ACADEMIC AMNESIA

by
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Much of my work at Harvard involves consulting with students about their educational experiences – their writer's blocks, their difficulties with problem solving, and their doubts and convictions about The Meaning of Life. Along with other concerns, students often tell me they would like to increase their ability to retain material from lectures and readings. They'd like to improve their memory skills. Often, these students are afraid there's something “wrong” with their memory. They suspect they may have some sort of neurological disorder; or they confess with great shame that they have a “bad” memory.

Despite the fact that students often attribute memory failure to neurological infirmity or questionable character, I don't think these afflictions actually account for most students' difficulties. Lack of effort is an equally unsatisfactory explanation: I have no doubt that these frustrated students are, in good faith, trying to remember what they study. How is it, then, that bright and hard-working women and men with healthy brains and good intentions have such terrible trouble remembering their course material?

An answer to this question can be glimpsed in the complaint of one student who told me that although he diligently completes all his course work, he is suddenly struck with amnesia whenever he opens a blue book. This statement isn't as fanciful as it sounds. The word amnesia (from the Greek: a-, "not," and mnasthai, "remember") means simply an absence of memory, a not-remembering, which quite accurately describes what happens to this student when he is tested.

I was first introduced to the study of the human memory by one of my graduate school professors, Dr. Herbert Crovitz. Everything about the human memory fascinated Crovitz. I think he felt that our humanness itself is located in our capacity to remember and in the memories we carry within us. He wanted to understand how we remember, what we remember, and why we remember. Reasonably enough, he also wondered how, what, and why we forget. This was the source of Crovitz's interest in clinical memory loss and his occasional consultations with victims of traumatic amnesia. These consultations gave him a chance to study “forgetting” in its most dramatic form and to join the amnesia victims in exploring ways to recover from, or at least compensate for, their memory dysfunction.

I remember sitting in on a conversation between Crovitz and a young woman of about seventeen named Rickie. Rickie had been out riding her bicycle one day when the side-view mirror of a passing truck bashed her in the head and threw her into the road. She suffered multiple and severe injuries. By the time we met her, many months after the accident, she had already made a remarkable recovery – except that the head injuries she sustained had left her with retrograde amnesia. She had lost all recollection of the year of her life immediately preceding the accident.

Rickie told us that for weeks after the accident her friends and family had tried to prompt her: "Don't you remember...?" "Let me tell you about the time we....” They all hoped this might jog her memory. But for Rickie, the things they described had never happened. She almost thought they'd been duped by some impostor.
some Rickie-double who had done all the things they described and now, obviously, was the one with all the memories. When Rickie realized what she had actually lost, she experienced an utterly lonely and unremitting grief. Most painful of all was learning that during her "nonexistent" year she had met a boy, fallen in love, and had her first sexual experiences. Rickie's amnesia had some practical implications, of course, both for Rickie and for the distraught young man who knew her so intimately but whom, as far as she could recall, she had never met. Yet Rickie's loss of memory had more profound implications as well: in losing all recollection of her experiences of that year, she felt as though she had lost some sense of who she was.

She was right. In many ways what we experience has a lot to do with who we become. We are changed by our experiences. We are changed by what we see and feel, by our mistakes and successes, and by our relationships with other people. We learn from and are transformed by our experience. That is how we grow. And we identify who we are partly in terms of what we have experienced in our lives.

Before the accident, Rickie had fallen in love and developed an intimate relationship with another person — arguably one of the more profoundly transformative of human experiences. After the accident, she had lost all memory of that period of her life. As she said, it was as though it had never happened. Was Rickie, then, unchanged after the accident? Was she no longer who she had become through her recent experiences but rather who she had been before?

Of course not, precisely because we are transformed by our experiences and not just "added on to." The laws of algebra don't apply very well to human learning or the growth and development of a living thing. If a tree loses some of its branches in a storm, that doesn't mean it turns back into a sapling. What Rickie felt was a loss of a sense of connectedness and relationship between who she felt herself to be and what she remembered of her experiences in life. In losing her memory, she lost a sense of knowing where her Self was located in time and space and in relation to other people; she lost her sense of self-in-context.

Crovitz and Rickie did not work together for very long. Although time and support may have helped Rickie reestablish her sense of belonging in the world, I doubt she ever regained her lost memories. They may have been irrecoverable, destroyed along with the areas of her brain that died in the accident. But just as it is simplistic to think of amnesia victims as somehow returning to a "before" version of themselves, it is also simplistic to think of memories as being contained in discrete locations in our brains, filed away like mementos in attic boxes. The brain is too complex an organ, the memory too complex a function, and amnesia comes in too many different forms.

Amnesia can be caused not only by a head injury but by neurological disease, by the effects of a drug (like alcohol), or by emotional shock. Victims may lose their recollection of a moment, a year, or a whole lifetime. Memory loss may be temporary or permanent. It may not even be memories themselves that are lost (memory content), but rather the ability to remember — an interesting and important distinction. Thus, superficially similar symptoms of amnesia may result from completely different neurological circumstances.

