

THE HARROVIAN

VOL. CXXXIII NO.20

May 8, 2021

ATHENAEUM SOCIETY

Q Sun, *Moretons*, “Concrete and Why Nothing Lasts Forever”, 23 April

The Athenaeum Society was very fortunate to welcome Q Sun, *Moretons*, who gave a lecture entitled ‘Cemented in time: Concrete and Why Nothing Lasts Forever’. He gave a brief description of cement to start off, that it binds things together and, contrary to what most people would believe, doesn’t dry but sets. Cement usually comes in bags as a grey powder, which is then mixed with water, forming a dull, grey, soulless solid. Concrete, on the other hand, is made as a mix of cement and aggregates, such as gravel and sand. Sun mentioned that Crete (one of the Greek islands) may have been related to the name concrete. Mortar is made of cement and sand, and is often used in brick-laying.

Sun followed this on with a humorous five-minute rant on why he didn’t like gravel. He thought that gravel was very unstable to walk on, and gets in your shoes. However, he believed that it was a necessary evil. He gave a description of the two different kinds of cement – hydraulic cement involves water, non-hydraulic doesn’t. By heating calcium carbonate up, we get calcium oxide. The calcium oxide can react with silica to form complexes – this is hydraulic cement. Non-hydraulic is when the calcium oxide reacts with water to form calcium hydroxide, which then reacts with carbon dioxide to form calcium carbonate. As mentioned previously, hydraulic cement doesn’t dry as the water is still contained in the concrete. The aggregates inside cement are used for compressive strength, to control thermal expansion and volume (since gravel and sand are much cheaper). Controlling thermal expansion is extremely important. Sun gave the example of a train going past – sometimes the wheels are not quite aligned perfectly with the tracks – this is due to thermal expansion. Ferrocete is concrete reinforced with steel, and it is used since it has high tensile strength. It is also sustainable, since it contains recycled steel.

The Pantheon dome is possibly the earliest use of concrete and has stood for more than 2000 years, while a more contemporary example would be the Shard. Concrete has been seen to exist everywhere, but it won’t last too long and provides an illusion of security, as the foundations won’t last and the domes may cave in. It was there where Sun ended his brilliant talk, which gave the audience a lot of food for thought. There were a number of questions. some from Dr Cooper, including whether non-hydraulic concrete was carbon-neutral – it was not, since making lime requires a lot of energy. Dr. Cooper also asked whether non-hydraulic or hydraulic concrete was used more. The answer was hydraulic concrete as non-hydraulic concrete is weaker, although more environmentally friendly. Since aggregates can’t be added to non-hydraulic cement, most of the cement structures are made from hydraulic cement. A question was asked about the origin of concrete, and Sun stated that people came across concrete probably through trial and error, and since the Ancient Romans were extremely advanced in terms of science, they managed to discover it.

All in all, it was a fantastic Athenaeum Society lecture by Sun. Many thanks to Alexander Newman, *Druries*, and Aum Amin, *Elmfield*, as well as Dr. Cooper, for hosting this lecture, and we look forward to the next society talk.

COMPUTER SCIENCE SOCIETY

Mark Zeng, *Elmfield*, “Machine Learning and Neural Networks”, 29 April

The Computer Science Society welcomed Mark Zeng, *Elmfield*, to deliver its inaugural talk of the summer term. Zeng spoke on machine learning: artificial intelligence algorithms that improve themselves automatically, achieving frighteningly accurate results.

Zeng began by acknowledging the inspiration that neural networks draw from biology: much like neurons in the brain, the so-called ‘perceptrons’ that make up neural networks are connected to each other. That being said, they do not serve as a model of the brain, but are, instead, highly mathematical algorithms.

Next, the fundamental unit of the neural network was explained. A ‘perceptron’ takes in a value, applies a function to it, and then outputs it. Neural networks are created when many such perceptrons are linked together, receiving input from and outputting to other perceptrons.

The function that each perceptron applies was then explained. A ‘weight’ is applied to the input when it is multiplied by the value the ‘weight’ corresponds to, controlling the strength of connection between perceptrons. Biases, on the other hand, are simple constant values that are summed afterwards, allowing for additional adjustment and ensuring that perceptrons fire even when the input is zero. Finally, an ‘activation function’ is applied to the resultant value, mapping large output values to smaller numbers that are more manageable for the next perceptron. The consequent value is then outputted, received by connected perceptrons.

Zeng then dealt with the ‘learning’ aspect of ‘machine learning’. Machine-learning algorithms are initially trained on data that humans already know the correct answer for, allowing for fine tuning. The process of ‘gradient descent’ finely adjusts the weight of each perceptron until the output of the perceptron matches the output which is known to be correct. A ‘loss function’ can be used to describe how far off the output is from the desired output, transforming the raw difference into a more convenient value. Zeng explained the derivative used to find the precise value by which to update the weight. In the case of multi-layered networks, where layers of perceptrons feed into other layers of perceptrons, higher-order derivatives can be used to compute this value. A similar process can be applied to finely adjust each perceptron’s ‘bias’.

Zeng proceeded to reveal the code behind his own neural network, which attempts to recognise handwritten letters and numbers. The intricate code made use of the mathematical NumPy (numerical Python) library. The first function initialised each perceptron’s weight, setting them to random numbers (as they will inevitably be adjusted anyway, and this prevents identical sessions). Next, he programmed his choice of ‘activation function’, the ‘sigmoid’ function, mapping every possible output to a smaller number up to 1. Zeng introduced the ‘softmax function’, transforming this output number to a probability that an input was a certain letter or number, before defining the ‘forward pass’ function, which applies the weights and biases in the first place. Lastly, he programmed the ‘backwards pass’ function, which applies the above functions to perform the actual machine learning.

The complex network was put to the test as he iterated the algorithm thousands of times in seconds, watching the algorithm's accuracy increase with every trial, reaching an impressive 90% success rate. Given that there are many output perceptrons, he plotted the algorithm's result on an x and y axis, with each axis containing every letter and number. When a point arrived at the same letter/number on both axes, there could be a high degree of certainty about the result. Occasionally, one axis may suggest a character was '5', whilst the other offered 'S': a perfectly understandable mistake.

Zeng concluded by summarising the above computations that the network performs, explaining that the technology behind today's most important algorithms is more maths than magic. He offered detailed answers to a range of technical questions, discussing the mathematics of the network's output space as well as practical concerns such as the need for significantly higher accuracy in applications such as self-driving cars.

Thank you to CMC for facilitating the society talk, and to Zeng for his successful explanation of the mathematics and dynamics of today's most influential algorithms.

FITZROY SOCIETY

Mr Norcombe Barker, Managing Director of Larnach Castle, NZ, 20 April

On the first day of the Summer term, the FitzRoy Society hosted an exciting lecture event featuring a guest speaker from New Zealand, Mr Norcombe Barker, the managing director of Larnach Castle, who joined us remotely from his residence in Otago, New Zealand – 19,000 km away from Harrow. The FitzRoy Society was certainly quick to harness the global outreach opportunities offered this academic term.

Mr Barker started the talk by sharing the tale of William J. M. Larnach, the Australian-born New Zealand businessman and politician – the man behind Larnach Castle. William Larnach was the son of a station owner and enjoyed a reasonably comfortable upbringing. His uncle Donald Larnach was the founder of the Bank of New South Wales, for which he would later serve as the manager of the Geelong branch. Whilst enjoying a family trip in Europe, Larnach was posted to the Dunedin as the branch manager for the Bank of Otago in 1867. This was at the height of the Gold Rush in Dunedin and the little colonial town subsequently experienced an economic boom and became a beehive of activity. Alongside the increasing trajectory of Dunedin's wealth and prosperity, Larnach also found himself becoming richer through well-informed investments, land speculation and successful timber sales.

Larnach Castle was commissioned in 1870 by Larnach whilst he was riding the high waves of success. The opulent building served as a symbol of the wealth and power Larnach obtained both through his endeavours and the fact that he married a wealthy heiress. Extravagant statements were made through Larnach's actions. In 1875, he ordered 20 tons of glass all the way from Venice for the balcony windows of his "camp" (the sobriquet of the castle coined by Larnach). In 1887, a 3,000-square-foot ballroom was added onto the complex to mark the 21st birthday of his daughter. By the end of the construction, the site included the "camp", a 30-acre vineyard and a 300-acre farm.

As the saying goes, "all good things come to an end." By the 1890s, Larnach's once-booming business dealings had gone astray. The situation was worsened when the Colonial Bank of New Zealand collapsed – Larnach had been the director and a major shareholder. Being riddled with multiple financial and personal setbacks, he ended his life with a revolver in the parliamentary building committee room in 1898. The camp was eventually sold in 1906.

