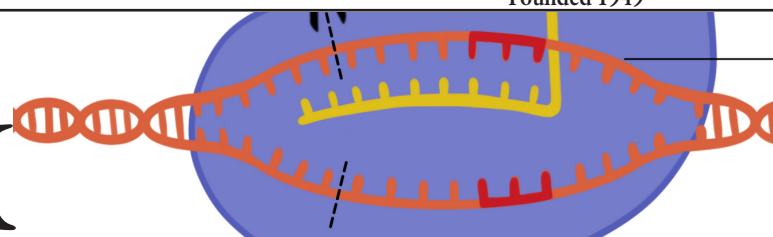


Felix



INSIDE

Pig organ
transplants
What's been going
on with Joe Rogan?

ISSUE 1792

FRIDAY 11TH FEBRUARY 2022

Imperial Professor goes viral for anti-vax rebuke

Sam Lovatt Editor-in-Chief

In a rare case of double virality, an Imperial professor has made the rounds on social media after decrying an anti-vaxer in the Question Time audience for talking “nonsense”. The Times described the clip in question as “going viral”.

Professor Robin Shattock is Head of Mucosal Infection and Immunity in the department of Medicine at Imperial College. His work focuses on mechanisms of mucosal infection, and the development of preventative strategies for a developing world setting.

Professor Shattock was a guest on Question Time on Tuesday 3rd February. The producers of the show had previously put out a call on Twitter for people who had decided not to get vaccinated to attend the show as audience members.

Shattock said he wanted to differentiate between vaccines for the general population and vaccines for healthcare workers, as healthcare workers have a duty of care which “first of all is to do no harm”. He said he can “see no logical answer” for someone in the healthcare profession not to get the vaccine, as it is known to reduce harm of the virus and to reduce the spread. He added

that the way to achieve this was probably not to



Continued on Page 3...



A look at ICHack

Ameena Hassan Deputy Editor

Over the last weekend, the department of computing society (DoCSoc) held their annual Imperial College Hackathon (ICHack '22), engaging over 50 teams in a 24-hour challenge to come up with original code that solves a problem. Participants hailed from various disciplines and years: from second-years studying Material Science to first-year PhDs, and to out-of-towners from Manchester and Leeds, with even first years in the mix. Some alumni also competed, as the competition was open to anyone who had graduated in the past year. The event

was organised by DoCSoc's committee and past committee members - one had even flown in from Zurich to attend for the weekend - to make sure that there was continuity between years, as ICHack '21 had to be cancelled due to COVID-19.

ICTV were hired to film the opening and closing ceremonies. They did not have access to the audio-visual suite overlooking the Great Hall, leading to delays of up to 30 minutes before the opening ceremony, but the following event, a talk by Cisco about their Webex Video and Meetings software, started on time.

Felix has learned that someone, in

their capacity as a mentor, was allowed to see proprietary information without having signed an NDA (an oversight on the parts of the sponsors involved, as the information could have been leaked and distributed to anyone).

Despite every attendee being asked to take an LFT within 48 hours of the start of the event, as well as mandatory double-vax status, positive cases have been reported from the event.

Continued on Page 4...

EDITORIAL

Fixed Penalty Notices

This issue was produced thanks to the work of

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And our numerous contributors



I can't really make up my mind whether or not I like the fact that the Met are investigating the No. 10 lockdown parties.

On one hand it's of course very fair that they do; the entire populace has seen multiple leaked photos that all but confirm that tens

of senior civil servants, MPs, and the PM himself broke their own regulations on multiple occasions. The police have previously said that even in times of diminished Covid regulations they still enforce the rules "where

there are clear breaches of the rules", and these breaches could hardly be more clear. There were 118,438 Covid Fixed Penalty Notices processed up to October 2021, and it would be woeful for the police to turn a blind eye to the government just because of their position.

That being said, in practical terms it is quite disruptive. Boris needs to go, and countless Tory backbenchers and donors have said so over the past weeks. His approval ratings are lower than Theresa May's were at her worst, yet still he clings on. What seems to be causing this is a fine balance of consistent lying and exceptionalism versus apparent misguided loyalty and the lack of an obvious successor as PM.

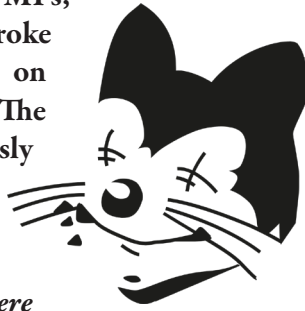
Somewhere in this careful balance lies the threshold where enough MPs are sufficiently annoyed that they write a letter calling for a vote of no confidence to the chairman of the 1922 committee. It's extremely unlikely that a Cabinet member

would do this, leaving it up to the Tory backbenchers to pen a total of 54 letters. Once this happens, a secret ballot among Tory MPs would take place, and if a majority vote against him, Boris is out. The flip side of this is that if Boris survives a VoNC, then another one cannot be held for at

least a year, cementing him in the position for a while longer.

Quite the digression, and I apologise, but now back to the Met investigation. A 'furious' Sue Gray released her substantially redacted

report into the goings on in Number 10 over the lockdown period at the end of January. Whilst certainly not good news for Johnson, so many details and key aspects of the particularly heinous events were not included, by order of the Met so that they did not prejudice its investigation. Because after literally months of dithering and declining to investigate the Number 10 parties on some of the shakiest ground I've ever heard, it swoops in whilst Gray is mid-report and demands most of the heat be redacted. And now we wait God knows how long for a glacial Met investigation to play out, no all-encompassing, crushing blow is dealt to the PM in one go, and he limps on towards the imminent parliamentary recess which will essentially confirm he has survived this round. Counterintuitively, a Met investigation into the parties might have been the best thing that could have happened to Boris.



Statement of Intent

At Felix we believe that it is always in the interest of the students to know. Transparency in the workings of the College and the work of your student representatives is key. Therefore I, the Felix Editor, on behalf of the team promise that:

We will, to the best of our ability, tell you the whole truth and nothing but the truth.

We will keep your confidence and will only publish something you say to us if you have explicitly said that we can.

We will work to expose unfairness and discrimination in all forms that it takes at the College.

We will treat fairly any article sent to us, regardless of point of view, and do our best to work with you to prepare it for publication.

Signed by Sam Lovatt
Editor-in-Chief

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...continued from Page 1

introduce a vaccine mandate.

The audience member who asked the question in the “viral” clip drew comparison between Covid vaccine side effects and side effects from a Swine Flu vaccine rolled out during the Swine Flu epidemic, which he stated had caused up to 800 cases of narcolepsy in children.

He said he has “great respect” for people who have questioned the evidence. “Science is all about questioning the evidence... I spend my life looking at evidence and questioning it.”

“First of all, one thing is really important to recognise, is that there are a range of vaccines out there. They don’t all have the same side effects.”

Shattock then addressed the Swine Flu vaccine comparison, stating that the cases of narcolepsy were not as related to the vaccine as had originally been thought.

“We have far more safety data based on the current vaccines because they have now been in billions of people, and the evidence is there and accessible so if you want to do a data analysis and look at the risk ratio and hazard ratios, you can get those numbers, there’s no secrecy around it. So if we talk about serious adverse events they are extremely rare.

“the two main vaccines currently used

in the UK are the two RNA vaccines Moderna and Pfizer. The rarest events of any serious concern is inflammation of the heart which happens mainly in young men and teenagers, it’s extremely rare, very unlikely to happen, and no one has actually had a long term consequence”.

“Most people who have some adverse event [have] mild injection site reactions and maybe a day of feeling slightly unwell. The evidence and the facts are there. They’re indisputable”.

The audience member cited his degree in Philosophy and stated that an appeal to authority is not an automatic win of an argument. He then went on to discuss Dr Robert Malone, who the audience member claimed incorrectly had invented “the vaccine” and suggests that young people don’t take it.

To this, Shattock replied “it’s nonsense. He didn’t invent mRNA vaccines. The people who developed the vaccines, the two RNA vaccines, are BioNTech the company... and the other group are Moderna. It’s based on their research. It’s not based on an individual”.

After conversational doyenne Fiona Bruce had switched the topic and was asking another panel member a question, Shattock can be heard saying “you’re wrong” to the audience member.

Robert Malone has recently been a

Credit: Thomas Angus, Imperial College London



player in the dispute between musicians and Spotify over Covid misinformation on the Joe Rogan Experience podcast, to which Spotify has the sole rights. Malone has appeared on the podcast and espoused covid misinformation, including that Covid death figures shouldn’t be trusted as hospitals receive bonus payments

for patients with a Covid infection.

Professor Shattock also voiced discontent with the government’s current plans to ease the cost of living crisis, saying that the schemes need to be more targeted and that relief from higher energy bills should not have to be paid back in the future.

Strike action continues for UCU members

Ameena Hassan Deputy Editor

In December, Imperial College employees went on strike over changes to the Universities Superannuation Scheme (USS) pension scheme after 71.7% of Imperial University and College Union (UCU) members voted in favour of strike action and 86.3% voted in favour of industrial action short of a strike.

The USS’s Joint Negotiating Committee (JNC) decided on changes to the pension scheme, and stated on their website: “the proposed changes by the UCU were not submitted” to them as of 31st August. UCU will now meet with employer representatives

from UUK this Friday, 11th February, to discuss revoking the cuts to staff pensions and to formally accept the UCU’s counter proposal. According to the UCU, USS consultations found that employees would not mind increased pension contributions if the increases were matched by employers.

The UCU will describe planned action they will be taking through a recorded online event at 5pm on Friday the 11th of February.

The changes will come into effect on 1st April 2022. Depending on the outcome of the meeting, the UCU is calling on its members to be prepared for a 3-week nation-wide

strike over USS pension changes, pay and pension, and working conditions.

Imperial College UCU members have previously only voted to go on strike over the USS pension strikes, and will participate in the first week, that is, 14th February to 18th February. Additionally, they will also strike on 21st and 22nd February, dates which coincide with UCU strikes over pay and working conditions.

The NUS has called for a strike by students on 2nd March in support of university staff who would be striking over pay and working conditions, but this issue does not impact Imperial staff.

If the issues remain unresolved,

the UCU may hold a marking and assessment boycott, followed by a referendum to extend their six-month industrial action mandate beyond its expiration at the beginning of May.



NEWS

...continued from page 1

Sponsor Prize Winners**Cisco - Solutions for the Hybrid World:**

Sign Language Translator for Web Meetings: identifying BSL and CSL, and converting to words.

Citadel - Best Use of Data:

PrivateCarbons: A bot that criticises private jet owners about hypocritical environmental awareness tweets
(Runner-up:)

Gredie: Web extension to estimate the cheapest shop required to make a recipe

Marshall Wace - Most Entrepreneurial Hack:

StartNet: Checking how unique your startup is, how likely it is to be sponsored, and who to employ
(Runner-up:)

Rhythm Royale: Musical Battle Royale, battle recreating sounds with your friends

Optiver - Market Making Challenge: Whichever of the 25 teams could make the most money trading off the generated market over 24 hours:

Viraj Shah, Austin Andrews, Robert Slawik, Cameron Stanislawski-Doyle, and Ruari Phipps

Palantir - Real Impact Hack:

Ambulance Distribution
(Runner-up:)

National Disaster Information Centre

(details of these hacks cannot be included due to the participants signing NDAs relating to the software used)

DocSoc Prize Winners**Best Entertainment Hack:**

MagicWand: turn your monitor into a touchscreen using your webcam
(Runner-up:)

Build-a-Story: engaging young children whilst teaching English

Best Educational Hack:

Quot-a-Lecture: search Panopto subtitles and lecture notes
(Runner-up:)

Michelin Duck: recipe instructions safe for children

Best DevTool Hack:

Oh hey: a VSCode extension to show live comments left by team
(Runner-up:)

Keeping London Moving

Update:

UK membership to Horizon Europe is *STILL* not ratified

Best Newcomers' Hack: (*where over half of the team had to be first-time participants to qualify*)

DevRush: connecting startups and developers.

(Runner-up:)

StockTweets: whose tweets can influence which stocks?

Also because it was an event hosted by DocSoc, there was of course a *memep prize*, sponsored by CKHN Media.

Transcription factors

Sam Lovatt Editor-in-Chief

The Times Higher Education (THE) have highlighted that universities must now provide all audio-visual content with transcripts at 99% or greater accuracy. The requirement is part of wider accessibility legislation that was passed in Parliament in 2018, before the pandemic triggered a tectonic shift to remote working.

The legislation (The Public Sector Bodies Accessibility Regulations 2018) does add that it “does not require a public sector body to comply with the accessibility requirement if doing so would impose a disproportionate burden on the public sector body”.

The 99% accuracy caveat, noted by THE but so far unverified by Felix, is at odds with many students' experiences of auto-generated captions by Panopto.

THE highlighted that “systemic inequalities” are brought to light by the transcript requirements. Those who speak English as a second language are more likely to have less accurate transcripts of their speech auto-generated, and regional dialects across the UK lead to differing outcomes in accuracy.

Apparently, an accurate transcript of a one hour lecture can take up to three hours to produce, landing an unfair burden on the lecturers who are asked to produce them, on top of already having given the lecture. It is worth noting that the legislation places the burden on the public body, in this case the university, and not the lecturer themselves.

Imperial's current guidance around accessibility states “We recommend using closed captions for online videos”. It also states that accessibility guidance applies to all online teaching material from the 20/21 academic year and beyond.

On lecture transcripts, the College says “A text alternative must be provided in the form of closed captions. The alternative text may be autogenerated, but it should ideally be checked for accuracy by a human expert”, seemingly adding this burden to the lecturer in question. Indeed, this is confirmed in the ‘suggested workflow’ where it is stated that the captions should be checked “by the lecturer or their delegate”.

**Got lungs? Then blow the whistle**

We don't like it when a relatively bland news week comes around, and we assume you don't either. We try our hardest to find stories that will be interesting to the Imperial community, and most often these come from people giving us random tips, sending us interesting documents, or just telling us which rocks to look under (who can forget the infamous data breach of October 2021, right?.. right?!)

If you know of any miscreants getting away with stuff within the College, or if any diligence is not being effectively done, please let us know (you could be boring and tell the College or the Union, but it's more fun if you tell us).

Felix@ic.ac.uk Your anonymity is always protected **02075948072**

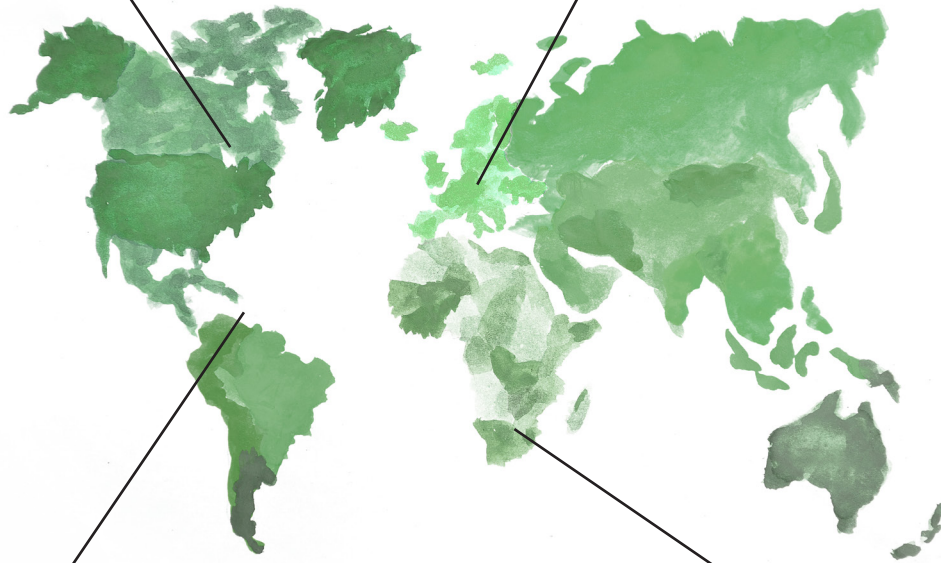
...in the world this week

Protests against vaccine mandates reach new heights

Protests against the mandate for Canadian truckers to be vaccinated against Covid-19 have now been ongoing for almost two weeks. Initially in response to a government mandate that required truckers to quarantine for two weeks after crossing the US-Canada border if they were unvaccinated, protests that have blocked off large parts of Ottawa have caused major disruption and grown to encompass a swathe of covid-related grievances from the general public. Police have described the situation as a 'siege' and the mayor of Ottawa has declared a state of emergency. As many as 10,000 protesters were reported at the peak last weekend.

