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Painting the Inner Landscape of the Mind: Exploring the Mental Maps of Memory and Imagination Through Science and Literature

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Exploring the Mental Maps of Memory and Imagination Through Science and Literature

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In the early spring of 1985, Clive Wearing, an accomplished British musician and musicologist, was at the height of his career when he contracted a herpes encephalitis virus. Within days, the virus had attacked Wearing's central nervous system, leaving him with one of the most severe cases of amnesia ever recorded. Wearing could no longer store memories; he could only remember his past in thirty-second increments. Encouraged by his doctors and his wife Deborah, Wearing kept a diary for years by his bed. Its contents illuminate his experience of constantly reawakening into a new consciousness. An entry from January 13, 1990 reads: "9:06 am Now I am awake (1st Time), 9:34 am Now I am awake (1st Time), 9:40 am Now I am AWAKE (1st Time), 9:54 am I am awake with cup of coffee." This journal entry illustrates the extent to which Wearing fully lost his sense of time, place, and self in his loss of memory.

Astonishingly, Wearing was able to hold on to two things despite being unable to store any memories. He never lost the love for his wife, Deborah, and he also retained his ability to sing and conduct in certain settings. Wearing was always calling for Deborah, wanting her to be by his side at all times. If she left the room for a split second, he would begin calling for her if his memory restarted. Wearing's preserved musical abilities emerged when Deborah brought Wearing to church one day, where he began to sing a hymn. Even more astounding, when she brought him to see his old choral group, he was able to conduct an old piece of music exactly as he had before the virus damaged his nervous system.

Love and music. Both are entrenched in sensory stimuli, which call to mind Marcel Proust's treatises on memory. Memory, for Proust (one of the founders of our contemporary knowledge on memory), was of greatest interest in its episodic, or autobiographical, form, rather than in its semantic form. Semantic memory is long-term memory that processes ideas and concepts that aren't drawn from personal experience, such as names of colors and capitals of countries. The term was born from collaboration between Endel Tulving at the University of Toronto and Wayne Donaldson at the University of New Brunswick in 1972. In contrast, episodic or autobiographical memory is specific to you—even your earliest recollections have an auto or self-quality to them. Autobiographical memory is your personal past, your lived experience, a recollection of biographical experience and specific events in time in serial form.

