eliot Rodger's manifesto. The upper red portion of the network represents words expressing Rodger's sexual frustration; the lower, light blue portion represents words expressing his nostalgia for family and friends. Yet this particular color contrast has nothing at all to do with the primary text. I chose these shades of red and blue because they nicely emphasized what I saw as a stark binary division in the textual network; using red to color the sexually frustrated language was also an obvious artful choice on my part. Different colors, such as brown and dark yellow—which were, in fact, the default colors applied by Gephi—would produce a graph with very different interpretable qualities. The division so apparent in Figure 5.6 would be much less pronounced, and the words constituting the nodes in the red cluster—'girls', 'sex', 'wanted', 'beautiful'—would seem less ominous. In short, the vivid color contrast of network visualizations—which is one of their most salient features and to which much of their popularity is owed—does not necessarily (but may) visualize a quality inherent in the underlying data. Sharp color contrasts emphasize the *disconnectedness* of clusters within a network, but the precise value of the partitions is a mathematical one, which may or may not warrant emphasis with bright colors.

Truncating a bar graph's y-axis provides another example of how visual design affects

the interpretability of a data visualization. The variance in a graph's data can be made to look more or less pronounced by altering the range of the y-axis, as Figure 5.16 demonstrates. Each graph represents the same difference between two bars of a hypothetical Value 1 (35 and 39.6); however, the difference of 4.6 appears much greater in one graph than the other because the range of the bottom graph's s y-axis has been narrowed to 34 - 40 whereas the top graph's y-axis extends the entire range of the data, 0 - 40. Simply put, truncating the y-axis makes differences in data seem much larger than perhaps they are. Of course, whether value differences are large or small depends on the context of the values. In some disciplinary contexts, a difference of 4.6 is a major one, while in others, it is a trivial variation. Nevertheless, in both cases the variance can be made to appear greater or smaller by altering a single element in the graph's visual design.

It is also worth mentioning that certain features of a visualiation's semiotic properties emerge during the visualization process itself. That is, they are artifacts forced into space by the algorithms used to visualize data in the first place. Network visualizations once again provide a good example of what I mean. Recall that the most important verdices within a network can be quantified with different centrality measurements: degree centrality, betweenness centrality, eigenvector centrality, and so on. Now recall Figures 5.10 and 5.11. The former visualizes the Unabomber Manifesto using degree centrality; the latter visualizes the Manifesto using betweenness centrality. Same text; different visualization. Same underlying data; different sizes allocated to different nodes and network clusters. Wikipedia's article on "Centrality" provides another example of a single underlying data set graphed according to different measures of centrality, leading in this case to different color coded clusters (Figure 5.16). In either case, the sizes, clusters, or colors of the nodes emerge directly from the algorithms used to measure and visualize the connections within the data. This is a good example of how an image's interpretable



Figure 5.15 Truncating the y-axis



Figure 5.16 Different centrality measurements, different colored clusters.⁵⁸ Wikipedia, "Centrality."

features may not even be *post hoc* artistic additions but simply artifacts of the initial choice to visualize data in one way as opposed to some other way.

The essential point to be made regarding color contrasts, truncated y-axes, and node sizes is that these visually interpretable elements are open to being used or misused. Do the data warrant the visual choices? Or do the choices encourage a reader to make unwarranted assumptions about the underlying data? These are critical questions. The challenge for humanists utilizing visualization, Drucker writes, is thus "to break the literalism of representation" (71). In other words, the challenge is to treat visualizations as constructs that—like memories—mediate

⁵⁸ Graph A displays betweenness centrality; Graph B, closeness centrality; Graph C, eigenvector centrality; Graph D, degree centrality; Graph E, harmonic centrality; Graph F, Katz centrality.

information and thereby alter the ways humans interpret the information. In this framework, a visualization becomes like any other digital interface between data and user; and critical analysis of a visualization's interpretable elements ensures that distortion in the interface will not go undetected (148). It also encourages humanists who create visualizations to make ethical design choices, producing visualizations that emphasize rather than minimize nuances or uncertainties in their core data (126-27).