Refugees still stranded at EU's eastern border

The situation at the Poland-Belarus border, covered by global newspapers near the end of last year and first addressed by Felix in November, is still ongoing. Syrian and Afghani refugees enticed to Belarus with the prospect of easy visas and a free passage to Europe came in their droves to the eastern frontier of the EU. Reports of Belarusian border guards cutting holes in the fence and encouraging refugees through were common, as were those of violent pushbacks by Polish border guards. This has resulted in hundreds of refugees stranded in a no-man's land where they are exposed to sub-zero temperatures with next to no aid. At least 19 people have died.



Baby shot by coastguard in "self defence"

The coastguard of Trinidad and Tobago shot and killed a baby whilst injuring its mother last Saturday. The coastguard vessel was attempting to intercept a boat containing suspected migrants when they say it tried to ram them. According to the coastguard, the crew "fear[ed] for their lives" and opened fire on the ship, apparently trying to hit its engines. Upon boarding the vessel, they found the mother bleeding and baby unresponsive. It is unclear how the use of deadly force on a boat suspected of containing migrants would be justified in any situation.

Refugees drown in attempt to escape Zimbabwe

Economic turmoil and a void of government support are leading to hundreds of Zimbabweans to attempt to leave their home country for South Africa. South Africa hosts a far more stable economy, and Zimbabwe's desperate conditions have led many to risk police brutality, deportation, and even crocodiles in their attempts to settle across the Limpopo river. The Guardian reports that bribing the police is guaranteed for those who try to take the road, and at least three people having drowned trying to swim across the river rather than pay. The former route's choke point occurs at the border checkpoint on Alfred Beit Road Bridge, named after the brother of Otto Beit, for whom Beit Hall at Imperial College is named.

... in this issue's year (1792)

JAPAN

The Unzen earthquake and resulting megatsunami result in the death of roughly 15,000 people

THE UNITED STATES

The United States Mint is formed, following the passing of the Coinage Act

INDIA

The Sultan Tipu launches a failed attempt to invade Kerala

ENGLAND

Mary Wollstonecraft publishes *A Vindication of the Rights of Woman*, one of the earliest pieces of feminist literature

FRANCE

The French Revolutionary Wars begin, eventually leading France to come into conflict with Austria, Prussia, and Britain. Prussia declares war on France

TIBET

The Sino-Nepalese war ends. Chinese forces invade Nepal in response to Nepal's subjugation of Tibet, leading to a "stalemate" and Nepal accepting Chinese terms going forward

SCIENCE

Edited by: ISABELLE ZHANG
JAMIE JOHN
CARA BURKE
MAREK COTTINGHAM

Genetically modified pig kidneys transplanted into brain-dead patient

► *Could this be the answer to organ shortages?*

Lorena Mejias Martinez Science Writer

For the first time in the history of medicine, two genetically engineered pig kidneys were transplanted into a man who was brain-dead at the University of Alabama (UAB) in Birmingham. The recipient Jim Parsons, 57, had been declared officially dead following a severe head injury during a motorcycle race. With his family's blessing, Jim was kept alive on a ventilator so that researchers could perform the experiment just four days later. With his blood still circulating, his own kidneys were removed, and replaced with the genetically engineered pig kidneys.

Why can we not use ordinary animal organs?

On average, 20 people die every day on the transplant waiting list. However, under normal conditions, pig organs cannot be transplanted directly into humans. There are three main obstacles preventing pig-to-human transplants (xenotransplantation):

- (1) Risk of rejection by the immune system
- (2) Potential transmission of cross-species infections
- (3) Ethical concerns.

This is why the historic experiment on Jim Parsons is “a major milestone in the field of xenotransplantation, which is arguably the best solution to the organ shortage crisis,” according to lead surgeon Dr Jayme Locke, director of the Comprehensive Transplant Institute at the UAB. “We have bridged critical knowledge gaps and obtained the safety and feasibility data necessary to begin a clinical trial in living humans with end-stage kidney failure disease.”

What makes this experiment different?

Locke's team is the first to test therapies in brain dead people. The experiment relating to Jim Parsons, now termed the Parsons model, was developed to test the safety and feasibility of using pig organs in preparation for clinical trials. This could be an alternative when testing on animals is insufficient. Normally, pig organs are too different to human organs, so they cannot be transplanted as they are rejected by the human immune system even if people are taking drugs to suppress their immune system. However, new pigs have been genetically modified by the US firm Revivicor and designed to prevent rejection, using CRISPR, a gene-editing technique (see information panel).

The pig kidneys provided by Revivicor came from a 13-month-old male pig and had undergone 10 gene edits by CRISPR, which switched off four genes, including genes involved in rejection by the human immune system. Additionally, the pig's genes had six human genes added.

Before transplant, the cross-matching process took place. This was where the blood from the donor pig and Mr Parsons were mixed together to ensure that, when transplanted, his immune cells would not attack the pig's cells. The new pig kidneys were then transplanted into Mr Parsons, using the same connections as his original kidneys. During the 77-hour experiment, the pig kidneys were not rejected, and within 23 minutes the first kidney to be transplanted began to produce urine. “It's a remarkable achievement. We had a beautiful pink kidney, not one that turned black from hyperacute rejection,” said Dr Locke. The experiment was stopped once Mr Parsons could not be maintained on mechanical support any longer.

Conclusions

Overall, the surgeons concluded that the experiment was a success and it shows potential for progression into clinical trials. “The goal is not to only help one person, but to help everybody,” said Dr Locke.

Despite these positive results, getting genetically modified pig organs is still extremely difficult. Some scientists believe experiments should focus on clinical trials, as opposed to experiments on brain-dead patients. “What we

really want to know is will the pig kidneys function for a year,” said Dr Cooper, from Massachusetts General. He believes the only way to truly see if using animal organs is a potential solution is to transplant organs into living patients. However, the Parsons experiment may allow for FDA approval for clinical trials and is a historic step forward in the field of transplantation.

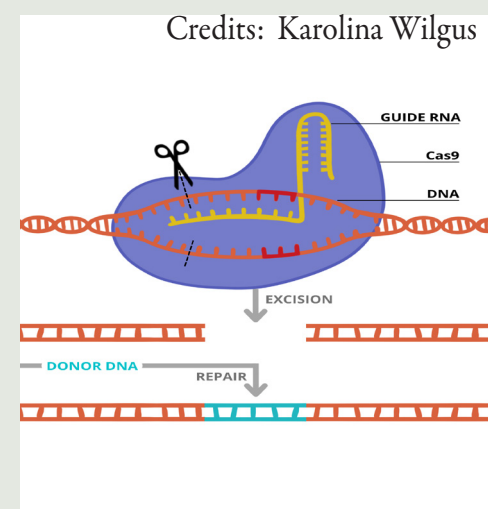
“A radical solution is needed for the organ supply crisis,” said Dr Locke.

EXPLAINER

WHAT IS CRISPR?

CRISPR (pronounced “crisper”) is a powerful tool which allows scientists to edit genes. The process is very simple: once you find a specific region of DNA, the CRISPR-Cas system will then alter the piece of DNA. Cas are ‘CRISPR-associated proteins’, which are proteins found in bacteria that are used to destroy viral DNA. The most important is Cas9, an enzyme which can be given a piece of RNA (a simpler, single stranded form of DNA, which carries genetic information), which acts as a guide and takes Cas9 to find its target sequence in the DNA of a target cell. Cas9 then acts as a pair of molecular scissors, where it cuts the target sequence out. Now, when the missing piece of DNA gets repaired, it usually inserts a mutation which disables the gene. Although this is the most common use for CRISPR, it can also be used for true genome editing. That is, making exact changes in the DNA sequence, but this is much more difficult.

CRISPR has revolutionized science since its invention in 2012, allowing for the treatment of many different diseases. However, the power to edit genes has raised some ethical issues. The potential to edit the genome of children using CRISPR exists and in 2018, this was attempted by biophysicist He Jianku in China, who was sentenced to three years in prison for “illegal medicine practice”. Although this has been deemed unethical, some people believe gene-editing using CRISPR could be used to prevent diseases in children before they are born.



ISS set to be retired in 2031, NASA report confirms

Taylor Pomfret Science Writer

After an illustrious 23 years of service spanning approximately 138,000 orbits of Earth since its inaugural revolution in November 20th 1998, NASA has announced this week that the International Space Station (ISS) will cease operation in 2030, before plunging into the Pacific Ocean in 2031.

In a report titled 'International Space Station Transition Report', NASA outlines the goals for the next decade of ISS operations "leading to a smooth transition to commercial services". The space agency wishes to use the remaining activity of the ISS to "continue enabling deep space exploration, conduct research to benefit humanity, foster a U.S. commercial space industry, lead and enable international collaboration, and to inspire humankind". The report published by NASA comes one week after US President Joe Biden and his administration confirmed the extension of the space station's activities to 2030. A planned descent into the oceanic pole of inaccessibility, also known as "Point Nemo", will lay the ISS at rest alongside many old satellites and space debris that have crashed there, most notably the former Russian space station Mir, which has been there since 2001.

The ISS has provided a unique platform to conduct scientific research across a wide range of disciplines – including astronomy, materials science, meteorology, human research, and space medicine - with power, data, cooling, and crew available to support experiments. The ISS has a unique microgravity environment that has allowed for experiments to be conducted that simply would not have been possible in an Earth-based laboratory. Gravity at the altitude of the ISS (250 miles in space) is approximately 90% as strong as at Earth's surface, but objects on the ISS are in a continuous state of free fall – resulting in an apparent state of weightlessness.

A large array of some 3000 multidisciplinary experiments have utilised the space station's unique

microgravity environment to date. In 2018, an experiment instrument named the Cold Atom Laboratory was initialised, which produced Bose-Einstein Condensates (commonly referred to as the "fifth state of matter") for the first time in low-earth orbit. Since this discovery, the Cold Atom Laboratory has allowed us to study the behaviour of atoms on a macroscopic scale, which has supported the research and development of quantum technologies such as ultra-precise timekeeping, and sensing; thus transforming the field of atomic physics. In addition to this, there is NASA's Twins Study, one of the most comprehensive and integrated studies conducted on the ISS. It assessed the physiological, molecular, and cognitive effects of long-term space flight on humans. Lasting 25 months, astronaut Scott Kelly stayed in the ISS for 340 days, whilst his twin brother Mark Kelly stayed on Earth. Ten research teams collectively observed and compared the molecular profiles of the twins. The results are not only being used to make future space missions safer

for astronauts but have developed our understanding of diseases induced by environmental stressors on Earth.

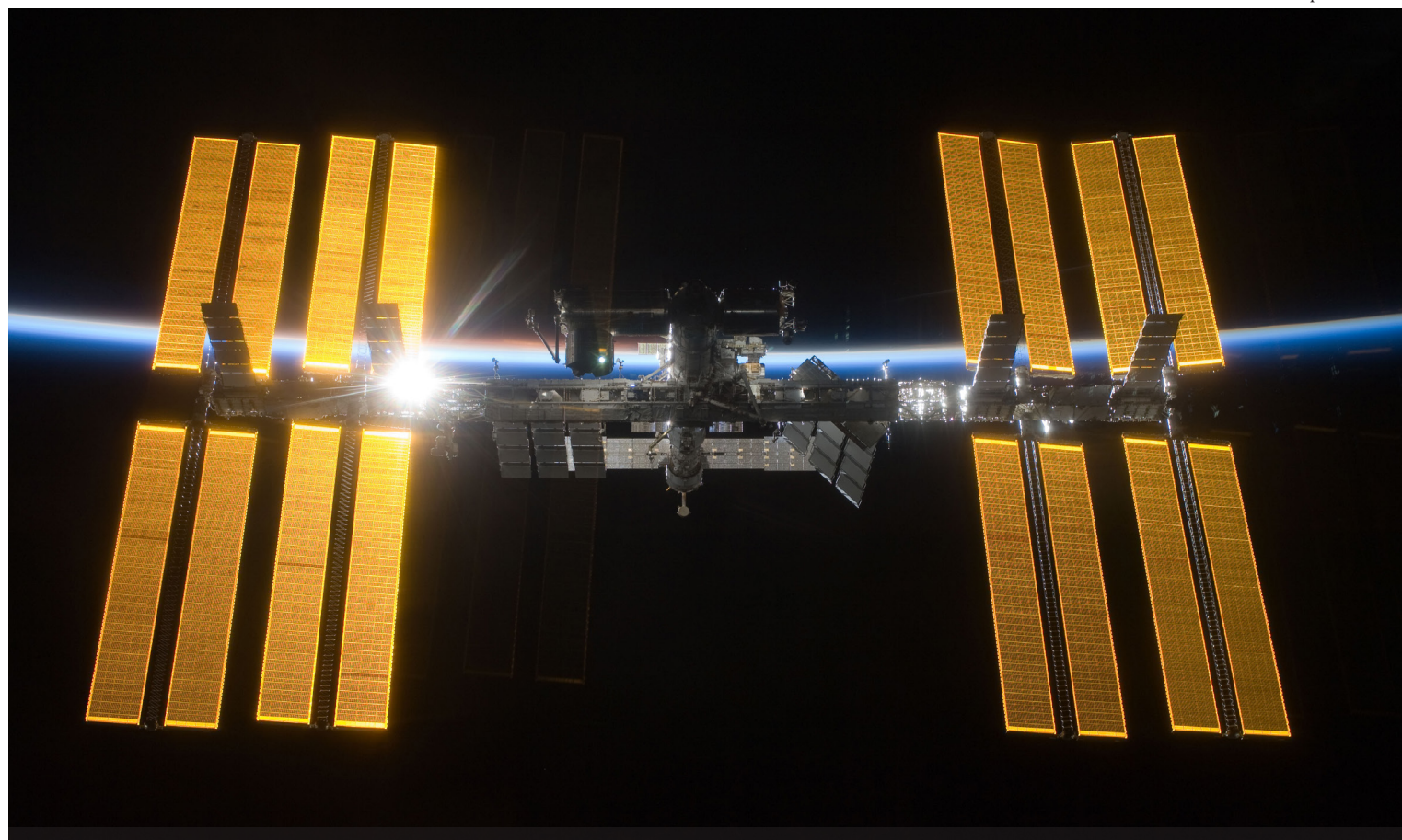
Perhaps my favourite accomplishment of the ISS concerns the space station's servicing missions of the Hubble Space Telescope. Shortly after the telescope was deployed in 1990, it was discovered that the primary mirror of the telescope had an aberration that affected the clarity and focus of the images it produced. Fortunately, Hubble was designed in such a way that allowed astronauts to perform repairs, replace parts and update its technology with new instruments. Astronauts on the ISS first visited Hubble in December 1993 – a further four service missions have prolonged Hubble's life further and returned new insights including: the discovery of two Plutonian moons, Nix and Hydra; galaxy rotation curves; a development to our understanding of dark energy. The speed and efficacy of these missions could not have been achieved without the ISS.

Like all good things, the ISS cannot

last forever. We still have nearly a decade for the space station to return new insights into the way we view and interact with our universe. During this time, I will still be watching the ISS unblinkingly traverse our night sky with awe.

Looking ahead to 2031, NASA aims to "broaden the audience reached by the ISS to create more awareness of the benefits of microgravity research and development and orbital activities to humanity", whilst "continuing to engage the public through different platforms to communicate the values that the ISS brings to the Nation and to the world". In the meantime, NASA will continue to collaborate with national and commercial partners from the European Space Agency, Canada, Japan, and the Russian Federation to maintain the general systems and functioning of the ISS.

Credits: NASA, public domain



The International Space Station taken from Space Shuttle Discovery leaving the Space Station in March 2009

SCIENCE

Applications of medical engineering to diagnose and treat metastatic cancers

► Researchers aim to use spinal implants to protect against cancer induced spinal fractures

Rachel Rajan George Science Writer

Bone metastasis is a complication of cancer which causes weak bones and fractures. A team of researchers from Imperial College London, University College London, and the University of Leeds are developing imaging techniques to ascertain the point at which bones in the spine will fracture. To prevent such fractures, they are exploring the use of implants made from metamaterials to support the weakened bone.