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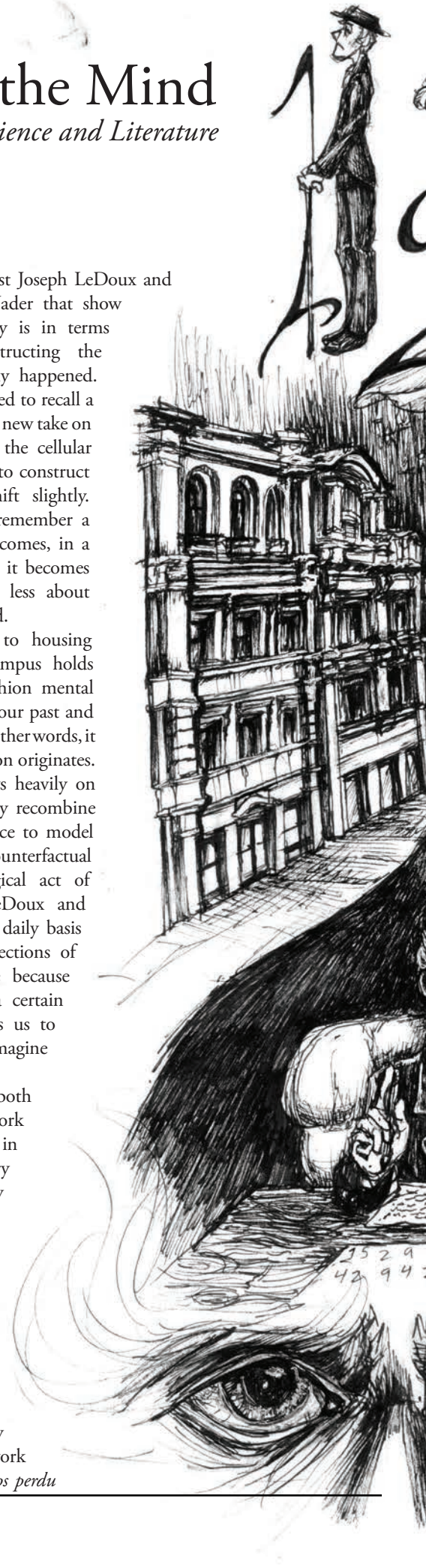
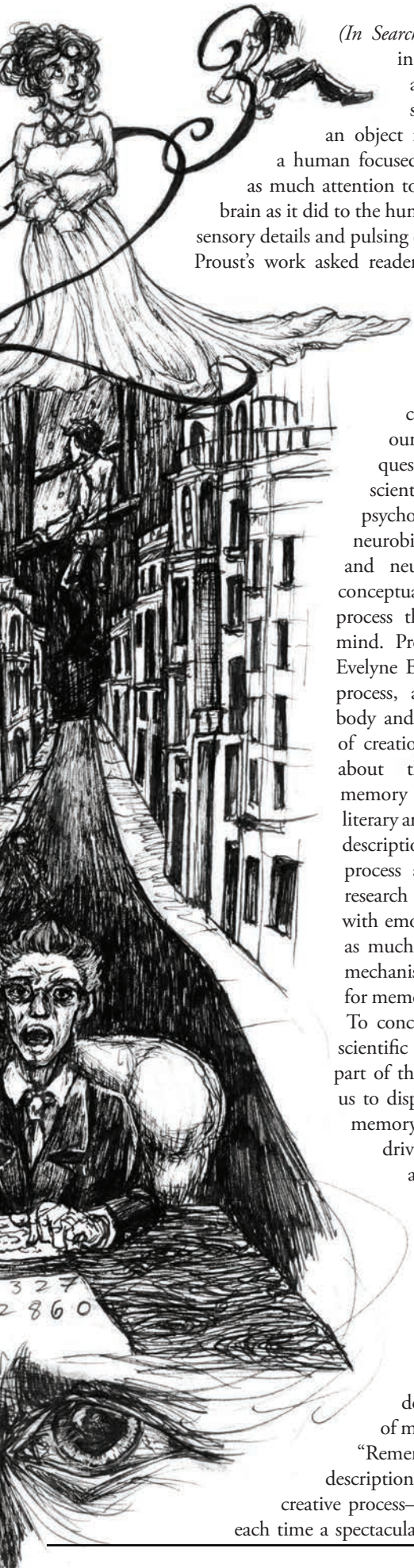
Semantic and episodic memory, on a neural level, are physical traces largely built of proteins. A single memory is an active net of cellular constructions that connect one brain cell to another. All memory reconstructions take place in the hippocampus. Dr. Julia Shaw, a psychology researcher at the University College London, aptly describes these pathways in a visual metaphor: "The brain as a galaxy and the memory network is made up of stars that are constantly moving." The constant motion described by Shaw suggests memory is malleable. This is supported by the studies of neuroscientist Joseph LeDoux and psychologist Karim Nader that show how unstable memory is in terms of accurately reconstructing the truth, or what actually happened. Every time you are asked to recall a memory, you develop a new take on that memory because the cellular constructions you use to construct that memory will shift slightly. Thus each time you remember a specific memory, it becomes, in a sense, a new memory; it becomes more about you and less about what actually happened.

In addition to housing memory, the hippocampus holds the site where we fashion mental maps to both recreate our past and envision our future. In other words, it is where our imagination originates. The imagination draws heavily on memory; we constantly recombine bits of actual experience to model hypotheticals and counterfactual scenarios. The biological act of remembering that LeDoux and Nader deal with on a daily basis shows that our recollections of the past are adaptive because it provides us with a certain flexibility that permits us to alter our memory to imagine the future.

While both LeDoux and Nader's work have been formative in the field of memory studies, the ways they conceive of memory and approach it scientifically arose out of a paradigm shift in memory studies in the early twentieth century. Marcel Proust provoked this paradigm shift, largely through his seminal work *A la Recherche du temps perdu*





(In Search of Lost Time), published in seven parts between 1913 and 1927. Proust sought to situate memory as not just an object for scientific study, but as a human focused subject that required just as much attention to the inner workings of the brain as it did to the human experience, replete with sensory details and pulsing emotions.

