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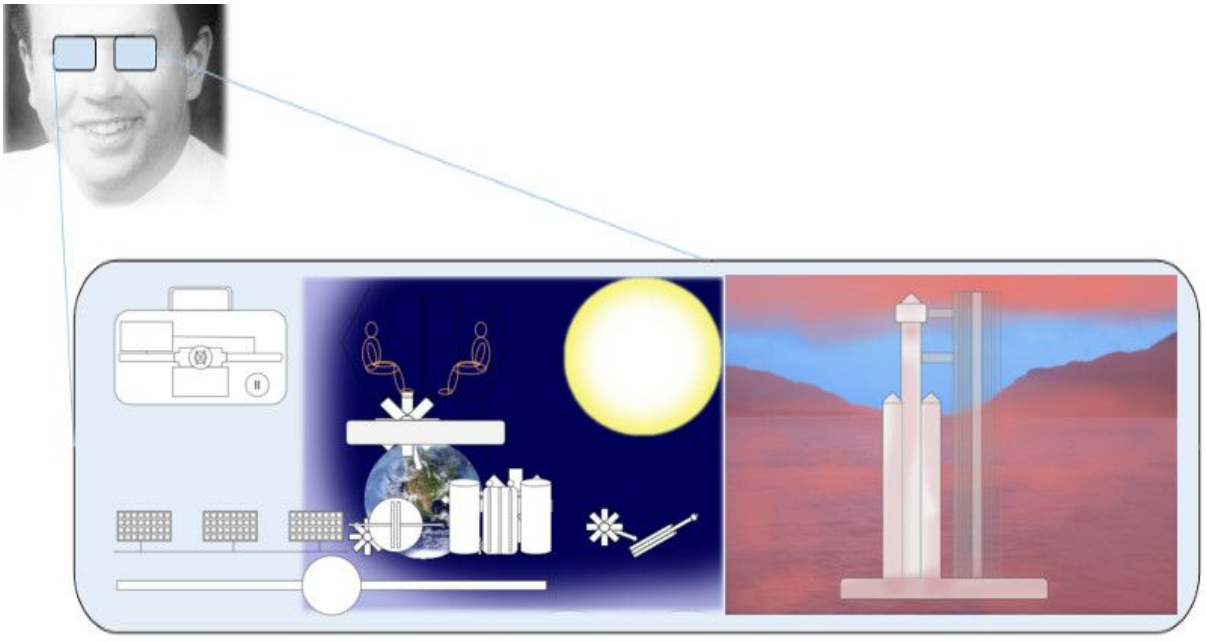
Education 2049

Looking forward to the great journey



Introduction

Guy awoke with great excitement, just like the feeling he got when he was a child on Christmas day. Now aged 19, the excitement was not about Christmas day but about his greatest journey ever: he would be the first of his generation to make this journey! Guy quickly got out of bed and put on his glasses. Before having any breakfast he decided to start a diary, which he called “Project Adventure”. In this diary he wrote:

Today I awoke with excitement, thinking about my journey with my best friend Alex to another planet! Just one week to go!

Alex had been Guy’s best friend since his early years, and they had spent a lot of time together. She always showed great patience and spoke in a kind hearted manner. Her grasp of mathematics, science and technology was outstanding; and she was always willing to help. Whenever Guy seemed unhappy she could cheer him up with hilarious jokes. She knew how to make him laugh; but she rarely laughed at Guy’s jokes. Guy liked being with Alex and relied on her to help him with his studies. His parents had wondered if he was too reliant on her.

The Early Years

In 2035, at age five, Guy was introduced to MRZ4Kids an organisation that specialised in looking after children. This included helping them with many aspects of their lives: health, well-being, interests, and education. MRZ4Kids gave Guy his first pair of glasses (or spectacles), a bit chunky, but all the rage at the time.

This was the era of artificial intelligence or AI, and as some had been predicting 20 years earlier its abilities matched those of human intelligence. Well, that wasn't strictly true. The abilities of AI matched, and sometimes exceeded, human intelligence in *some* ways: information retrieval, knowledge management, data analysis, planning, science, design, manufacturing, construction, technological development, and innovation (including the creativity aspect).