Cancer cells can move throughout the body via the bloodstream. This often results in further complications away from the primary site of cancer. When these cancer cells spread to a different part of the body, the cancer is said to have metastasised. Breast cancer is commonly known to metastasise, with 20-30% of patients suffering from this condition. Bone metastasis occurs when cancer spreads from the originally afflicted site to the bone, forming a secondary tumour. Consequently, the patient's bones are weakened and are at risk of breaking. Fractures can eventually be induced by physical trauma, or fractures can naturally occur as patients go about their routine activities.

The team's research focuses on bone metastasis in the spine. The spine comprises 33 stacked vertebrae. The researchers will be using advanced computational modelling to calculate the strength of vertebrae at various targeted locations. These predicted values are compared to the actual forces on the spine, to determine the likelihood of fracture. "The problem doctors face is that they have no way of knowing which of the spinal vertebrae is going to collapse. If, or when, that happens, patients may require major surgery which involves a lengthy period of rehabilitation," said Professor Richard Hall, the lead researcher and Professor of Mechanical Engineering at the University of Leeds. This knowledge gap highlights the urgent need for methods to accurately identify the vertebrae at risk of fracturing.

Another objective of the investigation is to design implants made from metamaterials to prevent the patients' bones from fracturing. A metamaterial is a material that has been modified to have properties that are not naturally found in the material. For example, the metamaterial could harden when subjected to stress. This property would enhance the implant's capacity to strengthen weak bones. The researchers are investigating

the medical applications of structural metamaterials which are commonly used in the aerospace industry. A historical example of this is in the titanium alloy, Ti-6Al-4V. Ti-6Al-4V was discovered to be suitable to make implants, as its elastic modulus is comparable to that of cortical bones – the type of bone that makes up 80% of the skeleton. In the aerospace industry, Ti-6Al-4V is used in compressor blades and casings because of its resistance to fatigue. Alongside the investigations into structural metamaterials, the Advanced Manufacturing Group at Imperial's Dyson School of Design Engineering is designing a 3D printer that can accurately print unique implants for each patient.

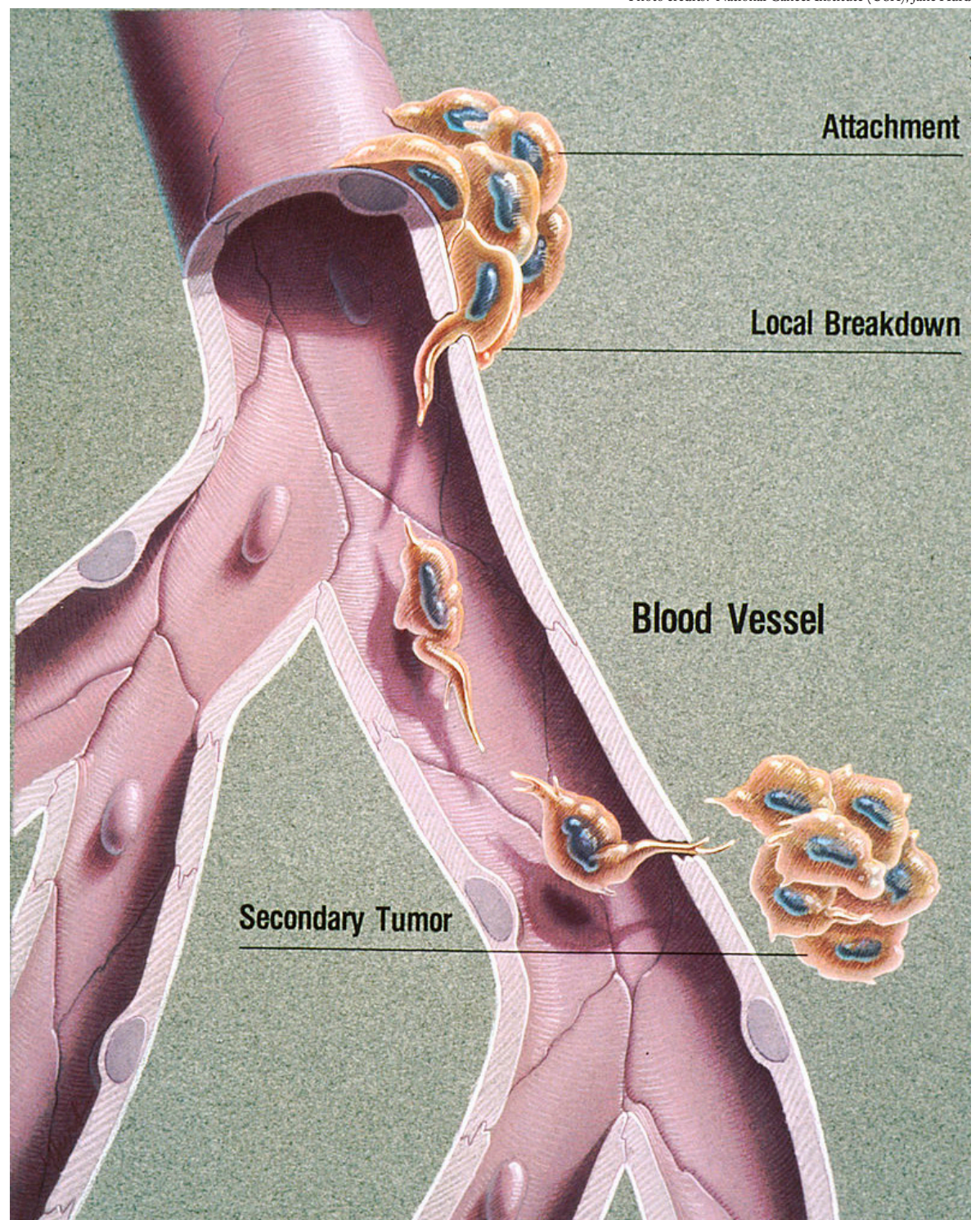
Recovery from spinal fracture typically takes weeks or months, because invasive surgery is required. However, the researchers aim to reduce the recuperation period when an implant is inserted to support the weakened bone. A key-hole surgery will need to be carried out to introduce the implant at the iden-

tified site. This procedure is minimally invasive as only small cuts of about half an inch will have to be made, instead of a larger incision. Such an approach is advantageous, as the patients are predicted to recover from the surgery within days.

Bone fracture due to metastasis can have devastating impacts on cancer patients. A fracture in the spine can cause spinal cord injury which may then result in paralysis. Patients often expe-

rience pain that becomes exacerbated with bed rest. The grim reality is that cancer becomes increasingly difficult to cure once it has metastasised. Hopefully, more cancer patients will at least be able to live more comfortable lives, with reduced risk of bone fracture, when this innovative technology is accepted and rolled out on a large scale.

Photo credits: National Cancer Institute (USA), Jane Hurd



Cancer cells can travel through the blood stream to form secondary tumors elsewhere in the body

The history of mankind is tinted with green

► *We walk on the shoulders of green immobile giants!*

Wang Guo Science Writer

The first domesticated plants, probably cereals, were cultivated in the Fertile Crescent around 10,000 years ago. The Fertile Crescent is an area located in the Middle East, particularly favourable to the development of agriculture thanks to its sunny climate and the rivers that pass across it. Just like the discovery of fire, the apparition of agriculture was a milestone in human history because it led to the establishment of permanent residential zones. Having a stable residence also allowed people to possess more goods. As in the forager lifestyle, only the most essential items could be carried - to speed up the pace. That is to say, the transition from nomadism to sedentarism caused the emergence of private property. This was key for the definitive establishment of hierarchical societies dominated by the wealth of material goods.

The domestication of plants was not limited to the Fertile Crescent. Around the same time, some civilisations were discovering the plants that could be cultivated, while others were already developing canal systems to control the water distribution to crops. Although the oldest evidence of agriculture comes from the Fertile Crescent, the first steps of the domestication of crops are more likely to have happened in harsh environments. At the beginning of the 20th century, the Russian botanist Vavilov proved that domesticated plants come from mountains and not valleys, as was previously thought. Mountainous regions are usually associated with harsh environmental conditions that increase the rate of natural selection. Mountain plants have more genetic variability, which means there are more trait differences among the individuals of the same population, which boosts the biological fitness of the population. The increasing genetic variability allows humans to find plants with the 'ideal set of desirable traits' for cultivating. For example, potatoes are originally from the Andes, South America, and were brought to Europe by Spanish sailors.

Potatoes shaped human history by contributing to the creation of the most

powerful nation currently, the United States of America. It all started in 1845, in Ireland, where a mysterious disease was annihilating potatoes. These were a vital source of food for the Irish population, especially amongst the poorest people. The destruction of potato crops caused the deaths of around 1,000,000 Irish, and the migration of another 1,500,000 to America. The arrival of such a huge number of immigrants boosted the economy and demography of the US. Nowadays, we know that the culprit of the potato famine was a plant pathogen called *Phytophthora infestans*, which continues to be a menace for crop security.

However, the most important group of plants is undoubtedly the grasses. The golden trio of cereals (wheat, corn, and rice) provides most of the calories ingested by humans. Wheat alone accounts for around 20% of the total carbohydrates and proteins of the global population. Sugarcane produces 80% of the global sugar that you put in your tea.

The challenges of cereal cultivation also created great innovation and development to society. It is therefore

“

WHEAT ALONE ACCOUNTS FOR AROUND 20% OF THE TOTAL CARBOHYDRATES AND PROTEINS OF THE GLOBAL POPULATION

understandable why early civilisations placed such a great value on these crops. For example, folkloric dances and rituals were carried out in Central Europe to attract or to celebrate the good harvest. In the case of rice, its influence in Asia was huge, as it has been a staple food for millennia. It is a crop that requires a great deal of care and work. In fact, in the past, farmers needed to plant rice one by one with their bare hands. Furthermore, rice fields are sensitive to water levels; not enough will dry the plants, but too much will cause them to rot. In response, people developed a system of canalisation that can control the water levels of the rice fields, which required

working in teams of hundreds or even thousands of people. The cultivation of crops required a great deal of organisation and involved many people, which is evident today in a world where the process is industrialised and global.

With these few examples, it is clear that "human history is tinted with green". However, the domestication of plants was only the beginning. Now, we are modifying them genetically to enhance their properties in order to make them more nutritious and robust. The world of rot-proof tomatoes and ultra-resistant potatoes are closer than you would think.

Photo credits: Wikimedia Commons, I.Sáček



Phytophthora infestans, the pathogen responsible for the Irish potato famine

SCIENCE

This week in Science...

FROM IMPERIAL...

COVID-19 vaccine may not be as effective in patients with IBD treatment

Inflammatory bowel disorder (IBD) is the long-term inflammation of the gut. Immunosuppressant drugs are often prescribed as treatment to reduce inflammation, but they can increase the risk of infections. Little is known about how patients with IBD treatment respond to vaccines. Two particularly immunosuppressant drugs - infliximab and tofacitinib - significantly decrease the ability to induce protective antibody responses. This was observed in 10% of patients on infliximab.

Sticky situation! The search for magnetic monopoles

New experiments, envisaged by Imperial scientists, at the Large Hadron Collider (LHC) in CERN are bringing scientists closer to magnetic monopoles, which have only a North or South magnetic pole. The LHC usually smashes single protons together at very high energies. In 2018 it smashes heavy ions together, at lower energies. If the nuclei of two lead ions pass very close to each other, it creates the strongest magnetic field in the universe. This method could produce monopoles, but so far the experiments have not crashed heavy ions together with enough energy. However, they have given scientists a food idea of the weight of monopoles, and the kinds of higher energy that could be used in future to create them.

FROM AROUND THE WORLD...

Psssss... plink! Dog urine and faeces could harm plant biodiversity in nature reserves

A group of scientists at Ghent University in Belgium have found that dog waste could be harming the biodiversity of plants in suburban nature reserves. Urine and faeces contain large amounts of nitrogen and phosphorus, which act as fertilisers, encouraging the growth of certain plants, and resulting in habitat degradation. Prior to this study, little research had been conducted into the impact of dog waste on wildlife, with the focus on disease transmission and disturbance of fauna. The researchers monitored the number of dogs at four nature reserves in Belgium and estimated the amount of nitrogen and phosphorus they brought in, using existing data on nitrogen and phosphorus concentrations in dog faeces and urine. The study assumed that dog owners don't take any of the waste away with them. "Dog owners should be aware that their dog is behaving as a fertiliser, and if this is not yet the case, pick up their faeces more", said Professor Pieter De Frenne, speaking to New Scientist. The researchers found that dog owners picking up all their dogs' faeces would reduce nitrogen and phosphorus input 57% and 97% respectively, compared to the case where none of it was picked up.

Ka-chow! Two 2020 lightning flashes were longest on record

The World Meteorological Organisation has concluded that two lightning flashes which occurred in 2020 were the longest ever recorded. The first flash occurred in southern USA in April 2020, and spanned 768km - longer than the distance from London to Inverness, and 60km longer than the previous record. The second flash occurred in South America, along the Uruguayan-Argentinian border, lasting for 17 seconds, making it the longest single flash ever detected. Speaking to New Scientist, Randall Cerveny, Professor of Geographical Sciences at Arizona State University, said, "This is important to scientists because it improves our understanding of the dynamics of lightning: how, where and, importantly, why lightning occurs the way it does."

SCIENCE ARTICLES WANTED

PASSIONATE about something in science and want to get the word out? Love writing but have no idea what to write ABOUT? No experience, or writing expert? WE WANT YOU!

Photo credits: Nicolas Geiseler Toran



We are looking for articles to be published during the summer term!

Contact us at science.felix@imperial.ac.uk

Exhibition

Blue is the season's colour

Gainsborough's Blue Boy ★★★★★

Where? *The National Gallery*When? *Until 15th May 2022*How much? *Free*Reviewed by **Vaidhiswaran Ramesh** Arts Writer

It is the season of portraits at the National Gallery! Anyone who has been to it over the last few months will recognise the reorganised Central Hall — replete with full length portraits by Van Dyck, Thomas Gainsborough, and Joshua Reynolds. This reorganisation—much like the renovation of The Julia and Hans Rausing Room (room 32) the year before—has given the central foyer area a breath of fresh exuberance and grandeur as you head into the gallery.

Now, Gainsborough's *The Blue Boy*, the lost 'National Treasure' that made its way to the New World (sold to Huntington Gallery) a hundred years back to the date, sits adjacent in the temporary exhibition room (Room 1). Masked by 4 paintings (two on each side) of his fellow compatriot Joshua Reynolds and inspiration Van Dyck, the exhibition is rooting to pull all focus on Gainsborough's boy. Central – tall – smug — he stares at us as we enter the room, immediately forced to decipher what he is trying to say.

Any visit to this exhibition, thanks to the main entrance being moved to the Sainsbury wing and the one-way routing (a grace a COVID), brings the viewer through the aforementioned Central Hall and the Dutch portraiture section (in the Rembrandt and Van Dyck rooms earlier on in the gallery route). In a sense, despite the lack of a traditional exhibition narrative in this small 'single painting' exhibition, the layout lends itself perfectly well to elevate the exhibition to feel like it is telling a story of more than one room, more than one artist, and more than one milieu!

Gainsborough adored Van Dyck. Painstakingly reproducing over 40 of Van Dyck's work in a search to emulate the great Dutch portraiture master and find similar patronage in England. Much like Turner's obsession with Claude, this was one of reverence and a lot of catch-up in the beginning! Van Dyck, a pupil of Rembrandt's school, revolutionised portraiture and enjoyed unparalleled appeal in Britain.

It is thus no surprise that elements of this painting, touted as Gainsborough's most popular work, are borrowed heavily from Van Dyck. Much has been made of the blue colour of the garment and the strong red background. Running against the grain of contemporary portraiture techniques, these elements are incor-

Ria Zmitrowicz, Rakie Ayola, and Fisayo Akinade in *The Glow* at the Royal Court Theatre.

porated masterfully with both a touch of reverence to Van Dyck (who adored the garment and the colour, repeatedly using it in his own work) and as statement of confidence to the academy! This painting, in that sense, was much more a statement than it was a piece of art. Years of perfecting the Old Master — and finally delivering his chef d'oeuvre.

