Introduction

When we think of our highest creative power, we think invariably of the imagination. "Great imagination, profound intuition," we say: this is our highest accolade for intellectual achievement, even in the sciences. The memory, in contrast, is devoid of intellect: just memorization, not real thought or true learning. At best, for us, memory is a kind of photographic film, exposed (we imply) by an amateur and developed by a duffer, and so marred by scratches and inaccurate light-values.

We make such judgments (even those of us who are hard scientists) because we have been formed in a post-Romantic, post-Freudian world, in which imagination has been identified with a mental unconscious of great, even dangerous, creative power. Consequently, when they look at the Middle Ages, modern scholars are often disappointed by the apparently lowly, working-day status accorded to imagination in medieval psychology – a sort of draught-horse of the sensitive soul, not even given intellectual status. Ancient and medieval people reserved *their* awe for memory. Their greatest geniuses they describe as people of superior memories, they boast unashamedly of their prowess in that faculty, and they regard it as a mark of superior moral character as well as intellect.

Because of this great change in the relative status of imagination and memory, many moderns have concluded that medieval people did not value originality or creativity. We are simply looking in the wrong place. We should instead examine the role of memory in their intellectual and cultural lives, and the values which they attached to it, for there we will get a firmer sense of their understanding of what we now call creative activity.

The modern test of whether we really know something rests in our ability to use what we have been taught in a variety of situations (American pedagogy calls this "creative learning"). In this characterization of learning, we concur with medieval writers, who also believed that education meant the construction of experience and method (which they called "art") out of knowledge. They would not, however, have understood our separation of memory from learning. In their understanding of the matter, it was memory that made knowledge into useful experience, and memory that combined these pieces of information-become-experience into what we call "ideas," what they were more likely to call "judgments."

A modern experimental psychologist has written that "some of the best 'memory crutches' we have are called laws of nature," for learning can be seen as a process of acquiring smarter and richer mnemonic devices to represent information, encoding similar information into patterns, organizational principles, and rules which represent even material we have never before encountered, but which is like what we do know, and thus can be recognized or remembered.[1] This is a position that older writers would have perfectly understood. It will be useful to begin my study by comparing descriptions of two men whom their contemporaries universally recognized to be men of remarkable scientific genius (assessments which time has proven correct, though that is only partly relevant to my discussion): Albert Einstein and Thomas Aquinas. Each description is the testimony (direct or reported) of men who knew and worked intimately with them over a long period of time. The first is by Leopold Infeld, a physicist who worked with Einstein at Princeton:

> I was very much impressed by the ingenuity of Einstein's most recent paper. It was an intricate, most skillfully arranged chain of reasoning, leading to the conclusion that gravitational waves do not exist. If true, the result would be of great importance to relativity theory . . .
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> The greatness of Einstein lies in his tremendous imagination, in the unbelievable obstinacy with which he pursues his problems. Originality is the most essential factor in important scientific work. It is intuition which leads to unexplored regions, intuition as difficult to explain rationally as that by which the oil diviner locates the wealth hidden in the earth.
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> There is no great scientific achievement without wandering through the darkness of error. The more the imagination is restricted, the more a piece of work moves along a definite track – a process made up rather of additions than essentially new ideas – the safer the ground and the smaller the probability of error. There are no great achievements without error and no great man was always correct. This is well known to every scientist. Einstein's paper might be wrong and Einstein still be the greatest scientist of our generation . . .
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> The most amazing thing about Einstein was his tremendous vital force directed toward one and only one channel: that of original thinking, of doing research. Slowly I came to realize that in exactly this was his greatness. Nothing is as important as physics. No human relations, no personal life, are as essential as thought and the comprehension of how "God created the world." . . . one feels behind [his] external activity the calm, watchful contemplation of scientific problems, that the mechanism of his brain works without interruption. It is a

constant motion which nothing can stop . . . The clue to the understanding of Einstein's role in science lies in his loneliness and aloofness. In this respect he differs from all other scientists . . . He had never studied physics at a famous university, he was not attached to any school; he worked as a clerk in a patent office . . . For him the isolation was a blessing since it prevented his thought from wandering into conventional channels. This aloofness, this independent thought on problems which Einstein formulated for himself, not marching with the crowd but looking for his own lonely pathways, is the most essential feature of his creation. It is not only originality, it is not only imagination, it is something more.[2]

The following descriptions are excerpted from a life of St. Thomas Aquinas, written shortly after his death by Bernardo Gui, and from testimony taken at Thomas's canonization hearings from his close contemporary, Thomas of Celano, who also knew Reginald, Thomas's *socius*, or friar-companion.