Because both the causes and effects of memory dysfunction are so varied, the most sensible way to treat amnesia victims is on a case-by-case basis. This is often the task of the clinician or neurologist. However, most cognitive-experimental psychologists, like Crovitz, are primarily interested in research. Their work is aimed at understanding on a more general and generalizable level how the memory functions: how we remember and how we forget.

Ironically, amnesia victims make terrible subjects for cognitive-experimental research on memory dysfunction. One case of amnesia is so different from the next that it's impossible to design properly controlled and "confound-free" experiments. I once heard Crovitz grumble playfully that he would be able to make some real progress in his research if only he could line up a batch of normal undergraduates and give them all identical bonks on the head. That way he could see what they all forgot and experiment systematically with techniques for helping them remember again.

Although the head-bonking avenue of inquiry was closed to him, Crovitz managed to find an alternative path. He used a nonviolent
way to induce a sort of amnesia in normal subjects – a method called the Brown-Peterson paradigm. I spent several interesting sessions as a volunteer experimental subject for Crovitz, and I was amazed that his simple amnesia induction could reliably make me forget despite all my efforts to the contrary.

The exercise began with the presentation of "target material," which consisted of three ordinary words. My test was to remember them. (Just three little words? No problem, I thought.) First Crovitz read the target words and then immediately told me a three-digit number. In accordance with instructions he'd given me beforehand, I quickly repeated the three-digit number aloud, silently subtracted seven from it, said aloud the number I got, silently subtracted seven from that number, and kept on that way as fast as I could, subtracting sevens and saying the answers aloud until he told me to stop. While I was struggling with my mental arithmetic, Crovitz consulted a noisy stopwatch. Finally he asked me what my three words had been.

Sure enough, one of the three words had completely slipped my mind.

We repeated the whole exercise a number of times, first inducing and then trying to cure my "amnesia." In the process I found myself experiencing an unexpected range of perceptions and emotions. For example, on one occasion I drew such a blank about one of the target words that I didn't even recognize it when Crovitz told me what it had been. More often, I suffered not the embarrassment of forgetting but the frustration of almost remembering. The forgotten word was on the tip of my tongue; I knew it was a thing (or a color or a verb), but I couldn't remember what thing (or color or verb); I was absolutely positive it began with a c, damn it. And more than once I was surprised at the depths of anger and shame I felt at my own failure of memory.

Crovitz was sympathetic. I might even go so far as to say he was delighted. After all, my memory loss was his opportunity to experiment with recovery methods. He helped me try a variety of things to regain the forgotten words: free-associating, blind guessing, visualizing, and the sort of retracing-my-steps I do when I've forgotten where the car keys are. I even tried not trying to remember. Always, whether I actively hunted down the forgotten word or it just "came back to me," the recovery of a lost word was accompanied by a sudden sense of joy and welcome. Remembering what I'd forgotten changed a vague and anxious sense of incompleteness into a sense of reconnectedness and wholeness.

What astounded me most about the exercise, though, was not what it felt like but how devastatingly effective it was. I forgot at least one of the three target words about every other time we tried the exercise – a rate of forgetting that strikes me as appalling. Forgetting and remembering are everyday experiences, of course. Like everyone else I inadvertently forget and remember little things all day long, and I am familiar with the fleeting feelings of annoyance or relief that accompany these moments. But during Crovitz's amnesia induction, I was honestly trying to remember the target words. The exercise was deliberately designed to make me forget, and it succeeded with maddening consistency. I had to wonder what it was about the exercise that so easily sabotaged my memory. Exactly what made it work?

I think I can boil down Crovitz's amnesia induction into a limited number of "active ingredients." In fact, these ingredients constitute a sort of recipe for amnesia.

RECIPE FOR AMNESIA

Ingredient #1: Present the target material out of context. (The target words that Crovitz gave me to remember were always random words. They never formed a sentence, as in "birds, fly, high," and they were never closely related to one another, as in "umbrella, rain, wet.") Material out of context is much harder to remember than material in context.

Ingredient #2: Don't allow the subject to do anything with the material. (In Crovitz's exercise I experienced the target material only in a passive way, by hearing the words spoken to me. I wasn't given the opportunity for any sort of active engagement with, or manipulation of, the material, such as inventing an acronym using the first letters of the target words.) A passive rather than active relationship with the material facilitates amnesia.
Ingredient #3: Present the target material only once and through only one medium. (Crovitz told me the target words just once, and I didn't get much chance to repeat them to myself. Also, I merely heard the words: I didn't see/read them as well, or speak them, or write them down.) Restricting contact with the material facilitates amnesia.

Ingredient #4: Immediately after presenting the target material, involve the subject in a very different activity. (My energy and attention were distracted from the target words by the arithmetic task, and this interfered with any effort I made to “grasp” or “store” the material in my memory.) The sooner the subject turns away from the matter at hand and the more involving the distraction, the greater the chance of amnesia.