The frame is as elaborate and eye catchy as the painting. In fact, this whole facade is one crying out for attention. The silvery strokes look very real, and in a

sense much more appealing and in cordon with the rest of the colours in-person than it appears digitally. The dark shades of the garments and the bushy trees in the background, that look just as though they are wavering to a storm, evoke passages of Wordsworth in the viewer's mind.

But the composure of the painting with its huge contrasts is geared to draw attention to the muse, Gainsborough's Blue Boy. The background, its wonderfully centred lighting, the detail on the shoes is all an after-

Credits: Photo/ Manuel Harlan

ARTS

thought. The focus is to be on this kid — looking right at us, with an arrogance sans malintent, that appears at puberty and disappears just as soon with age. I suppose despite all the story behind it, it is this fleeting emotion rendered on the painting that brings us back to it. Gainsborough's *The Blue Boy* — the unashamedly blue poster boy of all adolescents unwillingly dragged up in Victorian cloths to be dressed up and accorded to the annals of history.

The paintings' loss (sale? It was after all the most expensive painting when it was sold in 1922) was derided then as a loss of one of the nation's finest treasures... which is not much of an overstatement at all. Gainsborough's unnamed unknown boy stands smug as we bid adieu, confident in having expounded the artists talent to the world. On par (just) with Van Dyck and his ilk... he is back in Britain to finally share the stage with his compatriots again after 100 years! 90,000 are said to have thronged it in the last few days before it was packed off to America. I wonder how many turn up now. I hope it is more. For the blue boy's sake and for that of modern British art!

Ah - it is always lovely to catch reunions, isn't it?

Are you an aspiring arts critic?

Visit our Facebook page for more details on free press tickets for exhibitions & more!



Credits: Photo/ Manuel Harlan



Tadhg Murphy in *The Glow* at the Royal Court Theatre.

Article

Arts opportunities at The Blyth

The Blyth is Imperial's Centre for Music and Visual Arts. The centre houses an artist-run gallery space for creative exploration of ambitious visual projects. The gallery hosts a range of group and solo exhibitions throughout the year; these projects include Imperial College students and staff shows, exhibitions of postgraduate Fine Art student work and work by visiting professional artists. The Blyth Gallery also collaborates with other curators to showcase national and international exhibitions.

As well as the Blyth Arts Fellowship to apply for, the centre holds rolling artistic events for students and staff to get involved with.

Coming up next week are tutorials on Gouache Painting with Clair Mitten; and an exhibition of works made by Imperial Colleges Art Club Society in the Blyth Gallery entitled "The Waiting Room". Check it out now!



THE BLYTH FELLOWSHIP WAS WITHOUT A DOUBT A UNIQUE OPPORTUNITY TO ENRICH AND EXPAND MY ART.

STUDYING IN SUCH A SCIENCE-FOCUSED UNIVERSITY SHOULD NOT BE A BARRIER TO DEVELOPING YOUR ARTISTIC INTERESTS AND THE BLYTH FELLOWSHIP IS A GREAT WAY OF ACHIEVING JUST THAT.

Current Fellow: Andrea, Medicine Undergraduate.

Applications for the Blyth Arts Fellowship are open now — Deadline 10th March 2022!

The Blyth Arts Fellowship aims to develop a fine art practice at Imperial by supporting student artists through various support. (Note that the eligibility criteria excludes final year students).

The winner of the fellowship will receive four one-hour 1:1 mentoring sessions with a professional artist, a materials bursary of £500 in arts vouchers, as well as membership to the Tate, and access to Blyth Drawing evening classes.

To be eligible to apply you must be a current undergraduate or post-graduate student (excl. final year), have an active fine arts practice, and be able to commit to the 22hrs of taught sessions.



Scan to find out more, and apply!

FRIDAY 11TH FEBRUARY 2022

ENVIRONMENT

Edited by: MONAMI MIYAMOTO
MONIKA YORDANOVA
MARIE MORI
JACK CRIBB

A meteor is coming this way- Don't Look Up!

View online here! 

spoilers ahead

Pranjul Mathur Environment Writer

Adam McKay's 2022 opening blockbuster *Don't Look Up* casts a star-studded Leonardo DiCaprio (Dr. Randall Mindy), Jennifer Lawrence (PhD candidate Kate Dibiasky), and Meryl Streep (President Jane Orlean) among others in a disaster satire. The film is directed at the juxtaposition of a civilization that can't decide on the most fundamental quant of existence—the truth. The title accurately forebodes a society that is split on whether they want to look up at their impending doom or to not; instead, denying the existence of an inconvenient fact.

The knowledge of a meteor headed for a direct collision with earth hits the searching astrophysicists (Mindy and Dibiasky) as hard as the 20km wide meteor would eventually hit the Earth. Aware of the consequence of such a collision, the two scientists sound (off) every alarm that they are aware of—only to be faced by a mocking and distracted group of politicians, media presenters, and public at-large. Unsure on paths forward, the meme of conspiratorial scientists is upgraded to a dynamic duo as political tides turn. Unsure on the motivation, the two proceed with government plans to fly missiles into the now eponymous comet: Dibiasky's comet; allowing the meteor to be stopped and bring national dogma for a perfect hero story.

The moment of success is diverted as tech mogul Peter Isherwell (played by Mark Rylance) senses an opportunity for a market solution to a naturalistic scenario. Isherwell suggests a solution to vicariously absorb the impact of the meteor by extracting minerals and resources to bring a new era to Earth. The science, however, does not add up. Isherwell and his band of racketeers don't need science, they only need President Orlean to issue the order. The extraction scenario becomes the only scenario. Eventually, placated and confounded, Mindy and Dibiasky are

left to plea with the citizens of Earth to look up and consider the severity and disarray in which humanity stands.

Alas, their cries fall on deaf ears, their eyes stare into faces that don't care, and their words are left unread. The movie builds up to its final minutes as the climax shows a meteor within meters of collision. For a moment, the world hopes that Isherwell's pseudoscientific plot would come to be the victor; this of course was not the case. Eventually, the meteor causes utter destruction and decimation of all humanity—akin to the meteors that allegedly killed the dinosaurs. The movie finishes with metaphors, allegories, and microcosms galore—a buildup of soft signaling that this movie wasn't just about a comet.

In the moment of death and complete destruction, the lens of the camera shows that the world does recover and come back to a form that we are familiar with. Just that it does not have any humans to lay their eyes upon it.

A viewer in social and scientific

Credit: Wikimedia commons



isolation may immediately shrug this movie of as some jejune work of apocalyptic fantasy by McKay. That viewer might not be wrong. The movie dwells on a subject that has been explored time and again by films which hyperbolize human interaction—bringing out the flight and fight to its epitome. It's worth noting that the movie does have some logical inconsistencies—where were the intelligence organizations in all of this? A fair question when the movie is analysed in isolation. However, the viewer of the 21st century, alive in the consequence and pressure of humanity, would immediately see the unmissable parallels.

Don't Look Up surrounds a meteor of dire consequences with the rationale of science, the confluence of economic and social stances, and raw emotion. Sound familiar? McKay and the writers have carefully built the context of this film by mirroring one that exists today. All it takes to make a levelized context is to replace Mindy and Dibiasky with 97% of the scientific community;

replace meteor deniers with science/establishment deniers; replace Isherwell with the Tech moguls we are so familiar with; replace President Orlean with, well you know who.

The majesty of *Don't Look Up* is that it is an archetype of a world which is stuck; unsure on how to address climate change and unsure on how to reduce the liability of those who deny it and negate its externalities on the most vulnerable. It speaks about the problem that is faced when devious market solutions are used to build an ersatz appearance of climate-progressiveness. It speaks of how as a world, the lack of an aegis, a common base is quite literally catastrophic. Perhaps climate change is not a meteor strike that's going to cause destruction ephemerally, but it certainly is a meteor strike. So, use this movie to communicate with politicians, corporations, and people to collectively take a step back and look up; there's a meteor headed this way and we're not ready.

ENVIRONMENT

Sustainability and profit in business – a trade-off or synergy?

Monami Miyamoto Environment Editor

It has been just over 50 years since Milton Friedman famously coined the phrase, “The business of business is business”. Today, this statement no longer holds true. In a world where the devastating effects of climate change, social inequality, ecological degradation, and socio-political instability ensue, perhaps more than ever before, businesses hold immense power to determine the direction in which our society is propelled: to destruction or salvation.

There have been rapid developments in just the last few decades when it comes to businesses tackling humanity’s biggest problems. What initially began as acts of CSR (corporate social responsibility), such as philanthropy, has now led to the rise of companies that live and breathe positive social and environmental impact, like Patagonia, for example. Today, there’s a growing movement of businesses proactively taking a stand on contemporary issues, whether driven by consumers, investors or NGOs.

One company at the forefront of this movement is Unilever. Led by then-CEO Paul Polman, the multinational conglomerate that sells anything from Ben & Jerry’s to Dove soap bars has set itself apart since 2009 by ambitiously walking the walk of putting purpose at the core of its business. Major undertakings such as the Unilever Sustainable Living Plan are just the tip of the iceberg when it comes to the numerous environmental and social commitments made by the company. But as with most things that go against the status quo, this approach to business is not without its critics.

The rise of initiatives like the Taskforce on Climate-change related Financial Disclosures (in which businesses quantify the financial risks they face from climate-change-related risks), or ESG (Environmental, Social, and Governance), has spread like wildfire in the last few years, giving reasons for optimism. Yet the water is still murky when it comes to answering whether putting environmental and social purpose at the centre of a business comes

at the cost of business performance. Nothing highlighted this as clearly as the recent news of Terry Smith, one of Unilever’s top shareholders, openly criticizing the business.

Triggered by the rejection of Unilever’s bids for the consumer health division of pharmaceutical company GSK, Smith took a stab to highlight the company’s underperforming share prices, blaming it on their focus on purpose. He sarcastically stated in his annual letter to CEOs, “A company which feels it has to define the purpose of Hellmann’s mayonnaise has in our view clearly lost the plot. The Hellmann’s brand has existed since 1913, so we would guess that by now consumers have figured out its purpose (spoiler alert — salads and sandwiches).” Moreover, he stated that “Unilever seems to be labouring under the weight of a management which is obsessed with publicly displaying sustainability credentials at the expense of focusing on the fundamentals of the business.”

Smith’s interpretation of Unilever as a

business that has gotten stuck in its own head of a utopian business ecosystem may not be his alone. Public statements like this that have captured the attention of various news outlets, including the Financial Times, may ripple greater scepticism over environmental or social-driven businesses amongst the investor community.

But that same week, another Letter to CEOs echoed the complete opposite. Written by Larry Fink, CEO of BlackRock, this letter was widely picked up by media outlets—perhaps most notably for the fact that it used the word ‘purpose’ as many times as it referred to ‘profit’. Fink stated ‘In this polarized world, CEOs will invariably have one set of stakeholders demanding that we do one thing, while another set of stakeholders demand that we do just the opposite. That is why it is more important than ever that your company and its management be guided by its purpose. If you stay true to your company’s purpose and focus on the long-term, while adapting to this new

world around us, you will deliver durable returns for shareholders and help realize the power of capitalism for all.” In this view, companies like Unilever would make a stellar example of a business with purpose. Indeed, Fink went further on to state that “We focus on sustainability not because we’re environmentalists, but because we are capitalists and fiduciaries to our clients.”—highlighting that concern for the environment is not just a nice-to-have element of a business but that it is a necessary component of long-term economic return.

The polarised views displayed by some of the leaders in business highlight just how complex, frustrating, and exciting the role of a business has become. Must a company be driven solely by purpose to generate profit? Or does a firm focusing on purpose do more harm than good if its investors are no longer willing to support their operations? The answer is anything but clear. Only time will tell; or perhaps it is our role as members of society and the workforce to paint the answer.



Imperial College sustainability data

Sam Lovatt Editor-in-Chief

A quick dive into the Freedom of Information website WhatDoTheyKnow.com has revealed some interesting data on Imperial's progress in meeting its sustainability targets, laid out in the Sustainability Strategy 2021-2026.

GOOD NEWS ON CO₂

The College's annual CO₂ emissions had dropped almost 35% by the 2018/19 academic year, from a peak of 84,830 tonnes in 2015/16.

This total includes direct emission from sources the College owns or controls such as CHP, boilers, and fleet vehicle and indirect energy emissions, such as electricity purchased by the College.

Year	Carbon emissions CO ₂ e (tonnes)
2014/15	81,067
2015/16	84,830
2016/17	73,819
2017/18	60,052
2018/19	55,281

The FOI response also adds: "The College's plan to reduce energy and carbon began with the Carbon Management Plan (with The Carbon Trust) in 2009, which benchmarked a baseline emission of 2008 (business as usual emission) against a target of 20% for the following 5 years. As many universities discovered with increasing new campus sites, buildings, space and people, these targets became challenging to achieve as absolute targets.

In 2019 the College initiated the Greening Imperial College-wide.

The College has also since 2009 continuously carried out the following in its sustainability plan:

- Building Energy Management System (one of the largest BEMS systems in UK)
- Energy and Environmental Management
- Waste and Recycling Management
- Sustainable Building Projects (for New & Refurbishment)
- Reducing staff travel carbon footprint by providing, cycle schemes and cycle parking
- Improving biodiversity
- Innovative sustainable technology such as bore hole ground water cooling at Hammersmith, ground heat source heat pump, CHP, lighting and more"

GRANT FROM SHELL

On January 1st 2022, the Leonardo Centre for Sustainable Business received a £2.5 million grant from Shell plc.

WHO KNOWS WHAT THE SUSTAINABILITY LEAD GETS UP TO

The College has appointed an Academic Leader for Sustainability in the form of Professor Paul Lickless, a phenomenon that Felix has reported on already this year. One question we did not think to ask was "what is Paul's actual job?". Luckily, one diligent FOI-er asked just that question.

The College responded that they couldn't share the job description of Paul's sustainability role because "this is personal information". I believe it's

news to all of us that a job description is considered personal information. I wonder how many of Paul's protected characteristics were included in his job offer. Someone should really let Indeed.com know about this...

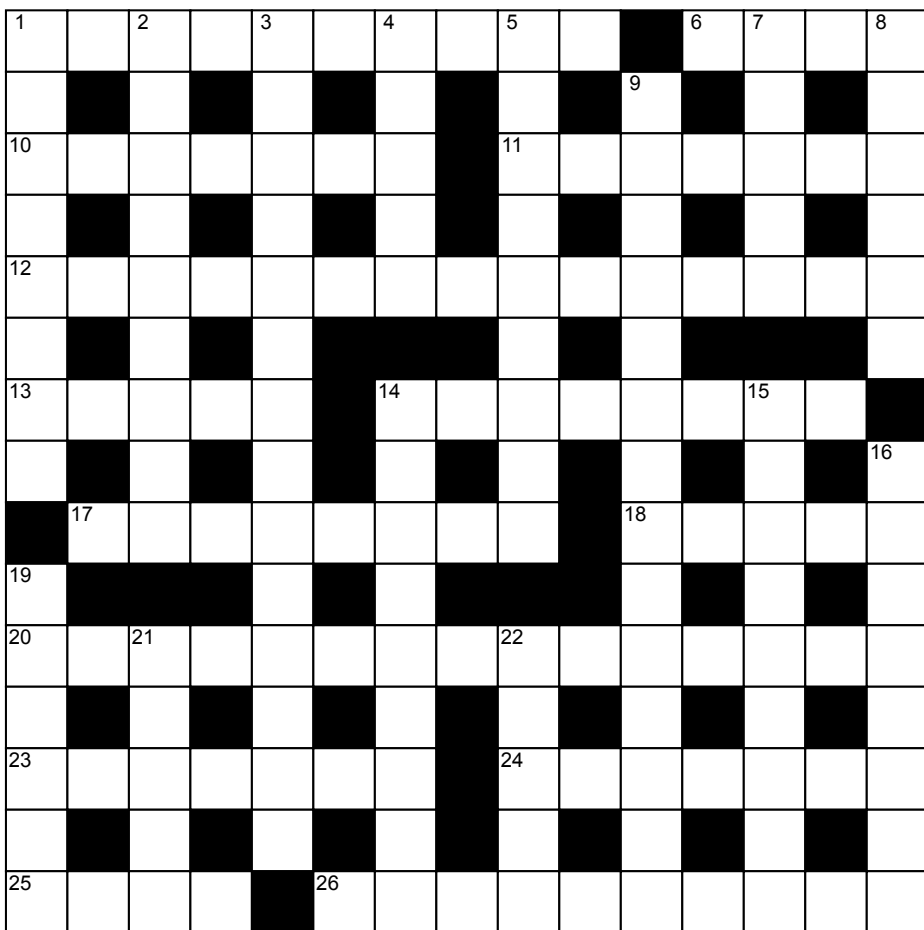
MORE PRESSING ISSUES

The FOI team add as a side note in one of their responses that "no reports

specifically on sustainability have been made to the College's governing body (Council) since 2019". Potentially not acting with student interests at heart? This information fits nicely alongside the recently unearthed Muir Sanderson quip that he can "fold his arms and wait for the students to graduate" on issues such as sustainable investment.



