Memory is fading. In his youth, he was powerful and energetic, ready to lend a hand in any intellectual task. At his peak, Memory was relied on, trusted, and nearly worshipped by all. However, times changed and Modernity moved into town, bringing with him gadgets and gizmos that appeared to surpass, at a far cheaper cost, anything Memory could provide. Memory and his dwindling supporters fought against this inexorable tide, but Modernity and his new media proved irresistible. Now, Memory is largely seen as an archaic and unnecessary artifact at best and a dangerous criminal that stifles creativity at worst. Battered, bruised, and beaten, Memory is an all-but-forgotten shade of a previous era.

More than two millennia after their first appearance in the *Phaedrus*, Plato’s worst fears about the memory-weakening nature of externalization are finally coming to fruition. From Gutenberg to the Internet, each quantum leap forward in the world of media has triggered a significant step backward in the role personal memory plays in our lives. One of the hardest hit areas is education, where memory techniques are demeaned as rote and often condemned or ridiculed as something “Tiger Moms” demand of their children in their insistence on perfect test scores. Especially in the past couple of decades, with the ever-increasing role of digital media, the trend in education and even in our broader culture has been to shun the art of memory in favor of “creativity.” However, despite this intolerance, memory is a critical facet of learning and life itself that must be retained and reinstated to a level of prominence in the classroom and our lives. If we do not restore memory, we run the risk of losing this critical ability.

Most of us generally think of memory as the simple act of remembering a piece of information. However, memory is much more than this. Memory is a process; it moves data from short- to long-term storage, where it provides the foundation for problem solving, synthesizing information, and, most importantly, creativity. Most of our day-to-day interaction with the world relies on short-term memory. New data and facts are perceived and then stored in this temporary holding area, ready to be drawn upon for immediate use. However, this mental storage bin does not have infinite capacity, so old information is quickly shunted out of the way for new, more current and useful data. To retain old information, the data must be transferred to long-term memory. This transition, which is not an easy process, requires constant and repetitive recall of the information. The piece of information must feel significant to us and become ingrained in our minds, until drawing upon the data becomes second nature. Only then will the information be fully transferred to long-term memory.

Long-term memory is the human equivalent of permanent storage. Once information is there, it stays. Think of riding a bike: once the long and occasionally painful process of learning how to ride is completed, the knowledge of how to do it stays with us for the rest of our lives. In essence, the information becomes a part of us. This data stored in long-term memory serves as the foundation for mental functions. Without it, these functions cannot operate. Not using long-term memory would be like trying to operate a computer without saving any files. Accomplishing
relatively simple tasks in the short-run would be easy. However, drawing on a diversity of information, synthesizing it, and then using it to create a unique solution to a complex problem would be next to impossible.

**From Plato to Web 2.0**

To shed light on just how far our memories have devolved, a basic understanding of the key turning points in the history of memory is necessary. It all began at the dawn of history, memory’s youth. The first seismic shift in the world of memory was the advent of alphabetic writing. Before this invention, if a scholar wanted to remember something (such as the entire *Iliad* and *Odyssey*), he was left with no choice but to memorize it. With the new tool of writing, the scholar could now record all of this mental information externally, just in case his memory failed him at some point. Writing allowed culture and collective memory to be stored in a more trustworthy place than the human mind. However, Plato, who lived in this era of change, (429-327 B.C.E.) foresaw the dangers of too heavily depending upon writing and voiced his concerns in his *Phaedrus*.

*Phaedrus* opens with a tale of Theuth, an Egyptian god who invented almost everything related to academia. Presenting his invention of writing to Thamus, the god who rules Egypt, Theuth claims that writing will make men wiser, while also giving them better memories. Thamus, not at all impressed, chastises Theuth for his clouded vision and enumerates how men will use writing as a remedy, becoming weak-minded as a result (1). Throughout the rest of *Phaedrus*, Plato expounds upon the mind- and memory-weakening nature of writing and strongly argues against allowing writing to play a significant role in scholarly endeavors.

