



## A Sci-Fi Short Story

By Ashley Marin & Sarah Panameno

### Chapter 1

The cool afternoon air was refreshing and invigorating as Amanda sat on a wooden bench outside of the well-worn and cozy local diner. The distant sound of a country song crooning from the jukebox inside the diner emanated through the glass windows behind her. The slight breeze swished through the tall green trees that dotted the sidewalks of the quaint downtown of North Bend, Washington. Despite the impeccably picturesque Americana and familiar atmosphere that surrounded her, Amanda could not help that an anger and frustration was bubbling up inside her.

She looked down at her wristwatch: 3:30. Every Wednesday for the past 5 years (not including holidays and other rare occasions) since her and her husband Henry had moved to North Bend, Henry would drop her off at this diner for a book club meeting at 2:00 PM and pick her up at 3:00 PM. Even though Henry and Amanda had been creatures of habit and routine since their younger days living in Seattle, in retired life this habit of punctuality seemed to strengthen even more so.

Amanda knew she could've called Henry on her cell phone 15 minutes ago, but she couldn't believe that this was occurring and wanted to test the limits of Henry's atypical behavior. Although his ripe age of 71 might have been cause for concern of a health crisis, she

knew this was not the case because he had tweeted about experiencing “programmer’s block” while coding for his retirement passion project computer program about 20 minutes before.

“Okay experiment over.” Amanda muttered under her breath as she took her cellphone out of her pocket. It was an older model iPhone, but she stopped caring about keeping up with the newest cell phone models years ago.

“Hello? Mandy?”

“Henry... have you forgotten something?”

“Huh? Uh...” Amanda stewed in her annoyance as she heard Henry shuffling for something, probably his planner. “No? Today is the 5th of May 2068 isn’t it?”

Amanda was dumbfounded, and suddenly her bitterness melted into fear and concern.

“Hon, today is Wednesday, the 9th of April, 2072.”

Henry remained silent. “I’m on my way.”

“See you soon”

“See you.”

She stared down at the blank screen of her cell phone, as her eyes warmed with tears. This was the third time in the past 2 months that Henry had forgotten to pick her up from the book club meeting. Immediately, her memories of Alzheimer’s patients that she had treated as a nurse before she retired flooded her consciousness. Children and spouses visiting their loved ones who were polite to their visitors but did not recognize them in the slightest, waking up in the middle of the night shouting for help in confusion. Henry’s father’s empty eyes that looked upon his son with no recognition of the son who he had prized as his life’s greatest accomplishment for so long.

Not Henry, not *her* Henry. Her tears dripped onto her phone's screen as the aesthetically pleasing downtown persisted in its small-town delightfulness, coldly ignorant to her sorrow.

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“Mr. and Mrs. Castillo, thanks for coming in today please have a seat.” Dr. Berman said with a professional smile as he gestured to the stuffy leather chairs in front of his sleek wooden desk.

“Thank you for having us.” Henry said underneath a weak smile. Amanda smiled widely to compensate for the dread she knew her husband was feeling. He loathed causing any inconvenience for anyone besides himself. In fact, coming to this appointment had taken a month of convincing to finally go through with. “After discussing with Amanda the options you relayed over the phone, I think I’ve decided to go with the VR remedy<sup>1</sup>, um Evergreen? Is that what it’s called?”

“Yes, Evergreen. Okay, great. We can get that set up for you. Do you folks have a VR set at home?”

“I do, but it’s an older model that Amanda bought me as a gift years ago.” Henry looked over at Amanda. “Do you think we can still use that?”

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<sup>1</sup> Huttner and Robra-Bissantz (2017) define virtual reality (VR) as the 3D simulation of a visual environment through computer simulation. Simulation is supported by a head mounted device (HMD) and smartphone. The smartphone’s screen is split into two to support binocular vision and allow the experience of spatial depth. A user is able to experience the illusion of physical movement (e.g., walking) by using a gamepad and smartphone’s head tracking feature. Results from Optale et al. (2010) suggest that virtual reality memory training (VRMT) prevents memory decline in older adults with mild memory impairment (MI). MI was defined as the stage between normal cognitive decline associated with aging and abnormal decline associated with dementia. 15 participants 65 years or older were led through 6 months of VRMT. By experiencing a combination of different simulations (e.g., auditory, visual, and navigational), each participant explored familiar and unfamiliar environments- childhood home versus a park with many pathways. (MI) participants significantly expressed improvements in long-term recall memory. Investigators attribute this positive outcome to enhancements in focus. MI participants strengthened their ability to concentrate and respond to stimuli, supporting many functions involved with recall memory.