MEMORY, INVENTION, VISUALIZATION

If we are to use rather than misuse data visualization in the humanities, it is important to keep in mind these necessary limitations. Critically stressing the constructedness of visualization is a good way to ground one's use of it. Data visualizations are not a first step toward Kotler's dream of unlimited human memory; they do not *solve* the problem of information overload. More modestly, they are tools to help manage and navigate the overload, to help make large quantities of information comprehensible and approachable. Just as the tactics discussed in the previous section do not solve the problem of developing text sense but merely aid its development, so too does data visualization support working memory as readers wade into the flood of textual information unleashed in the digital age.

A useful framework for understanding the mnemonic support provided by visualization is to think about memory in terms of **pattern/randomness**, a substitute for the traditional binary metaphor for memory, **presence/absence** (i.e., a thing is either stored or not stored in memory). The binary of pattern/randomness, Brooke contends in *Lingua Fracta*, returns notions of temporality and constructedness to memory (151). Is a thing to be registered in the mind as random noise or as part of an unfolding regularity? Memory becomes the practice of constructing patterns from the undifferentiated backdrop of time and information, or in reverse, the practice of deconstructing patterns back into that randomness. This conception of memory partially mirrors Aristotle's in *De Memoria*. For Aristotle, the passage of time separates memories from sensory experiences, leading him to ask whether or not our memory images bare any substantive resemblance to the past they are assumed to denote. In his recognition that memory images are "representations" of past time and materiality rather than the past itself, Aristotle, in his own empirical way, accepts that memories are in some sense constructions built from an undifferentiated mass of random sensory experience—re-temporalizations of time permanently lost.

As mnemonic aids, data visualizations do not denote unmediated knowledge any more than memories denote the unmediated past. Rather, like the memory faculty, they allow humans to construct patterns against randomness, to find signals in the noise, or to reduce patterns back to randomness if they do not lead anywhere generative. Visualization, in other words, fosters production; it reconnects memory and invention, as they were in the past. A visualization may represent the culmination of data-collection, but it is the starting point of invention. It is not a reified, mimetic object—created and used as a knowledge representation (Drucker 65)—but an exploratory device whose usefulness is determined by the argument(s) it suggests or supports. Any image is but one pattern to emerge from a data set, one memory recalled from it. Other patterns may tell other stories, suggest other arguments. And each is always influenced by the structure of the core data themselves, by the process of visualization, and by any artistic flourishes used to enhance the visualization.

Data visulizations are thus not a replacement for invention but, like the classical *imagines*, precede and aid invention. If constructed carefully, visualizations will indeed prompt ideas; developing them, however, remains an intellectual—an inventive—task, evoking once

again the association between invention and memory *through* visualization. Visualizations enable writers to bring together—in the sense of *bricolage* (Brooke 157)—a plethora of materials for invention. For the ancients, Mary Carruthers writes, the art of memory was "essentially a task of composition . . . literally bringing together matters found in the various places where they are stored to be reassembled in a new place . . . Memory-making was regarded as active, . . . a craft with techniques and tools" (*Medieval* 1-2). Data visualization likewises allows one to assemble, to make connections across, and to detect patterns within more material than individual working memory would be capable of handling. It englarges what *Ad Herennium* calls the "treasure house of ideas" which supplies invention. Whether in an imaginary palace or on the computer screen, the art of memory thus assmebles material into an argumentative pattern . . . as readily as it disassembles patterns—like letters defaced on a wax tablet—back into the noise and temporal flow of forgotten information.

APPENDIX A

PASSAGES CONTAINING "MEMORY" IN 19TH CENTURY RHETORIC AND COMPOSITION HANDBOOKS

1. Alexander Bain, English Composition and Rhetoric: A Manual

a. The ability to retain successive impressions without confusion, and to bring them up afterwards, distinguishes mind; it is a power familiarly known as Memory. Now, the chief way in which memory works is this: impressions occurring together become associated together, as sunrise with daylight; and, when we are made to think of one, we are reminded of the accompaniments.

b. A great pleasure once felt can be revived in the memory in connection with that which excited it. It is by this memory or association of pleasure, that we counterwork the dulling effects of repetition, and the inferior susceptibility of advanced life. Affection is the memory of pleasure.

c. When a succession of clauses is formed upon the same plan, a certain aid is given to the memory.

d. Intellectual processes have also a language of their own ; as, perception, memory, imagination, reason.

e. Every sort of connection both imparts interest and aids memory.

f. An acquaintance with localities is essential to realizing the events graphically, and gives them an additional hold on the memory. The physical features of the country constitute the first part of the delineation.

