

Nikola Tesla **(Jere Ruonakangas)**

Nikola Tesla was born in Croatia on July 10, 1856. He was the fourth of five children. His father was a priest and his mother was developing new home craft tools and mechanical appliances. Nikola's father wanted Nikola to become a priest, but he was interested in sciences.

Tesla began his studies in Karlovac's high school and completed a 4-year term in 3 years, graduating in 1873. At high school he was really good at math. After high school he got sick. He contracted cholera and was near death multiple times. When Tesla was bedridden his father promised to send him to the best engineering school if he recovered from the illness. It took Tesla nine months to recover from the sickness.

Tesla avoided going to the military by running away to Tomingaj where he explored mountains. He was resting and reading books and that helped him to recover from the earlier sickness. After spending one year in the mountains, he enrolled to university. During his first year, he earned the highest grades possible and passed nearly twice as many exams as required. Tesla was a really hard working guy and after his father died, he found out that his professor was sending letters to his father about getting removed from the school. That was because the professor thought Tesla would die from overwork. At the end of his sophomore year Tesla lost his scholarship and became addicted to gambling. This continued until he lost all of his allowance and tuition money. He later won back his losses and paid his family back. He never graduated from the university.

In 1881, Tesla worked in a telegraph company in Budapest under Tivadar Puskas. After working one year in Budapest, Tivadar Puskas got him a new job in Paris. He was installing indoor incandescent lighting devices. The management of the company took notice of his skills in engineering and physics and made him develop dynamos and motors. He spent two years in Paris he traveled to the United States, because the person managing the Paris installation went back to the United States to manage a division situated in New York City and asked Tesla to come with him too. In June 1884, Tesla emigrated to the United States. He started working in a large shop with a workforce of several hundred machinists, laborers, managing staff and twenty field engineers, they were trying to build large electric utility in that city.

After working six months in the Edison company, he left because of unpaid bonuses he believed he had earned. He met two investors who helped him financially. They made it possible for Tesla to focus on his inventions and experiments. During his lifetime he patented about 300 inventions worldwide. In my opinion the most important invention was induction motor that ran on alternating current.

Tesla died in New York, and he was found dead in his room on 7 January 1943 at the age of 86.

Marie Curie (Jutta Väänänen)

Marie Curie (born Maria Salomea Skłodowska) was a Polish physicist and chemist. She was born on 7th of November in 1867. Curie is remembered for her discovery of radium and polonium and for winning two Nobel Prizes in two different sciences. She was the first woman to win a Nobel Prize, and the first person to win it twice.

Marie Curie was born in Warsaw, but at the age of 24, she moved to Paris to study. She earned her higher degrees there. In Paris she also met her Pierre Curie, whom she married in 1895. They were brought together by their mutual interest in natural sciences. Later they had two daughters; Irene and Ève. Pierre was able to find Marie a laboratory, where she could start her work. After Henri Becquerel discovered that uranium emits rays that resembled X-rays in 1896, the Curies started their research work on the phenomenon. They ended up finding two new chemical elements far more radioactive than uranium. They called the elements polonium and radium. They also coined the term "radioactivity". Between 1898 and 1902, the Curies published, jointly or separately, a total of 32 scientific papers. After a long journey, Marie Curie was able to isolate radium in 1902.

In 1903, Marie Curie won a Nobel Prize in Physics jointly with Pierre Curie and Henri Becquerel for their researches on the radiation phenomena. On 19 April 1906, Pierre Curie was tragically killed in a road accident. The physics department of the University of Paris decided to retain the chair that had been created for Pierre Curie and to offer it to Marie. She accepted it, hoping to create a world-class laboratory as a tribute to her husband. She was the first woman to become a professor at the University of Paris. However, Curie's quest to create a new laboratory did not end with the University of Paris. In her later years, she headed the Radium Institute, which eventually became one of the world's four major radioactivity-research laboratories.

During the First World War, Curie worked to develop small, mobile X-ray units that could be used to diagnose injuries near the battlefield. The units were called Petites Curies. She worked with her daughter Irene, then aged 17, at casualty clearing stations close to the front line, X-raying wounded men to locate fractures, bullets and shrapnel. In 1911, Curie won her second Nobel Prize, this time in chemistry. Again, the award was a recognition of her remarkable work on radioactivity. In 1921, she was welcomed triumphantly when she toured the United States to raise funds for research on radium. President Harding of the United States presented her with one gram of radium on behalf of the women of America. In August 1922 Marie Curie became a member of the League of Nations' newly created International Committee on Intellectual Cooperation.

