

IC FUDGE



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7 wonders of the world

Structural masterpieces:

Our world consists of structural masterpieces with intricate architecture. Time, dedication and cultural significance have been seamlessly embedded into this art form. Some being manmade; tombs, mosques, temples, churches, museums, and some withstanding time, remains of natural disasters symbolising yore. However, seven of these sensational designs are considered the seven wonders of the world, regarded as milestones and landmarks, now you'll uncover a new perspective, a historical point of view of these masterpieces.

There is a significant difference between the seven wonders of the ancient world and the seven wonders of the “new” world, what we consider them to be currently, the new world wonders include; The Great Wall of China (Built 220 BC to 1644 AD), The Taj Mahal, India (Built 1632-1648 AD), Petra, Jordan (Built 4 Century BC-2 Century AD), The Colosseum in Rome, Italy (Built AD 72-82), Christ the Redeemer statue, Rio de Janeiro, Brazil (Built 1926-1931), Chichen Itza, Mexico (Built 5-13 century AD), Machu Picchu, Peru (Build mid-15 century AD). Although, the seven wonders of the ancient world were replaced in 2007 by the above.

The Great Pyramids of Giza:

Going back in time, The Great Pyramid's of Giza is the only wonder of the ancient world that withstood numerous encounters to survive to the present day. It is part of a group of three pyramids; Khufu, known as the Great Pyramid as it covers 13 acres of land, (Cheops), Khafra (Chephren) and Menkaura (Mycerimus). These were built between 2700 B.C. and 2500 B.C. The pyramids were precisely constructed, with almost symmetrical walls, this was believed to be done by using log rollers to move stones into place. Furthermore, the sloped walls were used to reflect on the rays of Ra, the god of the sun, originally built as steps. Many modern archaeologists have unveiled incredible treasures among the ruins. The interior of Khufu is a hierarchical pyramid structure, consisting of narrow corridors, the infrastructure still stands to date!

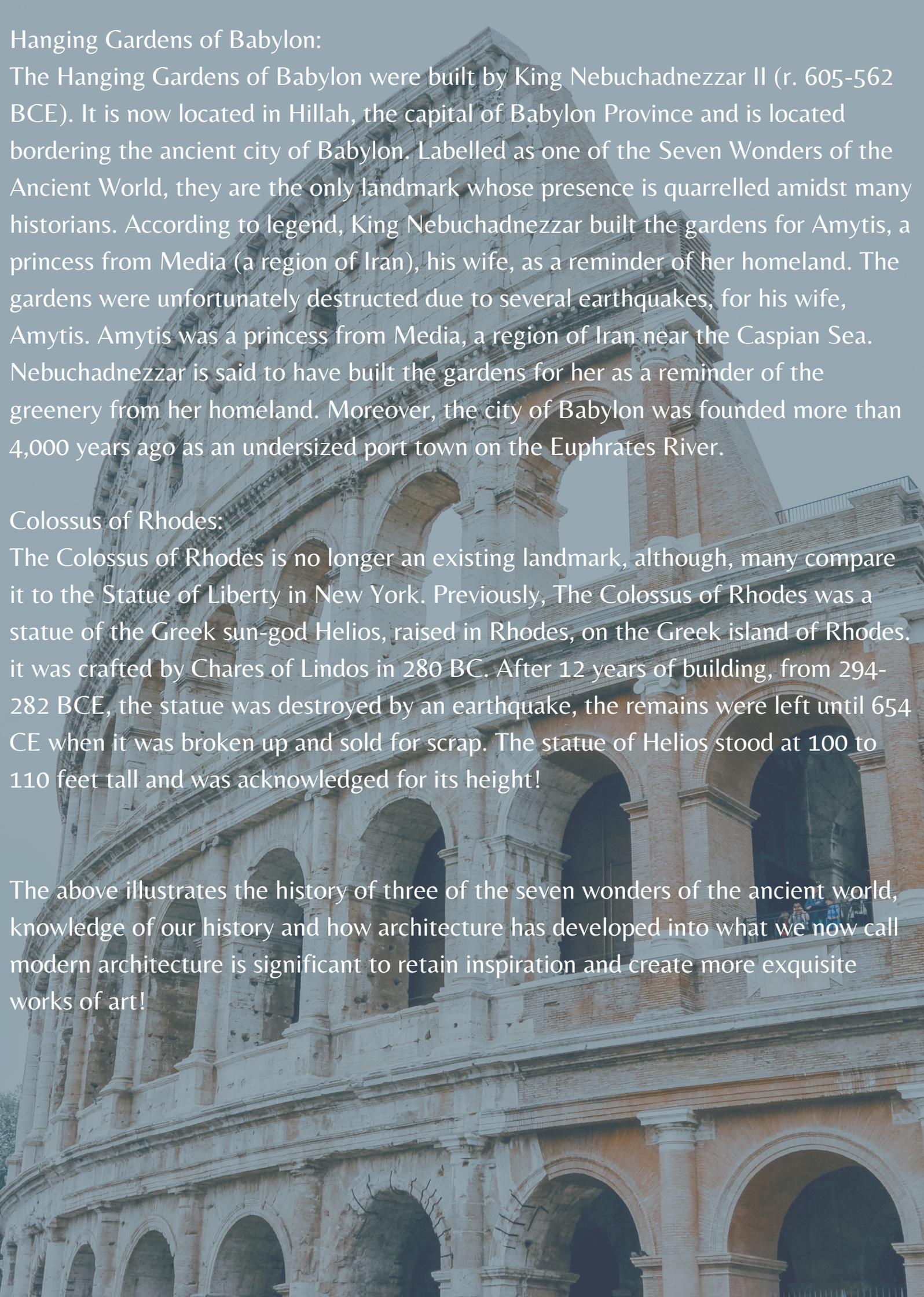
Hanging Gardens of Babylon:

The Hanging Gardens of Babylon were built by King Nebuchadnezzar II (r. 605-562 BCE). It is now located in Hillah, the capital of Babylon Province and is located bordering the ancient city of Babylon. Labelled as one of the Seven Wonders of the Ancient World, they are the only landmark whose presence is quarrelled amidst many historians. According to legend, King Nebuchadnezzar built the gardens for Amytis, a princess from Media (a region of Iran), his wife, as a reminder of her homeland. The gardens were unfortunately destroyed due to several earthquakes, for his wife, Amytis. Amytis was a princess from Media, a region of Iran near the Caspian Sea. Nebuchadnezzar is said to have built the gardens for her as a reminder of the greenery from her homeland. Moreover, the city of Babylon was founded more than 4,000 years ago as an undersized port town on the Euphrates River.