CRYPTIC Crossword Grid



CRYPTIC Crossword Clues

Across

- 1) "There are no bent cops in this crime organisation" – examiner. [10]
- 6) Mostly what the cows do in Austria. [4]
- 10) The starters of sushi and udon taste excellent, especially deep fried! [7]
- 11) Doing the deed over the banister? [7]
- 12) The letter is explicit: nobody meant for that to happen at Chernobyl. [7 8]
- 13) Gave fire back to the mosaicist. [5]
- 14) Detects scent of drug on that guy. [8]
- 17) Caesar in those ancient times had a close relationship with another man. [8]
- 18) Gag at the sound of that scoundrel. [5]
- 20) Eviscerate strong competitor to become one yourself? [7-8]
- 23) Does 21-Dn.'s name means something quite different? [7]
- 24) A huge one I left for her. [7]
- 25) Do some lunges, they'll assist with your breathing. [4]
- 26) Task to get approval for Instagram's new methods beginning to get centralised. [10]

Down

- 1) Myriad of contradictory points construed as man-hating. [8]
- 2) Madness to concur with oil representative. [9]
- 3) Thinking too highly about rough calculation. [14]
- 4) Predict trimming back of the booze. [5]
- 5) It expands for safety when you've got a messed-up trachea. [9]
- 7) River running like a nose? [5]
- 8) While feeling dizzy, go test for a pregnancy. [6]
- 9) Those who falsely dismiss the spread of disease falsely dismiss they spread this. [14]
- 14) Diseases causing awful dryness around the middle of dome. [9]
- 15) Elaborately exact rite to release yourself. [9]
- 16) There's talk in this castle! [8]
- 19) Some squirrelling everything they have for the gathering storm. [6]
- 21) There's an insect on him! [5]
- 22) Some Iroquois with a Middle Eastern person, for example [5]

REGULAR Crossword Clues

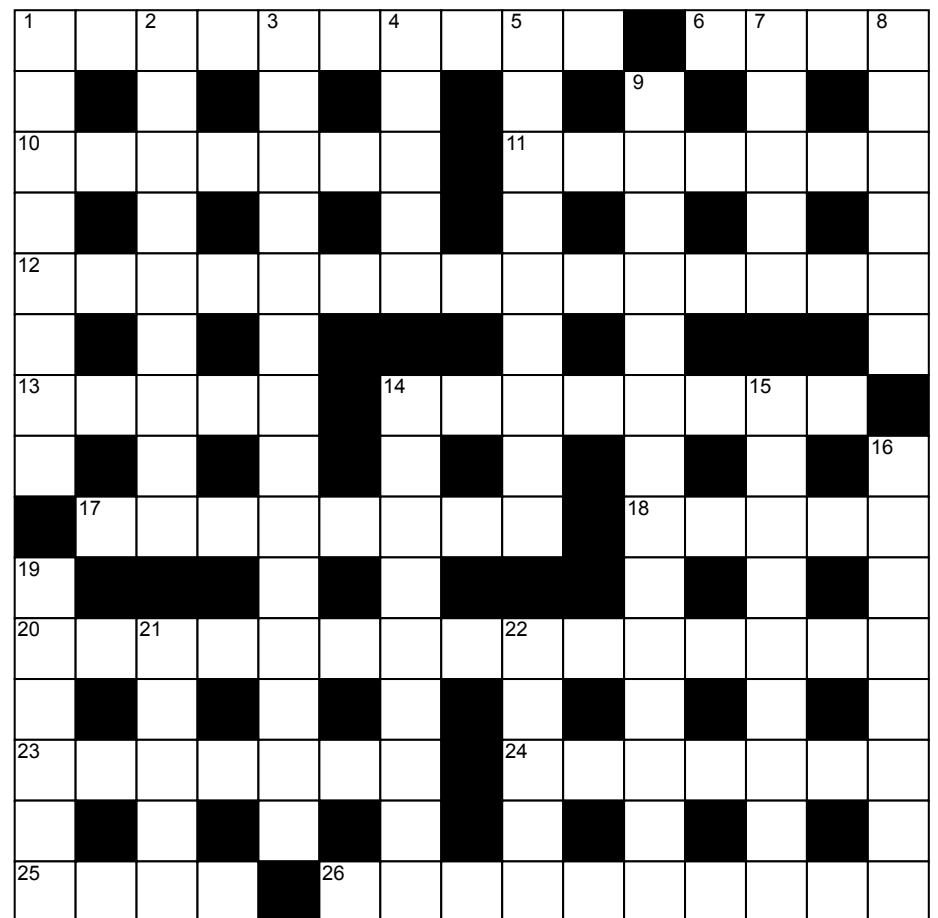
Across

- 1) Failure to do what one's purpose is. [10]
- 6) Dirty, foamy layer. [4]
- 10) Bring about feelings of love. [7]
- 11) Broke into. [7]
- 12) Meal deal choice. [5 10]
- 13) Term of power. [5]
- 14) Acts as a scribe. [6 2]
- 17) Danish fairy tale author. [8]
- 18) Building in which one might find sufferers of the fever. [5]
- 20) Confused, befuddled and bemuddled [15]
- 23) Makes clear. [7]
- 24) In solution. [7]
- 25) Underworld river in mythology. [4]
- 26) Not permitted. [10]

Down

- 1) Coming from a layman. [8]
- 2) Product of some source. [9]
- 3) They're sent in response to a rude DM. [8 6]
- 4) Round about. [5]
- 5) Maintenance person. [9]
- 7) Boiler type. [5]
- 8) Musical arrangement of many pieces. [6]
- 9) Movement set up against the status quo. [14]
- 14) Sink. [4 5]
- 15) Opens up, as a fly. [9]
- 16) Electrically treated, as aluminium. [8]
- 19) At which calves feed. [6]
- 21) Cutesy and sentimental. [5]
- 22) Crispy fried onion-based appetiser. [5]

REGULAR Crossword Grid



Puzzles Notices

Puzzles Editor: Lito Chatzidavari
 Leaderboard: Raluca-Anamaria Constantinescu
 Special thanks to:
 Stanley Scott for the crosswords

Submissions accepted via email to fsudoku@imperial.ac.uk until Wednesday noon, 16th February.
 Hope you have fun with our puzzles!

Points

Easy, Normal, Difficult sudokus	2, 3, 4 pts each
Cryptic Crossword	5 pts
Regular crossword	4 pts
Nonogram	3 pts

FUCWIT

1. It's not fat, it's power	93
2. Deep-Fried Charizard	78
3. AKGroup	76
4.Plont Palace	30
5. Lucky's Magic Whisk	29
6. Hea-ing	13

Online leaderboard:



CATNIP

THE HEADLINES THIS WEEK...

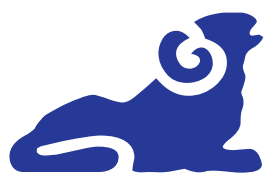
Covid cost the UK £400bn. The National Insurance hike will raise £12bn/year. The treasury has written off £4.3bn in stolen covid support. It all adds up, trust us

‘Boycott Jimmy Carr’ cries Sajid Javid, whilst shoving screwdriver into caravan tyre

Joe Rogan receives surprise bag of cash from Putin with ‘keep doing what you’re doing ;)’ note attached

The ‘who farted?’ allegation can travel round the world and back again while ‘it wasn’t me’ is lacing up its boots

“Best eatery on campus” award really depends on what you personally like to eat



ARIES

This week murder she wrote becomes murder she did



TAURUS

This week you decide to check on the half lemon in the fridge



GEMINI

This week you filibuster sexual congress



CANCER

This week a special cut of Euphoria is produced for younger audiences with explicit content replaced by abstract representation. Stream Euphemism now



LEO

This week you and someone else in the Zoom call start to speak at the same time but neither of you choose to back down. Everyone loses.



VIRGO

This week you tell your rude friend “Otto Beit me”



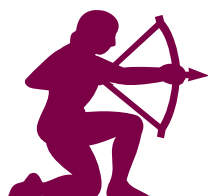
LIBRA

This week you face your fear of Judy Dench. Fear of the Dame only increases fear of the thing itself



SCORPIO

This week it’s ‘dick in the conical flask’ for you and ‘formal complaint’ for your lab partner



SAGITTARIUS

This week you take a calculated risk. Unfortunately for you, you left your calculator in radians



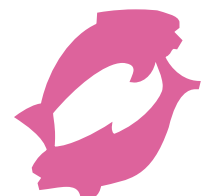
CAPRICORN

This week your course coordinator gives up with appeasement and tells you ‘it’s hard, get over it’



AQUARIUS

This week the mood is killed when you pull out a thesaurus mid-copulation to find a more elegant way of saying “I’m gonna cum”



PISCES

This week you narrowly avoid slipping on a banana peel, only to get clocked in the face by a satsuma

Imperial Students £3
Members FREE

Saturday 19th February 2022, 10am-3pm
Imperial College, South Kensington Campus,
City and Guilds Lecture Theatre

@the93percentclub | /93percentclub | www.93percent.club



FLAGSHIP CONFERENCE



Lasith Ranasinghe

Founder of Make a Medic & MindSet app

Tahira Resalat

Founder of inclusive illustration company, Teecaake



Kajol Patel

Deloitte Consultant and YouTuber (11.5k)

Harry Camp

Research Director at the 93% Foundation



**Salina Nicoleau &
Maïke Haensel**

Co-Founders of the Elevat(Her) podcast

Plus: - Careers Advice from
Imperial Careers Service
- CV guidance from a
Kaiser Associates consultant



FIRST AID X MARTIAL ARTS

Join us for a **FREE First Aid Seminar** tailored for **Martial Arts club members!**

WHEN: Saturday 12th February 2022, 13:30 - 16:00

WHERE: LT164, Skempton Building

TOPICS: Head injuries, strains & sprains, bleeding, fractures, blisters, CPR, recovery position & MORE!

ANY QUESTIONS? Email: spm@ic.ac.uk



Hosted by IC First Aid Society



Leadership Elections'22



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**Nominations
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7 February
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Your Union



I CAN STAND
14 February, 16:00 - 16:30
Black & Minority Ethnic



I CAN STAND - BME Students
14 February | 16:00 - 16:30



I CAN STAND
16 February, 12:00 - 12:30
Women



I CAN STAND - Women
16 February | 12:00 - 12:30



I CAN STAND
21 February, 11:00 - 11:30
International



I CAN STAND - International Students
21 February | 11:00 - 11:30



I CAN STAND
23 February, 13:00 - 13:30
Disability



I CAN STAND - Students with Disabilities
23 February | 13:00 - 13:30



I CAN STAND
23 February, 16:00 - 16:30
Postgrads



I CAN STAND - Postgrad Students
23 February | 16:00 - 16:30



I CAN STAND
28 February, 15:00 - 15:30
LGBTQ+



I CAN STAND - LGBTQ+ Students
28 February | 15:00 - 15:30

I CAN STAND EVENT SERIES

February | Online Teams - link will be emailed before each session

We particularly want to encourage disabled, LGBTQ+, BME, women, international, and postgraduate students to stand for a position. We've organised sessions for you to come and learn a bit more about the roles available and ask any questions you might have!

You can sign up for the sessions using the I Can Stand form which you can find on our website.

More events: imperialcollegeunion.org/whatson

FILM

Film review

The Tragedy of Macbeth: Distilled to its core

Directed by: *Joel Coen*

Starring: *Denzel Washington, Frances McDormand, Bertie Carvel, Alex Hassell*

Deniz Akansoy Film Writer

Adapting any theatrical play to the silver screen is a difficult task. It poses various challenges, such as maintaining the intended tone set by the playwright while introducing a new sense of realism that is brought by the film format. When the play in question is arguably the most famous Shakespearean Tragedy to have ever been written, the stakes are unequivocally higher. Ever since the dawn of cinema, there have been many adaptations of Macbeth, some considerably better than others. We've seen it all; from samurai-era Japan (*Throne of Blood*, dir. Akira Kurosawa, 1957) to a small-town diner in Pennsylvania (*Scotland, PA*, dir. Billy Morrissette, 2001), the story has been adapted countless times, yet the themes explored in the story remain as current as they were 415 years ago.

The Tragedy, as director Joel Coen refers to it, is a masterclass in filmmaking. It brilliantly achieves to convey the personal intimacy one would normally expect from watching a play in real life, through the constraints posed by the big screen. In fact, Coen mentions that he did not want to "deny that the text was created as a play and theatrical construct," further adding that he "had no intention of making it a naturalist film, such as the route taken by many others including Polanski."

One way in which the movie achieves this, is through very intentional use of set-design and very stylistic cinematography. "Every frame a painting" is usually a saying associated with Stanley Kubrick, however I don't think it's farfetched to argue that it equally fits the visuals of this movie. By shooting the entire movie on a soundstage and having complete creative control over the environment, Coen gets the best of both worlds - he makes sure that the world-class cast of actors can make the roles their own with creative choices, and the movie stays as true to the source material as possible.

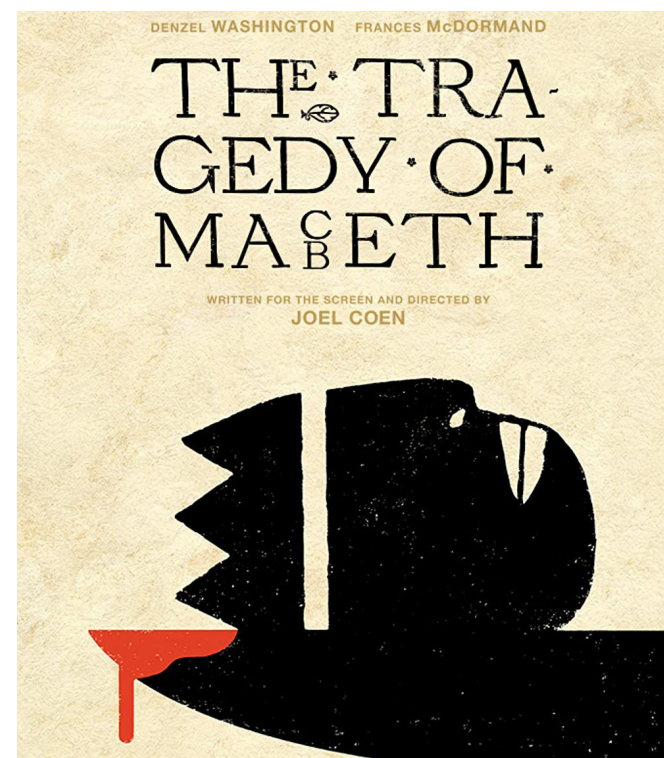
The cinematography is nothing short of magical.

In fact, stylistic choices made by Coen in conjunction with cinematographer Bruno Delbonnel - whose previous works span the likes of *Amelie*, *Darkest Hour* and *The French Dispatch* - makes the movie resemble a surrealist painting at times, without completely detaching the audience from reality. At the end you feel like the movie was more like a dream than a movie you actively watched on screen.

The 4:3 aspect ratio brings a sense of suffocation and claustrophobia, which becomes increasingly apparent as tensions rise; the characters cannot escape their destinies, their fates are sealed. Furthermore, symmetry is both used and then intentionally broken to create a sense of uneasiness. This especially becomes apparent as the movie progresses, creating a sense of sickliness and nausea which reflects Macbeth losing his sanity.

The set design beautifully complements the cinematography. From the get-go, the hostility of the land is reflected to the audience with the presentation of Scotland as a barren land with no love or joy, a land of fake smiles and hidden daggers. The harsh lighting, the use of heavy contrast, and the overall choice of black and white all contribute to this sickly atmosphere, devoid of happiness and hope. The interior décor of the castle, or lack thereof, with the very minimalist choice of design, creates a sense of emptiness that sticks out, like a form of deafening silence.

