Chapter 1 : Fragmented Memory I - ALEX LLOVET photography

Fragmentation of memory is a type of memory disruption pertaining to the flaws or irregularities in sequences of memories, "coherence, and content" in the narrative or story of the event. During a traumatic experience, memories can be encoded irregularly which creates imperfections in the memory.

What do you do? It is unglamorous, but what you will learn is the way that people use the system, and also all of the problems in taking a small code change and checking it works and getting it into production. It is not just about understanding the source code, but understanding exactly what the current process with all its idiosyncracies. Once you have more of this context in your head you can then start to make a plan for how to improve it. You will find that the steps are pretty standard. Set up continuous integration. The spectrum will be from having none, all the way through to having a working pipeline that is just not running everything. Start with every commit to master then go on to getting pull request builds working. Continuous integration should build the artifact that is required to run the product. You might also provide a deploy step as well. Get the current tests running or get a framework ready to run. First get them working then add them as a stage in continuous integration. If there are no tests set up a test framework with a single dummy test and get that running to put a mark down of how to write tests. Start running code quality. Add this to continuous integration on every run. Initially you will find you have to slacken off the checking and get it passing under less strict conditions as things like code formatting are less important than actual errors. Gradually over time you can then tighten up the rules. In order to achieve this you may end up with multiple docker containers with each data dependency and a bunch of processes running. Use the delete key liberally, less code is easier to manage. To get to this stage you are probably looking at 1 to 3 months work depending on how bad and how complex it is. Each step allows you to get more sure about the process and the order will depend on what is easiest to deliver. Then you also have to actually make code changes, this is the whole point of this work. When adding a feature or fixing a bug make sure you add tests to that stage you did earlier, this may not be easy, so you have to have a few layers of testing to accomplish this. If you can run your system locally you can manually perform the steps to check it works. This is obviously slow an inefficient, but you are also in a position you can attach debuggers and inspect how the code is actually working. This is the next layer, automate the steps you did manually when running it locally. This means you still require all the extra data dependencies like databases, but you can replicate the behaviour a lot more consistently than by hand. Web frameworks have unit testing framework, and there are many available. As you understand the integration tests better you can work out how to mock out the data dependencies and run basically the same tests without requiring all the data dependencies. This makes them faster and more dependable, and also easier to automate. When you have pushed through all those layers you can even take that legacy code and write reasonable pure unit tests where functionality at a low-level can be tested in the way they show you in books. Developers tend to have various beliefs about which are most effective, but having all these options available gives you a path to take what is hard to manage code that nobody really understands to easily testable code which is easy to add to. Really, the best way to approach it is to be continually improving the code quality of your tests and trying to move them to a more stable, reproducible state. Remember when the code is simpler and easier to read and understand, you can actually work out what the next evolutions for the codebase are and how to architect your way there. This is a fairly short overview of some of the steps I typically take when starting on a legacy system that needs some TLC. It is not a quick fix but a long grind to get to a better, more stable place.

Fragmented Memory is a triptych of large woven tapestries completed in May in Tilburg, NL at the Audax Textielmuseum's Textiellab. The project uses digital practices and processes to blur the lines between photography, data visualization, textile design, and computer science.

Haunting Dreams It was all started with a kiss. Just a little peck on the lips, shy and a little awkward, yet left a sweet aftertaste. To be fair, the kiss was not in his plan for that day. The young man swore it was a pure sudden impulse that made him did something that bold, really out of his timid character. On the contrary, they had kissed many times before, yet he never felt enough. That day, the shy lad and his partner agreed to do a class assignment in the library, as they were in the same class and coincidentally, assigned to each other. It was an occurrence that the pair were grateful of, since they had a reason to spend their time together without being hidden. Unfortunately, the day was also the day for his regular check-up with his guardian. His petite partner insisted him to see his keeper first, saying that his health was more important than the current task. Urged by the uneasiness, his lean body somehow managed to bring the rushed youth to the front of the facility in a remarkably short time, in spite of not being used to physical activities. Unaware of the capability he just displayed, the young man entered the enormous study with ragged breaths and tired limbs. Like usual, there were only several people in sight, though actually, there were a lot of more people inside the building. However, there were also people, including him and his partner, who intentionally chose a secluded spot for their rendezvous. Sometimes, it felt like that they were on an affair, being in need to hide their relationship. But his stoic guardian had clearly stated his objection to any romance-related activities while he was still in the academy. Worried at the consequences if he ever showed any sign of disobedience, the timid student had no choice but to comply. She was a well-known and well-liked prodigy, while he, on the other hand, was just a gloomy, mediocre guy, with no specialty, academically nor physically. Wait, at least he was taller than average people, the shy student assured himself. A bit unique, too. He smiled a little when he remembered his partner complimented his concealed golden eyes, hidden under his green colored hair. But when he realized that was all he got, the lean man sighed, feeling even more depressed than before. However, all of his anxiety disappeared when a fair haired figure came into his field of vision. His small framed partner was sitting at their usual spot, flipping through the piles of books and papers spread on the desk in front of her. The tall man admitted that the spot was perfect to conduct any activities without people ever knowing. It was a quiet corner on the third floor of the huge structure, just by a tall window next to it and obscured from any viewer by the surrounding bookshelves. The reason was quite logical. For the past years, the world was more concerned on finding a way to deal with a threatening calamity before them rather than telling their children bedtime stories. Ironically, here they were, working on a paper about a creature from an ancient mythology. The subject they had agreed for their project plan was the construction of the legendary Chimaera. Besides, a good mark was guaranteed with the said subject, so he had no reason to disapprove. As he reached her desk, the green haired student first apologized for making her wait, which she replied with a sweet smile. Not wanting to waste anymore time, he proceeded to sit on the empty seat next to her and started working on his part of the assignment. Once in a while, she opened her mouth and called for the tall man with her soft voice, but it was only when she needed help, be it was a forgotten formula or just asking for books that were out of her reach. The young man actually felt a little bothered with the lack of communication they usually had. But he decided to keep his thought to himself and focused on his assigned section instead, ignoring the awkward silence between them. By the time he finished his part, he noticed the sky had gone dark, as the sun was already set. Stretching his stiff arms and back, the lean student turned to his partner, who was still working on the paper. Even though there had been the records of successful attempts of the said experimentation, they were only applied to smaller critters, with results such as a dog and cat with a shared body, or a turtle and squirrel hybrid. Thus, she needed to modify the existing calculation so it could be applied to bigger creatures. Not to mention, chimaeras were consisted of at least three different animals. It was one tough challenge, even for the fair haired female, who had earned the recognition as an excellent alchemist. The perplexing problem even