Colossus of Rhodes:

The Colossus of Rhodes is no longer an existing landmark, although, many compare it to the Statue of Liberty in New York. Previously, The Colossus of Rhodes was a statue of the Greek sun-god Helios, raised in Rhodes, on the Greek island of Rhodes. It was crafted by Chares of Lindos in 280 BC. After 12 years of building, from 294-282 BCE, the statue was destroyed by an earthquake, the remains were left until 654 CE when it was broken up and sold for scrap. The statue of Helios stood at 100 to 110 feet tall and was acknowledged for its height!

The above illustrates the history of three of the seven wonders of the ancient world, knowledge of our history and how architecture has developed into what we now call modern architecture is significant to retain inspiration and create more exquisite works of art!



Lemon and Chillis

Indians are most commonly found to be hanging Lemons and Chillis at the entrance of their houses but is this just a superstition or is there a science behind it? Some people think that hanging lemons and chillis are a sour lie but most Indians living in the rural areas think that it's real and has scientific evidence to back it up too. We often see 7 chillis and 1 lemon hanging on the entrance of shops, offices, rickshaws, trucks, etc in India and it has now become an Indian custom to most people follow without the true meaning behind it.



This superstition has both religious and spiritual evidence as well as science to back up this one of a kind ritual. The religious side of this superstition is that according to legends, hanging lemons and chillis ensures that goddess Olakshmi, the sister of goddess Laxshmi, (who is also the goddess of poverty) doesn't enter people's houses. Also, Olakshmi enjoys eating sour and pungent things so when Olakshmi comes, she gets satisfied at the door itself with the lemons and doesn't enter the house. There is a spiritual explanation for this ritual too. When people keep lemons and chillis outside their house, it is meant to shoo negative energies and evil eyes. Lastly, there is a science behind this famous doing. A very popular theory suggests that in earlier times, people used to walk in forests with lemons and chillis as a protective measure. If they get thirsty, they would simply drink the juice of the lemon as it's a great source of Vitamin C which reduces tiredness and makes one energetic again. And for the chillis, if there were any snake bites, chilli could be used to determine whether the snake was venomous or not. Another theory is that keeping lemons and chillis at home can be a natural pesticide to get rid of insects and mosquitoes.

It is important to know the facts and knowledge behind this superstition and not do it blindly. There is both scientific and religious evidence so people believe differently about this ritual. Are hanging lemons and chillis a scientific doing or just an unreal superstition?

Carbon sequestration

It is undeniable that global warming could completely destroy our planet and its ecosystems. Although there have been efforts to reduce emissions by many countries, charities, and corporations, very few have come close to the goal of mitigating global warming. However, there have been substantial developments in environmental science that seem very promising – namely the creation of carbon sequestration methods.

Although carbon sequestration sounds complicated, it really isn't. Carbon sequestration is the capture and storage of carbon dioxide. This happens naturally in forests, the ocean, or other carbon sinks. For example, during photosynthesis, plants take in carbon dioxide and release oxygen, which offsets carbon dioxide emissions.

Scientists have theorized that carbon sequestration could be used by humans to offset carbon emissions. One way that it could be done is through better land use management, which incorporates reforestation. This would mean that there are larger forests in strategic areas to facilitate the capture and storage of carbon dioxide.

However, there have also been more inventive (albeit theoretical) propositions on how to store carbon. One such way is through the process of advanced weathering. Basically, small rocks (specifically silicate rocks) are spread on the grounds, especially near beaches. This speeds up chemical reactions between the rocks, water, and the air. If this is done near the ocean, then the CO₂ can be stored permanently in the ocean, which simultaneously solves the problem of ocean acidification (the process of the ocean's pH rising due to burning of fossil fuels, which can damage wildlife). This does sound like a great method to mitigate climate change, although it does have its limitations. For example, it is not the most cost effective. As well as this, there are limitations in both the amount of carbon that can be stored and the amount of silicate rock that can be mined. All in all, it seems as though this method of carbon sequestration may stay theoretical.

Another method of carbon sequestration is that of carbon capture. It is a relatively simple method in which carbon dioxide is either captured at the source (for example, at power plants) or it is captured using (theoretical) appliances specifically designed for carbon capture. After this, the carbon dioxide is pumped down deep into the earth, where it is permanently trapped in a saline aquifer – a porous layer of rock filled with salt water. It may sound effective, but again, it does have its limitations. Compared to other methods of carbon sequestration, it is very expensive; and there is a limit to the amount of carbon that can be stored in saline aquifers.

Ocean fertilisation is one of the most interesting ideas for carbon sequestration. This is when nutrients like iron sulfates are dumped into the ocean to increase nutrients. This in turn increases phytoplankton populations, which can store carbon. Ocean upwelling is very similar to this, and is when pipes are used to pump nutrient-rich cold water up to the surface of the ocean, where phytoplankton live. Again, this would increase their population and increase the amount of carbon that they can store.