g. Summaries substitute for the numerous windings of the narrative the larger features and the main results; they are the heads, abiding in the memory themselves, and helping the cohesion of the details.

h. Memory is the power of recalling to the present view of the mind past impressions without the renewal of their original cause, or by mental forces alone.

i. The first requisite is to adduce arguments separately. Besides avoiding the confusion of mixing up different topics, we give to each a distinct local habitation, whereby it abides better in the memory; so that, if it be omitted in the reply, the hearer is aware of the void.

j. We are moved by pleasure and pain to come ; taking steps to secure the one, and to avoid the other. Now, to be so moved, we must have an idea or notion of the pleasure or the pain, obtained by adequately recollecting our past experience of each ; a feeble recollection is inoperative on the will. Hence Prudence is identical with a perfect memory for past good and evil, which enables future good and evil to be effectively kept in view.

2. Charles Sears Baldwin, A College Manual of Rhetoric

a. But these two phrases are essentially descriptive. They reveal the writer stirring the memories of familiar sights in order to suggest a new image. How closely the reader's image corresponds to the writer's depends upon the store in the mind of the one and the descriptive skill of the other. Perhaps it never corresponds exactly, if it be a new image, not the awakened memory of an old one; it often corresponds in all main points; it may always correspond far enough for the writer's purpose of suggestion.

b. The notes for speaking, in one's hand or in his head, should be few and simple. An elaborate scheme, since it afflicts the memory and hinders quick adaptation, is unwieldy.

3. John Bascom, Philosophy of Rhetoric

a. Imagination is more frequently employed to denote the power by which, through memory, we restore sensible phenomena, more especially those of vision, to the mind ; or by which we construct images under kindred forms, subject to desire.

4. Hugh Blair, Lectures on Rhetoric and Bell Lettres

a. Writing gives us the means of recording our sentiments to futurity, and of perpetuating the instructive memory of past transactions.

b. At the same time, there may be an excess in too many short sentences also; by which the sense is split and broken, the connection of thought weakend, and the memory burdened, by presenting to it a long succession of minute objects.

c. Periods, thus divided, are pronounced more easily; and the shortest member being placed first, we carry it more readily in our memory as we proceed to the second, and see the connection of the two more clearly.

d. Every idea or object carries in its train some other ideas, which may be considered as its accessories. These accessories often strike the imagination more than the principal idea itself. They are, perhaps, more agreeable ideas; or they are more familiar to our conceptions; or they recall to our memory a greater variety of important circumstances.

e. A maxim, or moral saying, properly enough receives this form (antithesis); both because it is supposed to be the fruit of meditation, and because it is designed to be engraven on the memory, which recalls it more easily by the help of such contrasted expressions.

5. James Robert Boyd, Elements of English Composition

a. To do this the more effectually, read a page of some good writer until the thoughts are understood ; then lay aside the book, and write from memory as nearly as possible according with what you have read. Upon completing this task, make a comparison of what you have

written with the page of the author, to ascertain your defects, or your want of skill, either in choice of words or structure of sentences.

b. Poetic compositions must depend greatly on a native endowment for it ; yet a taste and capacity for writing well in verse, may in part be acquired by a careful and frequent perusal, in early life, of the productions of those who excel in this species of composition, and also by com mitting large portions to memory — a practice that is worthy of adoption by all.

c. A maxim, or moral saying, is properly presented in the antithetic form, because, being designed to be engraven on the memory, the contrasted expressions are adapted to such a design.

d. The preparing of written reports of conversations held with friends, of scientific or literary information given by the teacher, of lectures, and of sermons, would have a most important effect, and exert a most direct influence in making ready writers. It is not here recommended that such report shall be made at the time of hearing what has been referred to, but afterwards, from memory.

e. If you are blessed naturally with a good memory, continually exercise it.

f. The sayings of men — a casual remark — an anecdote reported to us — a phrase used — newspaper items — many of these may be turned to a good account, and for this purpose should be stored up in the memory, or recorded in a common place book, with an appropriate heading, to indicate the subject which it may illustrate.

g. Collect, from memory, all the synonyms of a given word that may be assigned.