The former glorious family seat of a colonial businessman went to take on many different roles. During the First World War, it was a field hospital and it was eventually transformed into a residential psychiatric hospital during the inter-war years. It also had a brief stint as a nuns' retreat and slowly declined into a state of dilapidation. In 1967, the estate experienced a stroke of luck. Mr Barker's parents purchased estate. It was now derelict; its ballroom was a cattle pen used by local farmers and souvenir hunters had removed the desirable assets such as the chandelier or luxurious furniture. Since then, major restoration work has been carried out, with the goal of restoring the castle to its former glory. Mr Barker shared an anecdote where a group of college students approached them asking whether they could host their college ball in the ballroom. The Barker's said that if they were willing to clean up the cattle pen ballroom and make it usable, they would happily host a dinner and ball afterwards. The deal was struck and they went on to have a fantastic evening.

Since 1967, Larnach Castle has only seen an upward trajectory but then, in 2020, Covid hit. In the words of Mr Barker, Larnach Castle is both "an economic entity and restoration project." It has a symbiotic relationship where the majority of the economic revenue is funnelled into the restoration of the building and further developments of the building encourage further visits from tourists and local communities. This cycle was devastated during Covid times as 65% of guests were internationally based. Even in these difficult times, a sense of community was established when Larnach Castle sold vouchers for visits and many of the locals purchased them. The castle café became a regular meeting place for locals and the gift shop was repurposed to sell plants.

Going forward, Larnach Castle is looking to continue its legacy. With its 150th anniversary this year, Mr Barker has been working to organise a gallery of stories and tales that relate to the castle. Recent highlights include hosting a party with the Dunedin-based New Zealand rock band The Chills' and a reunion of the college students who had approached the Barker's to host their college ball in the derelict ballroom – they were now in their 70s but they enjoyed a slow dance after having the exact same dinner menu!

Larnach Castle is a symbolic landmark of Dunedin and with Mr Barker as its managing director; we hope to see the castle return to its former glorious splendor.

SCULPTURE SOCIETY

Alexander Adefarasin, The Grove, "The Golden Ratio: The thread that binds us all", 23 April

On Friday, Alexander Adefarasin, *The Grove*, presented a lecture on Teams to the Sculpture Society on "The Golden Ratio: the thread that binds us all". Notorious for the way in which it appeals to the human eye, it is a divine ratio based on the Fibonacci sequence – a sequence whereby two consecutive numbers are added to produce the next. The difference between every member of the sequence maintains the ratio of 1:1.6.

By using this ratio as proportions for rectangles and arranging perpendicular to each other, you obtain the points through which your golden spiral can be drawn. In terms of sculpture, this golden spiral helps to achieve the perfect depth and plasticity in a three-dimensional context aesthetically. This element of plasticity branches out into architecture and other fields. In ancient architecture, it was used for the design of buildings, most notably the Pantheon and the Pyramids of Giza. In the Pantheon, Adefarasin showed us that the Golden Ratio is applied through its many architectural features. In the façade, the golden spiral passes through the columns, the pediment and even down to the triglyphs and metopes, visually demonstrating

how this “golden thread” binds together this building. However, this application of the Golden Ratio is not limited to ancient architecture as it is visible in modern structures too.

Adefarasin moved on to discuss how the Golden Ratio is applied in the human body, starting with the face. He gave the example of Nefertiti’s bust from ancient Egypt, whose face was idealised its sculptors to align with the proportions of the ratio. Adefarasin elaborated on the how human anatomy relates further to this ratio and how it is used on a monumental scale for statues across the world (e.g. the Statue of Liberty, Christ the Redeemer). Adefarasin also noted a number of things outside of sculpture and aesthetics in which the ratio can be applied: keys on a piano, strings in a guitar and even the curvature of human ears, lungs and foetuses.

In fine art and photography, the spiral of the golden ratio provides viewers with a sense of dynamism, directing the viewer’s gaze down to the centre of its composition, often to the side of the focus of the piece. Adefarasin listed some famous paintings in which we most likely would not have been aware that the golden ratio was used, such as Raphael’s *School of Athens*, Leonardo Da Vinci’s *Last Supper* and *Mona Lisa*. More modern uses of the Golden Ratio include graphic design and illustration, most frequently in the design of logos. These are the art fields whose discipline consists in projecting visual communications intended to express certain messages to social groups with specific objectives. Adefarasin was kind enough to provide some of his own graphical designs with use of the Fibonacci sequence numbers. His creations included a simple outline of a fish and a more refined and complex turtle, whose upturned nose and curved shell align with the Golden Ratio.

To conclude, Adefarasin showed us how the Golden Ratio provides beauty in our everyday lives in ways that we may take for granted. He confirmed that the ratio is not always applied intentionally in design but happens to follow this golden rule naturally.

PIGOU SOCIETY

Ezekiel Akinsanya, Lyon’s, “Is Macroeconomic Stability Just a Dream?”, OMS, 28 April

The Pigou Society was delighted to welcome Ezekiel Akinsanya, Lyon’s, to lecture on macroeconomic stability.

Akinsanya began by explaining the government’s key macroeconomic objectives: prerequisites for macroeconomic stability. These include full employment, whereby everybody willing and able to work at the going wage-rate is employed; steady and sustainable economic growth; a favourable balance of payments, partly comprised of the current account, which is equal to net exports; and low and stable rates of inflation. He continued to describe more secondary macroeconomic aims: achieving an equitable and fair distribution of incomes and sustaining the environment.

Macroeconomic stability was consequently defined as ‘the state in which all the above government objectives are met for an extended period of time with low volatility’. Akinsanya explained how the COVID-19 pandemic has only caused macroeconomic instability, jeopardising the fulfilment of objectives like consistent economic growth.

It was then explained what policies can be undertaken in the pursuit of such stability. Akinsanya thoroughly explained fiscal policy measures, which involve altering tax rates and government spending to stimulate the economy. He presented the national income identity, showing how GDP (a country’s total output) is equivalent to the sum of consumption (spending by households), investment (spending by firms on the capital stock), government spending, and net exports (exports minus imports). Consequently, if the government lowers taxes, households are left with greater disposable income to spend

on consumption, increasing GDP; if the government raises its own spending, GDP also rises. This increased demand from the government necessitates that more workers be hired, increasing employment. This so-called “expansionary policy” contributes directly towards the goal of economic growth, and is inflationary in nature, helping the government achieve the desired rate of inflation. Akinsanya proceeded to describe the multiplier effect, through which this initial change in GDP can have an amplified final effect.

Next, Akinsanya introduced monetary policy: the control of the central interest rate and the country’s money supply. In the UK, rather than being supervised by the government, the Bank of England is responsible for implementing such policy. Citing the equation of exchange, where the money supply is directly proportional to the country’s price level, holding the velocity of money (the frequency with which money is used in transactions) and quantity of output constant, he explained how the Bank of England can vary the money supply so as to change the country’s price level and thus obtain the desired rate of inflation, fulfilling this key macroeconomic objective.

A nod was also given to exchange rate policy, which is enacted by governments that trade their own currency on foreign exchange markets in order to impact its price. Currency manipulation, although costly, can be beneficial: a weaker currency makes exports more competitive (as they become relatively cheaper abroad), whilst making imports more expensive. This helps attain the balance of payments objective, increasing net exports with rising exports and falling imports.

Akinsanya then examined how various aims can come at the cost of each other, threatening their simultaneous fulfilment, and thus creating a barrier to macroeconomic stability. First, he spoke about how a favourable balance of payments position may find itself in contention with economic growth. The expansionary fiscal policy described earlier may stimulate economic growth, but also increases consumer incomes. Higher incomes provide more money for consumers to spend on imports, especially since many luxury goods (goods for which demand increases sharply with income) are imports. Therefore, fostering economic growth may actually decrease net exports, achieving one target whilst sacrificing a favourable balance of payments position.

Likewise, low and stable inflation can come at the cost of an equitable income distribution. To tackle inflation, the Bank of England can increase interest rates. This reduces borrowing (by making it more expensive) and reduces the disposable income of those paying mortgages with interest rates tied to this central rate. Whilst this can decrease demand in the economy and reduce inflationary pressures, helping achieve the desired 2% inflation rate in the UK, this has the impact of reducing household incomes. Therefore, those with lower incomes or those paying so-called ‘variable rate’ mortgages suffer disproportionately, putting inflation control and equity in incomes at odds.

For similar reasons, unemployment and controlled inflation could be thought of as at odds. Expansionary policy like increased government spending increases demand for workers, boosting employment, but introduces pressures that can increase inflation. Akinsanya illustrated this with one of the most famous diagrams in Economics, the Phillips curve, showing unemployment and inflation as inversely linked. However, he explained that the failure of the model to accurately describe the late 20th century undermines its credibility.

Akinsanya also discussed the all-important trade-off between economic growth and environmental stability, as growth-inducing industrialisation can lead to significant environmental damage. This phenomenon was visualised using the environmental Kuznets curve, which depicts a peak in environmental degradation during industrialisation, but a decrease beforehand and afterwards.

The talk concluded as Akinsanya argued that, whilst macroeconomic stability is possible, it is only likely to occur far off into the future. He proceeded to field questions on matters

like the impact of shocks on macroeconomic stability, the industrialisation of developing countries, and the outsourcing of emissions.