Although ocean fertilisation does sound interesting, it has many problems. First, it can only store a small amount of carbon compared to other methods, and has high costs associated with it. However, the more important issue is the impact excess nutrients and phytoplankton blooms can have on the ecosystem. Increasing nutrients available can cause toxic algal blooms, which are sudden increases in toxic algae. When these algae die, they decay bacterially, which consumes oxygen in the water. During blooms of algae, the amount of oxygen in the water can decrease dramatically, creating dead zones – areas of the ocean where there is not enough oxygen in the water to support sea life. By increasing the amount of nutrients in water to increase phytoplankton populations, outbreaks of toxic algae can happen, leading to the destruction of marine life. Therefore, ocean fertilisation is too risky to be considered a viable carbon sequestration solution.

Clearly, some methods of carbon sequestration are better than others. Methods that could be the most successful work together with the environment, such as improving land-use management and reforestation. Even though there are more ambitious methods, these should be used only with caution.

The Formula 1 Season - Disaster or Delight?

Coming into this year, COVID 19 had brought a sense of uncertainty to Formula 1 paddock. Many circuits and tracks were not viable options due to the travel restrictions that were placed during the various waves of cases in their respective countries. After the Australian GP had been cancelled earlier this year, an ambitious proposal was put forward to reschedule the race for the month of November. Unfortunately, this plan did not follow through and the Australian government once again cancelled the rescheduled dates of the new GP. This meant a last-minute change was to take place; In comes the Losail International Circuit, a renowned MotoGP track recognised for its speedy flowing corners. Furthermore, Lewis' dominant display in 2020 truly mystified the fans as they were left to speculate the performance retention of the W12 from the previous season and how it fared against their closest competitor the RB16B. Fans yet again expected a commanding show to be put on by the now Sir Lewis Hamilton, but that was not to be. Let's uncover some of the controversies but also some of the spectacular surprises that played out during the season.



The FIA (the governing body of F1 operations) made some key decisions throughout the F1 season which brewed a lot of opinions on social media as fans poured in comments over the fairness and reliability of the FIA to punish drivers for their mistakes and also the ability of Michael Masi (Former Race Director) to take control of a possibly dangerous situation. This is one of the reasons he was recently ejected from his position as of 17th February. Some examples of these unprofessionally handled situations can be seen during the Abu Dhabi GP on the 1st lap where Max attempted a lunge into Turn 6 which Lewis reacted by cutting the chicane and gaining a lasting advantage over Max. The controversy here did not come because of Lewis' decision to cut the chicane but rather the FIA's inconsistency to penalise Lewis. This was after the Saudi Arabian GP where Max was penalised with a 5 second time penalty for a similar offence.

In addition to this, during the Abu Dhabi GP, in what was possibly one of the most controversial decisions in motorsport history, Race Director Michael Masi used his power to make real-time amends to the rule book on the last lap to allow a certain range of cars between Max and Lewis to overtake the Safety Car and allow for a final gasp of racing between the two title contenders. One Last Lap. One Last Chance. Max grasped his chance to win the championship by pitting for soft tires and overtaking Lewis on his degraded tires into Turn 5. This will likely be one of the tensest endings to any event that has ever taken place. Mercedes Team Boss Toto Wolff in a rather comical message to the Stewards Room exclaimed: "No Mikey no this is so not right Mikey!"



This season was host to a multitude of heated battles between the title contenders which ended in some tight racing leaving either or both drivers out of contention for points during the race. For instance, during the initial lap of the British GP Max and Lewis had a tense moment coming into Copse corner which left Max in the tire barrier at an alarming 51G impact. Lewis was handed a measly 10 second time penalty which many argued was not severe enough. On the other hand, in Monza during the Italian GP, Max pulled a risky move as Lewis sped out of the pits into the first chicane. Max's car catapulted over the Mercedes counterpart and both cars ended up in the gravel trap. Thankfully, this had a happier ending than Silverstone, the McLaren duo capitalised on this and ended the race with the only 1-2 of the entire season.

The season was not all competition between Max and Lewis, there were many surprises throughout the season which provided a much-needed refresher. In particular, Esteban Ocon's striking win in Hungary was exhilarating after the constant wins from Max and Lewis. Ocon's win came after Mercedes' costly decision to keep Lewis out on Intermediates and a brilliant display of world-class 'Lion' defence from Fernando Alonso. Another surprise came in the Belgian GP which was relatively lackluster considering we only got 2 laps of 'racing' behind the safety car. However, it provided a perfect opportunity for George Russell to get his first podium in his F1 career. After a sensational qualifying, he placed his car on the 2nd grid slot behind just Max Verstappen, championship leader, and ahead of Lewis Hamilton, a championship contender.

A history of the atom and atomism

“Nothing exists except atoms and empty space; everything else is opinion”

Atomos ...

Atomos...literally meaning, “indivisible” in Greek, is the term from which “atom” derives from. Atoms, as you might recall, are the “fundamental building blocks of life” and that as different atoms move through “empty space”, just as Democritus had said, they would collide between each other and that results in various combinations of different types of atoms which in turn create matter in various forms as we know it. However, with quite dissatisfaction, his theories and reasonings were largely dismissed by the mass of Aristotelians (and that, shall we say, included most of the population in Greek philosophy), leaving his and his teacher, Leucippus’, work laying in the shadows...that is, until the early 1800s, but more on that later.

What is atomism ?

Atomism is a theory that the universe, all reality and all the objects within reality are composed of microscopic, indivisible, indestructible particles that act as the lego blocks of our world. Atomism simply does not regard a higher being or a “God” so it is natural that it should be considered a materialist philosophy, which is also called “physicalist” philosophy. This branch of philosophy is to consider (or view) that all actualities (facts, that also take into account the human mind, will, and the whole entire course of human history) are reliant on physical processes. In fact, the first ever advancement materialism has ever made was through the atomism discussion... so it may be safe to say that the fathers of materialism are Leucippus and Democritus (the former only being known by his influence on Democritus).