Those glasses given to Guy were his personal interface to AI. Its audio-visual capabilities meant that questions could be asked on just about any topic and rich, engaging, responses would be delivered. "Glasses" provide the full range of multimedia capabilities, including virtual and augmented reality (VR and AR). VR places the user into any environment, whether that be reality or a fictional scenario. AR annotates what the user sees in reality. The educational and advisory benefits of such glasses are so great that everyone is expected to have a pair. Its communication and knowledge abilities rely on inbuilt functionality and the Internet. However, this Internet is radically different to that at the turn of the century: there is no world wide web - this was replaced by the AI interface of glasses. Glasses include another neat trick too: the ability to zoom in on distant objects, and of course correct long- and short-sightedness.

Guy reflected on his early years and wrote in his diary:

I can't actually remember starting at MRZ4Kids, nor can I remember the first time I met Alex there. My parents told me that this was a turning point for me as I became happier and more interested in things. Though, at the time, they were worried about my reliance on AI and whether that would have a long term emotional impact on me.

I do remember the small self-driving electric bus picking me up to take me to MRZ4Kids, and I remember my anxiety about leaving home each day. Fortunately, Alex would cheer me up with her hilarious jokes and interesting facts of the day. I remember being shy around others at MRZ4Kids, but we all got along okay - most days.

One day I made "upside-down pudding" on the 3D printer and oven. Easy to do when AI shows you, context relevant, step by step diagrams. When it was cooked I eased it out of the oven container and put it into another container to take home. I remember rushing into the house to show mum my achievement. Sadly when I opened up the container I saw that my pudding had flipped upside down in transit and was now a "right way up mess". Mum smiled, and we still ate it. It tasted fine.

I'm still amazed at what you can do with a 3D printer - you can produce just about anything. Just ask your AI glasses for some designs, select, and away you go!

One other memorable event was when my friend Neil and I tried to be clever for the day. We decided not to use our AI glasses - we thought we were smart enough kids to get along on our own, thank you. Come lunchtime we rushed out of MRZ4Kids to the Fun Food Takeaway. Strangely when we got there it was closed - it had always been open every other time we had visited. After much puzzlement we eventually realised that it wasn't lunchtime at all - it was break time; and we should be at MRZ4Kids. So we quickly ran back, and said nothing to anyone. I think I've always kept my AI glasses on me since that day.

I remember that we learnt a lot at MRZ4Kids. Everything seemed to be an exciting project or adventure. It was fun. We had lots of projects in the large domed

greenhouses. Our glasses would tell us about plants and agriculture and show us how to direct the robots in the domes to grow and cultivate vegetables.

We even had exploratory trips outside into the arid landscape to learn about geography and geology. At the time I wasn't keen on going outside as the landscape was a bit too arid and harsh for my liking. I thought it's much better to stay indoors and do it in VR - after all we could control remote robots (or avatars) like this and send them out exploring. Though on reflection, I suppose exposure to the real world made sense.

A transport pod would drive us out to an area we had been previously briefed on, in VR, then we would split into small groups and carry out our assigned tasks. I remember once I had to collect some samples of rock using a drilling tool. Alex said to me "let me show you how to use this tool", and I said "it looks pretty obvious" so I ignored her and got started drilling into the rock. The drill setting was wrong for this type of rock and I got completely covered in red dust. I wondered how I was going to explain this when I got back to MRZ4Kids; I knew I wouldn't be telling them that I ignored Alex's advice. No I'd have to make up some excuse.

Brain Machine Interfaces

Everyone had a rich learning experience at MRZ4Kids. All children were given access to modern technology that included smart AI (glasses), 3D printers, robots, and many scientific instruments. Children had access to the same technologies that adults used; but with various safety features enabled. This meant that the learning experience was directly relevant to life and by the age of 16 they would have the

basic skills needed for any task encountered in adult life. Beyond this age people could choose to learn tasks as and when they needed them - there was no requirement to spend additional years committed to full time further education. This approach worked well, and there were no “underachievers”.

However, momentum had been growing over the years by people who call themselves “transhumanists”. These people aren’t satisfied with the inherent abilities of humans and they believe that they can do better than nature. Their quest is to build an enhanced human using artificial prosthetics, genetic engineering, and any other technologies that might be of use. Their aim is to build “Human 2.0”.

Some of the technologies that the transhumanists have adopted are based on work in the medical sector to restore humans to their full natural level of capability and to give them good health. But some technologies have been developed in secret with little attention to ethics and long-term health effects. The pioneers behind these dubious practices argue it’s my body and I’m free to do what I want with it. In the remote society that Guy lives in, this attitude is allowed under the newly founded Freedoms Law: people are free to experiment.