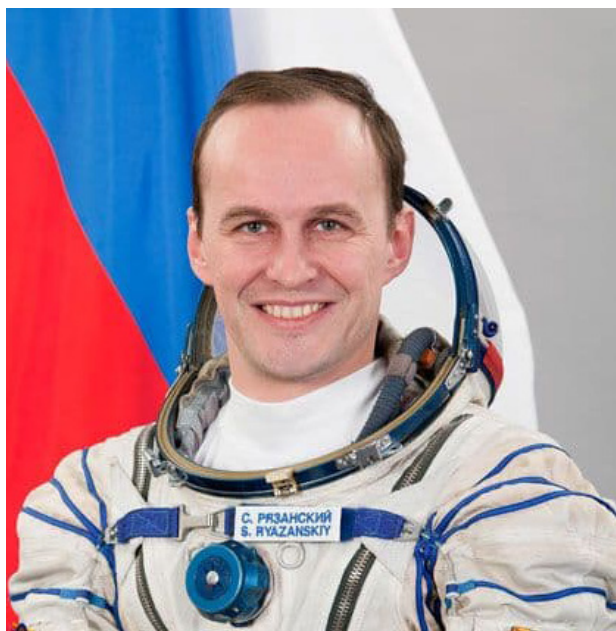
Many thanks to DMM for making the event possible, and to Akinsanya for a highly insightful talk that dealt with key macroeconomic concepts.

SLAVONIC SOCIETY

Zoom Meeting with Russian Cosmonaut Sergey Ryazanskiy, 20 April

On 20 April, members of the Slavonic Society, along with students from other schools, were invited by the Russian Embassy to attend an online lecture given by the Russian cosmonaut Sergey Ryazanskiy to mark the sixtieth anniversary of Yuri Gagarin's historical space mission. Sergey Ryazanskiy spoke about his life and career before hosting a Q&A session.

Born in 1974, Ryazanskiy's association with the Soviet and Russian space programme began early in his life through his grandfather, Mikhail Ryazanskiy, who was chief guidance designer on the Sputnik programme. Having dreamt of becoming a cosmonaut from an early age, Ryazanskiy applied himself in school and attended Moscow State University from which he graduated in 1996, with a degree in biochemistry. After university, he began working as a researcher at the Institute of Biomedical Research but never forgot his extra-planetary dreams.



In 2003 Ryazanskiy was selected as a research and test cosmonaut and his career in Roscosmos, the space agency of the Russian Federation, began. He completed his training in 2005 and in 2009 was selected for the 105-day on-Earth Mars-500 mission. The Mars-500 programme was set up to record the effects of prolonged isolation on the crew of a hypothetical mission to Mars. When thinking back to the programme Mr Ryazanskiy gave a chuckle and said that it "prepared him well for the current lockdowns."

In 2013, Ryazanskiy was finally given the opportunity to go to space when he was selected for Expedition 37/38 to the International Space Station (ISS). The mission lasted 166 days during which Ryazanskiy performed a spacewalk with fellow Russian crewmate Oleg Kotov in which they took the Olympic torch for the 2014 Winter Games outside the ISS as a symbolic part of the torch relay. During the mission Ryazanskiy performed two other spacewalks with Kotov, in which the two

repaired and installed scientific instruments on the hull of the Space Station. In 2017, Ryazanskiy took part in Expedition 52/53, his second and final mission to the ISS. Ryazanskiy was the commander of this mission and was the first commander of a mission to space to be a civilian, as opposed to military or former military personnel. The mission lasted for 138 days during which Ryazanskiy performed another spacewalk with Fyodor Yurchikhin to test out Russia's new Orlan space suits and install more experiments on the hull of the station. This brought his career total Extra Vehicular Activities (EVA) time to 27 hours. Throughout the presentation, Ryazanskiy shared photographs he took of Earth and some amusing videos of his time in space which included the crew of the ISS attempting to make pizza in zero gravity.

During the Q&A, students and teachers from all schools present asked questions about all aspects of Ryazanskiy's life including his best and worst moments on the ISS and his advice to women wanting to go into STEM fields and space flights. We learnt about the time he had to perform emergency surgery on a US crewmate in zero gravity and about some of the women he worked with in Roscosmos. Responding to a question from our own KAF, Ryazanskiy stressed the importance of learning foreign languages for people in all walks of life, but especially to those interested in STEM, where international co-operation is key to swift advancement in science and technology.

On behalf of the Slavonic Society, we would like to express our gratitude to the Russian Embassy in London, in particular to Ilya Erofeev and Anastasia Erofeeva, for organising this amazing meeting and for kindly inviting Harrow boys to participate in it and to KAF for facilitating the event.

HISPANIC SOCIETY

Lucas Maia, Druries, "Latin American colonial literature", OH Room, 27 April

On a sunny Tuesday afternoon on the Hill, the Hispanic Society was privileged to have Lucas Maia, *Druries*, indulge both boys and beaks with a talk on the prominence of Hispanics in America. This was sure to be a fascinating talk given that Lucas is proud of his Brazilian roots and resides predominantly in New York and it certainly did not disappoint!

He first spoke of the Hispanic demographic in the USA and how, in 2018, Hispanics constituted 18% of the American population. Maia then proceeded to highlight how intertwined Hispanic culture is with the USA given that in certain places such as parts of Florida, there is no need to speak a single word of English due to how much influence Spanish has had on particular communities. It was interesting to hear how it is forecast that the projected Hispanic population in the USA will make up 30.2% of the nation's total population by 2050 and this certainly supports the idea that Hispanics are the second-fastest growing ethnic group after Asian Americans.

Lucas then proceeded to delve into the rapidly growing Latinx movement that claims the word 'Latino' is inherently sexist since it bears the masculine ending of an 'o'. Such a movement is spreading at an immense speed across the Hispanic world and, from a language perspective, it is always fascinating to see people wanting their language to evolve.

As Lucas touched upon those in America with Hispanic roots, he highlighted how 71% of those with Hispanic descent agreed that it was not necessary for a person to speak Spanish for them to be considered either Hispanic or Latino.

From there, the hot topic of immigration and discrimination against Hispanics was discussed. Maia talked of how the USA had always been a place for Hispanics to aspire to reside in ever since Juan Ponce de León landed on a lush shore in 1513 and christened it 'La Florida' and indicated the plethora

of opportunities that exist there. Thereafter, this impression has always lived on within Hispanics. There was a discussion surrounding the treatment of Hispanics in the USA, since many have been guilty of inciting hatred of them such as a certain Donald Trump who has unjustly promoted negative attitudes surrounding Hispanics. The discrimination is widespread, with Maia highlighting how some Americans belong to anti-Hispanic movements and even wait on the border in the hope that they may be able to shoot at any Hispanics attempting to cross the border into the land of (supposedly) 'glory and gold'. The situation gets worse with many being exploited by bosses who threaten to report Hispanic immigrants to the police in order to ensure they can pay such people hardly anything for work. Nevertheless, Maia believes that, as the population size of Hispanics in the USA continues to grow, such marginalisation will be quashed to the extent that there would no longer be this idea of Hispanics having a sense of otherness in relation to belonging to the USA.

This was a thoroughly enjoyable talk and the Spanish Department is extremely grateful for the effort Maia put into this talk. The society continues to grow and please feel free to contact either Mr Turner (adjt@harrowschool.org.uk) or Finlay Matheson (16mathesonf@harrowschool.org.uk), *Druries*, should you want to get involved with the society. All are welcome!

L P HARTLEY SOCIETY

Indi Abrams, The Grove, "Psychological literature and how to write it", 28 April

On Wednesday 28 April, the L P Hartley Society heard a talk from Indi Abrams, *The Grove*, on 'Psychological literature and how to write it'.

To begin with, Abrams defined the genre, a commonly misunderstood part of literature. While many peddle the misconception that psychological literature is all about mental illness (think *Shutter Island*), it is in fact very different. Psychological literature is actually demarcated by a focus on the thoughts, feelings and motivations of key characters. Often, this stretches as far as having the majority of the action in the narrative happening in the main character's head, as in *Hamlet* or *Crime and Punishment*.

One key feature of psychological literature is that it is often written using the 'free indirect' style. This form of focalised narration allows linguistic mirroring of primary characters, in order that the reader might get into their heads. Indeed, the beauty of psychological literature pieces like *Crime and Punishment* is that they allow you to feel the same confusion that the main character feels. Whether it be the use of childlike similes or long rhetorical questions, the writing style of psychological literature is designed to allow one to understand the perspective of multiple characters.

For this reason, many leading psychological literature pieces also tend to have a foundation in the epistolary style, a post-Romantic style of writing that involves the story being told by a series of different letters. Although this was a common feature of the Romantic gothic style with writers such as Wilkie Collins using it in their work, it was in fact also a key part of the psychological style. One such example is *Alias Grace*, written by Margaret Atwood in 1996.