Plato’s fears about the collapse of memory failed to materialize, for a variety of exogenous factors, over the following centuries in the classical and medieval eras. In fact, the classical era was marked by a golden age of memory. Books and scrolls were still relatively rare, forcing scholars and nobility—the only people with access to these works—to remember what they read and heard. As a result, the classical and even medieval worlds abounded with scholars who had amazing memories. For example, St. Augustine had a friend “who could recite Virgil by heart—backward” (Foer 96). There were generals in these periods who could remember the name of every soldier in their armies and scholars who knew entire libraries by heart (Foer 95). Although not every scholar or general in classical times had a spectacular memory, such exceptional individuals demonstrate that the advent of writing did not strike the deathblow to memory or even harm it. Theuth, it appeared, was right.

However, Plato’s predictions began to manifest in Western culture with the advent of Gutenberg’s printing press, which heralded the arrival of modernity. With the sudden explosion of relatively cheap texts, it was no longer necessary for scholars to rely so heavily on memory. Instead of mental libraries, scholars could keep physical ones that required only a moderate amount of money and a lot less mental effort. As the printing press became more efficient and books became even cheaper, the value of memory slowly de-

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Hughes, “The War against Memory”

Image of Plato from Raphael’s La Scuola di Atene (The School of Athens), painted in 1509.
clined. Writing itself became more of a crutch as its use began to spread among the general population. By the time the typewriter was invented, the art of memory was clearly on the losing side of history. The final deathblow to a weakened memory, however, was the advent of digital media.

With the rise of digital media, people are reading less and even losing the ability to read (Crain 134). Although reading itself does not necessarily help build memory, as numerous studies suggest, not reading does have a substantial negative influence on the art of memory. Reading, for the most part, is a slow process that allows the reader time to absorb and fully understand the material being presented. Digital media, on the other hand, floods our brains with information, allowing neither time nor space to transfer most of the information to long-term memory. Even if we attempt to control this flood by visiting relatively simple websites such as The New York Times, we are still bombarded with advertisements, popups, add-on messages, friend’s activity on the site, and a bewildering array of links. Consequently, our brains cease trying to retain the flow of information, weakening long-term memory and the rest of our mental functions. For example, as Bryan Appleyard, a British journalist and author, emphasizes in his piece “Stoooopid … Why the Google Generation Isn’t as Smart as It Thinks,” the digital age can be seen as the age of perpetual distraction. Not only can our brains not keep up with the flow of information, but our cognitive functions also undergo a massive amount of stress even trying. He points out that “interruptions take up 2.1 hours of the average knowledge worker’s day.” This startling statistic only highlights how large the information overload has become, a trend that is devastating for memory. More distractions equate to less ability to focus and less time comprehend what we read, both of which are critical foundations of memory. Without time and focus, memory atrophies, weighing down the rest of our mental faculties.

The Culprit

The war against memory rages at the transition from short- to long-term memory. Instead of encouraging the building of a long-term foundation, today’s technology provides an artificial database that appears to supplant the need for long-term memory. When presented with the choice between using technology or strenuously cultivating long-term memory, our brains naturally choose the path of least resistance and accept the artificial foundation. However, like most mental functions, the ability to transfer data from short-to long-term storage requires practice to maintain. Without practice, this conduit collapses, causing long-term memory to devolve to the point where it is reliant on external aid, weakening our synthesizing, problem solving, and creative capabilities. As a result, if the artificial foundation is removed, any mental functions built around it crumble.

However, some scholars contend that what we are witnessing is not the devolution of memory, but just the benign externalization of the personal mental process and a shift toward collective memory. In his article “The Web Means the End of Forgetting,” Jeffery Rosen, a law professor at George Washington University, contends that the Internet and social networking sites such as Twitter and Facebook create a database of collective memory. Every time a person updates his status or tweets, this information is stored and can be called up by the general public. Search engines such as Google allow people to peruse almost any subject they desire. Humanity’s collective memory seems almost endless. The boom in technology allows for amazing databases, providing a stunning amount of easily accessible information, which benefits society’s ability to search for and process information.

However, this technology can be destructive on the personal level, especially in regard to memory. In their article “Toolforthoughts: Reexamining Thinking in the Digital Age,” David Shaffer and Katherine Clinton present a scientific
examination of digital media and its influence on the mind. They contend that person and object now act as a single unit in the process we call thought. Instead of an object being a separate entity in an interaction, the authors explain that the object is merely an extension of our mental will, much like our hands and feet (285). Furthermore, they argue that this type of interaction is a direct result of the digital age and is a relatively new phenomenon. With the advent of computers and other electronic constructions, objects take on an ever-increasing role by not only influencing how we think but also by shaping our subsequent actions. As a result, Shaffer and Clinton contend, we should not treat these objects as separate from our cognitive functions in our interactions with them.