6. William B. Cairns, The Forms of Discourse

a. In description, but one sentence or section of a sentence can be before the mind at any one instant; and a part of the picture can be reinspected only by recalling it through the memory.

b. When asked to write a narrative essay, a student is often tempted to give an account of some picnic or camping trip that has left a vivid impression on his memory. Such a subject will be good if the occurrences are so remarkable as to be really novel or picturesque, or if all the readers or hearers are well acquainted with the persons concerned.

c. In taking notes in a library, nothing should be omitted that can be of any possible value. It is unsafe to trust the memory with details to be associated with a brief note. Put everything down plainly.

d. Although there are many points of similarity between description and painting, there are also important differences. These are due to differences in the media employed for conveying the impression to the mind, recalling it through the memory or, if the discourse is written, by rereading. The process of constructing a mental picture from a description is slow and difficult.

The ideal plan is to give as many details as the reader can build into a picture without straining his memory; and not one more.

7. John Scott Clark, A Practical Rhetoric

a. Suspense, however, must not be so great as to weary the reader's memory.

b. To fix a thought in memory by expressing it in condensed and paradoxical form.

c. To retain the interest of the reader a narrative must not be so filled with unimportant details as to weary the memory.

d. The only warrant for using a metrical arrangement in treating of a purely prosaic subject is the aid thus given to memory.

8. Henry Coppee, The Elements of Rhetoric

a. Memory being simply the firm retention by the mind of the things and words, applied to Invention, has come now to take its place in the domain of intellectual philosophy — a science very indeterminate in Cicero's day: memory is consequently eliminated from his division of Rhetoric.

b... Goldsmith's "Deserted Village," which combines as many charms as any pastoral in any language; charms of thought and language so familiar that it is quite unnecessary to refer to them, because, upon the mere mention of them the pictures arise, and the verses resound in the memory.

c. The novelist must create individual characters, who are to seem like life, and to live in our memory as friends, often met and well cherished.

d. It has not been unusual to classify, as one of the parts of a discourse, what is called the Recapitulation; or a brief but comprehensive summary in proper order of the discourse itself: to refresh the mind on all its points, and fix it in the memory.

9. Henry Noble Day, The Art of Discourse

a. Care must be taken to communicate such a view of the object as will be retained in the memory, and thus be long present to influence the feelings.

b. Secondly, in this use of language, the imagination is directly addressed and put in play. The hearer fixes his eye on the sensible object or scene, and his imagination forms the picture of the thought. He thus becomes himself a creative artist ; and the forms, to which his own imagination gives birth, gratify at once the instinctive dotings of paternity and the love of originating, inherent in our nature. Interpreting a mere language of signs, where words only stand for ideas, and do not represent them through sensible objects, is, on the other hand, a dull exercise of memory. If the language of modern civilization, in which science prevails over poetry, is more

precise, more exact and unambiguous, it is yet less pleasing and less impressive than the rich imagery and life of earlier dialects.

c. In this study the imagery employed should be marked, reduced to its class, worked into the memory, impressed every way on the forming mind.

10. James Demille, The Elements of Rhetoric

a. In accumulative invention the subject-matter may be immediately furnished by the memory, so that no preliminary labor may be needed; but it is evident that this labor has already taken place in some way from the existence of those very things with which the memory has been supplied.

b. Antithesis is most easily apprehended and committed to memory. It is retained longest by the memory.

c. Recapitulation has all the force of repetition. It refreshes the memory of the hearer, brings up once more those propositions which might be forgotten.

d. Poetry adapts itself to all the wants of the heart, and has an expression for every passion. Here we find that indescribable blending of sound and sense, of varying words and ringing metre, joined with changing thought, which so affects the feelings and clings so closely to the memory.

e. It is essential that the proverb be quickly grasped by the memory, and long retained.

f. Conciseness is often conducive to perspicuity where a synopsis is needed of some previous statement. Here, by refreshing the memory, it helps to clear up obscurities; but at the same time such a repetition must necessarily be brief.

g. The effect of metaphor sometimes is to present a thought with extraordinary vigor and emphasis; and where it is success fully employed in this way there is a union of beauty and strength such as arrests the attention and impresses itself upon the memory.

h. It is evident that augmentative figures should always be presented in the most striking manner, so that they shall arrest the attention and be retained by the memory.

11. Howry A. Epenshade, The Essentials of English Composition and Rhetoric

N/a. No passages on memory.