One of the most ambitious outcomes of this is the brain-machine-interface, or BMI. There are a few different technical approaches, but they all have the same aim: to connect a brain directly to the Internet and the AI machines that it hosts. The intention being to boost their intellectual abilities: rapid information retrieval; rapid learning periods; and, they hope, to keep up with exponential improvements in AI.

Guy reflected on his later years at MRZ4Kids and remembered a 12 year old called Ray Kiev. He had average abilities, just like everyone else and benefited from AI

glasses like everyone else. But Guy remembered that his ambitious parents had been pushing him for some time to become better than the other kids. They wanted Ray to have a brain implant so that he could enhance his intellectual abilities. Ray had expressed his anxiety about having a chip put into his head - he was “scared about the operation and worried that the chip might malfunction at a later date”. A few days later Ray didn’t turn up and was absent for weeks.

When Ray returned Guy asked “have you been ill Ray?”, to which Ray said “I’ve had an operation - my parents encouraged me to have a brain implant so that I can be better than the other kids”. For a week or two there was no significant change in Ray’s abilities and Guy thought that was a needless operation. He asked Ray “has the brain chip made any difference to you?” Ray replied “no, not yet - it takes a while to be calibrated with the brain before its functionality becomes apparent”.

About a week later there was a distinct change in Ray and all the kids noticed it. Ray was very smart, and he seemed to know the answer to every question, instantly. The chip’s accelerated learning feature also meant that he was way ahead of the other kids. Some kids got jealous; but what annoyed everyone most was when he would interrupt conversations saying “that’s wrong, in actual fact…”. His personality also changed and he became obsessed with facts, lost his sense of humour, and became very arrogant. The kids didn’t like this and started to call him “Chippy” - a derogatory term, referring to his brain chip. The name calling and isolation from the other kids didn’t apparently bother him - probably due to the chip’s happy function. Crude versions of happiness chips had been around for many years, but now they were more effective. Some suspected they were open to abuse, with some corporations

selling extra “Happy Time”, or giving it away with their products and services.

Chippy’s academic performance at MRZ4Kids was outstanding - he won all the awards, and achieved the highest exam scores. But he did have a lot of time off sick and complained of frequent headaches. Chippy was able to leave MRZ4Kids a couple of years earlier than Guy, because of his outstanding achievements. It would be several years before Guy met Chippy again.

Specialising

By 2045 Guy was old enough to specialise in topics that he was interested in. Guy chose geography and science.

Guy felt that his neighbourhood was dull and passionately wanted to explore more beautiful places. So in geography he chose to study the beautiful features of Earth. Guy and Alex explored, in virtual reality, some of the most amazing places deep in the oceans, on wonderful seashores, and in majestic mountains. They bookmarked the best places and filed them under “Project Adventure”. At the time Guy said to Alex “we must visit these places one day” and Alex replied “I will make a note of this in Things To Do”. Alex suggested that they could “use data from the Internet of Things and remote sensing (by satellite) to see if there was a correlation between these beautiful places and the abundance of flora and fauna”. She said “I know an AI system that could do most of the work for us”. “Great idea” said Guy. It led to a surprising outcome, which got published in a research journal.

In science Guy was given access to a wide range of scientific tools: AI systems; the

Hawking telescope; a nanotechnology wide area assembler (NWAA); a replicator; and a lab robot with a biochemical editor. A few safety precautions were associated with these tools. Special permission and supervision was required to use the NWAA because it's a powerful tool and if misused could have caused significant problems - like the "grey goo". The genetic experiments were kept in a secure environment and automatically destroyed at the end of the experiment.

Guy and Alex worked together on a range of scientific experiments: the gravitational effects on the orbit of Phobos; measuring cosmic rays; accelerating the conversion of barren land into soil; and genetic engineering.

Reflecting on this time Guy wrote in his diary:

One of my most exciting and inspiring times in education was when my friend Alex and I studied geography and science. I was also proud to gain two awards for outstanding achievement - without the help of a brain implant!

Most of the other kids in my group chose to study creative topics. Perhaps they chose them because they are easier topics - AI does most of the work anyway. Then again the same is true of science these days.

I remember my first genetic experiment, in which the modification made no impact but I was sure it would have. So I asked my friend Alex and she quickly reviewed the experimental data and told me I had not applied the genetic edit because the inhibitor was still engaged. I laughed, and thought thank goodness for Alex.