From a different angle ...

Now, before we go any further, I would like to touch upon another view. In school we often get taught the Western region of philosophy (as Socrates was indeed the father of Western Philosophy), and this does not omit the history of the atom. One of the earliest forms of ancient Indian atomism had been first developed by the Hindu Nyaya-Vaisesika school between the 6th Century B.C and the 1st Century B.C. This theory said that there were four different elemental atom types and that these could have 24 different potential qualities. Also, something quite similar to western philosophy is that these atoms can also combine, in this case, it is in pairs (dyads) and then into trios of pairs (triads). Based on our understanding of the sheer size, we wouldn't be able to see these, nevertheless, the triads were perceived as the smallest visible units of matter.

Not only that, but the atoms were also considered to be able to have general intensive and extensive properties* and some specific intensive properties*.

There are other various theories circulating the aforementioned one, each with their own similarities such as Buddhist atomism which also pertains there being 4 types of atoms, along with their relatedness to their primary elements. Also, atoms were “point-sized”. But this is where things get slightly different. Every atom, according to Jaina philosophy, has one taste, one colour, one smell, and two different textures (touch). Atoms can exist in two different ways as well. These are “gross”, where they can expand and have extension to occupy a “finite” space and the other is “subtle”, in which the atoms can pervade infinitesimally into small spaces. Pretty interesting, right?

QUICK STOP:

Did you know that the difference between infinitesimally and infinitely is that infinitesimal relates to things being incalculably, exceedingly minute (very, very, very* 10^{10000} ... small) while infinite is endlessly (immensely and indefinitely) large.

NOTE *:

Extensive properties : properties that depend on the amount of matter in a sample e.g. mass and volume.

Intensive properties : properties that are only affected by, and due to the type of matter in a sample e.g. solubility and density.

Once Upon a Time

As previously mentioned, the now very well known pre-socratic philosopher, Democritus, is more often than not credited for the first realisation of Western atomism in the 5th century B.C., yet the possibly “real” heir to the title of the ‘first to have delved into the topic’ would have been his mentor, Leucippus who is suspected to have been responsible for the majority of the doctrine. Having said that, we are all pretty much familiar with Democritus’ logics, am I right? That if you cut something in half, then that piece cut in half again, followed by yet another cutting in half and so on; you would arrive at a point that you couldn’t divide it anymore. Cool, right?!

Yeah so, we hop from one side of the story to the next. We know - or at least, up to an extent - that Leucippus and Democritus believed that both atoms and space (the “void”) were never created and would never end...sound familiar? ... (Law of conservation of energy). Yes, so much so that it even resembles another law (law of conservation of matter...and also mass); matter is neither created nor destroyed, atoms that existed during a chemical reaction as part of reactants are not destroyed or created during a chemical reaction. So the very existence of atoms explains the conservation of, shall we say, most things... These links are cool because they show that the early methods of thinking were pretty good (as the philosophers who, with much accuracy, only did use logical reasoning-basically no physical experiments-to come to their conclusions). They were more abstract thinkers, some of them. You see, different philosophers had their own way of coming to their own said conclusions and that is when the two different fields came along: Mathematics and Science, but that is for another time.

QUICK STOP:

There are branches of atomism that link to many other branches (think of it like philosophical broccoli) these are:

- **Social Atomism** is the belief that society should be perceived on the basis of the individual’s importance and values (also that society is artificially constructed)
- **Simples Theory** is a doctrine of the theory of parts and their respective wholes, this is called metrology. Here, a “simple” is anything that has no actual parts which is sort of like the early philosophical notion of the atom. The opposite is “gunk” which is anything that is whole and whose parts have more proper parts to them.
- **Logical Atomism** was an attempt to identify the “atoms of thought” (pretty bemusing, right?), apparently they are fragments of thought that can’t be split into smaller pieces of thought. This was developed by Bertrand Russell who took it upon himself to elaborate earlier work by Ludwig Wittgenstein.

Conflict among Gods? No, disputes among philosophers

Other, well renowned philosophers partially disagreed with these theories and ideas. Examples against Democritus’ included that simple crashing of atoms could never be the cause of the beauty and form of the world..ahem, ahem-Plato-ahem. He believed more or less that solid triangles would instead be placed; coordinated accordingly to make what we see as an atom. As we can already see, not all logical thinking was the best in its essence; Aristotle completely refused the idea that Democritus had placed on the table and set up his own view of how things should be. According to him, elements of fire, air, earth and water were not composed of atoms at all but were rather continuous. This led to his speculation that the rearrangement of atoms was not responsible for any change but that instead the conversion or, how now modern people would call to be a metamorphosis (as it is quite a stretch to postulate such occurrences, but then again, it was mainly based on reasonable thinking and not experiments) from “what it was in potential to a new actuality”, as *The Basics of Philosophy* says. All in all, he really said, “objection!” to that one.

Nevertheless, Aristotelian theories were the mainstream at the time (sort of like the Tiktok trends we do nowadays but the goal was a bit more complex than figuring out how to do a dance properly); they were the most common and accepted theories. Both Plato and Aristotle refused to believe in a world that only consisted of nothing but moving atoms, reducing the meaning of reality, which also meant ourselves as human beings and all that comes with it...However, many say that the atomic theory does anything but.