Marie Curie died on July 4th, 1934 at the Sancellemoz sanatorium. The cause of her death was aplastic anemia. It is believed, that her illness was contracted from her long-time exposure to radiation. At the time, the effects of ionizing radiation were unknown.

The Curies' daughter Irene continued the family's work on radioactivity. Jointly with her husband Frederic Joliot-Curie, she was awarded the Nobel Prize in Chemistry in 1935 for their discovery of artificial radioactivity. This made the Curies the family with the most Nobel laureates to date. There are several institutes named after Marie Curie, for example the Maria Sklodowska-Curie Institute of Oncology in Warsaw and the British Marie Curie Cancer Care. A few biographies have been written about her, including one written by her daughter Ève Curie. Two museums are devoted to her.

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The Bicycle (Kati Mertala)

Bicycle was invented in the 1800s. It can be considered as one of the most important inventions in the world. Many of the other machines have advanced from cycle. Cycle has many previous versions. Before our modern version of cycle, we had many versions of bicycles. First significant version was high wheel. In high wheel the front wheel was much bigger than the second one. It was noted that the cycle went faster when the front wheel was bigger, and it was a benefit in the races.

Shortly they discovered that high wheel was a very risky vehicle. There happened many accidents with it. There was a need for a safer cycle and then they developed safety bicycle. In the 1885 British inventor called John Kemp Starley brought to market new cycle called Rover. In that version both wheels were about the same size. Transmissions had setted on back wheel. Leader wheel and puller wheel separated and that stabilized driving.

In the 1888 another Irish inventor called John Boyd Dunlop invented a wheel which was filled with air. Later in bicycles installed auxiliary engine where progressed enginebicycles.

Improvement stopped in the 1920s because bicycles were progressed quite ready. After that metals, springings and brakes have progressed. Materials have changed from iron to aluminium or carbon fiber in order

to weight less. Nowadays we have bicycles for many purposes for example mountain bikes and racing bikes. Nowadays we also have bicycles from many price ranges. And when something is popular there are plenty of business men who want to take their share.

Cycling is now more popular than ever. There are plenty of hobbyist in this time and the amount is increasing and no wonder! Citys and communes have made official cycling routes for cyclers. When you cycle in the woods you can smell trees and see beautiful landscapes and move swiftly from one place to another. You can feel physical condition improve rapidly and your mental welfare blooms.

Nowadays bicycle is familiar to everyone and is still a useful invention. Almost everybody knows what is bicycle and own one. Already at a young age childer are taught to drive bicycles. Many of us also drive most of needed trips by bicycle every day.

It is true that the cycle can be consired as one of the most important inventions in the world because it is still very useful and abroad known invention. Bicycle can be consired as one of the most important inventions also because many invention stem from it.

Leonardo Da Vinci **(Katriina Koskela)**

Leonardo Da Vinci was one of the world's most remarkable inventors, scientists and artists in history. He was born on the 15th of April in 1452 in a little town called Vinci in Italy. Leonardo lived with his father since his mother died quite young. Leonardo was interested in plants, animals and nature already at such a young age. This partly explains how he became a biologist as a grown up. When Leonardo was 17 years old, his father moved to Firenze. The father had a friend there, a well-known sculptor called Verrocchio, who was so impressed by Leonardo's skills that he took him as his apprentice. This is the point where it all started. Leonardo died on the 2nd of May in 1519 at the age of 67.

Da Vinci is probably most known from his art work, especially from painting the world-famous Mona Lisa, yet he was far more than that. All in all, Da Vinci was renaissance scientist, inventor, engineer, mathematician, musician, author and philosopher. All this without any background of university studying. He was mostly self-thought. Some of his studies with art and science were concentrated to Rome and Venezuela. Leonardo was already as a child more intelligent and more advanced both physically and intellectually than other his aged. This is shown from the enthusiasm he had towards studying and sports. However, since he was thriven alone, he wasn't very good with relationships. He also had this urge to be perfect. He got the opportunity to paint an altarpiece to abbey of San Donova which he started to do, but then got anxious feeling that it wouldn't be perfect so he quit.

Leonardo Da Vinci was really adept as engineer, especially in mathematics and physics. He has engineered several contrivances on his lifetime. Some of his biggest inventions must be the ones which are familiar to us too. These most known inventions are probably bicycle, submarine, airplane, parachute and last but not least, the early prototype of car! (There are many more inventions than in this list, these are just the most known ones). As a mathematician, he invented differential- and integral formulas which have been in use until this day. This is actually quite interesting, as he had trouble with learning simple multiplications and divisions.