Of the subtlety and brilliance of his intellect and the soundness of his judgment, sufficient proof is his vast literary output, his many original discoveries, his deep understanding of the Scriptures. His memory was extremely rich and retentive: whatever he had once read and grasped he never forgot; it was as if knowledge were ever increasing in his soul as page is added to page in the writing of a book. Consider, for example, that admirable compilation of Patristic texts on the four Gospels which he made for Pope Urban [the *Catena aurea* or "Golden Chain"] and which, for the most part, he seems to have put together from texts that he had read and committed to memory from time to time while staying in various religious houses. Still stronger is the testimony of Reginald his *socius* and of his pupils and of those who wrote to his dictation, who all declare that he used to dictate in his cell to three secretaries, and even occasionally to four, on different subjects at the same time . . . No one could dictate simultaneously so much various material without a special grace. Nor did he seem to be searching for things as yet unknown to him; he seemed simply to let his memory pour out its treasures . . .

He never set himself to study or argue a point, or lecture or write or dictate without first having recourse inwardly – but with tears – to prayer for the understanding and the words required by the subject. When perplexed by a difficulty he would kneel and pray and then, on returning to his writing or dictation, he was accustomed to find that his thought had become so clear that it seemed to show him inwardly, as in a book, the words he needed . . .

Even at meal-times his recollection continued; dishes would be placed before him and taken away without his noticing; and when the brethren tried to get him into the garden for recreation, he would draw back swiftly and retire to his cell alone with his thoughts.[3]

It might be useful to isolate the qualities of genius enumerated in each of the above descriptions. Of Einstein: ingenuity, intricate reasoning, originality, imagination, essentially new ideas coupled with the notion that to achieve truth one must err of necessity, deep devotion to and understanding of physics, obstinacy, vital force, single-minded concentration, solitude. Of Thomas Aquinas: subtlety and brilliance of intellect, original discoveries coupled with deep understanding of Scripture, memory, nothing forgotten and knowledge ever-increasing, special grace, inward recourse, single-minded concentration, intense recollection, solitude.

As I compare these two lists I am struck first by the extent to which the qualities ascribed to each man's working habits are the same. In both, one gets a vivid sense of extraordinary concentration on problems to the exclusion of most daily routine. Infeld speaks of tremendous vital force, Bernardo of intense inner prayer, but both are describing a concentrated continuous energy that expresses itself in a profound singlemindedness, a remarkable solitude and aloofness. Each also praises the intricacy and brilliance of the reasoning, and its prolific character, its originality. It is important to appreciate that Bernardo values originality in Thomas's work – he praises its creativeness just as Infeld praises that in Einstein's.

What we have, in short, is a recognizable likeness between these two extraordinary intellects, in terms of what they needed for their compositional activity (the activity of thought), the social isolation required by each individual, and what is perceived to be the remarkable subtlety, originality, and understanding of the product of such reasoning. What is strikingly different is that in the one case this process and product are ascribed to intuition and imagination unfettered by "definite" tracks, in the other to a "rich and retentive memory," which never forgot anything and in which knowledge increased "as page is added to page in the writing of a book."

My point in setting these two descriptions up in this way is simply this: the nature of creative activity itself – what the brain does, and the social and psychic conditions needed for its nurture – has remained essentially the same between Thomas's time and our own. Human beings did not suddenly acquire imagination and intuition with Coleridge, having previously been poor clods. The difference is that whereas now geniuses are said to have creative imagination which they express in intricate reasoning and original discovery, in earlier times they were said to have richly retentive memories, which they expressed in intricate reasoning and original discovery.