“Oh Henry, I’m sure that old thing is useless at this point. I bought it for him when we were in college. They were quite expensive and a new innovation at that time.”

“I see.” The young doctor chuckled. “Well, unfortunately, I think a newer one would be necessary to be able to handle the Evergreen software.”

Henry’s thoughts began to wander as Amanda and Dr. Berman discussed logistical details. The prospect of getting the chance to experiment with state of the art technology excited him since he’d always been a techie, but the purpose behind this endeavor was looming and daunting. Could Evergreen really improve his deteriorating memory? Some phrases stuck through his daydream “Memory Palace... Tutorial?... effectiveness...Personal visual cues... Henry?”

“Oh, I’m sorry what did you say?”

“Do you have any questions for me?” Dr. Berman said with an inquisitive look in his eyes.

“Um...” Henry cleared his throat and shifted in his seat. Plenty of questions plagued his mind. *Will I die lonely, confused, and alone like my father? Will I be able to recognize my wife in 10 years? Can you really help me?* However, he shoved those down and managed to mutter: “How will I have enough room to walk around in my memory palace<sup>2</sup>? Will we have to empty out a room for this?”

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<sup>2</sup> A memory palace is a mental strategy and mnemonic device that has been utilized for over 400 years. It involves creating a mental building (or palace) that might be familiar to you and filling it with unique visual cues that can help you recall certain facts that you might not be able to remember without that visual cue. A common example would be trying to memorize the periodic table in order via a memory palace. For instance, one could imagine walking into the front door of their house and see a waterfall crashing through the east wall of the living room. The large amount of water (H<sub>2</sub>O) reminds one of hydrogen. One could keep walking into the family room and see a bunch of helium balloons tied to the couch, and it reminds one of helium and so on. The key to memory palaces is that they can be as unique to you as you would like. They are meant to remind you of facts using your preferred mental cues (Harman, 2001).

“No Mr. Castillo, that won’t be necessary. The controllers provided with the aerodynamic headset allows you to be physically stationary while moving around in the virtual world.”

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Once the VR headset and the controllers arrived, Henry and Amanda went to work immediately on learning the ins and outs of Evergreen. They set up an account on the up and coming VR platform and began planning out Henry’s personal memory palace.

“Okay, what building should I choose Mandy?” Henry asked as he stood in the middle of his office in their small yet functional home. In his headset he perceived that he was in a blank white space and the software had prompted him to pick a type of building to begin making.

“Well hon, according to Dr. Berman, memory palaces work best when you pick one that’s very familiar to you. How about your childhood home in Seattle?”

“Good idea.” He chose the two story home option, and a generic, white two story home appeared before him. “Wow, they weren’t kidding around about this being as accurate as possible huh?” He craned his neck up to be able to see the top of the house. Henry continued to make modifications to the building and its environment to match it to the memory of his childhood home as much as he could. He added clouds and intermittent showers to replicate a typical Seattle afternoon as well as his mom’s rose bushes that lined the front yard.

“Does it look as realistic as Dr. Berman said it was?”

“Heck yeah.” Henry guffawed. “It’s like I’m really there, you can even see ants crawling on the roses in the rose bushes! The detail is amazing Mandy, you really gotta see this.” He said as he bent down to look at the virtual roses.

“No that’s alright, Dr. Berman said it’s best if only you spend time in your evergreen. Try adding a memory!”

“Oh right! I got so caught up in how cool this is I completely forgot.” He laughed with glee. “Okay, let’s go with my first memory. Hitting a homerun at my first t ball tournament.” Henry selected the first rose bush and an input bubble appeared asking about the title and details of his memory. He could also include photos or videos. He titled it “First t ball home run.” He then described how he remembered it underneath the title in the caption section: “Wednesday, Sunny, Hot. My dad cheered me on from the stands as I adjusted the black helmet that was too big for my head. I swung the metal bat and it collided into the ball with a distinct \*tink\* sound. “Run Henry, run!” I heard my dad shout. So that’s what I did. I ran and ran until I made it to the home base. Although a little confused about what was happening, my dad’s excitement made me realize that I liked making my dad happy.”