Leonardo was really keen on to flying, so helicopters and hang gliders were his ultimate interests. His savor towards flying started by watching birds. He investigated their muscles and movements by drawing them on paper. Based on these anatomic detailed drawings, started he conceive the mechanical wings. Soon after some experiments he came to the conclusion that there's no way how human could lift his own weight, so he gave up on that idea and started designing a spiral that spins in the air. This is how he invented helicopter - unwittingly.

Another interest of Leonardo's were diving and boats. Water associated innovations from him were submarine and diving suit. Many of Leonardo's inventions were left unfinished because he didn't have patience to focus on to one thing at the time, so he could suddenly change the target to another, nor the technology in his time was developed enough.

Leonardo wasn't as appreciated when he was alive as now. It's sorrowful how most of these incredible people like Leonardo don't get the appreciation until they are dead - they will never get to know how much of impact they've made to a mankind!

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AIV-fodder and Artturi Ilmari Virtanen (Konsta Marjomaa)

AIV-fodder is a Finnish invention, invented by Artturi Ilmari Virtanen in 1929. AIV-fodder is treated with AIV-liquid. AIV-liquid was first produced of sulfuric acid and of hydrochloric acid. The fodder is treated with the liquid to make the shelf life of the fodder longer.

AIV-fodder is meant for cattle food. It is very important to treat the fodder with the AIV-liquid especially during long winters. The increased acidity of the fodder stops harmful fermentation, but at the same time it does not affect the animals it is fed to in any way.

Artturi Ilmari Virtanen, the inventor of AIV-fodder, is a Finnish Nobel-prize winner. He was honoured with the Nobel-prize in 1945. He was rewarded with the prize of chemistry. He is one of the four Finnish Nobelists. Artturi was born on 15th of January in 1895 in Helsinki Finland. He was a Finnish chemist, professor and the Finnish Academy's first manager. He worked in Valio's laboratory, for a while, but after inventing the AIV-fodder in 1929 he founded his own biochemical research laboratory. He held the research laboratory as his primary workplace, even when he worked as a professor in the university of Helsinki. In addition to AIV-fodder, A. I. Virtanen produced many products used in the dairy industries.

The basic idea of AIV-fodder was born during 1928, when in tests it was discovered that the temperature of the fodder didn't rise during the storage if the pH-value of the fodder is under 4. By adding the AIV-liquid to the fodder, it kept the pH-value of it under the needed to abate the harmful enzyme- and bacterial functions. The laboratory results were confirmed in

1928 in a farm in Askola. By the suggestion of Gustaf Rosenqvist, the new fodder was named AIV-fodder. The method was quickly taken to use, and in the autumn of 1929 AIV-fodder was produced in total of 40 million kg. Virtanen left the patent application on 16th of February in 1929, and it was approved on the third of November 1933.

When Virtanen in 1945 was going to the Nobel-awards, he had two scandals on the trip. Politically he got in to a fight with the minister of justice, Urho Kekkonen, after he told the press that he was against the idea of giving up Karjala, in terms of truce with Soviet Union. The discord between Virtanen and Kekkonen later infected in Virtanen' job as the manager of Finnish academy.

Virtanen died at the age of 78 on the 11th of November in 1973. In late October he had fallen on his porch and broken his thighbone. His thighbone was nailed in a surgical hospital, but he then later got a pneumonia and died. He was blessed on 27th of November on government's expense, and he was buried to the cemetery of Hietaniemi.

In addition to AIV-fodder, Virtanen invented a lot more stuff during his lifetime. He also invented the AIV-butter salt. The invention remained as a secret for 14 years, which is why Valio got a remarkable export advantage. The invention improved the storage of butter, regulated the Finnish typically acid pH-value of butter and protected it from flavour mistakes.

VR (Marko Jokela)

Virtual reality, also known as VR is an interactive computer-generated experience taking place within a simulated environment, and it usually incorporates auditory and visual feedback, but may also allow other types of sensory feedback like movement. It immerses its user in an imagined or replicated world like videogames or simulates presence in the real world like visting the Eiffel Tower. It was first seen in 1962, when a pioneer named Morton Heilig created a prototype of his vision called "the Sensorama". A machine that displayed five short films in it while engaging multiple senses: Sight, sound, smell, and touch.