managed to bring a solemn looks in her normally gentle face. It was rare to see the sweet girl in such a serious expression, the tall man observed. A frown was formed between her brows, disappearing only when she took a very short break to stretch her stiffened head and shoulder. Her cheeks were flushed in a faint shade of pink, presumably caused by the sheer frustration. Lastly, her bright green eyes, covered by a round glasses, were filled with a strong determination, as if she were on the frontline, fighting with all her might. The girl sitting next to him was more suited with a smile in her face, just like how she usually was. The calm, gentle smile that seemed to melt all his problems away, ensuring that everything will be okay. A smile that reminded him of a home, a place where he could always come back to, even he was not sure if he got anyplace to call home. In spite of not being exceptionally beautiful, nor having the glamorous look, the soft spoken girl was secretly popular between the opposite gender. Partly because of her lovely platinum blonde hair, the object of awe of both males and females, but also because of her tender presence, constantly exuding a pleasant air around her. The green haired man remembered some boys in his class bragged about her being in top ten of most-wanted-wife list in the academy, even though they were just her classmates. Dawdling in his idleness, the lean student also wondered, how come, despite her meek and chaste demeanor, his partner was hiding a curvaceous body under her ankle-length robe. Even if he tried to ignore the matter, the shy lad had to admit that he was just a normal, healthy young man. The sweet girl was never aware how hard it was for him to stay composed whenever she clung to his arms, or when she gave him a surprise hug from behind, effectively giving him the feel of her ample chest. Soft, delicate, yet supple. He started to ponder over how they would feel in his palms. Flustered at his own musing, the anxious male took a quick glance at his partner, who was still working on her assignment. Trying not to invoke anymore vile intention, the green haired man tried to move his attention back to his already finished assignment, double-checking if there were any unnoticed mistakes. Deliberately, he opened his mouth, intending to notify his partner about the minor injury. It was the first time she put off her serious expression ever since they started working on the assignment, and he admitted that he already missed her smile. There was always something in the way she looked at him. It was a pure, sincere gaze, showing a glimpse of a tender emotion, and it agitated him. Yet, right now, it was one thing he longed for. So he leaned forward. And as he did, he instantaneously jumped back, nearly falling from his seat in the process. He opened his mouth, trying to make up some words, but none could come out, instead making a scene that he choked on himself. His face was bright red, creating a strange contrast with the green colored hair, a combination which reminded his partner of a tomato. After several times failed to speak anything, somehow he finally managed to spit out some awkward stutter. She gave him a shy smile then whispered an unexpected request. However this time, it was the first for her boyfriend to take initiative and she was delighted because of it. Though perhaps, a little bit too delighted, almost greedy, even. On the other hand, the green haired man froze in silence. Yet strangely, this time he acted otherwise. Perhaps it was the result of the exhaustion after working on the assignment, or his frustration of being unhelpful. Perhaps it was her sweet voice, invoking the uncalled lust still lingering on his mind. But at the moment, he could only think to close off the distance between himself and her. The fair haired girl closed her eyes this time, like a child waiting on a surprise present. Her slightly swollen lips opened a bit, eager for the second kiss, inviting the already enticed young man. When their lips met, it was sweeter from any other kissed they had had before. More exciting, more tantalizing, more addicting. And none of the two wanted the kiss to end. Thus, the lovers continued the kiss. Until they both ran out of breath and their lips swollen. Until their sense of reasons was overwhelmed by the intoxicating sensation. Until the originally tender passion had unintentionally changed into a more craving obsession, a darker desire, a lust. The pure, gentle kisses had now gone, replaced by a lust laden dance, with tongues busily entwined with each other, each sweep causing a jolt of electricity running through both of them. Two pairs of hand clang on each other closely, his around her waist and hers around his neck. Who knew how or when it happened, but the short girl was now already on her boyfriend laps, pressing her own body to his, causing a sweet friction every little move they made, which only heightened the intensity of the kiss. Somewhere deep inside his mind, a part of his reasons screamed at him to immediately cease their action. It reminded him about their unfinished assignment, their original plan in the library. Instead, he craved for more. He moved one of his hands from her waist to the back of her head, tangled in her soft locks, as he

tried to deepen the kiss, which was gladly reciprocated by the girl sitting atop him. At the same time, his other hand boldly advanced to her full bosom, at first amazed by the size, but then eagerly squeezed the tender flesh. It was soft, much softer than he ever imagined, with a bit of suppleness that prompted him to be bolder. His hand then proceeded to fondle the squishy tissue. Gently at first, slow and torturing, but only before his hand discovered a slightly hardened area, which he instinctively rolled with his thumb, causing the petite girl to pull away from their kiss and let out a delighted squeal. Back from the intoxicating passion they were drowning in. Back to the reality, to their surrounding, their secret rendezvous spot, the quiet corner of the huge library, hidden by the tall bookshelves.

Chapter 3 : Fragmented Memory â€" Garry Bodsworth's Blog

There was a fascinating talk at this year's Gophercon by Julia Ferraioli (and her Twitter account) called "Writing Accessible Go" where she covers how you can approach writing code taking disabilities in mind.

