

Felix



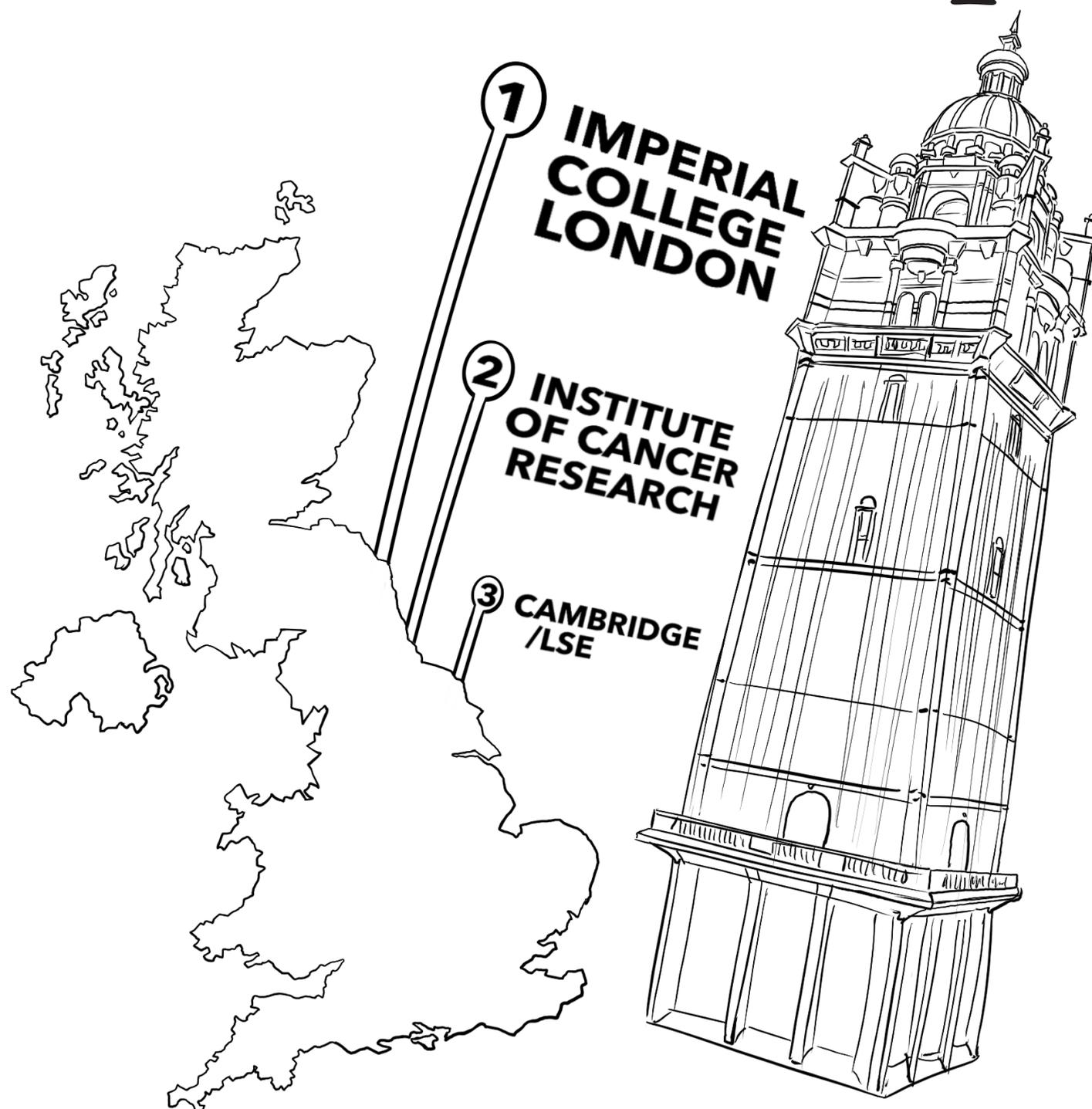
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ISSUE 1801

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REF 2021 - Imperial on top



Sam Lovatt Editor-in-Chief

Imperial College has come out on top in the most recent Research Excellence Framework (REF) publication, REF 2021. Ranking first in the UK, Imperial provides a greater proportion of “world-leading” research than any other UK university.

The College achieved exceptional results in the research environment category, achieving a 100% “world-leading” score in all but four units of assessments. The College also ranked first in the UK in research outputs and first in the Russell Group for research impact.

The Institute of Cancer Research had the second highest average score, followed in joint third by Cambridge University and LSE.