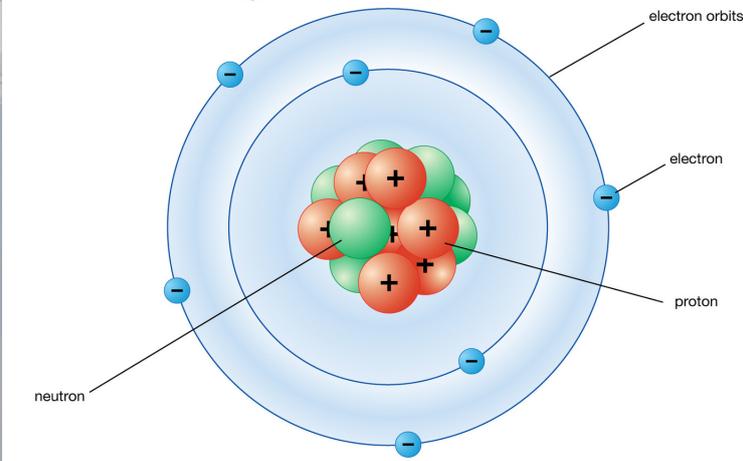
In fact, although few, there were surprising enthusiasts for the democritean side of things, among which was the roman poet Lucretius Carus, who, thanks to his famed, pedagogic poem *De rerum natura* (“On the nature of things”) introduced atomism into the latin world.

The Stacking ...

As one might have already guessed, we have made a lot of scientific progress over the centuries and it is worth mentioning that Isaac Newton, in a letter to Robert Hooke in 1675 could have never been so right in saying that “If I have seen further it is by standing on the shoulders of Giants”. Science is all about stacking our knowledge onto the knowledge that the ones before us have achieved and in doing so, creating a better world....hopefully! Modernised scientists of the 1800s had the privilege to make more sound inferences as methods and technology (“technology” for their time) was improving. Democritus’ and Leucippus’ ideologies have paved a way for future generations of inquisitive minds to scour new and better pieces of the puzzle. Amidst this- “I was here first, or early!” (relating back to Tiktok)- crowd was John Dalton. Mr. Dalton essentially took Democritus’ and Leucippus’ ideas and gave them their first strong scientific value (with experimental evidence!).



Bohr atomic model of a nitrogen atom



However, some of these points had to be revisited (Dalton’s idea that atoms could not be divided or split apart was later punctured by JJ Thomson and Thomson himself would also have some of his own concepts being called into question by scientists that would come after him) and so the cycle continues. All these messy loop-the-loops and back and forths; all that to create a more accurate, credible model of the atom- like the transition from Thomson’s plum pudding model to our current one, the “electron cloud” model- all this to create better ways to perceive the world and in doing so, unravelling some of the unenlightenment that history has been tainted with. Going back to the models, although the electron cloud model is the current model, we also tend to use Bohr’s model (by Niels Bohr) to encase the modern understanding of the atom.

In summary

But then again, I, as the thinker of many other philosophers, do believe in such comfort found in an unresolved question mark. To find answers to questions with more questions, and to know more than what we did yesterday, but also hold to heart that infinite knowledge is only rendered pleasurable when you can’t have it. It’s sort of like a paradox, you like the way you know but also why you don’t and can’t know everything. Enough of that, let’s just say I like the way we want to know stuff....and physics ...and atoms. I hope you learned something new today too! I know for a fact that I have!

The history of popular English idioms

An idiom is a phrase with a meaning (established by usage) that doesn't relate to the actual words of the phrase. There are loads of them in the English language and some even date back centuries but have you ever wondered the history behind them and how they came to be? Well, if you did you're in luck! Down below are some popular English idioms, their meanings and the history behind them.

'Break a leg'

This idiom is a popular form of theatre slang often used to wish performers good luck before performing. It is so popular that it's even considered bad luck to wish a performer good luck by simply saying 'good luck'. As with many of these idioms, there are a number of different origins for the saying however one of the most interesting is from Elizabethan times when an audience would bang their chairs on the ground instead of applause. Frequently, if the chair was knocked hard enough, one of the chair legs would break showing the audience thoroughly enjoyed the performance. Another popular origin is from the Ancient Greeks as audiences would stomp their feet on the ground in applause and if you stomped hard enough you might break a leg.

'Kill 2 birds with one stone'

This common phrase is one referring to being able to achieve 2 things through a single action. The earliest printed record of the idiom was in 1656 in *The Questions Concerning Liberty, Necessity, and Chance* by Thomas Hobbes however another popular origin is the story of Daedalus and Icarus from Greek mythology. The story is about an inventor (Daedalus) and his son (Icarus) who were sentenced to living in a maze that Daedalus created (after he fell into disfavour of the King of Crete). Daedalus decided to build wings of wax and feathers to fly out of the maze and they killed 2 birds to get the feathers to build the wings. This story also happens to be the one where Icarus 'flies too close to the sun' after ignoring his fathers warning causing his wax wings to melt and him to fall to his death.

'Spill the beans'

'Spill the beans' is one of the most well-known idioms and has been around for quite some time - long enough for it to have changed to another one (now 'spill the tea'). It means to reveal a previously secret piece of information and is believed to have originated from the Ancient Greek method of voting. In the method, two different coloured beans would be placed in a vase and one colour would vote 'yes' while the other voted 'no'. So if the beans were spilled (literally!) then the vote results would be revealed.

'Cat got your tongue'

This one is usually used to ask someone why they aren't talking or why they are being so quiet. There are 2 main possible origins for this idiom; Ancient Egypt and the English Navy. In Ancient Egypt, liars and blasphemers (a person who speaks disrespectfully of sacred things) would have their tongues cut off and fed to cats meaning the cat's would essentially 'have their tongues' and therefore they wouldn't be able to talk. The English Navy used to use a whip called 'Cat-o-nine-tails' when delivering punishment and it was said that the pain was so intense that it normally caused the victim's to stay quiet for quite some time.

'Under the weather'

Okay, I'm sure most of you will have heard of this one! 'Under the weather' is a term commonly used when one isn't feeling well or is slightly ill. It's a term from the days of old sailing ships when sailors that weren't feeling well would be sent below deck, so the weather wouldn't affect them - they were actually under the weather.