Blazing through his soliloquys with style, Denzel Washington brings a sense of charisma to the role of the tyrant, as he portrays a much more muted and fatigued Macbeth. This is an older Macbeth, a weary one in his 60s, and as such, the theme of youthful ambition is much less emphasized. Washington acts with subtlety, "underplaying" the part until the last act in which Macbeth fully loses all sanity. Frances McDormand plays the role of the instigator, as Lady Macbeth, beautifully. Her choice in acting almost humanises the "power couple" in certain situations, yet this allows



other certain scenes to be even more jarring and shows them as the brutal and heartless people they really are. The real show stealer, however, is esteemed theatre actor Kathryn Hunter, playing the role of all three witches. The witches lie at the very heart of the movie, setting everything in motion, and manipulating Macbeth as the story unfolds. Even though most of the movie is very much realistic, the movie embraces the theme of the supernatural, as Hunter brings a real sense of eeriness to the role.

To conclude, *The Tragedy of Macbeth* is excellent on a technical level, and I would recommend it to any cinema lover. Be warned that your level of enjoyment could be limited to your previous knowledge of the source material, and the experience could be jarring at times due to the use of Shakespearean English. However, that doesn't mean that you shouldn't go into the cinema (or stream it) with an open mind.

What's on?

Oscar nominations are out -

Let us know what you think about the nominees!

What could be considered the most famous film prize-giving ceremony will take place late March, but the nominations have just been announced early this week. Categories include best picture, costume design, cinematography, makeup and hairstyling, best original song and original screenplay. You can find the nominees for each award on the Oscars official website as well as in *The Guardian* or the ABC youtube channel. Who should win, was there anyone you were expecting to be nominated but didn't, we are looking forward to reading your opinions!

You can email us an article to film.felix@imperial.ac.uk.

FRIDAY 11TH FEBRUARY 2022

MUSIC

Edited by: TARA PAL CHAUDHURI
JOE RIORDAN

DON'T MISS THE GIG - ONE NIGHT AT THE PEMBROKE

@ 19:00 17TH FEB

HEADLINED BY QUADRONAUT, BAKBURNER, AND MONKEYS IN LIVING FORM SOCIETY, LIVE MUSIC SOCIETY IS TAKING THEIR SHOW OUTSIDE THE HALLOWED HALLS OF THE UNION. CATCH THEM AT THE PEMBROKE FOR A NIGHT OF LIVE MUSIC AND (DISCOUNTED) DRINKS.



Single of the Week

Kissing Lessons by Lucy Dacus

Lucy Dacus is back just in time for Valentine's Day with 'Kissing Lessons'. The new single tells a story of practising for a first kiss with her best friend, with Dacus wondering if her friend also thinks of it as a proper first kiss. Accompanied by crunchy guitars and punchy drums, Dacus provides a soundtrack for the lovers and the lonely to stream on February 14th.



TODAY IN MUSIC HISTORY

58 YEARS AGO TODAY, BEATLEMANIA HIT AMERICAN SHORES AS THE BAND PLAYED THEIR FIRST US SHOW IN WASHINGTON DC. IN FRONT OF ADORING CROWDS (WHO DID, LOVINGLY, PELT THEM WITH JELLYBEANS), THEY PLAYED HITS LIKE 'SHE LOVES YOU' AND 'TWIST AND SHOUT'. WITH A 15-YEAR-OLD AL GORE IN ATTENDANCE AND AN UNWILLING HAIRCUT FOR RINGO AT THE BRITISH EMBASSY THE NEXT DAY, THE TRIP WAS FILLED WITH SURPRISES.



Album Reviews

It's Your Lucky Day, I Finally Shut Up About Hippo Campus

Written by Joe Riordan Music Editor

Hippo Campus drop long awaited third album, LP3

Behold, the day has come. We've been blessed with some stellar new music from Hippo Campus, Black Country, New Road, Mitski, and more today. Let's get down to business and talk about the new Hippo Campus album, LP3.

I'm sorry but we have to start on a sad note. The pandemic rages on and another tour is taken from the ears of today. Hippo Campus have delayed their UK tour until May this year so my pleas were obviously not heard; now they'll be gracing The Garage on May 9th. Worryingly, this is the night before my Quantum Physics exam so if you are my quantum lecturer and you're reading this – of course I won't go see one of my favourite bands who only come to the UK once every few years the night before your exam. This was going to be a joint album and gig review, but the band must've read the two single reviews of their tracks and wanted more of my words, so it'll just be the album review for now. Wait patiently for the gig in May, people.

LP3 is the culmination of nine years of Hippo Campus: it is the journey to where they are today, and the fans that they've brought along with them. I first listened to the band in 2017 when their breakout hit 'South' was recommended to me on the YouTube sidebar. I was drawn in by lead singer Jake Luppen's versatile vocals, guitarist Nathan Stocker's twinkling riffs, bassist Zach Sutton's driving basslines, and drummer Whistler Allen's hypnotic drums. These aspects that made me love the band are still here in LP3 but joined by qualities gained in other works, like the synthesised sounds of second album *Bambi* and the deep-dive electronic soundscapes of recent EP *Good Dog, Bad Dream*. This is the basis of the album: growth and maturation while staying true to yourself.

Kicking off with a public safety announcement against faux-adolescent confidence, opening track '2 Young 2 Die' builds from a lone horn from trumpet player DeCarlo Jackson up into one of my favourite choruses of the album featuring ethereal vocals, uber-compressed drums and synths that rival tracks from *Bambi*. Jackson and Stocker shine on this album.

Trumpet and guitar riffs no longer give each other space as was the case on previous records, now they interplay beautifully; twirling and lacing in and out of sync with the perfection of prima ballerinas, most impressively heard in 'Scorpio'.

I'd like to stop and take time to give a special mention to one of my top tracks of the album, 'Bang Bang'. It uses stop time accents and polyrhythmic vocals, two of my top 5 musical techniques that I'm a complete sucker for. I'm excited to see the band live in May to see who sings the other of the two interlocking vocal lines in the last chorus with Luppen after I surprisingly learnt Allen and Stocker sing when I saw the band in Newcastle back in 2019. On the stops, they work flawlessly to enhance the drop into the chorus. For the entire album, the band have masterfully utilised volume changes to transform incredibly sparse sections into massive stadium filling soundscapes.

Closing the album is my favourite track, 'Understand'. Reminiscent of 'Buttercup' which ended first album *Landmark*, 'Understand' melds old and new sounds, completing the journey that the album embarked on. "I don't care what we are,

it just has to work / Where we end is something far / Something hard to understand" says Luppen in the chorus, reaching an acceptance of powerlessness against the future but promising to live happily in the moment. The best sound on the record is what seems like something falling off the drum kit at the start of the guitar solo, it could be skilful drumming from Allen or a lucky sample of a tumble in the studio. Whatever it is, it's so satisfying to listen to – trust the process. Listening to that sound so much also lets me listen to Stocker's guitar solo, a soft, shimmering masterpiece. This is Hippo Campus at their best.

LP3 is out on streaming platforms everywhere, go check it out. The band will commence its postponed UK tour in May, visiting Manchester, Glasgow, and London.



MUSIC

Black Country, New Road release a future cult *classic*

Written by **Rosie Millns** Music Writer

Black Country, New Road's sophomore album, Ants from Up There, confirms their place as one of the best bands around in a long time

Black Country, New Road have had perhaps an unorthodox journey as a band. In 2018, they formed in Cambridge from the ashes of a former project. The band quickly began on a dizzying journey to the front of the South London underground post-punk scene, eventually being signed by Ninja Tune and releasing their debut album *For The First Time* just last year in February 2021. By the time they were the face of the scene, BC,NR had moved on, leaving their post-punk origins behind them. Not slowing down for a second, the band released their second album, *Ants from Up There*, exactly 364 days later.

Releasing two albums in a year is an incredible achievement, let alone for both albums to be critically acclaimed – *FTFT* was nominated for a Mercury Prize, and *AFUT* has been universally hailed and is an instant contender for album of the year. However, the departure of lead vocalist Isaac Wood just four days before the album's release has left a more sombre tone over the album – it is a huge achievement, but it is also a goodbye.

AFUT was supposed to be a turning point for the band – a departure from the post-punk roots from which they grew to fame. It was not realised, perhaps, just how significant of a turning point this would be until the announcement of Wood's leaving. The six-remaining members have stated they are not going to play any songs from the first two albums out of respect for Wood, meaning the BC,NR as we knew it is gone. This is maybe not unexpected from a band who have always done everything in reverse, inverting the convention of releasing an album and then touring it.

notably different from the 'Instrumental' of *FTFT*, being a joyous 54-second-long track that explodes into the anthemic 'Chaos Space Marine', in contrast to the 5-minute long angsty introductory track for *FTFT*. Immediately, you can hear the joy from the band that they are playing and releasing music in a genre that they want to be, and are more proud of.

'Chaos Space Marine' is the most whimsical and upbeat song on the album, sounding almost like a funfair theme. I was hesitant when I first listened to the track, which was the first single released from the album. The short track was a bold change from the BC,NR I loved, but in the context of the album I understand why the band describe it as the "best song [they have] ever written". In three minutes, the band are able to establish their new style. A more euphoric and joyous BC,NR are introduced, with the sound taking inspiration from klezmer and virtuosic free-jazz. The whirlwind jazz of *FTFT* is gone, replaced with a sound that is more cohesive, despite the fact it shouldn't be on paper. The instrumentation is more varied, the unconventional song structures remain, the rhythms and time signatures are chaotic, but unlike *FTFT* where these features could leave you whiplashed and left behind, *AFUT* manages to fuse ideas together in a way that carries the listener alongside them.

The pop culture references in Wood's lyrics remain, cleverly used as a guise for more complex issues. 'Chaos Space Marine' is a Warhammer reference after all, with the song describing a narrator who obsesses over the game as a distraction from their failing relationship. At its core, that is what *AFUT* is about: a



Concorde supersonic jet, a project by the British and French governments that was a failure and far exceeded budget but was not abandoned due to the amount of money already funnelled in and lost to the project. The other person in the narrator's relationship is described as the "Concorde", which is used as a metaphor for a romantic sunken-cost fallacy in a failing relationship. The motif of the Concorde jet reoccurs throughout the album as a representation for the failing relationship.

'Bread Song' is a quiet and contemplative moment on the album, taking inspiration from Steve Reich, that explores one-sidedness in a relationship, and introduces the feeling of melancholy that later pervades the album. The idea of dependency in a relationship is continued on the next track, 'Good Will Hunting', which is the most conventional and accessible song on the album, beginning as a conventional pop-rock tune that soon descends into dissonance and unconventional song structures.

It is at this point, halfway through the album that the tone shifts into a mood that is much more emotive and painful. The hopefulness and triumph from the start of the album is gone, and the songs become heavier and more heart-breaking. The second half of the album is one I find difficult to listen to, despite how much I love it - 'Haldern' is a track that is almost too agonising. It gives a feeling of heaviness at the bottom of your stomach, and the weight on your chest that makes it hard to get out of bed in the morning. The feeling of sadness it imparts is so all-encompassing that it is hard to encapsulate with words.

'Mark's Theme' is a quiet change of pace, a loving instrumental dedication to saxophonist Lewis Evan's uncle who was a big supporter of the band. It begins with a heartfelt unaccompanied heartfelt tenor saxophone solo, that is later joined by quiet piano and violin, before going into audio of Mark singing. It is a hauntingly beautiful dedication to the influence that Mark had on Evans, and how that outstretched to the rest of the band.

'The Place Where He Inserted The Blade' is my



Single cover: "Snow Globe"



Single cover: "Concorde"



Single cover: "Bread Song"

Many of the singles from *FTFT* were toured for years before studio release and were dropped from live sets as soon as the band began touring again after *FTFT*, being replaced by new and ever-evolving tracks that would eventually form *AFUT*. In fact, the band do not even consider *FTFT* their debut album, but rather a collection of songs from their early days, indicating how far detached they are from it now. With Wood's departure, it is likely that all the songs on *AFUT* will also never be toured again.

Within seconds of *AFUT* it is clear how separated BC,NR have become from their early days. 'Intro' is

co-dependent relationship that the narrator is in denial of, and their deep emotional turmoil. Throughout the album it becomes more difficult to decipher how the relationship is being described – whether it is a romantic one, or whether it is the relationship between artist and audience.

'Concorde' begins as a gentler, waltz-like piece, that grows into an eruptive anthem as the cohesion at the start of the track disintegrates into chaos, whilst the lyrics move from metaphorical imagery to plainer language tainted with despair ("I was made to love you / Can't you tell?"). It also introduces the motif of the

favourite track on the entire album. Wood's lyrics and vocals express distress – the lyrics are, taken literally, about having a breakdown whilst following a cooking tutorial, and relying on a partner to calm you down – which is perfectly contrasted by the joyful backing vocals and warm accompaniment. It is a cathartic, if not painful listen. I haven't had such visceral feelings listening to a song since I first heard Car Seat Headrest's *Twin Fantasy*. The way the lyrics broach mental health through storytelling that hints at a deeper underlying meaning, and the words that phrase feelings you couldn't express yourself, make the song (as well as the album as a whole) perhaps the most provocative one I have heard in years.

It is almost impossible to believe that the lyrics for the album were written separately to the instrumentation. The relationship between the two, in how each enhances the other, is breath-taking. The timbre and dynamics, and the articulation and song structure, convey the emotion in Wood's lyrics with genius.

'*Snow Globes*' is different to anything the band have ever done before. The instrumentation is simple, the song structure is simple, the rhythms are simple. This simplicity is wonderfully contrasted by Charlie Wayne's drumming, which builds up from a slow rumble to an expressive chaotic sound. The drums are so detached from the song that they almost occupy a completely

different soundscape, but somehow the track still feels coherent and cohesive. The juxtaposition of the calm track with the chaotic drumming creates the idea of anguish below a calm exterior, which bubbles to the surface as Wood's vocals become frantic and shouted as the track explodes into enormity.

The final track on the album, '*Basketball Shoes*', has been a highlight of a BC,NR set since before their debut album was released. The 12-minute song is almost operatic, with multiple sections that eventually reach the climax of the entire album. The band describe '*Basketball Shoes*' as the track that *AFUT* was built around, with musical motifs from the song appearing in other tracks throughout the album. Originally about a parasocial relationship with Charli XCX, '*Basketball Shoes*' has undergone many evolutions, with the current version omitting all mention of her entirely. The song describes recovery from a codependent relationship, learning to prioritise your own needs again ("now I'm feeling kinda normal with a packed lunch / train rides don't hurt so much these days") and how difficult that can be ("if you see me looking strange with a fresh style / I'm still not feeling that great"). The anthemic track explodes into a triumphant finale with the band all singing together as Wood shouts over it. It is the perfect climactic ending for the album, and one Wood should be proud to end his time as frontman of the band on.

It is a shame that *AFUT* will not get a live performance. I did not appreciate the songs when they were new to me in their live sets, and I would have loved to experience them live with the love for them I now have, but I have deep respect for any artist that prioritises

“
IT IS A HUGE
ACHIEVEMENT,
BUT IT IS ALSO A
GOODBYE.

their own needs and wish Wood all the best in his recovery. He has truly achieved something magnificent in his four years with BC,NR - and even if the

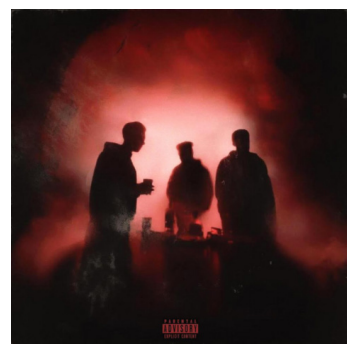
BC,NR we knew are gone, the group are continuing as a six-piece, and have proven with *AFUT* that they can take each reinvention in their stride to create something incredible, including the emotivity of mourning pass. And as a sensitive motherfucker, this album makes me want to catapult myself into the sun. If you haven't heard it yet, go on, let blondie maim you, all too well.

