

Text 1. History of the Internet

From its very beginnings the Internet became a crucial part of each and any infrastructure. Similar to the discoveries of electricity, microorganisms or elementary particles, the creation of the Internet has turned a new page in the history of humanity.

The history of the Internet has begun in the middle of the 20th century as a result of rapid development of computer science. Computers of that age were still relatively underperforming and needed constant maintenance. Some kind of an effective and automated method of time-sharing between users needed to be devised and implemented for them to work reliably.

The first idea that had emerged from that necessity was a concept of multi-tasking. Nowadays we don't pay much attention to the fact that our computers perform many tasks at once, and that with our computers we can, for example, work and listen to music at the same time. But in the 1950s this idea turned out to be revolutionary.

The second idea would be a proposition to merge multiple computers into a single network. Each participant of such a network would be able to exchange data with the others. But the exact mechanism of implementation was still largely a mystery. Roughly for ten years the scientists were developing and discarding all kinds of ideas, one after another, preserving those that could be at least somewhat handy bit by bit. This is how the prototypes of packet exchange protocols (as well as the concept of a data packet itself) came to be.

In 1969 a duo of American engineers, Robert Taylor and Lawrence Roberts, have made a presentation to the U. S. Department of Defence with a project dubbed ARPANET (which stands for Advanced Research Projects Agency Network) founded on the previous research. Even more advanced networks have started to develop based on this one, including what would be later known as 'networks of networks'. These researches have culminated with the emergence of two main network protocols (TCP and IP), which are still used as of today with some modifications.

A modern solution that eventually replaced ARPANET was called NSFNET, which was the National Science Foundation Network. This particular network has adopted the TCP/IP protocol as its main one, and also helped the emergence of the Domain Name System (DNS). And thus when the 1990s have arrived, the Internet architecture as we know it was largely in place.

One should make a distinction between terms 'the Internet' and 'the World Wide Web'. The first one relates to the network architecture in itself. The second one is more of a modern development and constitutes an interface that allows the access to a network for a user. It emerged in 1990 courtesy of CERN scientists, Tim Berners-Lee in particular. He was the inventor of terms such as HTTP, HTML, and also of a web browser.

In 2020 nearly 4,5 billion people are using the Internet both for work and communication. The Internet is a cornerstone of all modern banking, of the vital infrastructure automated systems, and also of many computer science branches. This promising technology still continues its development nowadays, and for now we can't even fathom what new discoveries this further development can bring.

Text 2. Baby K

The development of a human embryo can go awry in many different ways. One of the most common types of birth defects that afflict yet unborn children are referred to as neural tube defects (NTDs). A premise for the development of NTDs lies in an incomplete closure of a neural tube, a precursor to the human central nervous system that forms from an embryo's nervous tissue over the course of a normal development. As a result, an opening remains in the developing spine or cranium of the fetus, which, depending on its severity, can fully disrupt the growth of the nervous system. Neural tube defects affect either the development of the brain, or spine, or both. Most of the conditions that stem from NTDs are usually untreatable, leave the person largely disabled, and have an extremely high mortality rate.

Anencephaly is a NTD that in broadest terms means the complete absence of the cerebrum, the largest part of the brain responsible for senses and cognition. The causes of the condition are still unclear, but it is speculated that it can be triggered by a folic acid deficiency and certain types of diabetes in pregnant women. Abortion is strongly encouraged when anencephaly is detected via ultrasound. Anencephalic children are usually either stillborn, or die from cardiorespiratory arrest mere hours or a few days after the birth.

Nevertheless, there were some cases of anencephaly that truly stood out from the rest. One of such cases was of Stephanie Keene (name was probably changed due to privacy concerns) dubbed as Baby K.

Stephanie was diagnosed with anencephaly long before her birth. Her mother has chosen to keep the child due to her belief as a Christian that all life should be protected.

The doctors and the nurses both strongly advocated for a DNR order for the baby, but the mother refused yet again. Over the course of six months after the birth Stephanie has travelled from hospital to a hospital and was kept under a ventilator all this time. Eventually a hospital has filed a lawsuit against Stephanie's mother, aiming to appoint a legal guardian in her place, and trying to receive a legal confirmation that the hospital couldn't be held responsible for Stephanie's health and would opt out of any services to her save for palliative caregiving.

And, in a very controversial ruling, the hospital has lost that case. The court has ruled that Stephanie is to be put under a mechanical ventilator and be given other care if any sort of other medical emergency would have arisen. The court has also made a notion that they ruled according to existing laws, without any regard to the rather unusual condition that Stephanie had.