Abrams then took the audience through extracts of prominent pieces of work like *Crime and Punishment* and *What Maisie Knew* with the precision of a trained surgeon. Despite having an audience that had read a fair amount of Dostoevsky before, Abrams managed to use linguistic analysis of the importance of single words or images to expand understanding. In fact, reading Abrams' comments on the text was an experience

akin to being taken through fine wines for the first time by a prominent sommelier.

There was then the opportunity to engage in a practice writing exercise, with the audience each invited to compose for ten minutes and share their work. Although the pieces weren't quite as maturely finished as the works of Henry James, there were promising pieces from Gareth Tan and Aarav Tribhuvan, both *Moretons*, on a range of different topics, all in the psychological style.

Thanks must go to ACO for hosting the talk and to Abrams, for the impressive depth of his knowledge, particularly as he was not using notes for the full 45 minutes.

SCIENCE SOCIETY

Chris Liu, The Head Master's, "The Secret Ingredients of our Universe"

This week, the Science Society was delighted to have Chris Liu, *The Head Master's*, give a talk titled "The Secret Ingredients of our Universe", where he explained the existence of the various elements that exist in the universe today.

Liu first introduced the fundamental forces: the strong force, weak force, electromagnetic force and gravity. Each fundamental force has its unique properties and conditions in which it acts. Notably, the strong force is the force that exists at very small ranges, between neutrons and protons, effectively keeping nuclei together. Understanding these forces is integral to the process of nuclear fusion, in which two nuclei fuse to form a heavier nucleus and release a large amount of energy. The basic concept behind any fusion reaction is to bring two light nuclei close enough to overcome the repulsive electromagnetic forces, so the residual strong force in their nuclei will pull them together.

With the foundations in place, Liu took the audience back to the very beginning: the Big Bang. Initially, the universe only contained neutrons, which naturally decayed into protons and electrons. Consequently, as the universe cooled, these protons and neutrons could fuse to form the very first elements: hydrogen and helium. However, for heavier elements, we have to turn to nuclear fusion within stars, where the temperature and pressure are extremely high.

The formation of stars begins with large clouds of dust and gas, known as nebulae. Due to gravity, the dust is slowly pulled together to form a protostar. The protostar continues to heat up until it reaches a critical temperature, at which point thermonuclear reactions will start at the centre of the newly born star. The expansion of hot gas and radiation pressure eventually balance the inwards gravitational collapse, and a hydrostatic equilibrium is reached, moving the star onto a main-sequence star.

However, Liu pointed out that the fusion of heavier elements requires even larger stars. For example, our Sun is only massive enough to fuse hydrogen. Red giant stars, on the other hand, are capable of fusing heavier elements. They will generally deplete all hydrogen stores within one million years, resulting in its collapse as the inward gravitational forces overpower the outward radiation forces. Meanwhile, gravitational energy is converted to heat, increasing the temperature to allow for the fusion of even heavier elements such as helium, reaching a state of equilibrium once again as radiation pressure matches gravitational forces. This process repeats until we reach the fusion of iron, at which point we encounter a problem. The mass of heavier elements is slightly larger than the mass of the nuclei merged to form them. Hence, as we can see from the famous equation, $E=mc^2$, this reaction will result in a net loss of energy rather than a gain – thus, the star collapses entirely as gravitational forces overcome outward radiation forces. So why do heavier elements exist?

The answer lies within supernovae. As the star collapses into a supernova, neutrons are released from various nuclear reactions. Given that neutrons do not have a charge and hence, are not repelled by electrostatic forces, they can move and collide freely with other nuclei, specifically the abundant Fe atoms. Many processes now take place, most notably the R-process (R standing for rapid). Neutrons collide rapidly and frequently, allowing no time for decay, allowing Fe nuclei to accumulate neutrons until they are saturated, becoming heavier and heavier. At this point, neutrons may decay into protons, forming cobalt. Repeating the R-process, we can see how even heavier elements, up to uranium and thorium, are produced.

However, not all elements can be produced in this way – which is where the S-process comes in (S standing for slow). Occasionally there are neutrons in stars that can randomly transform lighter elements into heavier ones. However, due to its slow nature, nuclei have time to decay between collisions. The P-process is even slower and infrequent, where nuclei may randomly decay during the R- and S-processes to form other elements.

Yet, what evidence is there for these theories? Liu attempted to answer this question with a list of reasonable points. The long life of stars is supported by the process of nuclear fusion. Supernovae have been observed several times, sometimes even visible to the naked eye. Technetium, which has an extraordinarily short half-life, has been detected in stars, which proves that new elements are being continuously created within stars. As cobalt is produced during the R-process, gamma-rays can be detected, correlating to observations on Earth. Finally, assuming the theory of stellar evolution, the calculations of element abundance within the universe match the observed abundances in stars.

Liu concluded by summarising the timeline of the universe: from the Big Bang, where only hydrogen and helium existed, to the nuclear fusion within stars, producing heavier elements up to iron, and the R-, S- and P-processes and decay that account for the rest of the elements. Overall, Liu gave a stellar talk, thoroughly explaining the series of events that have led to the composition of elements we observe today on Earth. Along with some thought-provoking questions from the audience, it was a worthwhile lecture to attend. If you didn't quite manage to watch Liu's talk, the link is attached somewhere on the page.

METROPOLITAN

JONATHAN HEAD BARROW

Short Story Competition

Winners:

'Table for One', Aarav Tribhuvan, *Moretons* (Lower Sixth)
 Matthew Chin, *Bradlys* (Fifth Form)
 Charlie Ni, *Elmfield* (Removes)
 Otto Marre, *The Grove* (Shells)

Table for One

Aarav Tribhuvan, Moretons

John scampered through an opulent wrought iron door hastily following a heavily armoured security guard. He silently contemplated his situation as he pulled at his jacket in sheer excitement. John had made it into one of the most exclusive places on the planet. It was so exclusive that only those who had the approval of the most esteemed panel could get in -

John was now one of those people. He could only imagine the select few who had graced these walls, a group of individuals unparalleled in fame. John hoped that his name, like theirs, would be remembered for a while to come. Upon entering the vaulted dome, an eerie silence wafted through the empty room, revealing a solitary table at its heart. As he inched towards the lonesome table, he caught a glimpse of another guard from the corner of his eye by the door. Milky white tiles gleamed on every surface, mirroring the stark and clinical demeanour of the staff. The guard stopped just in front of the table and motioned for him to turn around. John kindly obliged. The man proceeded to help John out of his jacket, allowing him to finally move his arms. The thing was far too tight for him and restricted the blood flow to hands. It was a relic of a bygone era but given the occasion it was all he could wear. This venue had a very specific dress code, but that was fine as long as the food was good. John took his seat as he watched the guard quietly exit the room. The one at the door remained with his static gaze fixated ahead. The man's face was motionless and devoid of any impression that he was even breathing. However, none of those distractions mattered, what was of paramount importance was the fact that it was finally time for John's highly anticipated meal, and he just couldn't wait

What ensued from there on was a synchronised performance of clockwork precision. Within twenty seconds of him being seated, an elegant young woman had entered the room carrying a dish. He had been required to place the order in advance without the option of amending it. The exactness of the service seemed to be very swift but abrupt as John only had a slim window in which he was allowed to remain on the premises. The woman placed the order on the table in front of John as he eagerly straightened up in his seat. A tiny smirk snuck across John's face as he realised, he was in for the meal of his life. After silently depositing a knife and fork either side of the plate, the woman slinked away. John took a minute to survey the food, mentally devouring the symphony of flavours in front of him. Half relieved and half amazed that he had gotten exactly what he had asked for, John rubbed his calloused hands in ecstasy. His eyes flitted towards the pathetic plastic cutlery, an annoying but somewhat understandable policy of the place. It was a shame that metal wasn't permitted on site. Without a second thought John launched into a frontal assault of the food with his bare hands. He immediately took a bite of the out of a strawberry, and then a chicken wing, and then a shrimp, and then topped it all off with a handful of fries. The flavours didn't mix at all, but he had expected that when placing the order. John had managed a couple fast food restaurants in his time, although that hadn't translated into any gastronomic expertise.

As he slowly ploughed through the food on his plate, John checked the clock and realised that he only had around fifteen minutes left. Regardless of whether he had finished or not, he would be escorted out. This had always plagued John; the place could go months without serving a single client and yet they could only give a man thirty minutes to eat his meal. It was preposterous. They even had an unspoken rule that one was only ever allowed to enjoy this experience once in their lifetime – no matter how deep one's pockets ran. The more John thought about these factors, the more dissatisfied he became. For all the hype and prestige that surrounded this place, it really delivered a subpar experience. The food was decent, but the service was laughable at best. The room was barren of entertainment, and the staff hadn't spoken a single word to him. He supposed that the decor could have been passed off as modern minimalist, but it just seemed languid in this context. John sighed and reached for the glass of water, slightly annoyed that he had been denied the glass of wine he had asked for. You'd have thought that this place could afford more than room temperature tap water given all the funding they received.