'Let the cat out of the bag'

Here we are with another idioms about cats! When one 'lets the cat out of the bag' they tell people about something that was meant to remain a secret. It is thought to have originated after merchants would sell customers live piglets and place the piglet in a sack for transport only to sneakily swap it with a cat. The customer would only find out that they had been tricked until they got home and 'let the cat out of the bag'.

'Barking up the wrong tree'

To 'bark up the wrong tree' means one is following the wrong course of action because they have incorrect beliefs about something. It probably originated from the 19th century in America when hunting dogs were still very popular. The hunting dogs were frequently used to hunt raccoons however in attempt to escape the raccoons would sometimes climb up trees. The dogs were trained to chase raccoons and wait at the bottom of the tree barking until the owner caught up to them. But, raccoons soon adapted and learned to trick dogs into thinking they had climbed up one tree so they could quickly escape and leave the dog confused and barking at the wrong tree.

Interesting where some of the phrases we use on a daily basis came from, huh? Are there any idioms that you can think of? If there are, have a quick google and see if you can find the story behind them!

Are we too dependent on devices ?

Have you ever wondered what a device is? A device is a piece of portable electronic equipment that can connect to the internet. We use devices for nearly everything. With devices and Artificial Intelligence taking over the world, could this lead to our downfall? Some people believe that we are too dependent on our devices, whereas some people don't.

First and foremost, there are a variety of amazing activities that can be done without a screen such as reading books, art, and many more activities like exercise. Government guidelines say that children must get 60 minutes of exercise every day. Devices can lead to addiction and health issues. These include neck pain, eye weakness, backaches, headaches, and obesity. With so much focus on the digital world, it not only causes health issues, but it also leads to road accidents.

Following on, there is no doubt that devices have many advantages and disadvantages. During COVID-19, apps like Zoom and Google Meet have helped us stay in touch with our loved ones. It has also helped schools and students continue and get access to education from the warm comfort of their homes. With the help of Artificial Intelligence, many people have gotten the great opportunity to work from home and continue the service. Devices have also kept us entertained with a splendid range of awesome games and movies to watch and play.

Last but not the least, devices have helped the marvelous medical industry evolve immensely. E.g. Ultrasound device. They don't only have a huge impact on our mental, physical, and emotional health, but also our wellbeing. Many people are getting access to continue their hobbies with the help of digital extracurricular activities (ECAs). E.g. Karate, Music, Dance, and many more. However, the high radiations of some devices (phones, laptops, microwaves, etc.) have led to the extinction of some sparrow species.



Overall, we truly cannot deny the fact that devices have been a great addition to human life. It's undoubtedly true that the use of devices has its own advantages and disadvantages. We've become so dependent on our devices, that we cannot live without them. Mesmerized by these magical devices, we neglect to see the big picture. I firmly believe that we shouldn't be too dependent on our devices. Instead, we should socialize more with others and reduce the amount of screen time.

The new Covid-19 Variant : Omicron

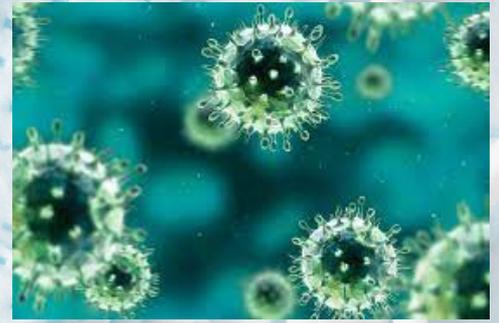
Having just recently been made to switch to online learning due to an increasing number of Covid-19 cases within the UAE, I'm sure you're well aware of the recent wave of Omicron that has taken the world by storm!

Risk Factors

Generally speaking, Omicron seems a lot milder than the formerly dominant Delta Variant. A US study of nearly 70,000 Covid positive people showed a substantially reduced risk of hospitalisation and death from Omicron, which is a reassuring sign!

The paper found that people infected with Omicron are half as likely to be hospitalized, 75 percent are less likely to need intensive care, and around 90 percent are less likely to die compared to those infected with the Delta variant.

Therefore, the Omicron does seem a lot milder than that of delta, but this doesn't mean that we're not at risk. This variant spreads a lot faster than the Delta variant does, and it is therefore essential that we re-instill precautions to keep everyone at JC and in the UAE safe.



Keeping yourself and other safe!

Getting vaccinated (including the booster), wearing a mask and washing your hands are manageable tasks that anybody can do; tasks that are essential to keeping people at high risk safe. Even if you may not experience severe symptoms (this is no guarantee as a mild case of COVID-19 can still be bad) someone else might be prone to much more dangerous symptoms. Dr. H. Dirk Sostman, chief academic officer of Houston Methodist states that "If we all let our guards down — giving into the hopefully milder infection and the seeming inevitability of catching it eventually — we're adding fuel to the fire of letting this virus spread unchecked, which comes with consequences."

I'm sure you've heard these exact precautions a number of times by now but here's some things you should definitely be doing consciously with the spread of this variant. Some safety measures may include:

- Getting vaccinated and boosted if you haven't
- Maintaining physical distancing
- Limiting your travel outside as much as possible and avoid crowding at all costs.
- Following hand hygiene and respiratory etiquettes
- Not ignoring any signs of illness (fever, weakness, sore throat)
- COVID-19 "bubbles" - if need be, select a few friends or family members you socialise with, mask-free but no one can socialise in-person with anyone outside the bubble

Additionally, within JC, we, as students, can implement things like:

- Cleaning our desks before using them
- Keeping our mask on at all times of the day excluding break and lunch times
- Following the social distancing guidelines on the school floors, in classrooms
- Sanitising your hands at the school's stations as much as possible.

As COVID-19 infection rates are predicted to increase in the following weeks, it's essential that we continue to adhere to safety guidelines, allowing us to keep JC safe for both the students and staff

Why does Elon Musk want to read your mind ?