Thus Baby K has lived 2 years and 174 days. Her heart had stopped on April 5, 1995. Keeping her heart beating had cost over 500,000\$, a sum, as some would argue, that could've been spent on research aimed to prevent NTDs or, possibly, treatment of other newborn children.

Text 3. A Beautiful Mind

Game theory can be explained broadly as a study of behaviour of rational beings in cooperative and non-cooperative decision making. It's a relatively new field of science that emerged in the second half of the 20th century. Globalization of economics, advent of nuclear weaponry and emergence of computers were all major milestones in the history of humanity, and each subsequently dictated the need to formalize at least the most common trade and war strategies.

A game is usually defined as a process involving two or more actors, each of them having something to gain or lose through their actions after the game is finished (or 'solved'). Thus, the definition applies to most of the regular games (like, for example, poker), but can be broadened as necessary to cover multitudes of other situations, both real and hypothetical. The action is presumed to be taken by a 'rational agent' - that is, an actor that acts consistently and always chooses an action that is the most optimal in terms of loss/gain ratio according to his current position. A game can be cooperative or non-cooperative, allowing or disallowing willing alliances between the participants respectively.

The study of cooperative games usually focuses on why and how the coalitions form, and what actions the members of any coalition would take at any given time. The study of non-cooperative games instead focuses on individual players and on finding a solution called Nash equilibrium.

Nash equilibrium is a state of a game in which no player, knowing the strategies of other players, can change his own strategy to better his own odds while the other strategies are unchanged. Essentially, this means that all of the players have found the best possible (or 'optimal') outcome of the game for themselves, given the current rules and circumstances. Mathematician John Forbes Nash, who was an author of the concept, proved that this equilibrium is possible to find for any finite game.

One of the most famous examples of finding Nash equilibrium is a thought experiment called Prisoner's dilemma. Suppose there are two prisoners interrogated in two different prison cells. They have no way to communicate with each other, but each of them knows that the other is also interrogated. Each prisoner is sentenced to one year in prison. Each prisoner is then offered a deal: if he testifies against the other, he is set free, while the other gets a harsher, 3-year penalty. However, if both prisoners testify against each other, both of them will get a harder sentence, and both will serve 2 years in prison. Each prisoner can choose either to testify or to remain silent. What is the optimal course of action for each prisoner?

According to game theory, a rational actor would choose to leave prison, condemning the other prisoner. Thus Nash equilibrium in this situation (and the most optimal outcome) would be reached if both prisoners tried to betray each other and subsequently each served 2 years.

Knowledge that in any situation with something to gain or lose there is indeed an optimal course of action with maximized profits for any and all participants has very wide implications. Finding it might be hard, but the willingness to do that, perhaps, can make us able to stop the wars and other major threats to our society.

For his works in game theory, John Nash was awarded a Nobel Prize in Economic Sciences back in 1994, 45 years after actually writing them down. As of 2020, Nash is the only person ever to be awarded both this prize and the Abel Prize in mathematics, which he was awarded in 2015.

Text 4. The Bayeux Tapestry

The Bayeux Tapestry (also known in France as a Tapestry of Queen Matilda) is a unique medieval artifact that dates back to the 11th century. Nearly 70 metres of embroidered cloth expand on the events that led up to the Norman conquest of England, culminating with the fateful Battle of Hastings.

Technically not a tapestry (as tapestries are woven, not embroidered), this exquisite piece of cloth shows about 70 historical scenes and is narrated with Latin tituli. It's origins and the history of creation are still hotly debated in scholarly circles, but the two main theories give the credit either to the Queen Matilda of Flanders who was a wife of William the Conqueror, or to a bishop Odo of Bayeux, who was William's half-brother and eventually became a regent of England in his absence.

The tapestry is made largely of plain weave linen and embroidered with wool yarn. The woolen crewelwork⁴ is made in various shades of brown, blue and green, mainly terracotta, russet, and olive green. Later restorations have also added some brighter colours, such as orange and light yellow. Attempts at restoration of both the beginning and the end of the tapestry were made at some points, adding some missing tituli and numerals, although an ongoing debate disputes the validity of these restorations.