A golden machine was found broken in the ruins of Wraeclast. Believing it to contain some dark infernal secret, High Templar Venarius asked that I restore it and weaponize whatever powers it might contain Though the device seemed to be mostly functioning, something important appeared to be missing I worked tirelessly in search of answers, until finally, at the base of that cruel device, I fell into a deep, deep sleep I awoke in the most beautiful of places, and as I wandered this strange new land, I felt a growing sense of realization that I was not alone. A Shade, a whisper of embodied smoke, spoke to me through thoughts and pictures. I found myself enthusiastically volunteering information in detail of Oriath The Shade knew of the device - a doorway between my world and the dreamlands. It offered to help me rebuild the missing part, to create a conduit between this beautiful land and Oriath. All that the Shade asked of me was to return the favour Every night, I found myself asleep at the foot of the strange device, awoken to the reality of another world within my own. The Shade taught me how to shape and build things from my imagination, how to transport such phantasmagorical treasures back into the world of man The missing part of the great device had finally been formed. The Shade requested its one favour. I was shown images of the past, the Shade as King of the dreamlands, the hateful Watchers of Decay It led me deep into a cave, to a statue pierced by a sword But doubt entered my mind, and the Shade flew into a fury! I felt my mind torn asunder as images of murder and mutilation were forced upon me. I fled in a panic, cursing myself for ever trusting such a strange creature so blindly Months have now passed since the Shade revealed its true nature. Each morning, I lock myself inside my study, searching for some knowledge that might save us. I have found at last, some information on the Watchers of Decay. The truth is so unutterable that I hesitate, even now, to write it down They called it the Elder. A creature of malignant madness A weapon to give the Elder eternal rest. I must find a way to put a stop to it before it finds a path to freedom The creature cannot be killed, but maybe Lack of progress on the device has given the High Templar cause for suspicion. Clapped in irons, I was lead off to the Theopolis prisons for my insubordination. I must find my way from these chains at all costs. The Elder is coming for us. Only I can save us from this blasphemy that will soon befall Oriath His men beat me within an inch of death I told him everything. He demanded that I take all of us into the dreamlands, to meet with the Elder. Using the device, we stepped through, setting foot in the Atlas of Worlds The very essence of the Elder, demanding of me in visions to tell it why I had returned. But before I could answer, Venarius stepped forward and greeted the phantom Before we knew it, we stood at the base of that blasphemous effigy. The true scope of the Elder befell the High Templar and his men, and as it began to feed, I began to run I fear this to be the end. Not just the end for me, but the end of all things. The Elder has been freed. Soon it will feast on me It was too late for me. The Elder had to be stopped. I knew of the shaping powers. Only I could have a hope at defeating the Elder

Either way, what gets attention tends to be fragmentary sensations, not the many different elements of the unfolding assault. And what gets attention is what is most likely to get encoded into memory.

For instance, one woman who had been locked in a closet had an isolated memory of the smell of old clothes and the sound of a clock ticking. Later, she connected these details with feelings of intense fear; only then was she able to recall the whole picture of what had happened to her. PTSD also causes problems with non-declarative memory subconscious or motor memory, such as remembering how to ride a bicycle. This can show up as abnormal conditioned responses and the reliving of traumatic experiences when something happens to remind the sufferer of past abuse. These types of memory disturbance may also be related to physical changes in the hippocampus and medial prefrontal cortex. How Psychological Trauma Affects the Hippocampus and Memory Childhood abuse and other sources of extreme stress can have lasting effects on the parts of the brain that are involved in memory and emotion. The hippocampus, in particular, seems to be very sensitive to stress. Our study showed that diminished right hippocampal volume in the PTSD patients was associated with short-term memory loss. The hippocampus plays an important role in connecting and organizing different aspects of a memory and is thought to be responsible for locating the memory of an event in its proper time, place and context. We suspect that damage to the hippocampus following exposure to the stress brought on by childhood abuse leads to distortion and fragmentation of memories. For instance, in the case of the PTSD sufferer who was locked in a closet as a child, she had a memory of the smell of old clothes but other parts of her memory of the experience, such as a visual memory of being in the closet or a memory of the feeling of fear, are difficult to retrieve or completely lost. In cases like this, psychotherapy or an event that triggers similar emotions may help the patient restore associations and bring all aspects of the memory together. This new understanding of the way childhood trauma affects memory and the brain has important implications for public health policy. One example would be the case of inner-city children who have witnessed violent crimes in their neighborhoods and families. If this kind of stress can cause damage to brain areas involved in learning and memory, it would put these children at a serious academic disadvantage in ways and for reasons that programs such as Head Start may be unable to address. The medial prefrontal cortex regulates emotional and fear responses. In several studies we have found dysfunction of both the medial prefrontal cortex and the hippocampus at times when patients were suffering from PTSD symptoms. In a study using combat-related slides and sounds to provoke PTSD symptoms, combat veterans with PTSD had decreased blood flow in the area of the medial prefrontal cortex. Conclusion Traumatic stress, such as that caused by childhood sexual abuse, can have far-reaching effects on the brain and its functions. Recent studies indicate that extreme stress can cause measurable physical changes in the hippocampus and medial prefrontal cortex, two areas of the brain involved in memory and emotional response. These changes can, in turn, lead not only to classic PTSD symptoms, such as loss and distortion of memory of events surrounding the abuse, but also to ongoing problems with learning and remembering new information. These findings may help explain the controversial phenomenon of "recovered" or delayed memories. They also suggest that how we educate, rehabilitate and treat PTSD sufferers may need to be reconsidered. March References 1. Clinical characteristics of women with a history of childhood abuse: Posttraumatic stress disorder in the national comorbidity survey. Arch Gen Psychiatry Bremner JD, Marmar C eds. Bremner JD, Narayan M The effects of stress on memory and the hippocampus throughout the life cycle: Implications for childhood development and aging. The neurobiology of posttraumatic stress disorder: An integration of animal and human research. Neural mechanisms in dissociative amnesia for childhood abuse: Relevance to the current controversy surrounding the "False Memory Syndrome". Am J Psychiatry 7: Paradoxical effects of adrenal steroids on the brain: Why stress is bad for your brain. Hippocampal damage associated with prolonged and fatal stress in primates. Hippocampal damage associated with prolonged glucocorticoid exposure in primates. Exposure to excess glucocorticoids alters dendritic morphology of adult hippocampal pyramidal neurons. Brain Res ; Glucocorticoids inhibit glucose transport and glutamate uptake in hippocampal astrocytes: Prevention of

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Chapter 5 : Fragmented Memory | Official WildStar Online Community | FANDOM powered by Wikia

Fragmented memory? hr(May 1, AM Every four five days getting message that memory is fragmented on device and needs to be corrected.