12. John F. Genung, The Practical Elements of Rhetoric

a. It is the reader's memory, most of all, that we are to consult: in developing the thoughts that compose our theme we are to choose such natural and sequent order as shall be convenient for him to retain and recall.

b. The difficulty of this order is that, like the periodic sentence, it compels more attention and greater effort of the memory to hold facts whose significance and application are not yet apparent.

c. Under this head comes expository, argumentative, and hortatory material; of all which the leading problem is, how to find a sequence that shall lead the reader naturally forward and be easily retained in his memory.

d. Extended paragraph topics are a needless burden to the reader's mind and memory ; and it is the feeling that too much Is demanded of his interpreting powers that causes his dislike of a solid page. As a rule, paragraphs of over a page in length should be avoided.

13. Joseph Henry Gilmore, The Outlines of Rhetoric

a. Do this preliminary work with pen in hand, if you find it easier. The reason why you find it easier is that the memory is unburdened, and you are enabled to concentrate all your energies on the work of invention.

14. Adams Sherman Hill, The Foundations of Rhetoric

N/a. No passages on memory.

15. Adams Sherman Hill, The Principles of Rhetoric

a. For the memory firmly retains that only which has fastened the attention.

b. When not carried to excess, the balanced structure is agreeable to the ear, is a help to the memory, and gives emphasis to each of the balanced expressions.

c. Language, on the other hand, cannot, as painting and sculpture can, bring a figure or a scene before the eye. With the aid of the imagination, it can recall to the memory things that the eye has seen ; but no " word-painter " can give an idea of the sea or a mountain, of a color or a flower, to one who has never seen it: there is no such thing as a " poetical picture."

16. David J. Hill, The Elements of Rhetoric and Composition

N/a. No passages on memory.

17. Samuel Newman, A Practical System of Rhetoric

a. A man may have invention, memory and imagination, but if he cannot reason accurately and with power, he will not interest and inform his readers, and thus ac quire the reputation of a good writer.

18. Henry G. Pearson, The Principles of Composition

a. The final sentence needs care, because it should give the last word on the subject which the first sentence introduced. What it contains is likely to remain in the memory of the reader, both because it is followed by nothing adding another idea on the subject of the paragraph, and because after it comes the brief pause which is instinctively made by the reader before beginning the next line.

b. The leading thought of the paragraph must, consequently, attract the reader's attention, and will also probably remain in his memory.

19. Joseph Priestly, A Course of Lectures on Oratory and Criticism

a. But it is not common to find a person able to acquit himself with propriety in a speech of considerable length, even though he prepare himself by digesting before hand all that he intends to say; because the order and connection of sentiment, and variety of diction, necessary in a continued speech, are not easily carried in memory.

b. 'If the view of the historian be simply to communicate information, and he be desirous to do it in such a manner as to give it the earliest admission into the mind, and leave the most lasting impression upon the memory, his general endeavour must be to give as clear and just an idea as possible of the most striking relations that the ideas he exhibits bear to one another ; since it is by means of their mutual relations that ideas introduce one another, and cohere, as it were, in the mind.

c. And the same discourse, delivered extempore, will always be heard with more pleasure than if it were pre-composed; or, supposing it to be pre-composed, it will give more pleasure delivered from the memory than from notes.

20. George P. Quackenbos, Advanced Course of Composition and Rhetoric

a. The heads of a sermon, moreover, are of great assistance to the memory of a hearer ; they enable him to keep pace with the progress of the dis course, and afford him resting-places whence he can reflect on what has been said, and look forward to what is to follow.

b. Arguments should not be multiplied too much, or extended too- far. Besides burdening the memory, and lessening the effect of individual points, such diffuseness renders a cause suspected.

21. Ashley Thorndike, The Elements of Rhetoric and Composition

N/a. No passages on memory.

22. E. A. Aisnley, Elements of Literature

a. But he ought not to pass over in silence any of those circumstances or details which tend to fix

important facts in the memory: he should paint his scenes so vividly as to render them present to the imagination.

23. John S. Hart, A Manual of Composition and Rhetoric

a. Writing out from recollection what one has read of any historical incident may be a good exercise for the memory, but it is a very poor one for teaching composition.

b. Periods, thus divided, are pronounced more easily. Besides this, the shortest member being placed first, we carry it more readily in our memory while proceeding to the second.