The departments of Physics, Biological Sciences and Geography & Environmental (G&E) Studies performed less well in an otherwise stellar College-wide performance. Overall, the Physics department ranked 17th in the UK out of 44 institutions judged on physics, in terms of “world-leading” output. The Biological Sciences department ranked 13th, and G&E Studies came in at 10th.

The trend in Physics continues that seen in the National Student Survey (NSS) results published last year. Despite Imperial’s impressive score of 84% overall satisfaction, the Physics department scored just 69%.

This is, however, not the case for Biological Sciences. Biology scored an only slightly sub-par 81% overall satisfaction in the most recent NSS.

“This achievement is the result of Imperial’s commitment to both discovery-led research and the translation of that work into

UK “on the brink” of losing Horizon Europe association

Sam Lovatt Editor-in-Chief

The UK is on the verge of losing the chance to participate in the EU’s Horizon Europe funding programme, the Russell Group CEO has said.

In a speech delivered this week to

the League of European Research Universities 20th anniversary conference, released prior to the event and reported by the Times Higher Education (THE), Tim Bradshaw said “it increasingly feels as if we are right on the brink, with association to be

snatched away before the summer”.

Horizon Europe is the largest ever transnational R&D funding programme, with a budget of €95.5 billion, around £80.6 billion.

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NEWS

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tangible benefits for society” said Imperial on their news website.

College President Alice Gast said “These are outstanding results for Imperial. They confirm our position as a world class research university, and are testament to the spirit of innovation, collaboration and internationalism that runs through everything we do”.

Ian Wamsley said “Imperial is the best place in the UK for academics to pursue their research, and these REF results show that. We have created an environment that supports our researchers in tackling some of science’s deepest questions and some of society’s most urgent problems. Our research is stronger because of our collaborations – whether that’s across academic disciplines, institutions or international borders: we will always be a global institution”.

The REF was established in 2014 and replaced the Research Assessment Exercise. It takes place every six years and is carried out by the four UK higher education funding bodies: Research England, the Scottish Funding Council, the Higher Education Funding Council for Wales, and the Department for the Economy, Northern Ireland. The assessment has three purposes: To provide accountability for public investment in research; to provide benchmarking information and establish reputational yardsticks; to inform the selective allocation of funding for research.

An Imperial College London spokesperson said: “These are outstanding results for Imperial. They confirm our position as a world-class research university and are a testament to the hard work and brilliance of the entire Imperial community, and we



Credit: Imperial College London

are extremely proud of all our staff and students who have contributed to this achievement. The results have also highlighted areas where there is room for improvement and will provide a focus for us to continue to build on what we have achieved.” The College did not respond to Felix’s

questions on the disparity between the aforementioned poorly performing departments and the wider College.

REF’s methodology has received criticism in the past, and the announcement of the REF 2021 results has brought it in fresh waves. Sociologist Martyn Hammersley wrote on the *Times Higher Education* website this Monday an article titled ‘The REF is an exercise in fantasy accountancy and management’. In the piece he says ‘measuring the quality of individual research products in the REF cannot have high accuracy because the concept is unavoidably fuzzy’.

The College also recently earned praise from the non-profit *Understanding Animal Research* for its openness surrounding research involving animals, earning Leader in Openness status from 2022-24. Animal research statistics can be found in granular detail on the College’s website, and researchers working with animals started the Animal Research@Imperial podcast in 2020.



Credit: Imperial College London/ Jody Kingzett

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Bradshaw praised the government for considering alternative funding methods, should ratification fall through, but added “make no mistake: failure to move forward with UK association would be bad news for research and a second best outcome for both the UK and the EU”. He went on to express disdain for the fact that wider politics were standing in the way of science, and urged delegates of the European institutions present to make the case for UK membership of Horizon to their national governments and the European Commission.

In April *THE* reported that many researchers who had had European funding approved had already made plans to leave the UK, after being contacted by the European Research Council that their funding could be cancelled if they were not registered with an ‘eligible legal entity’, an institution already participating in Horizon Europe, within two months.

UK membership to Horizon Europe was included in the Trade and Cooperation Agreement (“Brexit deal”) signed at the end of 2020, with the UK

existing as an Associated Country, able to apply to most funding opportunities on equivalent terms to those of EU countries. The association process has been marred by UK-EU disagreements over the Northern Ireland Protocol included in the Brexit deal, which protects the Good Friday agreement and has led to a de facto border in the Irish sea, segregating Northern Ireland from the rest of the UK. It is understood by many that UK association to Horizon Europe is being postponed until after the Northern Ireland issue has been settled.