Thursday, January 31, By: This article is written to set the record straight, to explain what this disorder is and what we understand about its causes, both in early life experience and in the brain. The controversial diagnosis of dissociative identity disorder DID has replaced what once was called "multiple personality disorder. A better understanding of the importance of specific regions of the brain to memory and emotion may help push research forward. Some believe that the disorder is the creation of credulous and overeager therapists. However, these and other common perceptions are mistaken. Sufferers experience sudden loss of episodic memory, change from a sad, dependent, and helpless personality state to an angry, demanding, hostile one in seconds, and may find themselves in situations that they cannot understand. But they are the victims, not the authors, of their own fragmentation. One "identity" may inflict physical damage on their body as "punishment" for another "personality" state, such as the patient who carved "I hate Mary," another of her identities, into her forearm with a knife. Mary was frightened and mystified about the injury. Such memory loss is often asymmetricalâ€"one identity may be aware when another is prominent, but not vice versa. The problem is not that there are "multiple personalities" existing in one body, as the old name of the disorder implied, but rather that the brain fails to integrate our different personae. We normally act like "different people" at work and at a party hopefully , but we have continuity of memory and identity across the differences. Patients with DID do not. In fact, the problem is not that they have more than one personality, but rather that they have less than oneâ€"a fragmentation of self rather than a proliferation of selves. People with dissociative disorders are like actors trapped in a variety of roles. They have difficulty integrating their memories, their sense of identity and aspects of their consciousness into a continuous whole. They find many parts of their experience alien, as if belonging to someone else. They cannot remember or make sense of parts of their past. Dissociative symptoms involving alterations in identity, memory, consciousness, and body function are seen in cultures around the world, described as "ataques de nervios" in many Hispanic cultures and as states of trance and possession in China, Japan, and India. DID is not all that rare. It affects some 1 percent of people in the United States, 0. Controversy has swirled around the disorder, in part because it is extreme and dramatic. But new research has helped us understand the origins of this tragic condition, as well as how it is reflected in the brain. Roots in Trauma Evidence is accumulating that trauma, especially early in life, repeated, and inflicted by relatives or caretakers, produces dissociative disorders. DID can be thought of as a chronic, severe form of post-traumatic stress disorder. During and in the immediate aftermath of acute trauma, such as an automobile accident or a physical assault, victims have reported being dazed, unaware of serious physical injury, or experiencing the trauma as if they were in a dream. Many rape victims report floating above their body, feeling sorry for the person being assaulted below them. Sexually or physically abused children often report seeking comfort from imaginary playmates or imagined protectors, or by imagining themselves absorbed in the pattern of the wallpaper. Some continue to feel detached and dis-integrated for weeks, months or years after trauma. Abuse by a trusted authority figure such as a parent creates special problems. A child abused by a family member faces an ongoing dilemma: The child has to maintain two diametrically opposing views of the same person, which creates considerable tension and confusion, a situation described by psychologist Jennifer Freyd as "betrayal trauma. Can a Person Forget Trauma? Humans process vast amounts of information. We can function only by being strategically selective in our awareness. Emotional arousal typically leads to increases in recallâ€"most of us remember September 11, , with more than average detail. However, we frequently try to control our emotional response to traumatic events, sometimes at the expense of recollection of them. Research bears out that blocking emotion about a trauma can also block memory of it. Before seeing the slides, one group was given a beta-blocker, a drug that blocks the stress-induced increase in heart rate and blood pressure triggered by the sympathetic nervous system. When participants were asked to block their memory of word associations, PET imaging showed

increased activity in the dorsolateral portion of the prefrontal cortex, the part of the brain that enables us to stop and think, coupled with decreased activity in the hippocampus, the structure deep in the brain that controls memory storage and retrieval. Evidence that this inhibition of memory happens in real life is more than anecdotal. Thirty-eight percent of them could not remember the episode that made a trip to the hospital necessary, although many discussed other episodes of abuse in detail. Another 14 percent reported that they had been unable to recall the traumatic episode for a period of time, lasting months to years. One would think that anyone actually brought to a hospital emergency room for treatment would recall the necessitating episode, yet a substantial minority could not. While voluntary suppression of emotionally laden memories is less likely to be successful than suppression of neutral memories, psychologist Martin Conway of the University of Bristol in England has found that when people are motivated to forget, they are more likely to do so for trauma-related memories than for neutral ones. Forty percent of their sample of 98 people who responded to a newspaper advertisement about an abuse history reported discontinuous memories of it. Why does this happen? For one thing, people naturally enter an unusual mental state during traumatic experiences. Their attention is narrowly focused. Dissociation can further isolate memories, by separating them from common associative networks in the brain that would make associative memory retrieval easier. Thus trauma can elicit dissociation, complicating the necessary working through of traumatic memories. The nature of the acute response may influence long-term adjustment. Often people who have suffered trauma consciously try to suppress their recollection of the painful events. Over time the forgetting becomes automatic rather than willful, in the same way that riding a bicycle requires a great deal of conscious mental and physical effort during the learning phase but becomes automatic over time. Trauma can be conceptualized as a sudden discontinuity in experience: However, though dissociated information is out of sight, it is not out of mind. The information kept out of consciousness nonetheless has effects on it. Others feel detached or estranged from people afterward. Emory University psychiatrist Douglas Bremner found high levels of dissociative symptoms among Vietnam veterans with PTSD, and they also reported dissociating during combat. These women had more dissociative symptoms than those who did not evidence PTSD symptoms. Those with symptoms of dissociation also had more symptoms of physiological hyperarousal, such as a pronounced startle response after hearing a loud noise, suggesting that there is an association between psychological avoidance and physiological hyper-reactivity. However, other studies provide evidence that dissociative detachment after a traumatic experience numbs the body as well as the mind. The women with PTSD but lower levels of dissociation responded with larger increases. Those with high levels of dissociation showed no increase in heart rate when read scripts with vivid descriptions of their trauma but had activation in the prefrontal cortex which is responsible for thought and inhibition and parts of the limbic system which is responsible for emotion on functional magnetic resonance imaging scans. Those with lower levels of dissociation responded with increased heart rates and less activity in those brain regions during this task. Dissociation after trauma is linked with higher levels of cortisol, a stress hormone that mobilizes glucose into the blood to assist with the fight-or-flight response, in the saliva, according to research in which cortisol levels were measured 24 hours after a stressful interview among adult women who were sexually abused during childhood. What Happens in the Brain Dissociative disorders involving fragmentation of identity, memory and consciousness seem less mysterious if we conceptualize identity as the product of mental effort rather than a givenâ€"a bottom-up rather than a top-down model of how the brain processes information. Neural systems that process the coincident firing of millions of neurons at a time must extract coherence from all this activity, and it is not surprising that in some cases these systems do not succeed. Neurons that fire together wire together, but building large, complex, and yet coherent neural networks may not always lead to a coherent sense of identity. Factors that restrict neurons from firing in association may limit the continuity of identity that emerges from experience and memory. Hippocampal Volume Another plausible neurobiological mechanism linking childhood trauma to dissociative difficulties with the integration of memory is smaller hippocampal volume. As mentioned above, the hippocampus, part of the limbic system situated in the middle portion of the temporal lobe, organizes memory storage and retrieval. The hippocampus is rich in glucocorticoid receptors, which are sensitive to stress-induced exposure to cortisol. Researchers have provided strong evidence in animals that