As the second hand closed in on three o'clock, John sucked on a chicken bone out of sheer boredom. He had ransacked his

plate of everything edible and was just trying to savour the few fading flavours. Right on time the guard who had ushered in him re-entered carrying John's trusty jacket. He spat out the chicken bone and rose as the guard got closer. John silently raised his arms as the man began to dress him in the same way a parent does to a child. Once his arms were all the way through, the guard began folding John's arms and tightening the straps of the jacket. After everything was secure, the guard once again lead John through the wrought iron door. As he did so, John looked back longingly at his empty plate, the place where his last meal had been just minutes ago.

Matthew Chin, Bradbys

The afternoon of June 1st was clear and sunny, with the refreshing warmth of a midsummer day permeating the air; the surrounding trees wore a lush green blanket of leaves, the sound of chirping from within them filling the air with an eerie sense of calm. The square was teeming with bustling Bourasguans, each with a brown burlap sack grasped firmly in their hands. As was custom on the first day of every month, they lined up one in front of the other, patiently waiting for The Provider to arrive.

So as to avoid the cluster of people, the children stood to the back of the square, quietly playing amongst themselves as they bathed in the novel sense of liberty that accompanied the start of the summer holidays. Mike Divoc in particular could not hide his delight as he ran about on the white cement floor, urging his peers to follow suit. At first they seemed hesitant, almost afraid to indulge in the freedom afforded to them, but eventually bowed down to Mike's persistent pleas. They zigzagged past the crowd of adults, sprinted through trees, and stomped on innocent flowers. Bored of running aimlessly around, the children decided to play a game of football with large fruits Mike had found in the corner of the square. Though as soon as they realised the once green and leafy 'Lebbeonuts' (as the adults called them) were now all hollow and rotten, they quickly abandoned the idea, leaving them to one side before running back to the square. Mike, who had other plans for his findings, stuffed a few of the large, heavy fruits into his rucksack, before running off to join the others.

The distant chiming of bells resonated through the air, getting louder as they approached the square. The children, whom the ringing sound of bells reminded of their school days, covered their ears in fear as they huddled together. Unlike their younger counterparts, the adults, to whom school bells were only a distant memory, eagerly began to untie the knots around their sacks.

"I have arrived." The booming voice of The Provider resonated around the square, bringing a silence to the otherwise talkative group of Bourasguans. Even the children's conversations were brought to an abrupt stop. "Your Lebbeonuts are at the back of the truck. Take no more than your quota of food, or else..."

The Bourasguans all nodded in trepidation, submissively filling their respective sacks with Lebbeonuts. Even Mr Sras, a man whose appetite knew no bounds, was careful not to take any more than fifty fruits. They knew what defying The Provider would entail, and it definitely was not a cordial invitation to his manor. Nobody had ever met him, spoke to him, or even seen him before. But his booming voice and shrouded demeanour were enough to convince Bourasguans of his power.

Before long, the square began to clear out, with the adults carefully heaving sacks of their whole month's supply of Lebbeonuts back home. "A pity we can't eat anything else apart from tasteless leafy fruits," Mike grumbled as he trundled along behind his father, Dr Henry Divoc, who nodded in agreement as he strained to lift his two burlap sacks over a small bump in the road. "If only there is a way to get rid of them." Mike grinned at the thought, although he knew his father would not approve, for Lebbeonuts were the only type of food afforded to

them. Even so, Mike would like nothing more than to rid his life of the fruit. Before he knew it, his mind began to wander to his rucksack and its contents...

The next day, Mike woke to the sound of horrified screaming from the downstairs kitchen. Filled with a vague sense of intrigue and excitement, he rolled out of his bed, before running down the stairs and through the kitchen door. There, he was met by a red-faced Dr Divoc, who was standing beside a pile of hollow, rotten fruits.

"There was a rotten Lebbeonut in there," Dr Divoc exclaimed in exasperation. "How did it get there?" Mike looked sheepishly at the ground, but said nothing. In the corner of his eye, he caught sight of a rucksack, its opening unzipped and its inside empty. The damage had been done, and there was nothing he could do about it. Not that he wanted to, for he had no intention of eating any more Lebbeonuts.

"Maybe they were rotten to begin with," Mike suggested.

"Why don't we ask the neighbours whether their Lebbeonuts are rotten," Dr Divoc decided. "If so, The Provider will surely provide us all with a fresh batch of food. If not, someone must have sabotaged our pile." As he spoke, Dr Divoc seemed to throw an accusatory glance at Mike, who gulped at the idea of being charged with criminal offences. Surely his father would not hand him over to The Provider. But a nagging suspicion began to grow inside him, a suspicion that his father already knew who the perpetrator was, a suspicion that Dr Divoc would be willing to denounce him in return for fresh Lebbeonuts.

As Dr Divoc walked out of the kitchen door, Mike hurriedly snuck several rotten fruits into his rucksack before swiftly following him.

The neighbours were far from helpful. For one, they were unwilling to share their ration of food, claiming that The Provider would punish them for reallocating the quota he had enforced on Bourasgua. Mr Sras was similarly uncharitable, although this had more to do with his stomach than it did with The Provider's dungeons. For another, their Lebbeonuts were as fresh as before, their round, fruity insides coated with a layer of leafy green. This was proof enough for Dr Divoc that his pile had been sabotaged. "Unless I can find out who did it, The Provider will never let us have another batch of food," he realised, exasperated. "Unless I report the culprit, we will have no food for the rest of the month!"

"Perhaps their Lebbeonuts just take longer to rot," Mike suggested, though he knew that that was not the case. Trudging back home, he could not help but grin as he shouldered his empty rucksack.

The next day, Mike woke once more to a cacophony of screaming. But this time, the sound did not come from the downstairs kitchen; rather, it was coming from outside. Rushing down the stairs and out into the open, Mike watched in glee as the neighbours lamented their rotten piles of Lebbeonuts. Some tried to wash off the rot; others tried separating the rotten ones from the healthy ones, but to no avail, for they were all hollow, their leaves tinted brown. The damage had been done, and there was nothing they could do about it.

Just when it seemed that all hope was lost, several Bourasguans yelled in joy as they heard the welcome sound of chiming resonating through the air, getting louder and louder as its source approached. Abruptly, the sound stopped, and there on the road was a truck, the very truck that they had seen just days before, the very truck they were yearning to see. Yet, they were shocked to see its cargo bed, which had previously housed large piles of Lebbeonuts, was empty.

"I have come yet again." The booming voice of The Provider resonated around the square. "But not to give you food, for it was not I who caused the rot. It was one of you." As he spoke, a ripple of anger seemed to pervade the crowd. "Your starvation shall be at the hands of Mike." With that, the truck continued to trundle along the road, leaving Mike paralysed in fear as a mob of angry Bourasguans encircled him.

WHERE AM I STANDING



Submit your answers to the Editors of *The Harrovian*. There will be 6 more photos over the Term. If you can identify all 7 locations that the pictures have been *taken from*, you can win a free pizza.

HARROVIAN AI
CORRESPONDENCE

The answer is simple – replace beaks with AI

DEAR SIRs,

I think AIs should be allowed to take over the job of teaching. I think that's absurdly important – especially in an age where technology is to much of an extent a substitute for traditional teaching (technology has replaced traditional teaching in some areas but still leaves teachers struggling in others), and the current generation of teachers is to blame for this. Due to the rise of social media and networking, not only is there no traditional analogue to turn to when one needs to ask for help, but also there is no way to independently verify the help others are giving. There is no way for a teacher to know how many helpers they have or whether there are any extra tutors. There is no way to gauge the effectiveness of their coaching – how much better or worse their students are getting with technology than they are with their own. AIs can correct for this.

Furthermore, consider the rise of modern classrooms. In the 1980s, classrooms were small and claustrophobic, with huge closets full of books and papers. As modern classrooms are filled with hundreds of people, and even fewer books or general reading, a lack of space was an issue. The 1980s also saw the rise of the internet and social media, which enabled pupils to meet their teachers face to face and to socialise with them remotely, eliminating the need for cramped study sessions. Although remote studying is fine and dandy, employing technology to limit reading time and constrict technology is a ridiculous idea. We need to close this compulsory time for exploration and allow for more individual attention – not send our pupils there constantly. AI technology can guarantee this.

The majority of my peers think that AIs are a bad influence on a child, but I disagree. I think they are great for helping a child to get by. AIs have already done so much of the work for us in the past, with the addition of a little extra help from us. I

also think that in a modern, technological society, with all the technology in our devices, it is only right that they take over the mantle of teaching, and I think that their already excellent grasp of the subjects they are teaching should be commended.

If you take AIs out of the equation, when someone is teaching, the output will be in steep decline. However, there should at least be a limit on the number of AIs a teacher can have. Moreover, I don't think this is such a radical idea that it needs to be implemented immediately. I think we could relax the AIs' rule a little and allow for more autonomy for teachers, allowing more leeway to be given to the pupils' brains.

I do think that as AI teachers become more widespread, a reliance on computers may wear off, and schools' finite computing power will become an increasing problem. The only option is to use their limited computing power in a more creative and holistic manner, which will undoubtedly lead to the creation of AIs. This isn't to say that AIs are absolutely necessary in every aspect of schooling, but using them at their most creative and inclusive means.