Felix Recommends

5 AP Dhillon Songs That Need To Be On Every Brown Munde's Playlist

Written by [Ambika Bharadwaj](#) Music Writer

Since his debut in 2019, singer, lyricist, and music producer AP Dhillon has sung his way into the hearts of millions of Punjabi music fans across the globe. From his song '*Saada Pyaar*', which softly tugs on listener's heartstrings, to his iconic Brown boy anthem '*Brown Munde*', each track has helped put Dhillon in a prime spot in the music game, with a large fan base that only continues to grow. All of us might not understand Punjabi music but we can't party without it, and we certainly can't ignore it. Punjabi songs are the life of every party and even if you're not Punjabi, you'd agree that grooving to Punjabi music is the best - and when we are talking about Punjabi music, AP Dhillon songs are on everyone's playlist these days. From long drives to a house party, we all listen to his music. So, here



are five AP Dhillon songs that need to be on every 'Brown Munde' playlist –

'*Excuses*': There is a new heartbreak song in town, and we can't stop humming it. '*Excuses*' by AP Dhillon and Gurinder Gill - with music by Intense - is all we are

listening to on Instagram. "*Dil tera Jado tutuga tan pata laguga*," speaks to your soul and we know you think of that one toxic ex every time this line comes on.

'*Fate*': '*Fate*' talks about heartbreak and AP Dhillon and Gurrinder Gill have mastered the art of singing about a broken heart. Shinda Kahlon, the featured artist on this cut, gives out a hard-hitting verse too. The production by Money Musik follows the trap formula, hard 808's and booming bass. This is the perfect amalgamation of traditional and modern music styles coming together.

'*Takeover*': '*Takeover*' is a track that's bragging and boasting about the lavish lifestyle that these guys live. The production features sinister bells that fit perfectly with the lyrics of this cut. AP Dhillon and Gurrinder Gill give each other space to shine individually which makes their alliance even better. The featured artist, AR Paisley, packs a punch with his contribution to this song.

'*Chances*': The most chill track on its EP, '*Chances*' flows smoothly throughout its runtime. The bass drops at the perfect time while the snares are just hypnotic on that loopy flute in the background. In this production, AP Dhillon and Gurrinder Gill glide, taking turns at killing their verses. They are two heartbroken boys who've found melody in their respective sorrows.

'*Saada Pyaar*': This song has AP Dhillon going solo and the chemistry that he and Money Musik share is incredible. The song starts off with AP singing to a guitar strumming in the background which follows the bass and the hi-hats. One of the deepest cuts on this record, '*Saada Pyaar*' is another heartbreaking tale about unrequited love.

Lata Mangeshkar (1929-2022)



The Nightingale of India has fallen silent. Lata Mangeshkar's extensive oeuvre spanned 70 years – incomparable to any other Indian artist in the century.

MUSIC Unpacking the Spotify Mutiny: What on Earth is Going On With Neil Young and Joe Rogan?

Written by **Tara Pal Chaudhuri** Music Editor

When Neil Young removed his music from Spotify due to allegations that Joe Rogan was spreading vaccine disinformation on his widely viewed podcast, did he launch a losing battle against the music-streaming platform?



A SPOTIFY EXCLUSIVE



David Crosby has specifically received backlash for supporting Young because he sold his entire catalogue to Iconic Artists' Group over a year ago, limiting the actual agency he has over his music. As a result, he and his ex-bandmates have been criticised for their 60s' pseudo-revolutionary "hippy" outlook that says much more than it does. While the impact of late 60s rock on protesting the Vietnam War is hard to quantify, who better to start a revolt against Spotify than Neil Young and his grumpy flower power companions? They hit the peak of their success decades earlier and their biggest fans tend to have their music on vinyl or CD, making them, arguably, the perfect musicians to start and support a cause against a music streaming service. And while they are definitely not the designated voices of science in our society, it's painfully obvious that the 270 American doctors and science professionals who wrote an open letter to

Spotify criticising misinformation in Rogan's podcast didn't gain half the traction Neil Young did.

But that brings us to the next question: is Spotify just a music-streaming service anymore? Many argue

that the first step towards it taking responsibility for the content on the platform is simply recognising the fact it is an exclusive content platform – exemplified by "The Joe Rogan Experience". This changes the role Spotify plays in the content that is available on the website.

Despite the fact that Spotify's CEO, Daniel Ek, has made it incredibly clear that he finds "some of Joe Rogan's comments incredibly hurtful", he still

wanted to clarify that "they do not represent the values of this company". This was, of course, still followed by the removal of 113 episodes of the podcast after a video compilation of Rogan using racial slurs went viral.

However, this rebellion against Spotify has its own consequences: we're one step closer to validating cancel culture. Artists like India.arie have decided to remove their content from Spotify not only to counter vaccine misinformation, but because they have a very particular bone to pick with Joe Rogan – his racial insensitivity. A mind-numbing conversation resurfaced between Joe Rogan and an interviewee about why Black people are called "black" despite not actually being "black", adding fuel to the fire. But despite how despicable it is, is it really wise for criticism to accumulate and then

fall on an entertainer all at once, or perhaps steadily make itself known to the entertainer? Daniel Ek also agrees that there isn't much use "silencing" Joe Rogan and that "cancelling voices is a slippery slope", instead emphasising the need to have "clear lines around content". Spotify has since added a content advisory to podcast episodes that discuss COVID-19 so that users can be redirected to a verified resource. Of course, this makes sense if users actively decide to click on it and ignore the statements of a podcaster they listen to so fervently.

While Joe Rogan was the reason behind the controversy, the recent musical exodus from Spotify was helped in large part by Spotify itself. Artists like Failure have taken the opportunity to call Spotify out on their "draconian royalty calculation which gives artists a microscopic fraction of money being generated on their platform". A lot of this money, in fact, probably went into that enviable \$100 million licensing deal with



Rogan. In case you might be wondering "if not Spotify, then what?", then you're asking a difficult question in the wrong era. Music streaming platforms have made music accessible and cheap, which also means that some artists can barely buy a cup of coffee from their earnings. The ethically-sound solution would be to purchase high-quality downloadable music from platforms like Bandcamp, but realistically, very few people would be willing to do that.

While this rekindles the peripheral debate on censorship, one has to give a thought to the measures that need to be taken to separate opinion and scientific fact. Influencers often feel the need to hold an opinion about everything under the sun, even if it's half-informed, or in this case, completely unqualified. Regardless, we must reorient our approach to these commentators and perhaps shift our focus to the platforms or algorithms that are purveyors of this kind of entertainment.

Neil Young released a statement in January criticising Spotify for "unfactual, misleading and false COVID information" that the platform has hosted unchecked, particularly pointing at content produced by podcaster and comedian, Joe Rogan. Rogan interviews a variety of people on his show with the intention of learning more about the world around him – a stance he has made very clear. That means that in conversation with "specialists" (who have been criticised by the scientific community), he was able to comfortably make statements about the nature of the COVID-19 vaccine. Not only has he stated that young, healthy people should avoid getting jabbed, but that the vaccine is actually "gene therapy". "The Joe Rogan Experience" reels in 12 million views a month and is tied to Spotify with an exclusive \$100 million licensing deal. Despite Rogan's obvious monetary leverage, Young posed an ultimatum to Spotify, "they can have either Rogan or Young. Not both." This rebellion has since snowballed for a variety of reasons, supported by both musicians, like Joni Mitchell, Nils Lofgren, and Mary Trump, and content-producers. However, it raises a few questions about censorship, creative rights, and the nature of the streaming era.

Of all that remains on Spotify of the late 60s folk rock bands, CSN (Crosby, Stills & Nash) and CSNY (Crosby, Stills, Nash & Young), are a few live albums that I doubt anyone pays much attention to. However,



THE RECENT MUSICAL EXODUS FROM SPOTIFY WAS HELPED IN LARGE PART BY SPOTIFY ITSELF.

BOOKS

Edited by: ZANNA BUCKLAND

Book Reviews

This Is Going To Hurt

Zanna Buckland Books Editor

With its succinct diary-style format, 'This Is Going to Hurt' is a recommendation for readers and non-readers alike. Whether you enjoy a good story and haven't got enough time on your hands for a novel (perks of being an Imperial student!) or aren't into books but want to take a productive break from the tedium of your MS Teams meetings, Imperial alumnus Adam Kay's accessible writing caters to everyone's literary needs. The fragmented nature of the diary liberates readers from commitment, and as a bonus, a TV adaptation starring Ben Wishaw has just aired its first episode on BBC One this week (on Tuesday 8th February), perfect for those of us who can't quite find the time or focus to read an entire book.

Containing a carefully curated plethora of anecdotes plucked straight from the diary of a junior doctor, 'This is Going to Hurt' is a poignant and introspective insight into the daily life of an NHS medic. Adam Kay details his journey post-med school, navigating the ins and outs of numerous hospitals while climbing the ranks from 'House Officer' to 'Senior Registrar'. His tales of medical maladies range from hilarious to heartbreaking, and each is told with a sense of pride and just a little sarcasm.

As it describes the medical world and everyday experiences of a doctor, this may seem like a heavy read, but each journal entry details Kay's cases with welcome simplicity and a hint of humorous absurdity.

Although he is no longer a practicing doctor, his passion for the career and belief in its nobility is inspirational even for those of us who would never even consider pursuing medicine. He relates to the reader an occasion on which he was asked to return to his old school for a careers event. To the few students who showed interest in medicine, he decided to reveal the grittier aspects of the profession, rather than simply advertising the glamorous, idealistic version.

If stories from the Covid pandemic haven't yet managed to convince you that the life of an NHS employee is tough and grueling, Kay's recounts of working 100+ hour weeks and being underpaid in hospitals that are severely understaffed definitely will. His slightly graphic albeit technical descriptions of pregnancy, labour, and delivery could also put any sane woman off having a child of her own. Despite all that, he encourages us that he wouldn't have had it any other way.

As incredible and funny as Kay's stories are, they also bestow the reader with a greater empathy for doctors and other health professionals, not just in the UK's NHS but all over the world. It provides ample justification for the sometimes-restrained and unsympathetic nature of medics, and garners appreciation for those that do show their patience and compassion to patients. Put in their position, how many of us



would have the strength of character to return to such a taxing occupation, and how soon would we reach our own personal breaking point?

Adam Kay's brilliant narration paired with the gravity of his subject matter will ensure you stay hooked with every turn of a page. If you only read one book this week or month or even this year, make it this one. I promise you won't regret it.

Twas The Nightshift Before Christmas



This review is slightly overdue given that over a month has passed since Christmas and New Year's. Kay's second book follows much the same format as the first but focusing on the six Christmases and New Years' in a row that he spent traipsing up and down hospital wards. He speculates that this somewhat unfortunate

arrangement arose due to spending each year training in a different hospital, and to his being Jewish.

It's a compelling read whether or not you're still feeling festive, delving into the ridiculous antics induced by Yuletide fever and the emotional burdens of having to spend the winter holidays as an inpatient or a medic. Being shorter and more subject-specific, it is arguably more lighthearted than the previous title, though not without its own touching moments.

Interspersed between perplexing stories of festive items being stuck in places they definitely shouldn't be are forlorn anecdotes about telling his significant other and family members he won't be available for

yet another holiday gathering and bringing Christmas lunch to work in Tupperware boxes.

This particular title also makes a good gift for a friend or family member, and - if you manage to remember it until Christmas comes round again - a great stocking filler due to its compactness. It's small enough that even the hardback version can fit neatly into a bag or large pocket. If you enjoyed reading the first book, give this one a go too. The holiday season seems to start earlier each year anyway, so why not add some Christmas spirit to your spring reading list?

A bad week for Zuckerberg indeed....

Meta: A Record-Breaking Single-Day Loss

Credits: Dima Solomin // Unsplash



Meta's problems are only getting bigger, and last week's share price tumble is fuelling the pressure.

Why is Meta facing serious issues at the moment? Our writer, Anna Fu discusses a list of possible reasons.

Anna Fu

Writer // Senior Analyst, Energy & Utilities



On the 3rd of February, Meta (previously known as Facebook), saw a whopping 26.4% decrease in its stock price, dropping from \$323.00 to \$244.98. This represents more than \$250 billion being wiped off the market capitalisation of Meta. The sudden plummet has also set a record for the largest single-day trading loss ever occurred on a US stock exchange.

What was the reason behind the record-breaking stock market loss? The crash could be attributed to Meta missing Q1 forecasts of \$30 billion by merely reaching the range of \$27 to \$29 billion. Meta's revenue is mainly driven by advertisements on Facebook, Instagram, and the Meta Family of Apps; these advertisements account for 97% of Meta's revenue. The remaining 3% of revenue originates from the Reality Labs division – the creators behind Metaverse. Since the Reality Labs division only accounts for a small fraction of Meta's revenue, issues such as declining daily users, privacy issues, and shifting focus onto the Metaverse all contribute to the dip in revenue.

Daily Users falling

The number of Daily Active Users (DAU) fell from 1.930 billion in Q3 to 1.929 billion users in Q4. This is the first time in history that the number of daily users was not growing but declining. This could be attributed to users' changing engagement – instead of consuming content in the form of posts and pictures, users are consuming more short videos. This is problematic to Meta in two ways: firstly, short videos generate less revenue from advertisements compared to the traditional format that Meta follows and secondly, TikTok, which provides short video content only, presents intense competition for user's time. Moreover, the different demographics for TikTok and the Meta

Family of Apps underpin the dwindling number of users. The Forrester survey conducted in 2021 showed that TikTok usage surpassed Instagram amongst those aged 12 to 17, suggesting that the Meta Family of Apps is no longer the go-to social media for the younger generation.

Competitors

How is TikTok more addictive compared to Meta? TikTok has a more effective AI engagement algorithm – the algorithm aims to maximise the amount of time users spend on the app. It uses user interactions, such as videos you have added to your favourites, videos that you have watched all the way to the end and account settings, such as your country settings, language preferences, to generate a unique “for you” page that is separate from the user's interests. This provides diversity in its content recommendation and is in stark contrast with the algorithms used by the Meta Family of Apps which recommend content similar to what the users have previously expressed interest in. The lack of diversity and neverending content recommendations keeps users in their echo chambers, and underlies why users are increasingly shifting away from the Meta Family of Apps. The drop in DAU then translates to a drop in revenue.

Privacy Issues

The second reason behind the drop in earnings could be traced back to software privacy changes. In April 2021, Apple introduced the App Tracking Transparency policy which mandates apps, such as Meta, to ask for the user's permission before tracking activity across apps and websites, which made it more difficult to use personal data to target advertisements. This has had a substantial impact on Meta, as its business model relies heavily on collecting users' information and selling them to advertisers. Therefore, the change in software privacy contributed to the drop in revenue.

Another privacy issue Meta faces is the invalidation

of the ‘Privacy Shield’ arrangement between Europe and the United States; the arrangement has previously enabled companies to transfer personal data from the European Union and Switzerland to the United States. However, since the arrangement is no longer in place, current EU regulations prevent Meta from transferring data, which is a crucial part of generating revenue. If Meta withdraws from the European market, Meta will miss out on \$6.8 billion of advertising revenue a year, further exacerbating the drop in revenue.

Focus on the Metaverse

The trend of declining advertisement revenue and the maturation of Meta's business has driven it to pivot to the Reality Labs division; this shift in concept is reflected in Facebook's rebranding into Meta. Meta has been investing heavily in the Reality Labs division, spending about \$2.5 billion in Q2 and Q3 and \$3.3 billion in Q4 to develop the Quest VR headset, VR software and AR glasses, all of which reduce the margins and ultimately leads to lower EPS growth. Moreover, recently, issues with the Metaverse have surfaced, such as privacy concerns and users reporting harassment in the Metaverse, which puts the ethics and practicability of the Metaverse under scrutiny. Since the release of Metaverse is 10 to 15 years away, Meta will not be able to profit in the short run.

Overall, Meta is facing a dwindling number of DAU due to intense competition; privacy issues brought on by Apple's App Tracking Transparency policy and the invalidation of the ‘Privacy Shield’ all gnawed on revenue and led to Meta missing Q1 forecasts. Cashflows from the Metaverse can only start benefiting Meta in the distant future. Together, these factors contributed to Meta's record-breaking single-day loss.

Anna is one of the Senior Analysts at the Investment Society's Capital Fund, QT Capital whilst studying MSc Finance and Accounting at Imperial College Business School.

THE ‘METAVERSE’.. WHAT IS THAT?