early life experiences have lasting effects on the hormonal stress response system, either making it unduly sensitive to stress or protecting it from overreaction throughout life. Studies in humans show that while minor stressors may produce resilience, childhood sexual abuse does the opposite: This research indicates that chronically elevated cortisol levels may damage the hippocampus, leading to smaller size and poorer function. Imaging studies by Murray Stein at the University of California, San Diego, and Eric Vermetten at Utrecht University in the Netherlands have shown that people with a history of childhood abuse and dissociative disorders indeed have smaller hippocampi, and that the reduction in size correlates with the severity of dissociative symptoms. However, Harvard psychiatrist Roger Pitman proposed an alternative explanation for this relationship. Pitman found that smaller hippocampal volume is indeed a risk factor for PTSD severity, but is not affected by exposure to trauma. A smaller hippocampus, he reasoned, may underlie vulnerability to the development of PTSD symptoms rather than occurring as a result of trauma exposure. The hippocampus is a context generator, helping us to put information into perspective. Wolf has shown that activity in the hippocampus buffers the effects of stressful input on the hormonal stress response system. Among patients with PTSD and dissociative symptoms, research also indicates that there is higher connectivity between two portions of the brainâ€"the right insula and the left ventrolateral thalamusâ€"that are involved in perception of bodily processes and emotion and consciousness. This finding provides further evidence that both mental and physical distress are triggered by traumatic memories. Neurotransmitter Activity Neurotransmitters convey information from one nerve cell to another, and a specific one may be involved in dissociation. It has long been known that drugs that block the activity of the N-methyl-d-aspartate NMDA subtype of glutamate receptors in cortical and limbic brain regions produce dissociative symptoms, perhaps via a one-time release of glutamate. Anti-anxiety medications such as lorazepam stimulate the release of gamma amino butyric acid GABA , a neurotransmitter that inhibits rather than stimulates activity in many regions of the brain. His work suggests that administering a drug that stimulates GABA increases dissociation. Future Research on Dissociation Two heads are not better than one when they share the same brain. The fragmentation of mental function that can occur after a series of traumatic experiences may both protect a person from distress and make it harder for the individual to put the trauma into perspective. As we come to appreciate the complexity of neural development, we also understand that early life experiences have a profound effect on the developing brain. In dissociation, achieving a sense of mental unity is such a difficult task that it can be disrupted by events that challenge body integrity, emotional control, and the development of relationships. Future research will reveal more about specific genetic vulnerabilities that may make certain individuals especially susceptible to the disorganizing effects of traumatic stress. We also need to understand more about neural development and function: How do specific regions of the brain facilitate or inhibit memory, emotion, and their interaction? How can we use this knowledge to better treat individuals suffering from dissociation? Current treatments primarily involve psychotherapy, and increasing knowledge of brain structure and function may provide necessary connections for therapists and their patients, helping these individuals to understand and control their dissociative tendencies while working through the consequences of traumatic experiences. Other research may lead us to a specific medication that treats uncontrolled dissociation; at present there is none.

Chapter 6 : 'Fragmented Memory' by Phillip Stearns

Memory fragmentation is the problem of memory becoming unusable even though it is theoretically available. There are two kinds of fragmentation: internal fragmentation is memory that is allocated but cannot be used (e.g. when memory is allocated in 8 byte chunks but the program repeatedly does single allications when it needs only 4 bytes).

Basic principle[edit] When a computer program requests blocks of memory from the computer system, the blocks are allocated in chunks. When the computer program is finished with a chunk, it can free the chunk back to the system, making it available to later be allocated again to another or the same program. The size and the amount of time a chunk is held by a program varies. During its lifespan, a computer program can request and free many chunks of memory. When a program is started, the free memory areas are long and contiguous. Over time and with use, the long contiguous regions become fragmented into smaller and smaller contiguous areas. Eventually, it may become impossible for the program to obtain large contiguous chunks of memory. Types of fragmentation[edit] Internal fragmentation[edit] Due to the rules governing memory allocation , more computer memory is sometimes allocated than is needed. For example, memory can only be provided to programs in chunks divisible by 4, 8 or 16, and as a result if a program requests perhaps 29 bytes, it will actually get a chunk of 32 bytes. When this happens, the excess memory goes to waste. In this scenario, the unusable memory is contained within an allocated region. This arrangement, termed fixed partitions, suffers from inefficient memory use - any process, no matter how small, occupies an entire partition. This waste is called internal fragmentation. For example, in dynamic memory allocation , memory pools drastically cut internal fragmentation by spreading the space overhead over a larger number of objects. External fragmentation[edit] External fragmentation arises when free memory is separated into small blocks and is interspersed by allocated memory. It is a weakness of certain storage allocation algorithms, when they fail to order memory used by programs efficiently. The result is that, although free storage is available, it is effectively unusable because it is divided into pieces that are too small individually to satisfy the demands of the application. The term "external" refers to the fact that the unusable storage is outside the allocated regions. For example, consider a situation wherein a program allocates 3 continuous blocks of memory and then frees the middle block. The memory allocator can use this free block of memory for future allocations. However, it cannot use this block if the memory to be allocated is larger in size than this free block. External fragmentation also occurs in file systems as many files of different sizes are created, change size, and are deleted. The effect is even worse if a file which is divided into many small pieces is deleted, because this leaves similarly small regions of free spaces.