Nowadays, the VR techology is way more advanced and it can be used for many purposes, and entertainment is just one of the many. Virtual reality can now be used in education, training medical students, flight simulation, pain management, and even as a treatment option for PTSD. Usually the user experiences virtual reality through a headset, sometimes in combination with physical spaces, motion sensing controllers, trackers and multi-projected environments, and is now able to interact with the virtual world in real time through internet.

Virtual reality in gaming has been dreamed about almost as long as video games and today, there are thousands of video games, that support VR Technology. As technology progresses, virtual gaming hardware has matured to the point that VR headsets offer a great experience with little lag or nausea, two areas that had presented problems historically. But what is the future of virtual reality?

The oppotunities are limitless. I believe that virtual reality is the future. Virtual reality will play a big part in the education of future generations. Actually, it has already begun. For example, in 2016, students of a school in city of Savonlinna had their very first experience of virtual reality in school. It is believed that in the future, students will learn how to drive a car, fly an airplane

and do surgeries on patients, safely in VR. The project also supports the implementation of learning-diversity based on the new curriculum. The students will become the creators of their own virtual learning materials. Now is it safe?

There are many health and safety considerations of virtual reality. A number of unwanted symptoms have been caused by prolonged use of virtual reality, and these may have slowed proliferation of the technology. Most virtual reality systems come with consumer warnings, including: seizures, trip-and-fall and collision warnings, and repetitive stress injuries. There is also a warning that it might cause developmental issues in children. Conflicting, but there is no concrete evidence that a child of a certain age was somehow adversely affected by wearing a VR headset. It's not surprising that VR headset manufacturers are being cautious. Virtual reality is relatively new, and we don't know much about the long-term effects yet, especially on children. My resolvment is, that as long as you don't stick too much in the virtual reality, you'll be alright.

If you wish to get your hands on virtual reality, it comes with a price. The cheapest VR Headset is being sold for about 6€ by Google, but for the best performance and most features, you're going to have to buy a VR Headset that is connected to a computer, like Oculus Rift or HTC Vive, which are being sold for about 600€. There is also a shop called VR Heaven in the city centre of Oulu, which allows you to book a VR room for you and your friends, starting at 20€ for a 30 minute session.

for example psychics, exceptional phenomena for which we have no expectations of everyday thinking.

Paranormal phenomenon is a very trendy topic in horror movies and books also. Actually all kinds of horror movies or books have a little bit of paranormality because it's an important part of horror culture. The movie called *Paranormal Activity* has perfect examples of what paranormal phenomena are. *Paranormal Activity* is directed by Oren Peli and the movie was first released in 2007 in the United States. The story tells about two persons who live together and are trying to find out where the haunting in the apartment comes from. They put cameras all around the house area so they can see everything that might happen in the house while they are sleeping. In the movie the main characters experience and see weird things like how different items are flying or doors get closed by themselves. There are also other stranger things happening in the house like whispers, footsteps, shadows and feelings of someone touching. The scariest thing is that some of the things that happen in the movie have happened in real life too. Even though there are a lot of proofs in the form of images, recordings and videos it's contrary to reality that there are ghosts in real life.

There is also plenty of news and documents about people experiencing paranormal things. Some of the investigators think that experiencing paranormal things is just people's imagination but they still want to know the explanation to all this. There have been made some researches about why people think that they are seeing weird things. Some of those researches shows that hearing sounds inside the head is not impossible and a person can see things that don't really exist. That usually happens if a person has some trauma from childhood, has been depressed, has had anxiety disorder or had to experience the death of a loved one. The list could continue endlessly. But there are still cases that are inexplicable. Would paranormal phenomena for real be verifiable? What if ghosts really exist? How can we ever find it out? Maybe weird things really happen. It's up to you if you believe it or not.

I write about amazing woman who is not real. She is an character in a TV show. Show is called Grey's Anatomy.

This is Meredith Grey. She is the most talented surgeon I have ever heard of. She knew as a young age what she wanted to with her life. Her mother was a general surgeon and now, so is she. Meredith is current head of general surgery at Grey Sloan Memorial Hospital.

Meredith didn't have an easy childhood, she had a lot to deal with. For example, her father who was a bit of a drinker. Her mother wasn't home with young Meredith but she was always at work. Meredith was the only child at the family at least according to her parents. She didn't know but she did have a sister, two to be exact. Her mother cheated her husband and her father found a new family after he and Meredith's mother divorced. When Meredith was young, she often went to her mother's workplace and watched her performing a surgery. Meredith always loved everything that was connected to human body. She received a doll, "Anatomy Jane" as a gift from her mother. The doll contained 24 organs to take out and some extra parts. Meredith would bring the doll with her to the hospital every time she visited her mother.