APPENDIX B

THE CANONS IN CCC ARTICLE TITLES

Rhetorical Listening: A Trope for Interpretive Invention and a Code of Cross-Cultural Conduct Writer-Audience Relationships: Analysis or Invention? Invention in Nineteenth-Century Rhetoric Linguistic Theory as an Aid to Invention Response to Russell C. Long, "Writer-Audience Relationships: Analysis or Invention?" The Processes of Invention: Association and Recombination Forensic Rhetoric and Invention: Composition Students as Attorneys An Invention Heuristic for Expressive Writing Invention: Understanding the Relationship between Sensation, Perception and Concept Formation Computer-Based Invention: Its Place and Potential Toward a Civic Rhetoric for Technologically and Scientifically Complex Places: Invention, Performance, and Participation Rhetorical Invention: Finding Good Subject Matter for Student Compositions The Process of Composing: Invention or Pre-Writing? The Cognition of Discovery: Defining a Rhetorical Problem Pre-Writing the Stage of *Discovery* in the Writing Process Teaching Students the Art of Discovery The Recognition of Discoveries A Paradigm for Discovery Using the Journal for Discovery: Two Devices Writing Discovery Journals: Helping Students Take Charge CCC titles containing 'invention' or 'discovery'

Teaching Arrangement: Defining a More Practical Approach Identifying and Teaching Rhetorical Plans for Arrangement The Music of Form: Rethinking Organization in Writing The Organization of Impromptu Essays Objectives and Organization of the Composition Course: The Report of Workshop No. 3 FD Organization and Administration of the Course: Universities Organization and Administration of the Course: Colleges FD New Directions in Course Content and Organization: Communication FD Devices for Teaching Organization in Elementary Composition Objectives and Organization of the Communication Course: The Report of Workshop No. 4 FD Organization and Administration of the Freshman Composition Course: Report of Workshop No. 4, Section B ^{FD} New Directions in Course Content and Organization: Composition FD Organization of the Communication Course: The Report of Workshop No. 4 $^{\rm FD}$ Organization and Use of a Writing Laboratory: The Report of Workshop No. 9 FD Organization and Administration of the Freshman Communications Course: The Report of Workshop No. 4, Section A FD The Organization and Use of the Writing Laboratory: The Report of Workshop No. 9 FD The Organization and Use of a Reading Clinic: The Report of Workshop No. 10 FD

CCC titles containing 'arrangement' or 'organization'

Style as Option Professing Multiculturalism: The Politics of Style in the Contact Zone Theories of Style and Their Implications for the Teaching of Composition Why Teach Style? A Review-Essay Imitation and Style Teaching the Teaching of Composition: Evolving a Style SA Response to William E. Coles, Jr., "Teaching the Teaching of Composition: Evolving a Style" SA James Baldwin's Style: A Prospectus for the Classroom The Feminine Style: Theory and Fact Rhetorical Considerations of Bacon's "Style" The Plain Style "Style:" A Narrow View Teaching Style: A Possible Anatomy Poetic Style in the Contemporary Short Story The Teaching of Style Sentence Structure as Style The Teaching of Style A Primer for Teaching Style Placing and Pacing: The Rhythm of Style An Exercise in Style Analysis Peter Mark Roget: Style as Symptom A Quantitative Approach to Thomas Hardy's Prose Style The Study of Style in the Composition Course Edward Gibbon: Linguistics, Syntax, and Style Metaphysics in the Criticism of Style ^{SA} Using Translations as a Means of Teaching Style The Bamboo Style of English ^{SA} Some Thoughts on Lincoln's Style Response to Louis Milic, "Metaphysics in the Criticism of Style" SA Syntax and Style: Ambiguities in Lawrence's "Twilight in Italy" Hugh Blair as an Analyzer of English Prose Style An Annotated Bibliography of Selected Writings on English Prose Style

CCC titles containing 'style'

In Memory of Edward P. J. Corbett ^{FD} In Memory of James Berlin ^{FD}

CCC titles containing 'memory'

Reflections on the Missouri CWA Surveys, 1989-2001: A New Composition Delivery Paradigm FD

The Composing Process: The Development of a Composition; Of a Style and of Styles The Variety of Composition Forms and Styles Appropriate to a Freshman English Course

CCC title containing 'delivery'