For instance, think of using an iPad (or some other piece of technology). When we interact, it does not passively obey our every command. Instead, the device asks questions, adapts, and trains us how to use it more efficiently. In shaping how we interact with it, the device fundamentally changes how we think. Our brains adapt to the way the technology uses information and adjusts accordingly in order to achieve greater efficiency. Eventually, by working and playing with the device enough, we understand how it operates. When we finally move this information to long-term memory, using it becomes second nature. In essence, the technological tool becomes an integrated extension of our will—a part of us.

Hughes, “The War against Memory”

No Quick Fix

Some scholars argue that technology and new media can fix what they have wrought, and several attempts have been made to fill the growing void of personal memory. All of these attempts, in some form or another, rely on the same basic principle: completely surrender our memory functions to technology, completing the externalization process.

One proposal to our memory crisis is “life-logging.” Gordon Bell, a computer scientist for Microsoft, has proposed a process of recording everything one does with a camera, scanning all of one’s possessions, and then amassing everything into a large personal database (Foer 157). Now, rather than having to remember what he said in a particular email, for example, all he has to do is remember what day he composed the email and some general keywords, vastly reducing his mental workload. In essence, his technological approach is the ultimate anti-Platonic response to our declining memories.

Although Foer’s invention does improve his memory, if you consider mind and machine to be one, the ramifications for his problem solving and creative capabilities are most likely dangerous. Without effort, personal memory atrophies. The same is true for the rest of the brain. By allowing a machine to do all of the mental heavy lifting, our brains become lazy and, as a result, creativity and other mental processes are stunted. Without the firm foundation provided by memory, everything else collapses.

A less extreme approach is explained by New York Times writer Clive Thompson in his article “The Pen That Never Forgets.” In his piece he illuminates one of the ways technology and new media are attempting to repair some of the dam-
The smartpen, a product made by Livescribe, is a pen that records lectures, or whatever else you want it to, while keeping track of your written notes in relation to the lecture. The technology is designed to combine the best of the audio and written worlds. If used properly, the pen allows students to write down only key words or phrases at critical points in the lecture without fear of losing any of the material. The pen, in essence, remembers everything in the lecture. It seems that all we have to do is sit back and enjoy the show, with little to no effort on our parts, a trap that is easy to fall into.

The smartpen has the potential to exacerbate mental laziness and accelerate the decline of memory. Rather than focusing on what we are listening to, our minds would use it as a crutch. In fact, the smartpen and similar technologies are not just crutches; they are replacements. Whereas a crutch requires some sort of mental faculty to operate, a replacement places only an iota of stress on our cognitive functions. These technologies are not designed to aid memory, but to externalize it. With externalization, our real memories deteriorate and become solely reliant on a mechanical “photographic memory.” Eventually, if the trend continues, humans will not have to remember anything. This state, which lacks the basic foundation memory provides, will most likely have a significant negative impact on other cognitive functions, such as creativity.

However, a more fundamental change is occurring in our minds. In his article “Is Google Making Us Stoopid?” Nicholas Carr opines that new media and computers are fundamentally altering the way we think. Carr, a writer who focuses on the effects of technology, explains that before the advent of computers he was able to read long and complicated pieces of literature without losing interest or being distracted. Not anymore. Now, he claims that after two or three pages, his mind begins to wander, searching for something more entertaining to do than reading a book. He is not alone. Many of his friends who are also in the top echelons of the writing and literary world are feeling the same mental shift toward something similar to ADD. The Internet, Carr contends, is at fault for this change in thinking. With the ability to surf in the space of a couple hours across more information than anybody could comprehend in a lifetime, our brains have adapted to the flux of information by becoming more adept at skimming while simultaneously losing the ability to sustain focus.