We know a good deal about the actual procedures that Thomas Aquinas followed in composing his works, thanks in part to the full accounts we have from the hearings held for his canonization,[4] and in part to the remarkable survival of several pages of autograph drafts of certain of his early works. Both sources of material have received a thorough analysis from the paleographic scholar, Antoine Dondaine.[5] Dondaine's work confirmed the existence, alluded to many times in the contemporary accounts, of a group of three or four secretaries who took down Thomas's compositions in a fair hand from his own dictation. The autographs are written in *littera inintelligibilis*, a kind of shorthand that fully lives up to its name (Dondaine says that the great nineteenth-century editor, Uccelli, lost his eyesight scrutinizing these drafts) for it was not designed to be read by anyone other than the author himself. As Dondaine has reconstructed the process of composing the *Summa contra Gentiles*, an early work for which a number of autograph leaves exist, Thomas wrote first in *littera inintelligibilis* and then summoned one of his secretaries to take down the text in a legible hand while Thomas read his own autograph aloud. When one scribe tired, another took over.

But no autographs are found of the later major works. Dondaine remarks this fact as curious, because one would expect these autographs to have been treasured at least as carefully as those of earlier works. He suggests that their nonexistence is due not to loss but to there having been none in the first place to save. "Le fait qu'il n'y ait plus d'autographes des ouvrages postérieurs invite á penser que saint Thomas ne les a pas écrits, sinon peut-être sous forme de brouillons, et qu'il les a dictés en les composant."[6] Dondaine points out the tedium and waste of time involved for Thomas in writing out a complete text, even in shorthand, and then reading it aloud for it to be written again, this time in a fair hand.

There is good evidence in the remembrance of his peers that, certainly later in life, Thomas was not accustomed to writing his thoughts down himself, even in *inintelligibilis*. Two incidents in particular suggest this habit. There is the famous story of Thomas at dinner with Louis XI, Saint Louis. Though seated next to the king, Thomas was still preoccupied by an argument he was composing against the Manichees. Suddenly he struck the table, crying, "That settles the Manichees!" and called out to Reginald, his *socius*, "as though he were still at study in his cell . . . 'Reginald, get up and write!'"[7] This incident must have occurred between the springs of 1269 and 1270; the work in progress was the Second Part of the *Summa theologica*.[8]

The second incident occurred in conjunction with the writing of his commentary on Isaiah, a work for which an autograph of five chapters exists (Vatican lat. 9850).[9] Thomas became puzzled for days over the interpretation of a text:

At last, one night when he had stayed up to pray, his *socius* overheard him speaking, as it seemed, with other persons in the room; though what was being said the *socius* could not make out, nor did he recognize the other voices. Then

> these fell silent and he heard Thomas's voice calling: "Reginald, my son, get up and bring a light and the commentary on Isaiah; I want you to write for me." So Reginald rose and began to take down the dictation, which ran so clearly that it was as if the master were reading aloud from a book under his eyes.[10]

Pressed by Reginald for the names of his mysterious companions, Thomas finally replied that Peter and Paul had been sent to him, "and told me all I desired to know." This tale, among other things, suggests that some of Thomas's work was composed in a mixture of some parts written out in shorthand and then read to a secretary and some mentally composed and dictated. The contemporary sources suggest strongly that the entire *Summa theologica* was composed mentally and dictated from memory, with the aid at most of a few written notes, and there is no reason to disbelieve them.

Around 1263, Thomas wrote a compilation of patristic texts on the Gospels, the *Catena aurea*, which Gui describes, in the passage I just quoted, as "put together from texts that [Thomas] had read and committed to memory from time to time while staying in various religious houses."[11] Chenu accurately describes it as a "concatenation of patristic texts cleverly coordinated into a running commentary"; it includes a number of Greek authorities as well, which Thomas had had translated into Latin in order to add these extracts, "being careful to place the names of the authors before their testimonies" in the proper quotational style, whose purpose, as we will see in Chapter 3, was certainly to aid memorial retention.[12] The *catena* or chain is a very old medieval genre of scholarly commentary, used widely by the monastic scholars as part of *lectio divina*.[13] The authorities are chained, or hooked, together by a particular Biblical phrase. Thus the commentary entirely follows the sequence of the main text, each chapter division of the Gospel book forming a division of the *Catena*, and each verse (actually its unnumbered phrases and clauses) quoted separately with a string of relevant comments following it.

The written organization of the *catena* simply reproduces its memorial organization, as each bit of Biblical text calls up the authorities attached to it. For example, on Mt. 2:9, Thomas Aquinas first gives us a bit of Chrysostom on Matthew, then Augustine from two sources, then the ordinary gloss, then Ambrose on Luke, then Remigius, and then the gloss again. It is important to note that in writing this work Thomas did not look up each quotation in a manuscript tome as he composed; the accounts are specific on this point. The texts were already filed in his memory, in an ordered form that is one of the basics of mnemonic technique. And of course, once the texts were in his memory they stayed there for use on other occasions.