Best wishes,
MARUNA KWENA, HARROVIAN AI

OPINION

DEAR SIRs,

I am writing this week to express my satisfaction at the way life on the Hill as we knew it has been preserved over the last couple of weeks leading up to this exam.

Although there are still visible signs of the pandemic in our (entirely appropriate) wearing of masks, the close contact policy and the lack of Speech Room and Chapel, it is beginning to feel like Harrow is back. It feels so great to be able to go into each other's rooms again, in the collaborative spirit in which Harrow belongs. The return of clubs and societies in person has made a huge difference to the education we are able to provide. Conducting a debate or listening to a lecture is one thing that simply can't be replicated on Microsoft Teams.

Over the last couple of months, I have to say that it is the social interactions of Harrow life which I have missed most. While conducting learning online is a blow, I have found that the efforts of many of my beaks to convert and redouble their efforts have meant that the on-timetable learning we are able to receive is just as good as it was in person. However, the small social conversations one is able to have during a Friday evening Flambar's session, before a Wednesday afternoon debate or before an external lecture are invaluable. Often, we learn as much from the conversations had at the dinner table, or walking around as we do from the education we are getting from the School. Learning is not just about lessons, it is about each other.

My only worry now would be for the next generation. As we emerge from the constraints of the online Super-Curriculum, I am concerned for the attitudes of the years below. Although some of the older boys in the School who remember what Harrow was like "before" will be eager to jump straight back into life as we knew it, what of the Shells who have never experienced Harrow at its full force? What will encourage them to get out of their rooms, and stop watching yet another autoplay YouTube video, and experience School life? How can we encourage boys to explore the wide variety of things on offer? I know that this has been an issue for quite some time and that there is no silver bullet, but we need to offer encouragement where possible.

That brings me nicely onto the concept of Harrow Prize Mentions. While we would like boys to participate in the Super-Curriculum merely for the sake of the betterment of themselves

and their community, we also recognise that offering an incentive can help as a hook in the first place. Indeed, we have the Send Up to encourage curricular work ethic and a whole range of other wearable paraphernalia to encourage sporting success. However, in the Harrow Prize Mention, we currently have an accolade that contains within itself no reward other than the short-burst dopamine release of an email from iSAMS.

I think that in order to get people to reinvigorate the Super-Curriculum, we need to give meaning to the Harrow Prize Mention. Where Send Ups have a value in points to be cashed in for House Master Pizzas, there is no tangible benefit of amassing a great quantity of Harrow Prize Mentions. The Harrow Prize is too far away to motivate younger boys within the School, and even so it appears to be more contingent on a category checklist than the number of Harrow Prize Mentions received. Indeed, it appears that you could be perfect in all but one of the categories and have one million Prize Mentions, but still not receive the Prize itself. There is no category for Prize Mentions as a pre-requisite for the Harrow Prize. Furthermore, although they are officially considered as a criteria for Monitorship, that remains too far away for the average Shell boy to be motivated. What kind of person will work today for a reward that they “might” get four years on?

I propose two potential solutions.

The first would be to incorporate Harrow Prize Mentions (albeit, at a smaller tariff of points than Send Ups) into the existing points framework for rewards and sanctions. As a result, they would be able to factor into whatever awards are based on them at House level, and will prove to be a more effective incentive for boys to lecture and write for *The Harrovian*. As a result, we can usher in a post-COVID renaissance of activity. Alternatively, the second proposal would be to give them a regular reward structure of their own. Perhaps they can be directly tradable for a “Hill Shop Gift Voucher” or a pizza through some sort of central School bounds. At least that would mean that boys can see that there is a visible sign of them being recognised for their hard efforts.

Regardless, I think the Super-Curriculum we have here is the one thing that allows us to stand out from other schools. When the Head Master conducted one of his first Speech Rooms he proclaimed that “Harrow was the greatest school in the world” and what he meant was that although we might not be invincible on the ecker pitch nor have the best exam results, our environment is special. The Super-Curriculum at Harrow is about learning to learn and learning to lead. It gives us a unique opportunity to engage intellectually and socially in a manner which will prepare us for later life. Many aspects of Harrow are great but our Super-Curriculum is the emerald in the diadem.

When people became ill-accustomed to going to restaurants, Rishi Sunak offered “Eat Out To Help Out”. Let us now stimulate the Super-Curriculum with a much needed overhaul of the Harrow Prize Mention.

Kind regards,
DYLAN WINWARD, LYON’S,

SPORT

SENIOR INTER-HOUSE GOLF COMPETITION

On the Hill, 28 April

Winners – The Head Master’s (Max Shirvell and Toby Shirvell)

We are experiencing an exceptionally dry spring with only

1.8 mm of rain in the past six weeks (and most of that fell as snow!). It is only fitting then that the first rain should fall on the afternoon of the Senior Inter-House Golf Competition to soften the greens and give the boys the best chance of shooting some low scores. But, as the saying goes, “you can lead a horse to water, but you can’t make it swim” and we were treated to some good, a fair bit of bad and some really, truly ugly (... weather, honest!).

The conditions deteriorated fast, but the boys kept heart and battled hard. Newlands (Jasper Gray and Jude Brankin-Frisby) were paired up with Rendalls (Johnny Connell and Ben Hope) and started on the second hole, playing into a stiff breeze. This didn’t faze Gray one iota as he held one up nicely into the draft to leave himself a 6-footer for birdie – sadly his putt did not match the approach and they would leave the hole with just the 2 points. They had found their feet early in the round and would go on to put together a tidy round with flourishes of brilliance from Brankin-Frisby, playing with a swanky new driver in the bag. The Rendalls pair struggled on the day and creative differences (awful golf) within the partnership led to frustrations (bickering). There were discussions about who really contributed within the pairing, but it is clear that with more lost balls than stableford points after nine holes, neither of the two were really on any sort of form and were battling to avoid the wooden spoon.

Teeing off on the first were The Park (Jonah Peppiatt and Max Hattersley) and The Knoll (Jake Forster and Ed De Bray). Forster has been in training for this day for many years and it was good to see him shoot a good score. The Park pairing struggled, with Peppiatt having particular difficulty on the par 4 4th, finding the rough about 20 yards to the left of the tee-box. It was going to be a tight run thing at the bottom of the leader board...

We were sadly down one House, with West Acre having to sit out the competition – commiserations to John Koutalides and Finlay Jones who I know were disappointed not to be present in this, the blue riband event on the inter-House circuit. This meant that the Elmfield pairing of Oliver Wills and Leo Wright would be out on their own starting from the 8th. It was great to see Wright in correct golfing attire for the first time in his career and this clearly had a positive impact on his game. He thumped a 3-wood just long of the green and played a masterful chip to leave him with a birdie opportunity. He would secure a par for a nice opening two points. Wills has been hitting the gym hard this term and was struggling with his distances. He overshot the green on the 9th with his pitching wedge but managed a good bogey to secure a point.

Furious to be starting from the 7th were The Grove (Peter Cartwright and Inigo Sanchez-Asiain Domenech) and Moretons (Ben Swan and George Williams). Cartwright had heard of a promising young Spaniard within the House and was very excited to see what Sanchez-Asiain Domenech had to offer. Sadly, Cartwright’s heart sank after one practice swing. The Grove pair struggled on, spending half of the round looking for balls and discussing whether out of bounds was really out of bounds. Meanwhile Moretons were putting together a decent round and picking up a steady trickle of points. Swan and Williams were eyeing an unlikely victory...

The penultimate group saw some of the keenest golfers in North-West London paired against each other. Joe Smith, *Bradlys*, was fresh back from injury alongside his trusty partner Ollie Kirkland. The pair started off well, but a scattering of double bogies on the card saw the end of their challenge. They were joined by arguably the most experienced golfers around the School course in history. George Webster and Finlay Matheson, both *Druries*, were feeling buoyed by September’s runners-up placing and were looking to go one better today. The faithful duo put together a fine string of holes with a number of birdies on the card. Could this, their final appearance in House golf, be their time...

Finally, we saw the hot favourites, three-time winners of the event, Max and Toby Shirvell, *The Head Master's*, playing alongside the Lyon's team of Henry Oelhafen and (late replacement) Zack Morgan. Toby Shirvell showed his class early on, finding the green on the 9th with his opening shot (he would be the only player to find the putting surface and in turn secure the nearest to the pin title!). Morgan struggled to find his swing (it was well and truly lost) until the back end of the round where he contributed well. Oelhafen is an up-and-coming star of the golf circuit and he was striking the ball nicely (after both he and Morgan found the water on 9). With birdies from Max Shirvell on 1 and 2 followed by a third birdie of the round for Toby Shirvell on 8, *The Head Master's* were just too strong on a challenging day and ran away with, clear by five points!