The events unfolding on a tapestry took place in the years 1064 to 1066. Anglo-Saxon earl Harold Godwinson is depicted receiving the English crown from Edward the Confessor, a deathly ill English monarch. An invading Norman force is then shown, which soon engages Saxon forces in a bloody battle. Ultimately king Harold is slain, and English forces flee the battlefield. The last part of the tapestry was supposedly lost and a newer piece was added in its place roughly in 1810. The tapestry allows for an unique insight into the mind of a medieval craftsman, and, as it was commissioned by victorious Normans, gives us a chance to see how the medieval history was customarily chronicled by the winning side.

Since 1945 the Tapestry rests in Bayeux Museum, although as recently as 2018 the plans were put in motion to move it to an exhibit of the British Museum in London before the end of 2022. If everything proceeds as planned, it will be the first time the Tapestry has left France in over 950 years.

Text 5. Thus Spoke Zarathustra

‘Thus Spoke Zarathustra: A Book for All and None’ is a famous and somewhat controversial novel finalized by German philosopher Friedrich Nietzsche in 1885. Nietzsche has considered this book his most important work. It greatly expands on the main ideas that he has presented in his previous works, and remains a hot topic for debates in scholarly circles up to this day.

The book was written in German, and made heavy use of various forms of wordplay. The translations were thus sometimes impeded by a lack of corresponding wordplays or terms in other languages. Even taken at face value, the book was made explicitly in a way that defies any attempts to read it straightforwardly. Nietzsche himself, rather tongue-in-cheek, has written thus in a preface to his next book, *Ecce Homo*: ‘With Thus Spoke Zarathustra I have given mankind the greatest present that has ever been made to it so far. This book, with a voice bridging centuries, is not only the highest book there is, the book that is truly characterized by the air of the heights — the whole fact of man lies beneath it at a tremendous distance — it is also the deepest, born out of the innermost wealth of truth, an inexhaustible well to which no pail descends without coming up again filled with gold and goodness’, perhaps hinting at the fact that none of his contemporaries had even begun to move in the right direction regarding that book.

The plot of the book is fairly simple. Zarathustra, a wandering philosopher, travels around the world and comments on various people and places he sees. Zarathustra is an evaluator (or rather, transvaluator) of all ideas, and strives to question a broad variety of topics regarding human culture and daily lives.

Three major themes can be followed through the book: the eternal recurrence of everything that is; the possible appearance of ‘super-humanity’; the concept of ‘will to power’ as the cornerstone of human psyche and behaviour.

The idea of ‘eternal return’ (or recurrence) is the idea that each event and occurrence that happens, repeats itself eternally in cycles. Rather than postulating this, Nietzsche actually ponders if it’s true. Although it’s a very popular idea that seemingly stems logically from the laws of infinite Universe as we know it, it still hasn’t been proven nor disproven, so Nietzsche marks it as ‘the most burdensome’ of his thoughts.

The concept of a ‘super-human’ (or, rather, of a ‘beyond-human’, *Übermensch*) is one of the goals that Nietzsche suggests to humanity through teachings of Zarathustra. The *Übermensch* is an objectively better type of a human that is destined to transcend the regular humans. This idea was interpreted in wildly different ways, sometimes outright xenophobic. But at its core it suggests only transcendence of some stale norms of morality and building a better future on Earth instead of turning to all things spiritual. An antithesis of an *Übermensch* is called a ‘last man’, a nihilistic, egalitarian and decadent human being, ‘too apathetic to dream’. Nietzsche also suggests that this is another of the possible outcomes of humanity development.

The third idea, which is a ‘will to power’ is never precisely defined in any of Nietzsche’s work. This also has brought many speculations and controversy into his works, as well as into the works of his researchers. He did mention though that it’s a driving characteristic of all life, and it’s related

to overcoming perils and obstacles, including the obstacles within oneself. He also made a notion that human cruelty (in whatever form) may be related to this driving force.

Initially Nietzsche has planned this book to have six parts. During his life he's managed to write only four, and the fourth was largely written as a rough draft. Debates around the book are still going strong today, and while Nietzsche himself has argued that the book is finished, and opposed vehemently to any attempts to add or remove something from it, the key to the ultimate understanding of his ideas is yet to be found.

Text 6. The Black Forest

The Black Forest is a large mountain range located in southwestern Germany. As the name suggests, it's covered by a lush forest. The highest summit of the range is the Feldberg mountain (1,493 m above sea level). The region is widely known for its precious minerals as well as its rich history, culture and cooking style.

In ancient literature the region is first mentioned in the works of Pliny and Tacitus. Almost for 2000 years, from the 5th century BC up to the 16th century, the Black Forest was known only for its surplus of ore. Workers of the few settlements that were in the region made a living mining lead, silver and iron.