Equipped with this recipe, it's possible to whip up a whole assortment of different amnesia inductions, all as powerfully effective as the one Crovitz used.

My graduate school pondering on the subject of amnesia ended as my interests centered in a different field of study. I had neither the opportunity nor the reason to think much more about Crovitz's exercise until I began my work at Harvard. As I watched my students struggling valiantly but fruitlessly to remember their course material, I got a close look at how they went about their studying. Before long, I realized that as often as not they weren't simply failing to remember the material – they were subjecting themselves daily to flawlessly designed, efficiently executed, and highly successful amnesia inductions.

For example, when I asked one student, Michael, how he studied his French vocabulary, he said that he read down the assigned list of French-English word pairs, trying to remember each one. When he got to the bottom of the list he went back and started again at the top. He kept this up diligently until he either memorized the words or, not infrequently, fell asleep. Michael's method, of course, included three of the four basic ingredients of an amnesia induction. First, he studied the material out of context (isolated words). Second, he studied passively rather than actively, unproductively going through the motions (which is probably why he found himself getting so bored). Third, he studied the material in only one medium (reading to himself). If we count falling asleep as a distraction, which I suppose it is, then Michael's study method achieved all four of the criteria for a successful amnesia induction.

Another student, Rachel, has a lot of class reading to do. She explained to me that her usual approach is very organized. She gathers together her immediate assignments from each of her four courses and goes through them with great determination. She picks up a book, starts reading at the beginning of the assignment, reads the assigned number of pages, puts the book in her "done" pile, and then goes on to the next assignment. The study method of this conscientious student also includes all four of the ingredients for inducing amnesia: she reads "cold" with no sense of the context in which an assignment exists; she reads passively, word by word; she reads each assignment only once; and after finishing each assignment, she jumps immediately into the next one.

Once students like Michael and Rachel realize they have fallen victim to their own academic amnesia inductions, they can be very resourceful at designing and implementing amnesia-thwarting study strategies. Michael designed the following plan for mastering his French:

Step One. He reads each French-English word pair aloud, then looks up from the list and writes the word pair on an index card, with French on one side and English on the other. Occasionally he needs to remind himself not to copy passively but to read the word pair aloud until he feels able to turn away from the list and write the words down from memory.

Step Two. He lays all the index cards out in front of him with the French side up and tries to invent a story in French using all the words. The story needn't be plausible; it just needs to be a story. He checks the back of the card if he doesn't remember what a word means.

Step Three. He shuffles the cards into a single pile and goes through them one by one, reading the word on the front of each card and testing himself against the translation on the back.

This three-step approach to the material is contextual, active, and varied, and keeps Michael from nodding off at his desk. He finds that it is not only more successful but also significantly less time-consuming than his old method. He even finds it
entertaining: he comes up with some vivid and hilarious stories in his efforts to connect all his vocabulary words into a single theme.

Rachel has also designed amnesia-thwarting strategies for herself. For example, she now does her assignments course by course, with short breaks in between. Before beginning any assignment, she first skims it and asks herself, What is this about and why was it assigned? She looks to the syllabus and her notes from the last lecture for cues as to what purpose the assignment serves in the context of the course and how the subject of the assignment relates to the course content. She has also invited her roommate to be her "study buddy." They silently go about studying their respective assignments, and every ten minutes they stop and tell each other all about what they've just read. With these two strategies alone, Rachel finds that her comprehension as well as her retention of course material has improved dramatically.

Almost by definition, learning involves some transformation of the self. We encounter an idea, a book, a teacher, and we are never quite the same again. We have learned and grown. If we haven't changed in some way, even a seemingly insignificant way, we can't say we have truly learned. Even committing something to memory, which many people regard as the lowliest form of learning, involves establishing a meaningful link between one's self and the something (that idea, that fact, that word). To remember is to connect, to incorporate something into one's self and thus to become a new and different being. Conversely, to forget, or to fail to remember, is to feel unconnected, to feel that one's self is untouched and thus unchanged. Rickie discovered this when her amnesia left her feeling alienated, "cut loose" from her own past and experience. Michael and Rachel discovered this twice: first when their old study methods failed, and again when their new ones succeeded.*

All forgetting isn't the same, of course. Trauma to the brain and study problems in college are certainly more different than alike. Still, it's often the case that getting yourself to remember something is a lot like keeping yourself from forgetting it. So when my students tell me there's "something wrong" with their memory, it sometimes helps to remind them that it's probably only amnesia.

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* It sometimes happens that the presence of a dyslexia first makes itself known in a student's complaints about memory functioning. Dyslexia is a term used fairly loosely to refer to neurologically based difficulties in information processing of one sort or another. Interestingly enough, dyslexic students often benefit as much as, if not more than, non-dyslexic students from the sorts of "amnesia thwarting" efforts described here. The critical focus in both cases is on designing and using individualized study strategies aimed at making meaningful links between one's self and the material at hand.