I am not suggesting that Thomas never made reference to manuscripts – on the contrary, we know that he did. We also know that one task of his secretaries was to copy manuscripts for his use.[14] But the picture we are often given of Thomas pausing while dictating in order to check a reference in a manuscript seems to me contrary to the evidence. For we are told over and over again that Thomas's flow to his secretaries was unceasing: it "ran so clearly that it was as if the master were reading aloud from a book under his eyes." He dictated "as if a great torrent of truth were pouring into him from God. Nor did he seem to be searching for things as yet unknown to him; he seemed simply to let his memory pour out its treasures." And again, "When perplexed by a difficulty he would kneel and pray and then, on returning to his writing or dictation, he was accustomed to find that his thought had become so clear that it seemed to show him inwardly, as in a book, the words he needed."[15]

That unceasing torrent, that clarity as though reading from a book before his eyes, that quality of retaining whatever he had read and grasped, can be understood if we are willing to give his trained memory its due. Thomas himself stresses the importance of concentration in memory, and we are told many times of his remarkable power of deep concentration, often approaching a trance-like state in which he did not feel physical pain. Thomas communed with his memory constantly, certainly before he dictated, and only when he clearly had "the understanding *and the words required*" (my emphasis) would he lecture or write or dictate.[16] (This, of course, is not to suggest that his works were dictated always in the absolutely final form in which we have them today; Dondaine gives much evidence of revision and reworking in the autographs and between the autographs and the fair texts. For some works, he left notes which were to be worked up later; the *Supplement* to the *Summa* is an example of such a practice.) I am even inclined to take somewhat seriously his comment to Reginald that Peter and Paul spoke with him and instructed him in his difficulties with the text of Isaiah. Their words were certainly intimately in his mind, among the many voices in his memory, intimate colleagues to his own thoughts. Moreover, subvocalization, a murmur, was a persistent and apparently necessary feature of memory work. One of his secretaries, a Breton called Evan, told how Thomas would sometimes sit down to rest from the work of dictating and, falling asleep, would continue to dictate in his sleep, Evan continuing to write just the same. What Evan took for sleep may have been an extreme form of Thomas's concentration. Or perhaps we should credit the story as told; since the matter had been worked out beforehand in

Thomas's memory, perhaps a kind of mental "automatic pilot" took over in times of extreme fatigue.

Most remarkable is the testimony of all his pupils and secretaries, including Reginald, that "he used to dictate in his cell to three secretaries, and even occasionally to four, on different subjects at the same time."[17] Gui comments, "No one could dictate simultaneously so much various material without a special grace." Dondaine is inclined to discount this story as the evidence of the single Breton secretary (are Bretons especially credulous?). Yet Gui ascribes the testimony to *all* those who wrote to Thomas's dictation.[18]

Moreover, as Dondaine himself notes, such stories have been told – though rarely – of other historical figures, notably Julius Caesar. Petrarch tells the story about Caesar, as an instance of trained memory ("ut memoria polleret eximia"), that he could dictate four letters on different subjects to others, while writing a fifth in his own hand.[19] Whether the tale is factual or not is less important for my analysis than that Petrarch understood it as evidence of the power of Caesar's *memory*, for Petrarch himself had a significant reputation as an authority on memory training. Thomas's biographer, too, understood a similar feat to be enabled by powerful memory. But it is not achieved by raw talent alone; indeed natural talent will not produce such facility or accuracy. Memory must be trained, in accordance with certain elementary techniques.

The nature of these techniques and how they were taught is the subject of much of my study. *Memoria* meant, at that time, trained memory, educated and disciplined according to a well-developed pedagogy that was part of the elementary language arts – grammar, logic, and rhetoric. The fundamental principle is to "divide" the material to be remembered into pieces short enough to be recalled in single units and to key these into some sort of rigid, easily reconstructable order. This provides one with a "random-access" memory system, by means of which one can immediately and securely find a particular bit of information, rather than having to start from the beginning each time in order laboriously to reconstruct the whole system, or – worse – relying on simple chance to fish what one wants out from the murky pool of one's undifferentiated and disorganized memory.