Chapter 7 : c++ - What is memory fragmentation? - Stack Overflow

You join a new team and discover that what you have inherited is a bundle of bugs all holding themselves together, which presents itself to the end-user as a fully working system.

May 29, Media: Digitally designed and woven textile Tools: Three pieces each measuring cm wide x cm tall [See Also: The project uses digital practices and processes to blur the lines between photography, data visualization, textile design, and computer science. The result are works of visual art that serve not only to render visible the invisible processes mediating everyday experience, but also to operate as distinctly tactile and lo-fi digital storage mediaâ€"the process becomes a means to capture, record, and transmit data. Three selections of the binary data were converted to images using custom software written with the help of Jeroen Holthuis in Processing which grouped 6 bits into RGB pixel color values 2 bits per channel. The resulting 64 hues in the images were then mapped to a custom woven color palette created by mixing 8 colors of yarn using variations on a satin weave. The resulting patterns were then woven on a computerized industrial Jacquard loom. In fact, a key to the binding patterns is provided on the back of each piece. Textiles have long been used as a medium for imagery but are also closely connected to the development of automation and computer technology. Fragmented Memory collapses these two histories, functioning as a visual and physical medium for the storage and transmission of digital information. Out of frame to the left is a dyeing and printing lab. To the left of that is another loom. Behind me is a Dobby loom, another Jacquard loom, and right out of frame are knitting machines, yarn spoolers, and computerized embroidery machines. The sound of these machines in operation is powerful, yet hypnotically rhythmic. The Textiellab employs a combination of Dornier looms and Staubli Jacquard heads. This particular machine looks capable of handling 12 different insertion threads. The warp threads alternate black and white. Machines measure out the weft thread. Weft threads are fed to presenters before being woven into the fabric. Detail of Memory Fragment XAE RGB px showing the overlapping of fibers typical of the satin weave used to optically mix yarn colors to create a 64 hue color palette. The physical memory of a computer contains the program data, instructions and file data, that are stored temporarily for future execution and processing. This includes media such as photos, video, sound, and text. In a sense the physical memory can be viewed as the part of a computer in which programs queue their instructions for the computer to execute. Those instructions once executed however, radiate, mediated back to the user, which brings into question the locus of agency in regards to who or what is programming or being programmed. Medium is the Message Binary data can take on many forms: Early Jacquard looms used punch cards to automate the weaving of patterns and designs. Though not exactly programmable in the same way a computer is, the punch card technology from Jacquard looms was later adapted for use as a means for programming early computers and storing binary. With punch cards now a relic of the past and modern industrial looms controlled by computers, Fragmented Memory confronts us with the possibility of program machines using textiles. To translate an image of computer memory to a visual form in such a way that the content of the data is preserved, an image of an image, and then to weave it into a tapestry somehow ties a clean knot. The patterns and designs locked in thread from the earliest times bear a striking resemblance to those formed by our digital machines today.

Chapter 8 : Fragmentation (computing) - Wikipedia

Year: Materials: Digitally designed and woven cotton textile Dimensionscm wide x cm tall Fragmented Memory is a triptych of large woven tapestries completed in May in Tilburg, NL at the Audax Textielmuseum's Textiellab.

This is a version of their article published in the Journal of Traumatic Stress , , 8 4 , Note that this online version may have minor differences from the published version. This paper first revie ws the literature on the differences between recollections of stressful and of traumatic events. It then reviews the evidence implicating dissociative processes as the central pathogenic mechanisms that give rise to PTSD. We present the results of a syste matic exploratory study of 46 subjects with PTSD which indicates that traumatic memories are retrieved, at least initially, in the form of dissociated mental imprints of sensory and affective elements of the traumatic experience: Over time, subjects reported the gradual emergence of a personal narrative that can be properly referred to as "explicit memory". The implications of these findings for understanding the nature of traumatic me mories is discussed. The nature and reliability of traumatic memories has been a controversial issue in psychiatry for over a century. Traumatic memories are difficult to study, since the profoundly upsetting emotional experiences that give rise to PTSD cannot be approximate d in a laboratory setting: While stress evokes homeostatic mechanisms that lead to self-conservation and resource-re- allocation e. Selye, , PTSD involves a unique combination of learned conditioning, problems modulating arousal, and shattered meaning propositions. Shalev has proposed that this complexity is best understood as the co-occurrence of several interlocking pathogenic processes including a an alteration of neurobiological processes affecting stimulus discrimination expressed as increased arousal and decreased attention , b the acquisition of conditioned fear responses to trauma-related stim uli, and c altered cognitive schemata and social apprehension. Without the option of inflicting actual trauma in the laboratory, there are only limited options for the exploration of traumatic memories: Surprisingly, since the early part of this century, there have been very few published systematic studies that explore the nature of traumatic memories based on detailed patient reports. Provocation stu dies of traumatic memories have been done in psychophyisology laboratories e. We will then review the evidence implicating dissociation as the central pathogenic mechanism that gives rise to PTSD and present evidence that traumatic memories are retrieved, at least initially, in the form of dissociated mental imprints of sensory and affective elements of the traum atic experience by presenting the results of a systematic exploratory study of 46 subjects who reported on their memories of childhood or adult trauma. What a person remembe rs depends on existing mental schemata: As Schachtel defined it: However, accuracy of memory is affected by the the emotional valence of an experience: It appears that evolution favors the consolidation of personally relevant information. For example, Yuille and Cutshall interviewed 13 out of 22 witnes ses to a murder months after the event. All witnesses had provided information to the police within two days after the murder. These witnesses were found to have very accurate recall, with little apparent decline over time. The authors concluded that emotional memories of such shocking events are "detailed, accurate and persistent" p. They suggested that witnessing real "traumas" leads to "quantitatively different memories than innocuous laboratory events". Researchers also have studied the accuracy of memories for culturally significant events, such as the murder of President Kennedy and the space shuttle Challenger. Brown and Kulik first called memories for such events "flashbulb memories". While p eople report that these experiences are etched accurately in their minds, research has shown that even those memories are subject to some distortion and disintegration over time. For example, Neisser and Harsch found that people changed their reco llections of the space shuttle Challenger disaster considerably after a number of years. However, these investigators did not measure the personal significance that their subjects attached to this event. Clinical observations of people who suffer from PTS D suggest that there are salient differences between flashbulb memories and the post-traumatic perceptions characteristic of PTSD. As of early , we could find no scientific literature that had demonstrated that intrusive recollections of traumatic ev ents in patients suffering from PTSD become distorted over time. The Complexity of Memory Systems Contemporary memory research has demonstrated the existence of a great complexity of memory systems, with multiple components, most of