An outbreak of plague and the German Peasants' War forced a decline of the region in the 16th century, through and all the way up to the beginning of the 18th century, when the mines were reopened, while lumbering and rafting of precious timber solidified its prospects of economic prosperity.

The region's relative seclusiveness coupled with an access to abundant mineral resources made people who lived in the Black Forest into artisan craftsmen. Even before the widespread advent of precision mechanics, the people of the Black Forest made additional income making wooden clocks and toys when mines and lumber mills were closed. When the Industrial Revolution dawned and a railway network made its way into the region, its clockmakers, jewelers and glassmakers became prominent throughout Europe.

In the 20th and 21st centuries the main industries of the region were power plants and tourism. Many of the mines were remade into museums, which are opened daily for the visitors. Numerous military conflicts of the Late Middle Ages, as well as those of early modern period, have left many archeological sites to discover, many of them pertaining to warfare, including more than 200 km of defensive fortifications. New archeological sites are still being discovered these days, and the full inventorying is still yet to be completed.

Someone who has no interest in history or industry can still find many interesting things to do there. The big lakes Titisee and Schluchsee are surrounded by small resort towns that offer miscellaneous water sport activities including deep diving. Each year the region sees a competition held between amateur and professional confectioners who aim to perfect an art of making the famous Black Forest gâteau.

Today the region makes use of developed transport infrastructure and is easily accessible from any other region of Germany. A bus ticket from Berlin to Freiburg, one of the largest cities in the region, will cost you approximately 30 euros.

Text 7. Born Free

Friederike Victoria Gessner (better known by her pen name as Joy Adamson) was an Austrian-born writer, painter and naturalist famous for her work raising and reintroducing big cats into the wild.

Briefly considering a career of a musician or a doctor at first, in 1937 Friederike was forced to migrate from turbulent Vienna into wild Kenya. Being very easy-going by nature, she made friends wherever she went. Soon enough she found herself very close to many researchers, biologists and wildlife conservators who were prominent in the area. Thus she spent her younger years as a naturalist, doing sketches and making observations on various flora and fauna.

Her greatest work was yet to come, though. When she was 42, her then-husband George Adamson, a senior wildlife warden, was asked to protect local farmers from a lioness that was threatening them. As it turned out later, the lioness was simply protecting her cubs from encroaching human settlement. After successfully fighting the lioness off, George and Friederike decided to adopt those little lions. Tending to all three of them at home has proven very difficult, so the couple eventually donated two larger cubs to Rotterdam Zoo, and took the smallest one, Elsa, for themselves.

As the young lioness was growing up very fast, Friederike has realised that soon they wouldn't be able to provide for her, so she decided to teach Elsa how to act on her own, hunt, and live in the wild. Taking this duty very diligently and treating Elsa as an equal rather than as a pet, Friederike (who by this point has already adopted her pen name) has managed to succeed. Roughly two years later Elsa, now a wild lioness, brought a litter of her own, and those three cubs were the first ever to be born by a domesticated lioness that was reintroduced into the wild.

This was an unprecedented story in a naturalist world, and soon enough Joy Adamson had the attention of both scientists and cinematographers. The story of Elsa was documented in her book, *Born Free*, that was also made into a motion picture in 1966.

Encouraged by her first successes, Joy shifted her focus to cheetahs. While still a rather large cat and a very fast predator, a cheetah nevertheless is one of the most vulnerable species amongst its kind. They suffer both from larger and smaller predators, as well as from human encroachment. Using the techniques she learned with Elsa, Joy successfully reintroduced Pippa, a female cheetah, into the wild. Joy has dedicated two books to Pippa and her litter, first being *The Spotted Sphinx*, and the second being *Pippa's Challenge*. Yet another success was waiting some years later, when Joy successfully worked on a reintroduction of an African leopard named Penny.

In her later years Joy was an activist, travelling around the world, making speeches and raising funds in order to protect the wildlife. Her life ended tragically shortly before her 70th birthday as she was murdered by a disgruntled laborer who was fired by Adamson not too long ago. Her ashes were scattered in Meru National Park over Elsa's grave as an eternal testament to the fact that we all were born to be free.

Text 8. Space Oddity

David Bowie (born David Robert Jones) was an English musician, actor, and one of the most prominent artists of the 20th and the early 21st centuries.

The American popular culture magazine Rolling Stone placed him as 39th in their list of 'The 100 Greatest Artists of All Time', right behind John Lennon, and, following Bowie's death in 2016, they also called him 'The Greatest Rock Star Ever'.