There's been lots of excitement surrounding one of Elon Musk's more recently launched companies Neuralink. The researchers in Neuralink are working towards making a brain chip interface that will allow those with paralysis, quadriplegics and tetraplegics, to regain their independence. He started the company in 2016 and promises that the technology "will enable someone with paralysis to use a smartphone with their mind faster than someone using thumbs". Essentially the technology allows the brain to communicate directly with a computer, which if you think about it, sounds like a scientific invention that has just come out of a Sci-Fi movie! But of course, the entrepreneurs ambitions don't just end there. As the company expands, he aspires that one day we will all be able to communicate telepathically, save and replay memories, as well as download them into a human or robot body. Crazy, I know right! Despite how imaginative that sounds, it's actually not all fiction. The real question is, is this all overblown hype, or visionary work that can help thousands of people?

Before we make a conclusion on how practical the new invention is, let's understand the science behind it all first, starting with how the brain works. To put it simply, the brain is an electrical organ and all of our sensations and then movements as well as the thinking that goes on in our brain is associated with electrical signals being sent from one brain cell to another and in principle a brain computer interface is a way of getting electronics to directly communicate with those brain cells by recording and sending electrical signals to a computer. The interface effectively allows our brains to communicate with technology without the need for a sensory or motor system. As incredible as that sounds, one can only imagine the difficulties associated with it. Implanting a device into the brain with it's different regions and unending complexity, must be a really difficult thing to do. Andrew Jackson, a Neural Interfaces Professor at the University of Newcastle explains the struggles associated with the brain chip interface, and how they are overcome. He explains that there are "different ways to interface with the brain", the simplest way being to stick electrodes on the surface of the head that can pick up electrical signals from the brain. However, he goes on to clarify that the closer you get to the brain cells the better, because you can more clearly listen to the electrical signals they're sending. So an invasive brain machine interface like the Neuralink team is devising, is the most effective. Probably the most difficult of all, is trying to make sense of all the signals, to decode and decipher them into thoughts, movements and intentions.

The most exciting potential application of this technology is helping people with spinal cord injuries, but how does it work? Well the brain chip interface is meant to decode the intention to move which is useful for those whose brains function normally, but electrical signals don't reach the muscles due to injuries. What the interface can do is listen to what's going on in the brain, infer information, then relay that information to a computer, robotic arm, wheelchair or even directly into the spinal cord muscle.

Recently Neuralink began clinical trials with the 9 year old macaque, paver. The scientists implanted electrodes into his brain, and as he plays a game his goal is to win digital pong to be rewarded with a banana milkshake. The scientists observing him, mathematically model the relationship between patterns of neural activity and the different joystick movements they produce so that they can link the two and essentially develop a dictionary of what all these brain signals mean. The electrodes are implanted inside of his brain in the motor cortex region, and as the macaque thinks about moving his hand up or down to control his paddle we record the associated electrical signals.



In conclusion, there's been lots of advancements surrounding the project and from a personal perspective, there's a prosperous future ahead for Neuralink.

The Legacy of the Quadruple Jump

From the legend of Surya Bonaly's bewildering improvised backflips to Olivia Oliver's record-breaking spin at a rotation of 342 Rounds Per Minute (RPM), the rapid progression of milestones within figure skating has thus far been phenomenal, advancing expeditiously across the globe as passionate skaters of all ages tirelessly pursue greater and more extraordinary feats on ice.

Up until relatively recently, however, a maneuver beyond the minds of physicists has remained unmastered by the large majority of Olympic figure skaters: the quadruple jump. Imposing itself as a defiance of the laws of gravity, this seemingly insurmountable undertaking comprises of at least four revolutions in the air, all of which must be completed under a limit of about half a second with only the propulsion provided by leg muscles - a stunt which requires months, and perhaps even years, of arduous effort to master.

Simultaneously majestic and showstopping, the quadruple jump can be performed in a variety of different skating styles including the salchow, toe loop, and, the most demanding approach of the three, the axel. With the arrival of the Beijing 2022 Winter Olympics upon us, the Russian figure skating team has once more prevailed amongst its rivals as their representative 15-year old prodigy Kamila Valieva performed a show-stopping quadruple salchow jump in her long program, followed by another quadruple, this time a toe loop, attaining the title of being the first female to land a quadruple jump in the Olympics and seamlessly securing herself a gold medal. Phenomenally, Valieva also shattered world record titles for the women's short programme, as well as acquiring a jaw-dropping final score of 178.2 in her free skate programme, brutally unsurpassable by the ensuing American and Japanese teams.

Recently, however, a dissension surrounding the skater's failure of a drug test has come to light after the notable absence of a medal ceremony ; a sample test conducted on the 25th of December 2021 revealed that trimetazidine, an illicit drug sometimes prescribed as a treatment for heart problems (specifically heart failure and angina attacks), was detected in Valieva's sample during the Russian Championship. The substance optimizes the functionality of the heart, potentially heightening stamina and boosting on-ice performance, hence the World Anti Doping Agency's (WADA's) prohibition of its usage by athletes. Deepika Thacker, a cardiologist working in Nemours Children Hospital in Delaware, revealed in an interview with the New York Times that there is "no legitimate reason that a 15 year old should be on it [trimetazidine]", and that there are "other beta blockers with fewer side effects", and this information has raised significant attention to the justification behind Valieva's positive result.