which are outside of conscious awareness. Each one of these memory functions seems to operate with a relative degree o f independence from the others. This form of memory functioning is seriously affected by lesions of the frontal lobe and of the hippocampus, which also have been implicated in the neurobiology of PTSD van der Kolk, Each of these implicit memory systems is associated with particular areas in the Central Nervous System Squire, Schacter has referred to the descriptions of traumatic memories made by Pierre Janet as examples of implicit memory. In many instances, traumatized individuals report a combin ation of both. While people seem to easily assimilate familiar and expectable experiences and while memories of ordinary events disintegrate in clarity over time, some aspects of traumatic events appear to get fixed in the mind, unaltered by the passage o f time or by the intervention of subsequent experience. For the past century, many students of trauma have noted that the imprints of traumatic experiences seem to be qualitatively different from memories of ordinary events. Starting with Janet, accounts of the memories of tr aumatized patients consistently mention that emotional and perceptual elements tend to be more prominent than declarative components e. Amnesias and the Return of Traumatic Memories Trauma can affect a wide variety of memory functions For convenience sake, we will categorize these into four different sets of functional distubances: While the vivid intrusions of traumatic images and sensations are the most dramatic expressions of PTSD, the loss of recollections for traumatic experiences, followed be subsequent retrieval is well documented in the literature. Amnesias for some, or all , aspects of the trauma have consistently been noted in a wide variety of traumatized patients, starting with Pierre Janet Sargeant and Slater observed the presence of significant amnesia in out of consecutively admitted combat soldiers to the Sutton Emergency Hospital during the second World War. A recent general population study of subjects by Elliot and Briere unpublished reporte d significant degrees of traumatic amnesia after virtually every form traumatic experience, with childhood sexual abuse, witnessing domestic violence as a child, and combat exposure yielding the highest rates. Traumatic amnesias are age- and dose-related: Amnesia for these traumatic events may last for hours, weeks, or years. Generally, recall is triggered by exposure to sensory or affective stimuli that match sensory or affective elements associated with the trauma. It is generally accepted that the memo ry system is made up of networks of related information: Affect seems to be a critical cue for the retrieval of informati on along these associative pathways. This means that the affective valence of any particular experience plays a major role in determining what cognitive schemes will be activated. In this regard, it is relevant that many people with trauma histories, suc h as rape, spouse battering and child abuse, seem to function quite well, as long as feelings related to traumatic memories are not stirred up. However, under particular conditions, they may feel, or act as if they were traumatized all over again. Fear i s not the only trigger for such recall: While amnesias following adult trauma have been well-documented, the mechanisms for such memory impairment remains insufficiently understood. This issue is even more complicated when it concerns childhood trauma, since children have fewer mental capacitie s to construct a coherent narrative out of traumatic events. More research is needed to explore the consistent clinical observation that adults who were chronically traumatized as children suffer from generalized impairment of memories for both cultural a nd autobiographical events. The combination of lack of autobiographical memory, continued dissociation and of meaning schemes that include victimization, helplessness and betrayal, is likely to make these individuals vulnerable to suggestion and to the construction of e xplanations for their trauma-related affects that may bear little relationship to the actual realities of their lives. Recent research has shown that having dissociative experiences at the moment of the trauma peritraumatic dissociation is the most important long term predictor for the ultimate development of PTSD Holen, ; Marmar, et al. Brem ner et al. Koopman, Classen and Spiegel found that dissociative symptoms early in the course of a natural disaster predicted PTSD symptoms seven months later. Peri-traumatic dissociation was the strongest predictor of PTSD status six months after the event. Dissociation refers to a compartmentalization of experience: While dissociation may temporarily serve an adaptive function, in the long range, lack of integration of traumatic memories seems to be the critical element that leads to the development of the complex biobehavioral change that we call Post Traumatic Stress Disorder. Intense arousal seems to interfere with proper information processing and the storage of information into narrative explicit memory. This observation was first made by Pierre Ja net, and is confirmed by a subsequent