Proust's work asked readers to consider what might be lacking in a solely scientific approach to memory. How does integrating the humanities—in this case, literature—enhance our study of memory? These questions prompted influential scientists such as experimental psychologist Marigold Linton, neurobiologist Antonio Damasio, and neurologist Oliver Sacks to conceptualize memory as a lively process that is not isolated in the mind. Professor of French Studies, Evelyne Ender, calls this a "*dynamic* process, a process that enlists the body and the mind in a unique act of creation." Ender thinks critically about the interdisciplinarity of memory research and its reliance on literary and scientific knowledge. Her descriptions of memory as a dynamic process asks the field of memory research to always concern itself with emotion, narrative, and image, as much as it's concerned with the mechanistic and biochemical basis for memory and memory formation.

To conceive of memory as both a scientific process and an essential part of the human experience allows us to dispel common metaphors for memory as file cabinets or disc drives and establish memory as something akin to a painting or sculpture, a freer form that embraces the voluntary and involuntary choices of the individual. Ender, while a literary scholar and not a psychologist, provides structure and depth to Proust's metaphor of memory as an artistic process. "Remembrance in [Proust's] description," she writes, "is an active, creative process—each time a performance, each time a spectacular and unique mental event that affects a miraculous match between sensations, emotions, and images." Ender asserts that memories do not give us direct, unfettered access to lived past experience. Instead, we use the emotional and sensory details that dominate our memories to imaginatively construct past experience.

Ender, Shaw, LeDoux, and Nader all provide crucial perspectives to consider when formulating an understanding of how memory functions. And while they all tangentially touch on the relationship between memory and imagination, it is useful to turn to the case of a famous mnemonist to delve into questions that arise when memory mixes with imagination. What happens when you are unable to distinguish between imagination and memory? When you are unable to separate the lived past from the evolving present and the imagined future? Does an endless memory coincide, then, with an endless imagination? This was the case with Solomon Sherevsky, or S., the man with an impossible memory. Documented by the well-known neuropsychologist Alexander Luria in his 1968 work *The Mind of Mnemonist*, S. is labeled as a man with memory that had "no distinct limits". However, on further investigation into S.'s journals, Reed Johnson of *The New Yorker* finds that S. did not have as perfect a memory as Luria claimed. While S.'s autobiographical memory did indeed flourish, it was often fully occupied by the literal details of experience, such as place, taste, and smell, to the point where he could not grasp abstract concepts.

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"The strength and durability of his memories seemed to be tied up in his ability to create elaborate multisensory mental representations and insert them in imagined story scenes or places; the more vivid this imagery and story, the more deeply rooted it would become in his memory," writes Reed, describing S.'s strong sense of synesthesia, where one sense strongly recalls other senses. S. would avoid doing activities such as reading the newspaper at breakfast because the taste of the printed words would mix and clash with the taste of his meal. So, while S. may have had a particularly strong memory, he also inadvertently absorbed sensory details without the actual sensory impressions hitting his body. As Luria notices, "One would be hard put to say which was more real for him: the world of imagination in which he lived, or the world of reality in which he was but a temporary guest." S., then, demonstrates that it is possible to lose some grip on reality because of his inability to distinguish imagination from reality.

S.'s experience, brought to light by Luria and again by Johnson, begs the question: If Luria had conceived of S. beyond a scientific subject with an endless memory, would he have enriched the scientific study of S.'s mind and memory? If we take into account Proust, and the work of scientists that followed him, the answer seems to be yes. As scientists whose work is concerned with the mind and memory formation continue to progress in their research, it is imperative that they continue to follow in the footsteps of those like Sacks, Linton, LeDoux, and Nader, who find worth in conceiving of memory in both scientific and literary fashions. If we are to better understand the intricacies involved in memory and the imagination, we must remember that memory enables consciousness, which is just as much a study of the mind as it is a question of what it means to be human.●

If you'd like to learn more about memory and imagination, see Evelyne Ender's book *Architexts of Memory: Literature, Science, and Autobiography*, published in 2005.