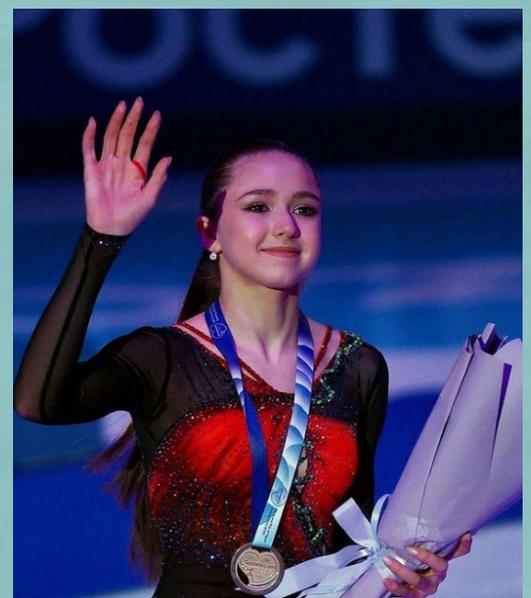


After investigation into the affair, Russia's national anti-drug institute RUSADA imposed a suspension upon the Olympic medalist however this condemnation was swiftly overturned after her appeal against the adjournment. Nevertheless, the International Olympic Committee repealed against the questionable disregard for the skater's performance and the following day the Court of Arbitration of Sport (CAS), held a virtual hearing during which her suspension remained void as judicial officials concluded that her 'exceptional circumstances' and young age would protect her from being immediately sanctioned. Thus, she was permitted to execute her performance on the 15th of February, where she stunned audiences and topped the leaderboard despite the pressure of the situation. According to a spokesman of the ROC, Valieva claimed that her positive test result was due to contamination with her grandfather's medication, however it is improbable that authorities will come to a conclusion before the end of the competition.

Although the teenage sensation had received worldwide acclaim before the revelation of her drug test scandal, the history of four aerial rotations on ice is one of length and intricacy, with the first person to land a validated quadruple jump in a competition being Kurt Browning during the figure skating World Championships in 1988 - more than three decades ago. Successively, a plethora of gifted skaters followed suit, landing ratified quadruples in various national and international competitions. A few notable incidents from these include Yuzuru Hanyu's procurement of landing the first substantiated quadruple lutz, a move nicknamed the "Rittbigger" in competition, fulfilling a remarkable ambition. Additionally, the 14-year old Adeliia Petrosian had become the first female figure skater to successfully land a ratified Ritbigger while competing. Another trail-blazer, Nathan Chen, executed six sensational quadruples in 2018's PyeongChang Winter Olympics, epitomizing his aptitude.

Thus far, no quadruple axel has been performed yet in the history of professional skating, however, awaiting us in this year's winter Olympics the grand feat just may be the pinnacle of the competition, optimistically in the absence of controversy.

Holistically, the legacy of the quadruple jump has been vindicated by passionate figure skating performers, irrespective of a few controversies, and the revival of Browning's spark in the world's most renowned international sporting competition has ignited an impassioned fervency within the figure skating community to establish unassailable standards while demonstrating the remarkable capacity and capability of the human body.

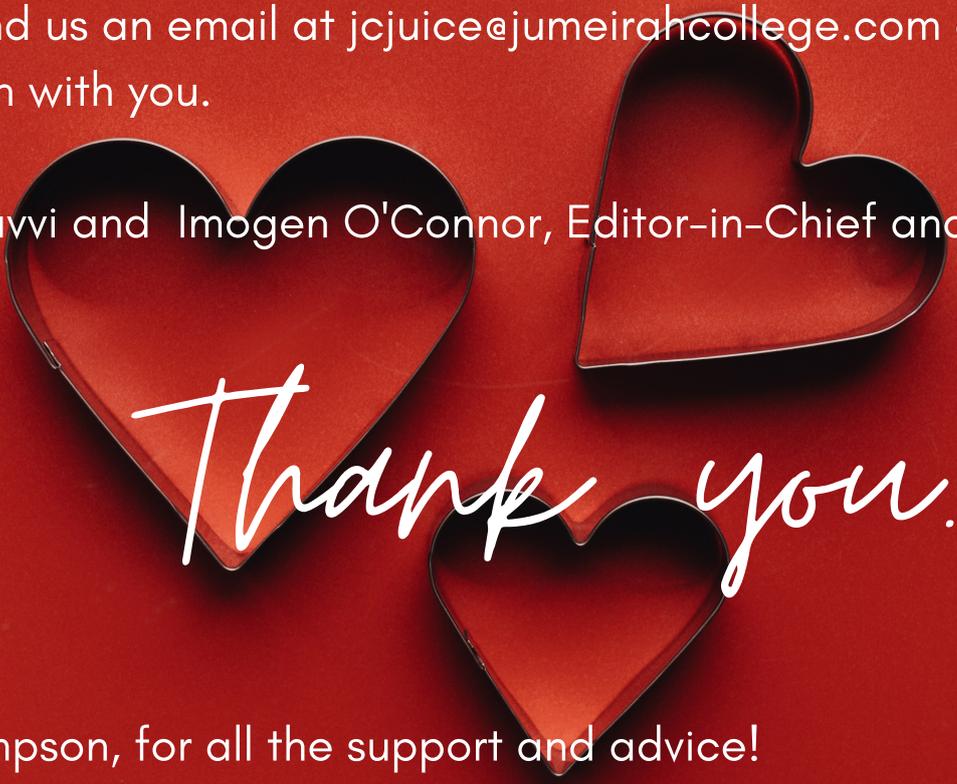


Editor's Note!

Hi JC! We at the JC Juice team hope you've enjoyed reading this month's edition. Our writers and editors worked extremely hard to research and discuss relevant and interesting topics for you to enjoy!

If you have any suggestions or topics you would like to see in next month's article - or you would like to write an article yourself - please send us an email at jcjuice@jumeirahcollege.com and we will be in touch with you.

- Maria Davvi and Imogen O'Connor, Editor-in-Chief and Lead Editor



Thank you...

- To Mr Simpson, for all the support and advice!
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... and lastly and most importantly to our readers, because without you, there would be no magazine.