David Bowie was born 1947 in London to a working class family. As a child, he was very gifted, albeit with a temper. When he was only 9 years old, he was already noticed by his music teachers for his highly imaginative and flashy dancing style. His childhood was spent under heavy influence of popular artists of the time, mainly Elvis Presley, Little Richard and Fats Domino.

As a teenager, Bowie took many classes in various musical instruments, including ukulele, piano and saxophone. In his free time, he liked doing impressions of his favourite artists to his friends. Later on, when talking about it, his friends and biographers were noting that Bowie's performances were 'like something from another planet'.

After multiple unsuccessful tries joining with various local bands, David has tried to embark on a solo career. He's taken his alias inspired by James Bowie, an American pioneer who has also invented a Bowie knife. This try was not very successful as well. Nevertheless, Bowie persisted relentlessly, recording his own music, building up his network of contacts in the music world, and educating himself in various theatrical arts.

The real fame came to him after his song Space Oddity that was released as a single on July, 11, 1969, a mere few days before the fateful Apollo 11 launch. The song was inspired by Stanley Kubrick's 2001: A Space Odyssey which was released just a year before that. The single quickly climbed to the top five in the UK charts. The song became one of Bowie's signature songs, while its hero, Major Tom, eventually became a recurring character in his other songs.

Building on his newfound fame, Bowie again tried to build a team around himself. Fairly antagonistic by nature, he nevertheless managed to record another of his iconic albums, The Man Who Sold the World. Around this time he also started to develop many different colourful stage personas and build his stage appearances in-character according to those personas. Wearing provocative costumes and makeup, he and his projects swiftly came to the light of the media and he started gathering a cult following.

His acting talent has also caught the attention of various film and stage directors, sparking his acting career. While he never got any notable lead roles, he was a very convincing actor nevertheless, and often appeared in an important supporting role or as a cameo. His most noteworthy performances in this field include Joseph Merrick in the Broadway theatre rendition of The Elephant Man, and Phillip Jeffries, an enigmatic FBI agent from David Lynch's movie Twin Peaks: Fire Walk with Me.

Bowie has struggled with drugs in his young years, but eventually managed to get rid of his addiction. In his late years he was a major advocate of healthy lifestyle. He has also used his fame to send strong statements regarding equality and the need to stand up against racism.

David Bowie died of liver cancer in his own apartment in New York City. It happened on January, 10, 2016, just two days after the worldwide premiere of his newest album, *Blackstar*. He's still remembered as being one of the most strange, wonderful and almost otherworldly artists of our age.

Text 9. Global consequences of the climate change

The 20th century was very notable with its unparalleled technological advancement of humanity. With each passing day the lasting impact that we leave on our planet becomes more and more apparent. The most obvious and harmful outcomes of heavy industrialization are global warming and climate change.

The first signs of global warming became obvious in the middle of the last century. Since the 1970s, the surface temperature of Earth has risen by 1 °C. Multiple data records show now that the warming happens at the rate of roughly 0.2 °C per one decade.

This is a very alarming development. The bulk of global warming is attributed to human activity. Assuming we don't do something about it, the consequences would be lasting, probably irreversible, and very harsh.

The first and most obvious effect is the heating of Earth's atmosphere. This means that there will be less cold days and more hot days overall. This in turn means that both plants and animals will need to adjust to it. Some of them might not survive such a change.

The secondary effect is the melting of continental ice, which makes sea levels rise far above their normal point. Extreme cases could lead to floods and destruction of continental coastlines.

Warmer weather also results in more water evaporating and the air becoming more humid. This can lead to even more rains, floods and some extreme weather patterns such as wildfires and tropical cyclones.

One of the most insidious and less obvious effects is the change of the oceans oxygen levels. Warmer water can hold less oxygen than the colder one, and so if the temperatures continue to rise, many underwater species risk total extinction.

While humanity definitely contributes much to climate change with irresponsible burning of fossil fuels, we still can battle it. Switching to renewable and clean energy sources, electrical cars, and improving the efficiency of our factories can curb the adverse effects we've inflicted on our planet over the last 100 years.

And if worse comes to worst, humanity can be very good at adapting to hostile environments. Adaptation strategies include reinforcing the coastlines or relocating deeper into the mainland; development of weather-resistant crops; development of contingency scenarios for local disaster management.

Text 10. A murder mystery as a literary genre

A crime fiction (also called a murder mystery) is a story that focuses on a criminal act and on a following investigation. Usually done from a point of view of either a detective or their assistant, crime fiction spans over many types of media. Usually it takes the form of either a novel or a movie.