Being able to sustain focus is critical for memory to survive. Memory requires time and patience to work, something which the Internet and skimming do not facilitate. Part of the reason scholars in classical Rome and Greece had such excellent memories was the mind-numbing amount of time they would spend poring over and analyzing a single book or scroll. Today, our brains are not equipped to remember a lot of material we have only glanced over. Instead of trying to remember the flood of information we expose them to, our brains simply don’t bother, causing a decrease in our overall ability to remember.

Sustained focus is also a fundamental ingredient of creativity. As Malcolm Gladwell outlines in his book Outliers, the greatest geniuses of the 20th century spent years focusing on the single subject they would eventually reinvent. From the Beatles to Bill Gates, Gladwell states that nearly all creative minds spend at least 10,000 hours of sus-

The Persistence of Memory (1931) by Salvador Dalí.
tained focus in their given field before they attain mastery, which is the necessary foundation for a creative breakthrough (41).

Creativity, as this massive amount of time suggests, is not a spur of the moment phenomenon. Creativity is the end result of a process, one that begins with long-term memory and requires cognitive functions such as synthesizing information and problem solving to complete. As Samuel Coleridge stated in his *Biographia Literaria*, “[Imagination], first put in action by the will and understanding… reveals itself in the balance or reconcilement of opposite or discordant qualities: of sameness, with difference; of the general with the concrete; the idea with the image; the individual with the representative; the sense of novelty and freshness with old and familiar objects…” (94). In other words, imagination—much the same as creativity—is solidly built on a foundation of hard work that drills information into long-term memory until we fully understand it. From the base provided by understanding, we synthesize the information, creating an amalgamation of different elements. This amalgamation, in turn, allows us to see connections that previously eluded us and use the information to discover unique solutions to problems. This is creativity—the ability to reconcile “discordant qualities” and create the spark of a new idea. Without the firm foundation provided by long-term memory, it cannot exist.

The Onslaught Against Memory

Today, a broad culture war is being waged in the educational system and elsewhere against the last remnants of memory. Simultaneously, a fierce debate in the scholarly world is raging over the influence modern media has on our ability to learn. Both the war and the debate have the potential to profoundly influence the educational system, the place we all discover how to treat knowledge and information as we learn how to think about almost every subject. Unfortunately, as scholars James Gee and Jaron Lanier indirectly show, both sides of this debate seem determined to shun memory.

Gee and Lainer both rest their arguments on the value modern media places on the very esoteric term simply labeled “creativity.” Gee, a professor of literacy studies at Arizona State University, chronicles his experience with “good video games.” In his article “Good Video Games and Good Learning,” Gee seeks to illuminate the many cognitive areas in which video games are actually superior to typical education. Throughout the article, he illustrates how many video games are better adapted to teaching humans than most school curricula. Unlike a textbook, which presents facts mutely, a video game interacts with us, makes us explore and take risks, requires us to think through many different scenarios, and allows creativity. This, he contends, is far closer to life than learning from a textbook, since real world scenarios often require risk-taking and creativity to solve difficult problems. Gee argues that schools should at least recognize what these games have to offer, if not embrace them entirely.

However, Gee fails to note that although these video games may be challenging, they provide little motivation for developing crucial memory skills. For example, he has an entire section dedicated to extolling the virtues of information that is “Just-In-Time” or “On Demand” (think of little popup screens that will warn you right before you do something terribly wrong). These features, which may come as a relief to overburdened video game players, only cater to our mind’s desire to do nothing strenuous. Gee’s main contention, that good video games inspire creativity and risk taking, assumes mental weakness rather than strength and overlooks the subsequent cost in our ability to remember. Also, but less obviously, creativity and risk taking require a strong memory. Memory serves as a foundation, the fundamental structure that everything else relies and is built upon. However, as previously mentioned, this mental foundation does not just magically appear on its own, ready for creativity
and other mental faculties to build on it. Memory, especially long-term memory, requires strenuous effort and time to strengthen and solidify. Video games supplant this process. Rather than build the foundation on its own, the brain uses the artificial base provided by the game (in the form of “Just-In-Time” and “On Demand” information) as a crutch. Once the artificial foundation leaves, the entire structure collapses. Creativity and risk-taking cannot stand alone, a fact that many schools and scholars forget in the modern era.