Next Evergreen prompted that he select a visual cue to associate with this memory. There were so many options that Henry found himself feeling overwhelmed, and just went with the simplest reminder. A T Ball flying into the bush as he hears “Run Henry Run!” in a robotic male voice. From now on whenever Henry wanted to run through his memory palace and he would walk past this bush, a baseball would come crashing through the bush and a robotic reenactment of his dad’s quote would play as well<sup>3</sup>.

As Amanda observed the satisfied smile on Henry’s face underneath the VR headset she couldn’t help but smile herself. Although the circumstances surrounding this event were dire and nothing to smile about, Amanda was so relieved and excited that Henry was enjoying Evergreen so much. Maybe this would work after all.

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<sup>3</sup> Yang and colleagues found that VR memory palaces helped the most when trying to remember facts from scholarly articles compared to computer based memory palaces and mental memory palaces. The participants of this study also commented that they would have liked to be able to customize their VR memory palaces to aid them personalizing their memory cues. They were given a preset coffee shop set as a VR memory palace (Yang et al., 2020)

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After about a month of Evergreen, the results seemed promising. Henry had dedicated his backyard to including memories of the events/facts he needed to remember for his daily life as well as his relationship with Amanda. Every morning Henry would run through his Evergreen backyard and remind himself of his current routine. Amanda was pleased that he no longer forgot to pick her up from her book club meeting and he was even being more mindful of his household chores. He was even using Evergreen to his advantage and including things that he wasn't consistent about even before his memory loss. One of those tasks included taking an evening walk with Amanda every Saturday. Amanda had expressed her desire to have a weekly "date night", a habit that they had discontinued once they retired, but it always seemed to slip Henry's mind.

The first time Henry brought up including this in his new Evergreen routine, Amanda felt flattered by her husband in a way she hadn't in a while. The first "date night" walk was refreshing in more ways than one. The coolness spread by the hundreds of trees in their area made the walk invigorating and calming which is the atmosphere that Amanda and Henry were hoping for when they moved to North Bend. Although they didn't say much to each other, Amanda and Henry walked around their neighborhood in peace pointing out unique birds or plants every once in a while. Even though they spent most of the day together, during their weekly walks Amanda and Henry felt like they could truly just enjoy each others' company. Henry was grateful that his memory was improving regarding whatever he placed into the memory palace, and he felt maybe he received answers to his internal questions that arose in Dr. Berman's office. *No, I will not. Yes, of course I will. Yes, Dr. Berman is actually helping me.*

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## Chapter 2

“Good morning Henry! Sorry to wake you up earlier than usual. I see you fell asleep while on Evergreen last night.” Eve was Henry’s geriatric nurse at the Evergreen Health Nursing Facility in Kirkland, Washington, for over a year now. It was not a rare occasion for Eve to have noticed that Henry had fallen asleep with his headset on again. A deep mark ran across Henry’s forehead and nasal bridge. She quickly grabbed zinc oxide ointment from the supply cabinet and proceeded to apply a thin layer onto the tundra of his skin.

“Ahh, yes Eve. I must have forgotten to log off. I was on a stroll with Amanda and probably lost track of time.” Henry rubbed his eyes and turned to his left to see the grand pine trees creeping through the wooden blinds. He took delight in being able to walk- at least artificially in his virtual paradise. His arthritis caused him to lose the ability to walk and roam around Washington’s lush moss and green pines.

“It’s okay Henry. I made a note and we will talk about setting a curfew this evening. Let’s give you some eye drops.” The nurse held the small dropper above Henry’s face and gently squeezed a drop into each eye. “For now, let’s run through some questions while you rest your eyes. What is your full name?”

“Henry Castillo,” he responded softly. Henry took his time to think about each question. His memory was still cloudy but he knew that with concentration, he could remember the information.

“Great! Now tell me, what is your wife’s name?”

“Amanda”

“And what is today’s date and how old are you?”



“Hmm, a Tuesday? Tuesday, December 13th , umm ... 2080. What was the last question again?”

“Your age Mr. Castillo?”

“83 years young” Henry responded with a smile completely enveloping his face.

“Amazing!” Eve laughed. “Only, it is a Wednesday and the year is 2084, but this is really great Henry! You are eleven years older than when you originally started your journey on Evergreen and your recall memory<sup>4</sup> holds constant without decline!”