The concept of Metaverse refers to a persistent and shared three-dimensional virtual reality space where users can interact with each other in a computer-generated environment, offering a hyper-real alternative world. Rudimentary forms of the Metaverse already exists in games such as Minecraft, Roblox and Fortnite, but Meta's Metaverse is likely to be released in 10-15 years' time.

COMMENT

» HAVE AN ARTICLE IN MIND?

EMAIL YOUR IDEA OR PIECE TO:

COMMENT.FELIX@IMPERIAL.AC.UK

Edited by: KHAMA GUNDE

Anti-relationship not anti-love

► *Women have long been pressured to find their value in marriage and motherhood, but this puts young women at risk of committing to relationships that do not fulfill their wants and needs in the short and long-term.*

Anonymous



THE EMOTIONAL CONTEXT

If I am being honest with myself, I became anti-relationship after a series of failed relationships and situationships - as do most people after having gone through a breakup. In the spirit of a true Imperial student, I turned to books about relationships (I should note mainly books written by feminists), wanting them to convince me further that relationships would not benefit me, and even go as far as to hinder me. It worked. So now I am not only anti-relationship due to heartbreak, but I also have real ammunition behind my personal belief which I have attempted to articulate in this article.

THE NUCLEAR FAMILY AND HAVING A CAREER

After reading 'Why I'm not a Feminist' by Jessa Crispin, I felt so enraged that women were almost condemned to this life of being born, educated, told to get a job, then expected to give all that up

Photo credits: Rodnae Productions on Pexels



The nuclear family

to dedicate their lives to raising a family. Just because we have ovaries. I refused to believe that this would be the series of events that describe my life because, as a woman, I am 'innately more maternal'. I would like to quickly mention that I do not see the issue with wanting that life

for yourself as a woman. It goes without saying that being a mother is commendable. But what I did not like was the fact that this was a 'given' in society. It is the expectation of whatever man that I may one day meet that he will not give up his career to raise my children. Because why would he? He is told that it is in his biology to be the strong, responsible provider in our nuclear family.

I like the idea of the house-husband. Women can be the providers, particularly as technology has developed i.e., the contraceptive pill allowing women to postpone having children in order to prioritise their careers. But should the liberation of the working woman be at the expense of her husband who has worked equally hard to get his dream career? Not if he doesn't want to. I cannot understand why anyone, regardless of gender, would willingly sacrifice all they had worked for to have a family. Why must anyone compromise? The formation of nuclear families, based on the argument of human biology, has historically benefitted men, but even with these developments it is still oppressive to the parent who must undergo

the sacrifice.

The next argument is that you can have both. This is the solution concocted to prevent the dissolution of the nuclear family which is the basis for the whole of society. Too much change would be scary so we need to tell the

girls something that will stop them from thinking too hard about it. That's it. We will tell them they can be a CEO and then go home to their mansions to their gorgeous, rich husband and kiss their straight A* children goodnight. Maybe this is possible. With money and with help i.e., a nanny for your baby or a private tutor to help your child with their homework. Can the average working woman afford this level of extra care needed for her to have both? In 2021 the average salary for a woman was £28,305 in the UK, according to the Office for National Statistics. So, let us say that the average

successful woman is on a salary of about 20% more than that, so £33,600. Full time nursery care in the UK averages at about £14,000 which is 41.7% of her salary. This is not taking into account the quality of the care. Would this be providing the best quality of life for your child? Even if it was, what about emotional care? Is it ethical to have someone else raise your child?

Finally, what about having children in later life? Maybe you are lucky enough to see an early retirement on the hori-



THE PROBLEM IS THE WEIGHTING THAT ROMANTIC LOVE HAS IN THE DECISION-MAKING PROCESS THAT YOUNG WOMEN UNDERTAKE WHEN CRAFTING THE PATHS THAT WILL BE THEIR FUTURE.

Photo credits: Alena Shekhovtsova on Pexels



The successful career woman

zon. Or you have an established career, and you feel like now is the time to step back. My argument here is that delaying reproduction is detrimental to the offspring. The best-known example to support this argument is the prevalence of Down's Syndrome. At 25, the rate of an embryo having Down syndrome at week 10 of pregnancy is 0.09%. At 35, this rises to 0.42% and by 45, the Down syndrome rate increases to 5.3%. It begs the question: commitment to success or commitment to survival? It is my belief that you cannot have both and do both well.

CHILDREN AND THE ENVIRONMENT

It is almost trendy now to care about the environment. Buying from charity shops is 'cool' and God forbid you buy from Pretty Little Thing. Look how fast Molly Mae gets attacked after benefiting from the capitalist structure which is slowly murdering the planet. These same keyboard warriors that will turn their noses up at you for not going vegan or for shopping at Zara (mostly) do not realise how hypocritical they are. Morgan Stanley analysts believe that having

COMMENT

a child is 7-times worse for the climate in annual CO2 emissions than the next 10 mitigants at the individual level. Overpopulation comes with overconsumption; according to one 2017 study one child equates to about 58.6 tonnes of carbon each year in the developed world. We do not consider how our relationships may be impacting the environment when we shame someone for not recycling.

THE BIOLOGY OF MONOGAMY

Jessa Crispin had convinced me that I do not want to sacrifice a career for a family. The next logical step for me was to challenge my perception of romantic relationships. So, I read 'Untrue' by Wednesday Martin for an insight into the alternatives to monogamy.

All of my family are monogamous. I had grown up thinking this is what happens because it works in the best way. However, Martin hinted to me that this might not be the case.

Generally, it is accepted that women are the more monogamous gender. Men can 'spread their seed' and impregnate multiple women at one time whereas women can only fall pregnant by one man at a time. By natural selection, we want the best offspring and so women should be more judicious in their choice of men to better their chances here. Stephen Fry even went as far as to claim

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The polyamorous 'throuple'

that women do not even enjoy sex. He believes they see it as 'the price to pay for a relationship'.

'Untrue' unveils the truth that this assumption is a lie. Between 2018 and 2019, women were found to cheat 40% more in monogamous relationships than in previous years. A study by Meana concluded that familiarity of spouse

decreases the female libido as opposed to males who were likely to report sexual satisfaction from sex with a long-term partner.

I encourage you to pick up the book for more extensive statistics, but I had concluded that women are not necessarily the monogamous beings that I had grown up thinking. Women cheat just as much as men. Women like sex as much as men. But why are we so committed to the idea of a happy ending in a monogamous relationship, if we are going to be disloyal? As a 20-year-old, it is impossible for me to imagine how it feels to be tethered to one other human being for 60 years. I have known my parents for 20 years and that is my longest standing relationship to a human. One can imagine that after 60 years, you may get bored or look outside of your romantic relationship for stimulation, may that be intellectual or sexual. This is where polyamory offers a solution. We have infinite love for multiple friends, parents have infinite love for multiple children. Why do we limit ourselves to just one romantic partner? Polyamory offers a logical solution, yet it is not quite accepted as 'normal' by society.

LOVE IS NOT THE PROBLEM

I am not anti-love. Love is amazing and I love many people in my life. The problem is the weighting that romantic love has in the decision-making process that young women undertake when crafting the paths that will be their future.

You just have to open TikTok or Instagram to see pictures of happy couples with millions of likes. Society values monogamy, not love. It seems that if you are in a relationship, then you must be desirable and therefore you are higher up the food chain. We envy people in happy relationships, but we do not envy ourselves despite having other forms of love in our lives.

On the other side of the coin, there are the female influencers living their 'hot-girl summer'. We love to see empowered, single women and we celebrate them as feminists. But do we seek personal improvement in order to make ourselves more attractive on the romantic market? It is a pessimistic view, but a valid one.

I worry that we place so much emphasis on the importance of romantic relationships that we lose sight of things that matter more.

This is my opinion, but I hope it made you uncomfortable. I hope somewhere, you felt angry that you slightly agreed with me. We are convinced from a young age that this is what we need to do. Enter a monogamous relationship and have a family. Do not think about it too much because you will be unhappy. Well, I am thinking, and I am unhappy. Thinking about it and challenging the expected allows me to make decisions now, while I am in my 20s, that I hope will result in me living a happier and more fulfilled life. If you disagree, please convince me I am wrong. Because that would definitely be an easier fate to accept. It is the default after all.

Photo credits: Sasha Kim on Pexels



Women can find love, happiness, and fulfillment outside of monogamous relationships.

PRIVATE SCHOOLS & STATE EDUCATION SURVEY

Comment is working on an article on private schooling in the UK and the future of the state education system, so we are looking for students to complete a brief survey on their education experiences, and thoughts on private vs state schooling. If you are interested, please scan the QR code below. Alternatively, use this link: <https://forms.office.com/r/bUjG2KwMk8>



The Australian Open

If you didn't catch it, here are some of the highlights!

Amanda Barden Sport Editor

This past fortnight has been an incredible show of athleticism. The Australian Open tennis tournament was held in Melbourne, marking its 50th anniversary. Every game watched was a feat of athleticism that some of us can only dream of. There were many, many games played over the course of the two weeks, however, the ones I want to talk about, of course, are the finals. Specifically, four of the finals. Now, I may be a little biased when writing this article because there is no coincidence that three of these four finals had Australian tennis players, and being a proud Aussie, I just had to talk about them. But I can say, without bias, that these were also incredible games.

The first of these finals, and one of the most touching finals that I have ever watched, was the men's wheelchair quad singles. The final was between Australian legend Dylan Alcott, winner of 15 Grand Slams, and Sam Schroder, a very young but already successful Dutch tennis player. Alcott had recently defeated Schroder in the final of the Tokyo Olympics. In a very tough final, Sam Schroder came out on top, with a 7-5, 6-0 victory. It was such an impactful game, with huge viewing numbers, that the channel showcasing the game held all news off for the entirety of the game.

This was Dylan Alcott's final Australian open appearance. All of Australia has loved to watch him play tennis and be an advocate for people with disabilities around the world. A couple of days prior to the final event, on Australia Day, Alcott was named "Australian of the Year", the first Australian with a disability to win this award, demonstrating the impact he has had on Australia and

the wider community. "This was my purpose," Alcott told Tennis Australia, "To change perceptions so that people with disabilities could live the lives they deserve to live, and I really wanted to get greater representation for athletes with disabilities." I think I speak for everyone when I say both of these men have definitely fulfilled this purpose. If you do get a chance, out of all these finals, please watch this one. Just as Alcott says, para-sports don't get the recognition they deserve, so watch this final, and see the high level of performance displayed in this sport.

The second final I want to talk about is the Women's Singles Final. Ashleigh Barty (or as we all call her, Ash) played American tennis player Daniella Collins in the final. Collins played fantastically, with incredible power and agility throughout the game, however, Ash Barty won the game, 6-3, 7-6. I have never seen anyone play like Ash. She was so calm and composed throughout the whole game! We almost never see any emotion at all, no disappointment or pride, she is so completely focused. This probably makes it even more special when she won the final and cheered and showed so much emotion; we all couldn't help but smile! She is the first Australian to win the Australian Open since 1987. She is a proud Aboriginal (Kooyong) woman, so it was even more special to have the trophy awarded to her by Evonne Goolagong Cawley, the Australian former world No. 1 player and Australian of the Year in 1971, and the first aboriginal woman to win the Australian open. Ash has made all of Australia proud and we all can't wait to watch her continued successes.

After Ash Barty's beautiful win, the men's doubles final was on, with a guaranteed Australian win with both teams being fully Aussie: The M's (Matthew

Ebden and Max Purcell) versus the Special K's (Thanasi Kokkinakis and Nick Kyrgios). I sadly didn't get to watch many of the previous games the M's played in, but based on the final, they deserved every win! They had fantastic chemistry together and read each other so well, with some beautiful volleys at the net. The Special K's on the other hand, I had watched quite a few of their games. They have some of the best personalities I have ever seen. They played each game with so much happiness and excitement and passion, and the entire crowd was always rooting for them (of course, them being Australian might have helped with that, but their personality definitely went a long way). The crowd loves them, and they play up to it! In the end, the Special K's did win, 7-5, 6-4, with each side struggling to break the other's serve. Max Purcell has won previous tournaments, we know his career isn't over yet, and Matthew Ebden, at only the age of 23, has a very bright future ahead of him in the world of tennis. In addition, we hope to see more of the Special K's special chemistry in future tournaments: our fingers are crossed.

The final game I want to talk about is the men's single. Even if you didn't watch the Australian Open, I am sure you heard about this game. The final was between 25 year-old Daniil Medvedev and 36 year-old Rafael Nadal, two incredibly talented and matched players. Medvedev had a fantastic start to the game, absolutely dominating the first two sets. We all thought that would be the end of the game, with Medvedev having a predicted 94% chance of winning after the second set. However, Nadal managed to break his serve in the third set, winning it 6-4. There still wasn't a lot of hope for Nadal to win, but it was definitely more than at the end of the second set. And somehow, yet again, Nadal managed to win the fourth set 6-4 as well. This is after 4 hours of playing in

the Australian Summer heat; I can barely walk from the garage to the house without sweat pouring off me and struggling to breathe, so I cannot even imagine how exhausted they must have been. Finally, the fifth set came, and we were all holding our breath. Most of the stadium was rooting for Nadal; if he won this tournament, he would make history by winning 21 Grand Slams, surpassing Federer and Djokovic. When the set tied 5-5, five and a half hours in, firstly, we couldn't believe the incredible game we all had already witnessed, and secondly, we had no idea where the game would go. Somehow, through all the exhaustion, Nadal won the next two games, winning his second Australian Open and making history. The game was nothing short of incredible, with some of the most athletic abilities I have ever seen: 205km/h serves consistently throughout the five and a half hours, forty shot rallies, constant back and forwards sprinting as if they hadn't been running more than I ever have in my life... the list goes on and on. Medvedev will become an incredibly well known player and might become one of the greats. But Nadal will always be remembered in history, not just as one of the greats, but possibly the greatest tennis player to have ever been.

Every tennis Grand Slam event is absolutely brilliant, but as an Aussie, the Australian Open has a special place in my heart, so it was lovely to be able to watch the success in this tournament. I have the utmost admiration for every single one of the tennis players during the tournament, their dedication and love for the sport was seen throughout, and their mental strength is something special. I am looking forward to the Winter Olympics starting in the next few days to see even more incredible feats of sport!

“**EVERY GAME WATCHED WAS A FEAT OF ATHLETICISM THAT SOME OF US CAN ONLY DREAM OF**”

“**THE CROWD LOVES THEM, AND THEY PLAY UP TO IT!**”

Imperial Judo at the Warwick Invitational

Michael Tanzer Imperial Judo Club

Last Saturday (29th January) the Imperial Judo Club took part in a large student competition hosted by the Warwick University. With more than 230 participants, it was the first large-scale competition the club was able to attend since the start of Covid-19 two years ago. The competition was divided into two main parts: an individual competition to which our club sent Ismail Hussain (blue belt), Jedidiah Cheung (green belt) and María Carretero Soria (2nd Dan black belt), and a team competition for brown and black belts to which our club sent Michael Tanzer, Edward Fry, and Levin Meinke (all brown belts). Ismail showed the results of his hard training bringing home a gold medal by defeating very seasoned opponents. His performance also impressed some other universities that wanted him to join them in the team competition later in the day. Jedidiah also performed splendidly, scoring a Bronze medal and winning very challenging matches. The team competition proved to be more chal-

“

IT WAS THE FIRST LARGE-SCALE COMPETITION THE CLUB WAS ABLE TO ATTEND SINCE THE START OF COVID-19

lenging for us. Due to incomplete numbers, some teams had to be combined from different universities. Michael Tanzer and Edward Fry joined the Keele University team who had some amazing members and won two of the four matches they took part in, both scoring points towards their black belt gradings; and Levin Meinke fought well with the Southampton team. All in all it was a fantastic experience where we went up against opponents on our own skill-level, which is always useful to improve and to find where to focus our training next, and against some much stronger opponents, showing us where we can get if we keep at it. It was also amazing to be part of a team competition where we could exchange views with members of other clubs from across the country. If you're interested in learning the kinds of throws shown in this article's photos, you should drop by for a session at the club. Email us at judo@imperial.ac.uk, and see training details at [@icjudo](https://www.instagram.com/icjudo) on instagram.



Have I won yet?



Smiles all round apparently...



One happy team displaying the medals they received!