APPPENDIX C: CANONS IN THE TITLES AND KEY TERMS OF ARTICLES FROM CCC, RSQ, RR, RR, CE, EJ, AND PR



CCC articles with canons in titles



CCC articles with canons in key terms



RSQ articles with canons in titles



RSQ articles with canons in key terms



RR articles with canons in titles



RR articles with canons in key terms






CE articles with canons in key terms



EJ articles with canons in titles



EJ articles with canons in key terms



PR articles with canons in titles



PR articles with canons in key terms

APPENDIX D

TITLES OF 64 ARTICLES ON MEMORY, TAKEN FROM CCC, RSQ, RR, RR, CE, EJ, PR, and JAC

The Curse of Memory (1917) (EJ)

Memorization Revisited (1952) (CE)

Mnemonics (1953) (EJ)

"Full of Memories": Teaching Matrilineage (1979) (CE)

Modern Poetry in the Classroom: Memory, Power, and Poetry: Sexton's "Fury of Overshoes"

(1987) (EJ)

Concepts of Memory in Contemporary Composition (1989)

Writing the Past: Poetry, Memory, and History (1991) (EJ)

Hunger of Memory: The Education of Richard Rodriguez, An Autobiography by Richard

Rodriguez (1993) (EJ)

Memory Fields (1993) (EJ)

The Methodical Memory: Invention in Current-Traditional Rhetoric (1993) (RR)

Orality, Literacy, and Memory in Toni Morrison's Song of Solomon (1993) (CE)

Rhetorical Memory and Delivery: Classical Concepts for Contemporary Composition and Communication (1994) (RR)

Modern Poetry in the Classroom: Exploring Memory: Li-Young Lee's "Mnemonic" (1994) (EJ) The Art of Memory (1997) (RR)

Mixing Memory and Desire: Some Reflections on Student Teaching and Teacher Education (1997) (EJ)

Methods of Memory: On Native American Storytelling (1997) (CE)

Magic and Memory in the Contemporary Story Cycle: Gloria Naylor and Louise Erdrich (1998) (CE)

Violent Memories (1998) (EJ)

Habit as Memory Incarnate (1999) (CE)

Reproducing Civil Rights Tactics: The Rhetorical Performances of the Civil Rights Memorial (2000) (RSQ)

Roses in December: Cultural memory in the present (2000) (CE)

Forgetting to be (Post)Human: Media and Memory in a Kairotic Age (2000) (JAC)

Memory, Identity, Community: The Idea of Narrative in the Human Sciences (2000) (PR) When Memory Speaks: Reflections on Autobiography (2001) (EJ)

Media, Discourse, and the Public Sphere: Electronic Memorials to Diana, Princess of Wales (2001) (CE)

The Metarhetoric of Aristotle, with Some Examples from His On Memory and Recollection (2002) (RR)

Reading the Cemetery, "Lieu de Mémoire par Excellance" (2003) (RSQ)

Logic and the Art of Memory: The Quest for a Universal Language (2003) (PR)

Rhetorics of unity and disunity: The Worcester firefighters memorial service (2003) (RSQ)

I Remember Mamma: Material Rhetoric, Mnemonic Activity, and One Woman's Turn-of-the-Twentieth-Century Quilt (2004) (RR)

The Girl in the Photograph: The Vietnam War and the Making of National Memory (2004) (JAC)

Cyber-Spaces of Grief: Online Memorials and the Columbine High School Shootings (2004) (JAC)

Forgetful Memory and Images of the Holocaust (2004) (CE)

"Memoria" Is a Friend of Ours: On the Discourse of Color (2004) (CE)

Testifying, Silencing, Monumentalizing, Swallowing: Coming to Terms with "In Memory 's Kitchen" (2004) (JAC)

Speaking My Mind: Let's Hear It for Memorization (2004) (EJ)

Taking Time: Beyond Memorization: Using Drama to Promote Thinking (2005) (EJ)

Rhetorical Spaces in Memorial Places: The Cemetery as a Rhetorical Memory Place/Space (2005) (RSQ)

Philosophy, Rhetoric, and Cultural Memory: Rereading Plato's "Menexenus" and Isocrates' "Panegyricus" (2005) (RSQ)

A Recipe for Remembrance: Memory and Identity in African-American Women's Cookbooks (2005) (RR)

Memory, Myth, and Rhetoric in Plato's "Phaedrus" (2006) (RSQ)

Beyond Mnemotechnics: Confession and Memory in Augustine (2006) (PR)

Linguistic Memory and the Politics of U.S. English (2006) (CE)

Crises of Memory and the Second World War (2006) (JAC)

Framing Public Memory (2007) (RSQ)