century of clinical and research data. Christianson has described how, when people feel threatened, they experience a significant narrowing of consciousness, and remain merely focussed on the central perceptual details. As people are being traumatized, this narrowing of consciousness s ometimes evolves into amnesia for parts of the event, or for the entire experience. Students of traumatized individuals have repeatedly noted that during conditions of high arousal "explicit memory" may fail. The individual is left in a state of "speech less terror" in which the person lacks words to describe what has happened van der Kolk, However, while traumatized individuals may be unable to givea coherent narrative of the incident, there may be no interference with implicit memory: More than eighty years ago, Janet observed: He clai med that when people experience intense emotions, memories cannot be transformed into a neutral narrative: This results in "a phobia of memory" p. Janet claimed that the memory traces of the trauma linger as what he called "unconscious fixed ideas" that cannot be "liquidated" as long as they have not been translated into a personal narrative. Failure to organize the memory into a narrative leads to the intrusion of elements of the trauma into consciousness: Similar observations have been made by other clinicians treating traumatized individuals. For example, in Grinker and Spiegel noted that some combat soldiers developed excessive responses under stress which they thought to be responsible for the dev elopment of a permanent disorder: But, when stimulated by repeated psychological trauma the intensity of the emotion heightens until a point is reached at which the eg o loses its effectiveness and may become altogether crippled. Grinker and Spiegel described traumatic amnesias in these soldiers, accompanied by confusion, mutism and stupor. Kardiner, in describing the "Traumatic Neuroses of War not ed that when patients develop amnesia for the trauma, it tends to generalize to a large variety of symptomatic expressions: Kardiner noted that fixation occurs in disscociative fugue states: He note d that many patients, while riding a subway train that entered a tunnel, had flashbacks to being back in the trenches. Kardiner also viewed panic attacks and hysterical paralyses as the re-experiencing of fragments of the trauma. Piaget claimed tha t dissociation occurs when an active failure of semantic memory leads to the organization of memory on somatosensory or iconic levels. As the external world is solely represented by images, it is assimilated without resistance i. The realization of the role of dissociation in the processing of traumatic memories was revived for contemporary psychiatry when Horowitz described an "acute catastrophic stress reaction" in civilian trauma victims, characterized by panic, cognitive diso rganization, disorientation and dissociation Such dissociative processing of traumatic experience complicates the capacity to communicate about the trauma. In some people the memories of trauma may have no verbal explicit component at all: Recent symptom provocation neuroimaging studies of people with PTSD support that clinical observation: Simultaneously, the areas in the right hemisphere that are thought to process intense emotions and visual images had significantly increased activation Rauch et al. Ongoing dissociation in traumatized people. People who have learned to cope with trauma by dissociating are vulnerable to continue to do so in response to minor stresses. The most extreme example of this ongoing dissociation occurs in people who suffer from dissociative identity disorder multiple personality disorder , who have the highest DES scores of all populations studi ed and in whom separate identities seem to contain the memories related to different traumatic incidents Putnam, The sensori-motor organization of traumatic experience. Having listened to the narratives of traumati c experiences from hundreds of traumatized children and adults over the past twenty years, we frequently have heard both adults and children describe how traumatic experiences initially are organized without semantic representations. Clinical experience a nd reading a century of observations by clincians dealing with a variety of traumatized populations led us to postulate that "memories" of the trauma tend to, at least initially, be predominantly experienced as fragments of the sensory components of the e vent: What is intriguing is that patients consistently claim that their perceptions are exact representations of sensations at the time of the trauma.

Chapter 9 : Trauma Information Pages, Articles: van der Kolk & Fisler ()

Memory Fragment Found in map tier Shaper's Orb Notes I (1) 6: Tier 1 Shaper's Orb (Tier 1) Upgrades a Tier 1 map on the Atlas by five tiers Right click this item then left click on a map on the Atlas to upgrade it by five tiers.

Memory in traumatic loss illustrates the paradoxes and complexities of the human mindâ€" fragmented yet precise, clear yet dreamlike, intrusive yet elusive. The Dutch composer Michel van der Aa has masterfully captured the complex elements of memory, loss, and identity in the U. The chamber opera is based on the life and work of South African poet Ingrid Jonker, who committed suicide by drowning in at the age of The opening scene begins simply on a sparse stage with a reel-to-reel tape deck and a blank screen. Swedish soprano Miah Persson plays the Woman, who pieces together the moment her son died in a drowning accident, singing fragmented phrases facing the side of the stage. The expressive words do not make sense at first, their meaning enigmatic. Her perfect timing and pacing become apparent a few moments later when a recorded version of her live performance is projected in 3-D film behind her; her image faces the audience. The first loop plays onscreen, and Persson accompanies the image of herself, filling in the gaps. This process is repeated yet again, so there are now three women, each conveying with powerful urgency the critical, paralyzing moment her son drowns. Her memory builds on itself, emerging like shadows on a photo developing in the dark room. She adjusts a programmed video camera so that it zooms in on the model furniture and projects onscreen a life-size version of the living room, creating a dreamlike, streamlined model of reality. Her need to reconstruct the physical details of the home appears obsessive at times and forensic, as if she were trying to prove to herself that the past occurred just so. Her compulsion to revisit this is familiar to those who have experienced or seen the grief of traumatic loss. As a psychiatrist, I have witnessed memory in traumatic loss, through the heartbreaking stories of parents who have lost children, children who have lost parents. Fragments of memoriesâ€" a photographic snapshot of a hand or smell or sound of a voiceâ€" inevitably resurface at the most unexpected times, along with an urgent need to place these pieces into a coherent narrative. Bessel Van der Kolk, a prominent psychiatrist and expert on trauma, described in his paper Trauma and Memory: People seem to be unable to accept experiences that have no meaning; they will try to make sense of what they are feeling. Once people become conscious of intrusive elements of the trauma they are liable to try to fill in the blanks, and complete the picture. Midway through, the picture shifts. A second character is introduced on film, the Man, played by baritone Roderick Williams. Another version of the story emerges: Williams recalls losing his mother who drowned to save him when he was a child. As if he were being interviewed in a documentary film, he explores his childhood home which, by the way, looks identical to the reconstructed miniature version onstage. At no point does Williams ever appear in real life, though his presence and voice feel so palpable that it is as if he will burst on stage from behind the screen at any moment. The Netherlands Chamber Choir sing on the film as well, adding a rich and otherworldly depth. It is unclear whose version of the story is real, but there is a sense that this distinction does not really matter. Several striking moments heavily blur the lines between reality and perception, memory and reconstruction. Another moment is when Persson and Williams on film create a virtual-physical-virtual loop using a physical ribbon that Persson draws out from the side of the screen, linking an onscreen reel-to-reel tape deck to the exact one onstage. Blank Out achieves its highest and most memorable moments where the real and unreal, virtual and physical, representational image and object, are wed together with stunning precision and ingenuity, releasing one from any need to choose between two worlds. New layers of meaning continue to build each time a motif or phrase returns, often in the voice of the other character, and accompanied by vivid imagery. Cocooned within the Park Avenue Armory, van der Aa probes the depths of traumatic loss and pushes chamber opera to new realms through his imaginative integration of multimedia technology and 3-D film. This post was published on the now-closed HuffPost Contributor platform. Contributors control their own work and posted freely to our site. If you need to flag this entry as abusive, send us an email.