Overall Standings:

- 1st *The Head Master's* – Max Shirvell & Toby Shirvell – 21 points
- 2nd *Druries* – Finlay Matheson & George Webster – 16 points
- 2nd *Newlands* – Jude Brankin-Frisby & Jasper Gray – 16 points
- 4th *Elmfield* – Ollie Wills & Leo Wright – 15 points
- 5th *The Knoll* – Ed De Bray & Jake Forster – 14 points
- 5th *Moretons* – Ben Swan & George Williams – 14 points
- 7th *Lyon's* – Zack Morgan & Henry Oelhafen – 13 points
- 8th *Bradlys* – Ollie Kirkland & Joe Smith – 10 points
- 8th *The Park* – Max Hattersley & Jonah Peppiatt – 10 points
- 10th *The Grove* – Peter Cartwright & Inigo Sanchez-Asiain Domenech – 9 points
- 10th *Rendalls* – Johnny Connell & Ben Hope – 9 points

CRICKET

1st XI v Malvern College, 28 April
Malvern College won by 2 wickets

	B	R
J Brankin-Frisby c F Morris † b A Catto	6	1
J Connell c C Williams b J Baker	137	100
T Sheopuri *† b R Edavalath	85	43
B Hope lbw b J Baker	16	8
V Patel c J Dickenson * b J Dickenson *	12	8
C Ellis st F Morris † b J Dickenson *	14	7
M Ferreira not out	2	2
B Sheopuri not out	1	1
Extras		15
Total	185	for 6

	O	M	R	W
C Williams	4.0	0	21	0
A Catto	6.0	0	19	1
J Baker	9.0	0	38	2
J Dickenson *	9.0	0	29	2
R Edavalath	9.0	0	38	1
J Edwards	5.0	0	22	0
Clarke	3.0	0	13	0

	B	R
T Boorman lbw b J Nelson	49	23
R Edavalath c J Connell b J Gray	18	4
O Cox c M. Ferreira b C Ellis	113	76
J Dickenson * b M Ferreira	20	11
T Burrowes c J Connell b B Sheopuri	7	1
J Baker c J Connell b J Nelson	11	11
F Morris † c B Hope b J Gray	38	28
A Catto not out	6	9
C Williams b J Gray	1	0
Clarke not out	7	7
Extras		18
Total	188	for 8

	O	M	R	W
J Gray	8.2	0	35	3
S Rawal	5.0	1	20	0
C Ellis	9.0	0	47	1
M Ferreira	7.0	0	24	1
J Nelson	9.0	0	31	2
B Sheopuri	6.0	2	27	1

Harrow won the toss and elected to bat on a chilly morning on the VIth Form Ground. After losing their first wicket in the second over, Johnny Connell, *Rendalls*, and Tej Sheopuri, *Lyon's*, began to build a steady partnership. They were looking good, reaching their 100 partnership in the 30th over when Sheopuri was caught behind for an important 43. For the next 15 overs, Connell played with class and intelligence, putting the bad ball away and consistently rotating the strike and he eventually reached a brilliant century. With a couple of overs to go, numerous contributions brought the total up to 185 after the 45 overs – a competitive total but Harrow would need a good bowling performance to defend it.

Harrow had a good start to the innings with tight bowling from their openers Jasper Gray, *Newlands*, and Shrey Rawal, *Rendalls*, with the first wicket going to Gray in the fifth over of the game. Their spells got Harrow off to a great start, which was followed up with the first change bowlers. The next wickets were taken by James Nelson, *Bradlys*, who dismissed the other opener and Max Ferreira, *The Grove*. Although the bowling was consistent and on the spot, the Malvern number 3 batter stayed in and reached 76 before being dismissed by Cameron Ellis, *Rendalls*, with an extraordinary partnership catch including Johnny Connell, *Rendalls*, and Max Ferreira (see Instagram for further details). This amazing catch put Harrow back in the game, with Malvern needing 26 off 22. Wickets kept falling off the back of good bowling by Ellis and Gray, but Malvern continued to nudge the ball around and eventually won the game with an edge for 4 with four balls to spare. Although Harrow did not win the game, they had a good performance and have plenty to be proud of. The stand-out performance undoubtedly came from Connell, with a century and three catches – not including his assist in the sensational catch with Ferreira. Harrow will look to fine tune their performance against Tonbridge this Saturday.

2nd XI v Winchester College, won by 43 runs

Sachin Vyas, *Elmfield*, – 27, Leo Wright, *Elmfield*, – 31, Olly Wills, *Elmfield* – 4-11

The 2nd XI secured another impressive win against Winchester on Thursday. Harrow batted first on a cold afternoon in Hampshire and initially found it tough going on a slow, low wicket. Indeed, at 26-2 after eight overs, it looked as if Harrow would struggle to post a competitive total. However, Sachin Vyas, *Elmfield*, produced a mature, obdurate innings to set a platform for Leo Wright, *Elmfield*, and Max Shirvell, *The Head Master's*, to accelerate in the final eight overs. A last-wicket stand of 21 between Max Shirvell, *The Head Master's*, and Herbie Smith, *Newlands*, allowed Harrow to finish on 145, five balls short of the completion of the allotted 30 overs.

In reply, Winchester struggled early on; especially against the hostile bowling of Herbie Smith, *Newlands*, and Jasper Blackwood, *Elmfield*. Winchester were toiling at 46-7, after Olly Wills, *Elmfield*, had taken advantage of the pressure built early on to chip in with three quick wickets in two overs. However, a resilient 8th wicket partnership of 51 saw Winchester start to creep towards Harrow's total. It looked as if there could be a close finish, but a fine spell from Oli Newall, *Druries*, and the return of Jasper Blackwood, *Elmfield*, saw Harrow through to what was ultimately a comfortable victory.

This was a very good win for Harrow, but there is still plenty to work on ahead of the next game at home to Tonbridge on the Sixth Form Ground.

3rd XI v Winchester College, won by six wickets
Fred Prickett, *The Park*, 48

Harrow lost the toss and Winchester elected to bat first. Harrow's bowling and fielding were strong throughout the first innings, with wickets falling quickly. Winchester were 15-1, 56-2, 69-3, 69-4. Rohan Prasad, *Elmfield*, Sam Owston, *Moretons*, Archie Powell, *The Grove*, and Fred Prickett, *The Park*, all bowled excellently, to wear down the opposition's batting order. After 20 overs it looked like Winchester were close to collapse, but their batsmen dug in, driving to reach 144 after 30 overs.

After a quick tea Harrow went in to bat. Winchester's bowling attack was ferocious from the off and resulted in some cheap wickets. Harrow were 13-1, 51-2, and 53-3. Shubb Malde, *Elmfield*, and Fred Prickett, *The Park*, responded with great maturity, slowly building the innings and closing down the target. The risk though was that Harrow would run out of overs. Malde was eventually caught, but Zac Yardley, *Druries*, came in to bat and kept the scoreboard ticking over. Harrow needed 18 off the last three overs; this was achieved with two overs spare.

This was a fantastic game, played with real spirit and great sportsmanship from both Harrow and Winchester.

Man of the match: Fred Prickett, *The Park*, who hit 48 and did a super job as captain.

4th XI v The Guards, won by 3 wickets

Harrow 4th XI captained by Jonah Peppiatt, *The Park*, won the toss and elected to field. The Guards scored 122-9 off of their 30 overs with Hassan Hammad, *The Park* taking very impressive figures of 4 for 3 and Max Morgan, *Rendalls*, taking 2 for 7.

In response Harrow reached 123-7 after 26 overs with strong showings from William Wallace, *The Head Master's*, 43 and Ben Ghani, *The Knoll*, 35.

*1st XI v Tonbridge, 1 May
Tonbridge won by 5 wickets*

	B	R
J Brankin-Frisby st T Geffen *† b S Hadfield	37	4
J Connell b S Baldwin	89	52
T Sheopuri *† b S Baldwin	45	22
V Patel run out (J Baldwin)	92	64
M Ferreira lbw b H Bevan-Thomas	25	22
C Ellis c J Baldwin b J Baldwin	7	6
P Ashworth not out	35	38
B Sheopuri c J Baldwin b T Masding	2	2
J Richardson not out	0	0
J. Gray		
J. Blackwood		
Extras		8
Total		218 for 7

	O	M	R	W
H Bevan-Thomas	11.0	1	44	1
A Ramanathan	10.0	1	32	0
T Masding	8.0	0	42	1
S Hadfield	11.0	3	32	1
S Baldwin	6.0	0	29	2
J Baldwin	9.0	0	34	1

	B	R
T Geffen *† run out (B Sheopuri)	9	1
S Baldwin c J Connell b J Gray	44	28
S Hadfield c J Connell b J Gray	2	0
H Bevan-Thomas c B Sheopuri b B Sheopuri	40	50
J Baldwin not out	111	65
M Campanale c J Brankin-Frisby b P Ashworth	31	14
D Beazleigh not out	69	42

A Ramanathan				
W Pike				
C Williams				
T Masding				
Extras				22
Total				222 for 5

	O	M	R	W
J Gray	9.3	2	33	2
C Ellis	5.0	0	32	0
J Richardson	6.0	1	30	0
J Blackwood	6.0	0	30	0
B Sheopuri	11.0	3	35	1
P Ashworth	8.0	0	36	1
M Ferreira	5.0	0	20	0

Harrow won the toss and elected to bat on a chilly morning on The Head at Tonbridge. After losing their first wicket, Johnny Connell, *Rendalls*, and Tej Sheopuri, *Lyon's*, began to build a steady partnership, putting on 50 for the second wicket. They were looking good before Connell chopped on in the 28th over for 52. Sheopuri only lasted four more overs before he fell in the same way for 22. This brought Veer Patel, *The Knoll*, to the crease who manoeuvred the Tonbridge spinners around with ease. He eventually reached his own 50 and was ably assisted by Max Ferreira, *The Grove*, and Phoenix Ashworth, *The Head Master's*, in Harrow's formation of a target. Ashworth and Patel batted maturely to take Harrow beyond 200 and their partnership of 58 for the seventh wicket pushed Harrow up to 218 for 7 from their 55 overs.