The first historical example of crime fiction is probably a novel *The Three Apples*. It was a part of *One Thousand and One Nights*, which is a collection of old Arabic folk tales. The novel lacked any typical features of a modern murder mystery, but still tried to set up a crime scene as a plot device. Other tales from this collection also describe some bits and pieces of actual crime investigation.

The genre became very popular in the late 19th century, with works by Edgar Allan Poe and Arthur Conan Doyle paving the way for more advanced stories of John Dickson Carr and Agatha Christie. Sherlock Holmes and Hercule Poirot, while being purely fictional characters, became real enough to their own fans. Over the course of many years readers were following the adventures of their beloved detectives. Holmes has appeared in 60 works of fiction in total, while Poirot in his career has made over 80 appearances.

A classic murder mystery can be viewed as a sort of a game between an author and the reader. An author sets up a murder scene, and the reader must deduce the culprit before the main detective character reveals him. A typical murder mystery leaves three questions to the reader: who has done it? How was it done? Why was it done? Answering all three questions before the main character would mean 'beating' the novel.

As the genre developed further, authors have developed some guidelines on writing a good murder mystery. There were many variations of such rules, but in a nutshell it all boiled down to a novel being fair to its reader. For example, a good novel had to introduce the culprit early in the story as someone who a reader would know about. All clues should be available to the reader the same way they are available for the protagonists. There were also some very strict rules on the usage of poison and other similar substances, as the reader should have been able to unravel the story without any sort of special knowledge.

One of the most iconic form of a murder fiction is the locked-room mystery, which describes seemingly an impossible crime (for example, a corpse would be hidden inside an empty room that is locked from the inside) and challenges the reader to find a plausible way to explain it and eventually find the perpetrator.

Another type of murder novels revolves around a closed circle of suspects. These stories usually have many colorful characters, each of them with their own agenda, and the main challenge for a reader lies in pointing out the single guilty party while sparing the rest of possible culprits.

The murder mystery is still a very popular genre nowadays, and the classics of it are routinely adapted into films, videogames and some other forms of fan fiction.

Text 11. Timeline of the far future

The future is not set. Or is it? Modern science allows us to predict some future events that are about to happen (for example, a weather tomorrow), but how about something that will happen 100,000 years from now? What about 1,000,000 years? With the power of biology and physics we can go that far. And maybe even further than that!

We can start with really simple predictions that are guaranteed to be fulfilled (obviously, if nothing happens to the object we're looking at before that). For example, we know that it will take roughly 50,000 years for the famous Niagara Falls to erode completely and disappear. In the same 50,000 years the astronomical day will need another second to be added to in order to actually represent a day.

In 100,000 years, even if humans are extinct, at least 10% of anthropogenic carbon dioxide will still remain in the atmosphere.

Roughly 1,000,000 years will take for the Arizona Meteor Crater to completely disappear. 1,000,000 years is also the top estimated time for the red star Betelgeuse to explode in a supernova. This supernova would be visible from Earth for some months afterwards.

In 10,000,000 years from now the Red Sea will flood into some areas of East Africa, dividing the continent.

In 100,000,000 years the rings of Saturn will probably disappear.

In 180,000,000 years the day on Earth will be an hour longer than today.

In 250,000,000 years a new supercontinent may appear, and some completely new species may start dominating the planet.

In 600,000,000 years the increasing Sun luminosity will start to disrupt carbon-based life as we know it, eventually making photosynthesis no longer possible. The oceans will start evaporating rapidly.

Assuming all previous events are true, about 1,300,000,000 years separates us from the total eukaryotic life extinction. In about 2.8 billion years all life goes extinct, as the surface temperature reaches roughly 150 °C.

Roughly in 4-5 billion years our galaxy will collide with the Andromeda galaxy, forming a new Milkomeda galaxy in the process. An event of such magnitude would be hardly (if ever) noticeable from Earth.

It will take an estimate of 3×10^{43} years for the Universe as we know it to end and the Black Hole Era to begin. Black holes, the enormous pockets of crushing gravity that usually form out of dead stars, will be the only celestial bodies in that era. But even the black holes will evaporate eventually, perhaps clearing the way for a new Big Bang.

Those all are very large amounts of time. Still, they are all perfectly countable. Seeing as we now know both the time that passed since the birth of the Universe, as well as the time for it to end, perhaps we can finally start to treasure the time that is given to us.