Between Archive and Participation: Public Memory in a Digital Age (2007) (RSQ)

Space, Time, Memory: Gendered Recollections of Wartime Los Alamos (2007) (RSQ)

The Rhetoric of Memory-Making: Lessons from the UDC's Catechisms for Children (2008) (RSQ)

Rhetorical Vectors of Memory in National and International Holocaust Trials (2008) (RR) Sappho's memory (2009) (RSQ)

Colonial Memory and the Crime of Rhetoric: Pedro Albizu Campos (2009) (CE)

Memory and Alterity: The Case for an Analytic of Difference (2010) (PR)

(De)Constructing the Praxis of Memory-Keeping: Late Nineteenth-Century Autograph Albums as Sites of Rhetorical Invention (2010) (RR)

Cultural Memory in the Classroom Public Space (2011) (EJ)

The Future of Forgetting: Rhetoric, Memory, Affect (2011) (RSQ)

Using a Prop Box to Create Emotional Memory and Creative Play for Teaching Shakespeare's Othello (2012) (EJ)

Bridging Gaps and Preserving Memories through Oral History Research and Writing (2012) (EJ)

Places of Public Memory: The Rhetoric of Museums and Memorials (2012) (RSQ)

Global Memoryscapes: Contesting Remembrance in a Transnational Age (2012) (RSQ)

Synecdochic Memory at the United States Holocaust Memorial Museum (2012) (CE)

The Present Time of Things Past: Julian of Norwich's Appropriation of St. Augustine's

Generative Theory of Memory (2012) (RR)

Up from Memory: Epideictic Forgetting in Booker T. Washington's Cotton States Exposition Address (2012) (PR)

Suspended Identification: Atopos and the Work of Public Memory (2013) (PR)

The "Agential Spiral": Reading Public Memory Through Paul Ricoeur (2013) (PR)

APPENDIX E

TOPIC WORD LISTS, 30-TOPIC RUN

1 Narrative (Literature and Drama) 2 Cicero and Artificial Memory 3 Memory Spaces 4 Memory and Culture 5 Poetry 6 Narrative (Film and Drama) 7 Literacy in History 8 Composition Theory and Pedagogy 9 Food 10 Writing and Domestic Space 11 Psychology 12 Memory and Epistemology 13 Holocaust 14 Student Writing 15 Memorials 16 Reading and Decoding 17 Personal Memories 18 Gender and Autobiography

1 time hamlet past life story modern man mrs scene history woolf death novels present characters action fiction consciousness joyce

2 cicero locus de loci press rhetorical feminism rhetoric chre tien bave sense theory ad ail se cited speech rhetorica

3 memorial cemetery memory space public civil press rights cemeteries places place rhetorical rhetoric university society quarterly past burial african

4 memory cultural public culture social rhetorical political identity women studies history rhetoric work discourse addams politics historical memories collective

5 poem poetry poet poems jim poetic lines line stanza poets love lyric image song music thoughts frost leaves workshop

6 film story drama action orlando narrative mind art characters time character comic strip quality events dream fantasy nature play

7 literacy sappho oral literate greek practices thinking university press culture margery medieval black alcaeus ancient abstract memory fr city 8 writing writers process writer text goals processes write plan thinking research model composing ideas cognitive words topic term written

9 food women family recipes cookbooks african american cook cooking eating memoirs recipe black memories cookbook community readers york memoir

10 reading writing read family books book school children parents people year write readers young stories memories adult families home

11 brain cognitive memory human mind affective affect language social information theory values habit neural body science emotion cognition theories

12 memory sense time experience form language present world ing order nature human life attention mind works meaning terms place

13 holocaust event memory shoah events images narrative writing history testimony image disaster historical witness photo photos language photographs child

14 students class student writing teachers school teaching teacher ing write teach group read classroom good learning english stu time

15 diana public media september web archive http princess digital display memorials visual quilt site memorial sites personal death images

16 reading text reader meaning sentence grammar composition research readers sentences process writing theory language kintsch information term propositions analysis

17 time life back people years memories home man day english find place remember mother story words father memory world

18 life autobiography personal women writing lives nonfiction class experience hampl experiences mother history memoir truth writer grandmother woman autobiographies Alexander, Jonathan J. G. *Medieval Illuminators and Their Methods of Work*. New Haven: Yale University Press, 1992. Print.

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