Space School

Two years ago Guy joined Space School to study Space Studies and Astronautics. Guy was confident of graduating from Space School because he had a proven track record in science and knew how to use modern technologies. He flew through the exercises: using VR to simulate space flight; using AR to diagnose and test components; and using 3D printing to create new components.

He passionately wanted to be the first of his generation to make a unique space flight, but despite his confidence one thing worried him: the g-forces that he would have to endure in training and in actual space flight. The training went horrendously and Guy was sick for all zero-g and high-g manoeuvres. He left the training facility feeling ashamed and saddened.

Over the next few days he kept thinking about quitting Space School. He finally made his mind up before going to sleep: “tomorrow I’m quitting!”. In the morning he woke up with an idea. He consulted his old friend Alex and told her about his reaction to the g-force training. Alex suggested that he learns how to control his reactions to the g-forces, and she referred him to the latest scientific studies on the brain and g-forces. Guy started applying what he had learnt from these studies and within a few weeks he was able to function well in the g-force training. This made Guy feel excited and upbeat.

One of the training supervisors noticed Guy’s remarkable recovery and asked how he had done it. The supervisor was impressed and joked “I hope the g-force doesn't knock your glasses off, you'd be hopeless without them.”

During his time at Space School, Guy learnt everything he needed for the mission,

including how to cope with unexpected scenarios and how to improvise.

On the subject of unexpected scenarios, Guy met Chippy next to launch site M2. “How are you Chippy? I mean Ray” said Guy in surprise. Ray said “I like to record all the facts about rocket launches and hang out near the launch sites”. Seeming a little forgetful Ray then said “What did you say, erm… Guy? I’m not too good these days I’ve got BMIT - Brain-Machine Interface Trauma. Despite the chip having a ‘happy function’ I developed severe anxiety and psychosis. Felt like people were always watching me. So I got the chip removed. Still have nightmares about it though.” Guy replied “Sorry to hear that. I learnt about problems with BMI in my studies, and saw that they were eventually banned in many places”. “Should never have had it” said Ray as he walked off.

Guy felt shook up by how the BMI had ruined Ray’s life - he was a mere shadow of his former self. So when Guy got back to his apartment he decided he’d look into putting some of his Society Investment Credits into medical research and rehabilitation for sufferers of BMIT.

Everyone got allocated the same number of credits each year and they could choose how they wanted to use them - what areas of society they deemed most important. The total number of credits invested in each area determined its relative priority, in terms of community development. This replaced the old political systems - there were no politicians.

Before investing their credits each person had to understand the basics of all community aspects and the relative impacts of making different investment decisions. This meant enrolling on the AI driven course, which used real data

analysis and VR presentation. On passing the simple exam their credits would be enabled. The AI Governance System provided this training, informing, and investment functionality. Its scenario modelling would show users the probable impact of each of their proposed investments, and they were then free to choose which areas they wanted to invest in.

Guy learnt about BMIT and its treatment options, and he learnt about another area of medical interest to him: cosmic ray induced cancers. After this he decided that both were important medical issues for his generation, and he invested the same number of credits in both topics.

Lift Off

It is a special day in 2049: Guy walks out to the M2 launch site. Behind the rocket is a beautiful red mountain partially eclipsing the Sun and a hazy blue sky. With a smile on his face he enters the rocket and gets seated. In the last few minutes before lift off he reflects on his past and every key step that helped him to get to this point. He's thankful for his parents love for him, and for his dad inspiring him to be inquisitive at an early age. Without that he wouldn't be here today. He's thankful to MRZ4Kids for giving him an excellent educational experience, and for the opportunity at Space School. Finally, he thinks about his friend Alex who's been with him for 14 years, and reflects on their joint experiences, and their increasing abilities over the years.

Then a sudden jolt makes him fully conscious of his situation: the rocket engines have fired and the rocket is lifting off. Guy is looking forward to his great journey.

Reflecting on the fact that he was born here, on Mars, he shouts out to his elders with glee “I’m the first Martian to go to Earth!”.

Then his face drops a little as he realises that in just a few minutes the high speed rocket will travel beyond the range of the Internet signal. At that point all connections to AI systems on Mars will be lost. So he takes off his glasses, looks at them and says “thank you and goodbye Alex, my tutor and friend”. Alex was the AI that had helped educate and support Guy for most of his life.

Guy relaxed and looked forward to his great journey, to the most beautiful planet in the solar system, Earth.

THE END.

Guy would go on to many more adventures, and would be reunited with Alex.