Rather than viewing digital media as a potential source of the creative power desperately needed in classrooms, Lanier’s *Does the Digital Classroom Enfeeble the Mind?* contends that the digital age is staunching the flow of creativity. Lanier, a computer scientist and author, explains that most schools are now teaching to the test, and digital sources are only worsening the trend by turning students into sources of statistics. He further contends that all the time spent in the classroom is now used to memorize numerous facts, rather than learning how to use and manipulate this same information. As a result, students are no longer learning how to solve problems and think critically, a trend that carries implications far beyond the classroom.

Lanier’s argument, although right about the dangers of teaching to the test, fails to diagnose the larger and more important trend. As Joshua Foer, a freelance journalist, notes in his book *Moonwalking with Einstein*, “Schools have deemphasized raw knowledge (most of which gets forgotten anyway), and instead stressed their role in fostering reasoning ability, creativity, and independent thinking” (194). As Foer proceeds to illustrate, this shift away from raw knowledge is actually a terrible mistake: “If one of the goals of education is to create inquisitive, knowledgeable people, then you need to give students the most basic signposts that can guide them through a life of learning” (194). Learning these basic signposts requires memorization. However, schools are clearly failing to provide this basic foundation, as evidenced by troubling statistics such as the fact that two-thirds of American seventeen-year-olds do not know when the Civil War took place (Foer 194).

In other words, we are not turning students into a horde of number crunching, memorization zombies, as Lanier fears. Just the opposite is true: little number crunching or memorization occurs in schools out of a pervasive fear of somehow damaging the creative genius inside us all. Instead of memorizing the Periodic Table for exams, teachers often hand out cheat-sheets so students can focus on more important areas such as how the different elements react with each other. This assumption of mental weakness over strength breeds mental weakness, a trend that is getting worse, not better. As a result of not emphasizing memorization to learn the basics of each subject, students are forced to cram what seems to be a horde of meaningless facts and statistics into their seldom used memory faculties when standardized test time rolls around. This cycle of deemphasizing memory followed by cramming not only damages the reputation of the art of memory, but also has a negative influence on students’ cognitive abilities and the test scores themselves. By demeaning memory as merely teaching to the test, educators are only damaging their students’ test scores and, more importantly, the ability of their students to succeed in life.

A Glimmer of Hope

In *Moonwalking with Einstein*, Joshua Foer chronicles his experiences during his quest to become the United States memory champion. As he delves into the world of memory, he meets people who can memorize a deck of cards in less than two minutes, recall thousands of random digits, and recite entire books. As remarkable as these stunning and almost superhuman feats are, the most amazing part is Foer’s contention that these mental athletes are almost entirely normal (aside from being a bit on the geekish side). Few of these athletes are genii, and almost none of them had
excellent memories before they start training. So what separates them from the rest of us? Not much. As Foer proves by winning the US memory championship in his first competition, the only difference between us and them is a recognition of how our brains use memory and a lot of hard work.

Despite his cheery outlook that “anybody can do it,” Foer’s description of the history surrounding the art of memory is extremely bleak. Before Gutenberg and the invention of print, writing was used as an aid to memory, not a crutch or replacement. Scholars were forced to remember most of what they read, since books were extremely rare. This would allow them to draw connections between books that would, in turn, spark creativity. Rather than digging through a library to find an important work or study, they could just remember it. Even the most unremarkable scholars of that era were well versed in the art of memory and could give even the best mental athletes of today a run for their money. This comparison emphasizes just how far our memories have fallen and how much we rely on technology. It’s not that our brains, which have remained more or less the same for the past 10,000 years, are now incapable of such feats. We just don’t try anymore and, as a result, rely solely on external resources to compensate for our laziness.

Can memory regain what it has lost? Doubtful. Although there is no reason why some extraordinary and committed people can’t reproduce the same mental feats that were common in the classical era, technology is just too tempting. There is no longer a need for scholars to have entire libraries memorized when computers can do it far more easily and economically. However, even if the levels of memory in the classical era are unnecessary and too time consuming to develop in today’s high tech world, we should not completely surrender the art of memory to a bunch of number crunching machines. If we continue to follow this trend of externalization, our memories and minds will atrophy, moving us toward an age of total dependence on machines and creative stagnation. Memory is too important to completely externalize, a fact we shouldn’t forget.

Works Cited