“My Amanda will be so happy,” he thought. Henry’s nightmare turned into reality four years ago when he lost his wife and best friend to cancer. He didn’t dare to think that one day all the memories they shared would dwindle down to the root of extinction. He regretted not having children with Amanda. Their careers filled every nook of their time. Retirement was their only escape hatch from the demands of worklife. “Maybe I could’ve been one of those super parents-waking up early, dropping off the kid at school, working all day, and confining my programming hobbies to the hours after 10 p.m.” Henry often thought. Evergreen muted his grief and dispiriting reality. In his mind, Amanda was still alive as ever. He worked hard to make Evergreen his new reality. He convinced himself the real world was only a dream.

“A Wednesday? I have to pick her up!” Henry shouted as he frantically opened his eyes and began searching for the control pad through his sheets.

“I know how important it is for you to stick to your routine on Evergreen, but I want you to take some deep breaths. We will continue your assessment later and you will get to see your

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<sup>4</sup> Carver, Bauer, and Nelson (2001) describe recall memory as a type of explicit memory retrieval where the recollection of facts requires one to consciously recall information (e.g., during multiple choice exams). Cognitive science often uses recall tasks to measure explicit memory and overall recall memory performance.

wife after your visit. Noah is here to see you.” Eve proceeded to open the door. A strong scent of peppermint and pipe tobacco filled the air.

“Noah? Noah is here?” Henry suddenly felt the sense of bliss he longed to receive from the real world. Noah was Henry’s brother-in-law and Amanda’s younger brother. Twice a year, Noah made the trip from Los Angeles to visit Henry and check on him. Sometimes, he brought photographs and videos of Amanda for Henry to use and upload on Evergreen. In his last visit, he brought a candid photograph he took of Amanda when he first visited her in Washington in her early 40s: a snapshot of Amanda midway sip through her herbal tea while reading.

“Henry! How are you?” Noah asked as he made his way across the room with his cherry-wooden cane. Noah shared the same cool-toned olive skin and oval face as his sister. Henry enjoyed his company. He felt a piece of his Amanda in the room.

“Feeling younger and younger each day!” Henry replied. The next hour was spent discussing the same conversation they usually had every other day on the phone. They discussed the shared pain they felt dealing with arthritis and always forgetting things. Noah was in his early 70s and was considering an Evergreen treatment for his memory decline. He found himself misplacing his keys and forgetting to take his medications more and more each week.

“If it’s okay with Henry, would you like to explore his memory palace?” The nurse asked Noah.

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Noah found himself in an unfamiliar environment. The cream walls of the nursery were no longer in his field of view. Instead, he was greeted by a grand window. A topcoat of fresh water droplets appeared on the glass. Outside was a row of yellow rosebuds and a pile of t-balls scattered in one corner of the yard. He used the control pad to navigate across the living room

until he met with a door titled “Wednesday: Pick Mandy Up.” Noah turned the rustic knob and was invited in with what he thought sounded like a ticking clock. He saw the photograph he took of his sister framed on the left wall. Amanda’s silhouette began to move and so did her facial expression. She stopped sipping her tea and looked down at her wristwatch with a subtle frown on her face. Noah, in a state of bewilderment, was left in awe. It was like Amanda was actually there. Alive.

“Henry... have you forgotten something?”

“Henry... have you forgotten something?”

“Henry... have you forgotten something?”

The voice of Amanda broadcasted over and over. “This is all made up,” Noah whispered to himself. He held back his tears as he completed experiencing the rest of Henry’s false memories<sup>5</sup>. Amanda used to call her brother for marriage advice almost every other day. Henry and Amanda spent the majority of their marriage arguing, if not working. Amanda wanted children and Henry did not. Henry spent too much time talking to a coworker on the computer, and Amanda lied where she would be after work. Weekends were spent going to marital therapy or staying isolated in different rooms. Noah felt empathy towards Henry. He was reliving his marriage through a rose-colored lens- far away from the truth. In Henry’s memory palace, Amanda and Henry were more than alive. They were Evergreen.

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<sup>5</sup> Malone et al. (2019) define false memory as the remembrance of an event that did not occur in real life. Furthermore, results from Gallo, Foster, Wong, and Bennett (2010) suggest that Alzheimer disease patients and healthy older adults are similarly susceptible to false memories when seeing emotional arousing visual stimuli (e.g., photographs of toxic waste cleanups).

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