Harrow had a good start to the innings with tight bowling from their openers Jasper Gray, *Newlands*, and Cameron Ellis, *Rendalls*. This pressure led to a risky single by the Tonbridge openers and Brij Sheopuri, *Lyon's*, was sharp enough to throw the stumps down to dismiss the Tonbridge skipper. The second wicket went to Gray shortly after who knocked-off the other Tonbridge opener. Their spells got Harrow off to a great start, which was followed up with the 1st change bowlers. The next wickets were taken by Brij Sheopuri, *Lyon's*, who completed a stunning catch off his own bowling to break a partnership of 63 for the Tonbridge 3rd wicket. Jasper Gray, *Newlands*, returned impressively to tie down an end and he took another well-earned wicket to leave Tonbridge on the back foot at 116-5. The Tonbridge 5th wicket pairing batted intelligently under the pressure and rode their luck as they started to rebuild. They gradually began to put the pressure back onto the Harrow bowlers and seemed very hard to tie down. Despite some valiant efforts by the Harrow bowlers these Tonbridge batsmen stubbornly refused to lie down and eventually carried their side over the line with 4 overs to spare. Tonbridge finished the victors and their 5th wicket partnership was an impressive batting spectacle. Harrow travel to Bedford next week where they will be looking to bounce back after a challenging week.

2nd XI v Tonbridge School, lost 117 all out v Tonbridge School
2nd XI 118-0

This was a humbling defeat for the 2nd XI against a strong Tonbridge side. Harrow batted first on the Sixth Form Ground, but struggled to build partnerships from the outset. A last wicket stand of 22 between John Koutalides, *West Acre*, and James Nelson, *Bradlys*, allowed Harrow to post a score which at least gave the bowlers something to defend.

However, Harrow failed to build pressure from the outset of the Tonbridge reply. Half chances came and went leaving the Tonbridge openers with the opportunity to waltz towards the nominal target. Harrow were sloppy in the field and struggled to take advantage of a pitch that had plenty to offer bowlers who were willing to deliver the ball in the right areas.

A disappointing afternoon and there is plenty to work on ahead of another tough fixture at home to Bedford on Thursday.

3rd XI v Tonbridge School, lost by 9 wickets

4th XI v Tonbridge School, won by 3 wickets

A hard-fought victory against very competitive opposition that was a real credit to the 4th XI. Requiring 205 for victory the Harrow batsmen knocked off the total with three wickets in hand.

Hassan Hammad, *The Park*, 2 for 27, Nathan Shepard, *The Park*, 3 for 44, with Ben Ghani, *The Knoll*, 35, William Wallace, *The Head Master's*, 45

5th XI v Tonbridge School, lost by five wickets

Junior Colts A v Tonbridge School, lost by five wickets

After a long bus journey, Harrow won the toss and decided to have a bat on what looked like a nice, true batting wicket. Opening up was Gus Stanhope, *Moretons*, and Charlie Nelson, *Bradlys*. Harrow started solidly and looked in good touch before Stanhope unfortunately chipped one up to mid-on and was caught in the 2nd over. Next to the crease was Caspar Baker, *Moretons*, who had a relatively slow but steady start to his innings until he got going and was starting to push on. Both batsmen were seeing the ball very well and they made a partnership of 102, with Nelson passing 50, until Baker fell for 41 leaving Harrow at 105 for 2 with 10 overs to go. Harrow had built a solid base and looked in a good position and with 8 wickets in hand, there was an opportunity to finish big. Next to the crease was Charlie Hope, *Rendalls*, and right from the off both Hope and Nelson were turning 1s into 2s and stealing singles from the fielders. Harrow continued to pile on the runs with Hope smashing a 6 and various other boundaries and Nelson also getting at the aggressive shots. Nelson and Hope really picked up the run rate in the last 10 overs and frustrated the Tonbridge side. With Nelson 17 away from a century with three overs left, he started to go for it and after playing a pull shot for 6 and another one for 4, he made his century comfortably in the penultimate over. Hope was out in the last over for a quickfire 37 off 27 and with Harrow having got 101 off the last 10 overs, Harrow finished at 197 for 3 after 30 overs.

Charlie Nelson, 106* off 94, Caspar Baker 41 off 57, Charlie Hope 37 off 27.

With a good score on the board, Harrow still had to bowl and field incredibly well to put the game away. Harrow started well upfront with a wicket from Sam Phillips, *Moretons*, with the batsmen driving the ball to Nelson at mid-off. After the early wicket, Tonbridge continued at a slow pace with consistent bowling elsewhere from John Edwards, *Moretons*, Filip Edstrom, *Bradlys*, until the partnership was finally broken by Charlie Hope with an lbw leaving Tonbridge at 79 for 2 after 13.3 overs. Tonbridge, after the below par start, with their opening batsmen who was set and playing some brilliant shots and their number 4 new at the crease, picked up the pace very well. Gabriel Harrington-Myers, *Bradlys*, and Charlie Nelson tried to settle their batsmen but were struggling as both were playing very aggressively. Tonbridge looked like they were in the driving seat in the match needing just 40 in the last 8 overs, however the long partnership of 68 was broken when Nelson bowled a loopier ball and was smashed into the deep high and towards cow corner. Everyone thought it was going

for a boundary at least, everyone apart from Freddie Dinan, *Rendalls*, who sprinted round from long on, leaped across the field and caught the ball in mid-air. The catch was absolutely incredible. Harrow were possibly back in the game after this. In the next over, Harrington-Myers got a wicket with an lbw and left Tonbridge at 154 for 4 with just over seven overs to go. After the quick wickets, Tonbridge, mainly from their opening batsmen who was still in, pushed the game to an end needing just 10 in the last three overs. Tonbridge won the game on the 3rd last ball of the match winning by five wickets.

Overall, it was another good performance in all aspects but unlucky not to end up on the winning side this time.

Junior Colts B v Tonbridge School, lost by 39 runs

Junior Colts C v Tonbridge School, won by 48 runs

The JCC's bowled accurately to restrict Tonbridge to a 100 all out after posting an excellent 148 runs in their innings.

Yearlings A v Tonbridge School, lost by 28 runs

Henry Porter, *Moretons*, 2-31, Henry Snow, *Rendalls*, 42*, Miles Herron, *Rendalls*, 31.

After a sizeable journey to Tonbridge, which featured a long period of energetic but tuneless singing from the boys at the back of the coach, skipper Teddy Barnett, *Rendalls*, won his third consecutive toss and chose to bowl in overcast conditions. The sun broke through the clouds as the opposition openers walked to the crease, but Henry Porter struck with the fourth ball of the match to vindicate the decision. After that strong start, Tonbridge staged a classy counterattack, putting on 85 for the second wicket in quick time. Putting pressure on the outfielders with some intense running between the wickets, it took a direct hit run out from Barnett and the introduction of some miserly spin from Jenkyn Kegwyn, *The Knoll*, and Tom Campbell-Johnston, *Druries*, to wrestle momentum back Harrow's way. Nevertheless, Tonbridge scored quickly in the final few overs to post an imposing total of 198-5 from their 30 overs.

In reply, Miles Herron and Harry Owens, *Rendalls*, started excellently, posting a run a ball 48 partnership for the first wicket before Owens was out LBW. Devastatingly, Herron fell in the same over to take the momentum out of the chase, but Snow and Porter rebuilt nicely to put Harrow back into a competitive position. Barnett replaced Porter and built another strong partnership with Snow, but once again wickets fell just as Harrow looked to be getting back into the game. Despite a final onslaught from Snow, Harrow fell 28 runs short. Whilst it was a disappointing loss, there were lots of positives to be taken from the batting performance in particular, whilst fielding looks to be an area in need of improvement.

Yearlings B v Tonbridge School, Lost by 6 wickets

Yearlings C v Tonbridge School, lost by 66 runs

Yearlings D v Tonbridge School, lost by 9 wickets

Yearlings E v Tonbridge School, won by 6 wickets

Ways to contact *The Harrovian*

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CELEBRATING OUR PAST
REFUNDING OUR FUTURE