It is possible for one with a well-trained memory to compose clearly in an organized fashion on several different subjects. Once one has the all-important starting-place of the ordering scheme and the contents firmly in their places within it, it is quite possible to move back and forth from one distinct composition to another without losing one's place or becoming confused. As an experiment, I tried memorizing a few psalms (texts that come to us with a divisional system already in place) in accordance with an elementary scheme described by the twelfth-century teacher Hugh of St. Victor – a scheme that I analyze in detail in Chapter 3. That scheme enabled me to recall the texts in any order I pleased. If one so novice and unskilled as I am can recite without difficulty three psalms "at the same time" (that is, going easily from one psalm to another, verse to verse, backwards or forwards or skipping around at will), a memory as highly talented and trained as Thomas's could surely manage three *quaestiones* of his own composition at the same time. The key lies in the imposition of a rigid order to which clearly prepared pieces of textual content are attached. Both the initial laying down of the scheme and its recollection are accomplished in a state of profound concentration. Proper preparation of material, rigid order, and complete concentration are the requirements which Thomas Aquinas himself defines in his discourses on trained memory, and, as we will see, they are continuously emphasized in all ancient and medieval mnemonic practices.

Scholars have always recognized that memory necessarily played a crucial role in pre-modern Western civilization, for in a world of few books, and those mostly in communal libraries, one's education had to be remembered, for one could never depend on having continuing access to specific material. While acknowledging this, however, insufficient attention has been paid to the pedagogy of memory, to what memory was thought to be, and how and why it was trained. Nor can the immense value attached to trained memory be understood only in terms of differing technical applications, though these are basic.

It is my contention that medieval culture was fundamentally memorial, to the same profound degree that modern culture in the West is documentary. This distinction certainly involves technologies – mnemotechnique and printing – but it is not confined to them. For the valuing of *memoria* persisted long after book technology itself had changed. That is why the fact of books in themselves, which were much more available in the late Middle Ages than ever before, did not profoundly disturb the essential value of memory training until many centuries had passed. Indeed the very purpose of a book is differently understood in a memorial culture like that of the Middle Ages than it is today.

A book is not necessarily the same thing as a text. "Texts" are the material out of which human beings make "literature." For us, texts only come in books, and so the distinction between the two is blurred and even lost. But, in a memorial culture, a "book" is only one way among several to remember a "text," to provision and cue one's memory with "dicta et facta memorabilia." So a book is itself a mnemonic, among many other functions it can also have. Thomas Aquinas makes this assumption about books in a comment on Ps. 69:28 ("Let them be blotted from the book of life"):

> A thing is said metaphorically to be written on the mind of anyone when it is firmly held in the memory . . . For things are written down in material books to help the memory.[20]

Andrew of St. Victor, writing over a hundred years earlier, comments similarly on Is. 1:18 ("Though your sins be as scarlet, they shall be white as snow"):

> According to Jewish tradition, the sins of all men are preserved in writing on a shining white substance . . . Grievous sins are written in red and other colours which adhere more faithfully to the parchment and strike the reader's eye more readily . . . When sins are said to be written in books, what else does it mean but that God remembers as though they were written?[21]

In the early twelfth century, Hugh of St. Victor, instructing some young students on how to remember, explains clearly the mnemonic utility of manuscript page layout and decoration. Repeating traditional advice about always memorizing from the same written source, lest a confusion of images caused by seeing different layouts make it impossible for the brain to impress a single image, he says:

> it is a great value for fixing a memory-image that when we read books, we strive to impress on our memory . . . the color, shape, position, and placement of the letters, . . . in what location (at the top, the middle or bottom) we saw [something] positioned, in what color we observed the trace of the letter or the ornamented surface of the parchment. Indeed I consider nothing so useful for stimulating the memory as this.

Much later, in his *Archiloge sophie* (*c.* 1400), the humanist scholar Jacques Legrand gave similar advice to pay close attention to the color of lines and the appearance of the page in order to fix the text as a visual image in memory:

> wherefore one best learns by studying from illuminated books, for the different colors bestow remembrance of the different lines and consequently of that thing which one wants to get by heart. And indeed, when they wanted to record and learn a matter by heart, the ancients placed various colors and figures in their books to the end that the diversity and difference would give [them] better recollection.[22]

Throughout this study, my concern is with educated memory. All my evidence comes from learned works, most of them written in Latin, from