Meredith moved out home early and went to collage to study medicine. Her studies went okay but she had a new friend who got her into some trouble all the time. Despite all she manages to finish school and got an internship to Seattle Grace Hospital. It was hard at the beginning but se bush it trough. When she was an intern, she met her future husband, Derek Shepherd. Also, she made some amazing friends. Christina, George, Lizzie, Alex. Those four are the most important. Of course, there was and is others. Meredith has a father

figure Richard who was there for her when ever she needed. Richard also had some drinking problems like her father, but Richard got over it.

Meredith's life is very dramatic and hard sometimes. She did some unimaginable founds at her job. She saved some many people and found answers to impossible diseases. She knew how to fix people and make them better. At her career she won a Harper Avery Award which is amazing award. Meredith has almost died and died, her pulse was zero. Meredith has three kids, two girls and one boy. Meredith lost Derek in a car accident. Meredith has gone trough so much bad things like shooting at the hospital where she almost lost Derek, her best friend's death, plane crash where she lost her sister, drowning and treading a man with pom inside of hem. So yes, you could say that she is had enough.

Now Meredith is living a happy life with three of her beautiful children and thinking of moving on with her love life. She misses Derek every day, but she is not standing in place. Her career is in amazing rise and she is developing some new ideas and methods. She is supporting all her friends with every adversity. **(Milla Sassi)**

The future of many faces (Mirka Saapunki)

Are you tired of using credit cards or cash to pay? Is it annoying to try to find your wallet from your bag and then find the cash or the card? Wouldn't it be easy for you to just walk to the checkout and push a button and you're done? These are the questions you're probably going to hear on commercials in a couple of years.

A handful of companies in China have developed revolutionary facial recognition software. Face+++ (Face plus plus) and Baidu are one of the companies that have been working on this project. The software runs by analyzing people's faces and matching them to a database of photos. Different applications are leveraging this technology in some interesting ways from security to payment credentials. The face-payment system is still on the progress and it requires more familiarization with the launch consumer. Still it probably won't be long until we are able to pay with our faces everywhere.

Phone companies are already using the face recognition. Example Apple have introduced Face ID on the flagship iPhone X as a biometric authentication successor to the Touch ID, a fingerprint-based system. Face ID has a facial recognition sensor that consists of two parts: a "Romeo" module that projects more than 30 000 infrared dots onto the user's face, and a "Juliet" module that reads the pattern. The resulting pattern is sent to a local "Secure Enclave" in the device's central processing unit (CPU) to confirm a match with the phone owner's face. The system doesn't work with closed eyes lest no one can misuse the system of the phone. Example if you're asleep, no one can open your phone by using the face recognition.

China isn't the only country that's working on the face recognition system on purpose of payment. In 2017 a Finnish company Uniquil had searched for market customers who would bring into use the system in the idea of a trial run. Nowadays Uniquil already uses the face recognition system as a payment. They are

marketing their system to shops. The company says that paying with Uniquil is very simple: "You go to the cashier and the Uniquil wallet opens on the tablet screen. You press OK to accept payments - that'll do". They say that behind the scenes, the system has begun to identify itself when you arrive at the checkout, and your work will be left with just a click. That's their point of view of a straightforward payment.

The face recognition system has more to it than just as a future payment. Surveillance cameras depicting streets and traffic stations may in the future find a crowd of people whom one misses: suspects, lost memory patients or young people who have escaped their homes. Many might not even realize that they've been identified. Remote ID can be successful even if you do not even see the identifier. The radar radius can hit hundreds of meters away and through the walls. When the beam returns to the antenna, changes in wavelength can reduce the rhythm of the heartbeat and breath, as well as the position and movement of the person. A single identifier may be weak, but a combination of multiple attributes is more likely to hit the right one. This obviously interests soldiers and cops, but also airports, amusement parks and other places with crowd. This technology is already used in China.

Overall face recognition is already part of our society. Even if you didn't want to. It's used in phones and payments and finding criminals. When we walk on the street there's "Big Brother" keeping an eye on us. They know who we are just by a glimpse of our faces. We are watched all the time. It's quite creepy if you think of that. But if you haven't done anything illegal, what is the disadvantage that you are identified on the street?