Before Brexit, the UK was the second largest beneficiary of EU R&D funding, trailing only behind Germany. The UK government’s post-Brexit Innovation Strategy has been designed to “drive forward ambitions as a science superpower”, according to the UK government website. Aside from Horizon Europe, the department for Business, Energy and Industrial Strategy has set out a three year plan to increase R&D spending to £39.8 billion for the period 2022 - 2025. This will reportedly involve a £5 billion per annum increase in government investment, so that total yearly investment by 2025 will equal £20

billion. This is £2 billion less than the yearly spending target set out for the same timeframe in the March 2020 budget.

Within the increased R&D budget, the UK government has allocated £6.8 billion for association to Horizon Europe, though have stated that if association is not ratified then this funding will be reallocated to UK R&D programmes, “including those to support new international partnerships”. The government has guaranteed funding for all successful Horizon Europe grantees whilst negotiations over UK association continue. This guarantee currently covers all grants expected to be signed and approved by the end of December 2022.

Imperial College has historically been

a large beneficiary of EU R&D funding, having received £192 million from EU sources between 2015 and 2020. This amounted to around 10% of total research funding awarded during this period.

Many scientists have voiced far more concern over the prospect of losing the ability to collaborate with scientists across Europe as a result of the UK’s membership to Horizon Europe not being ratified, rather than the loss of funding.

The recently published REF 2021 results show Imperial College as the institution most consistently producing “world-leading” research in the UK, an accolade that will undoubtedly attract more research funding from Horizon Europe and other sources alike.



Credit: Imperial College London/ Dave Guttridge

Union launches online feedback tool trial

Daniel Lo Deputy President (Education)

The ICU feedback board trial has launched in three departments at Imperial College and will run until the last week of June. The project is designed and facilitated by myself, Union Deputy President (Education) Daniel Lo, with the objective of improving the Union’s support for both academic and well-being student representatives (reps).

The feedback board was designed to help reps collect student feedback on a centralised platform to effectively close the “feedback loop”. In addition, the board helps departmental staff and reps to make bi-monthly Student-Staff Committees more productive, such that these meetings can focus on high-level issues instead of short-term queries that often can be fixed quickly.

Students can anonymously post their academic or welfare-related queries on the feedback board, where everyone in their cohort can both view, and interact with, the posts. Year reps act as moderators to gatekeep post submissions

to ensure the content is appropriate and cohort-related and raise feedback to the appropriate departmental staff. Year reps will also notify students on the same platform once they receive a response or an update, effectively closing the feedback loop. All feedback is automatically collated onto one platform, making the process more convenient for students. Welfare signposting links, departmental staff, and rep contact details are also included on the same platform to effectively direct students to the College’s student support services and increase rep visibility.

To evaluate the effectiveness of the trial, the Union selected three departments across various faculties and levels of study: BEng/MEng Materials, BSc/MSc Physics, and various MRes/PhD courses in Chemistry. The decision was also based on a recent rep feedback survey conducted by the Union, in which a strong desire to introduce an online feedback tool was felt.

The feedback board project received strong interest and support from current

reps and the College, who thought that the board could make collecting feedback more manageable and the results more accessible. Vice-Provost (Education and Student Experience) Emma McCoy said that “The feedback board trial is a really positive step towards improving the student experience. Having a consistent approach to logging and monitoring feedback will enable the ICU to close feedback loops; identify overarching issues and evaluate how they are responding to feedback. I look forward to seeing the outcomes of the trial and what lessons we can learn and use elsewhere.”

RSMU Vice President (Education) and Materials Departmental Rep George Morgan commented, “I like the idea and feel as though it would be useful in our department. Very happy to support this moving forwards.”

This initiative will positively impact students, the College, and the Union. The feedback board can improve communication between students and their departments, strengthening student-staff collaboration and

perception of a considered student voice. I am looking forward to expanding the scale of the project so that more students and staff can benefit from it.



SCIENCE

Edited by: JAMIE JOHN
CARA BURKE
MAREK COTTINGHAM

Why encryption?

Correction: In the illustration in last week's encryption article, person A and person B were wrongly labelled, and should have been the other way around

► Last week, tech writer Marc Richly gave a general overview about encryption types. This week is all about why we should care about encryption

Marc Richly Tech Writer

Let us quickly run through encryption in a communication setting: When we communicate, two types of data are encountered: content data (“Hey happy birthday today, Alicia!”) and metadata (Bob sent to Alicia, May 20th, 12:37pm, location: South Kensington, battery: 54%...).

End-to-end encryption (E2EE) means that content data can only be read by Alicia and Bob, not by any other person or the communication provider (such as WhatsApp, Facebook Messenger etc.).

Nonetheless, metadata is key for companies and governments to run analytics. One can derive very detailed social networks by looking at who communicates (how often, at what time etc.) with someone else. For instance, a high frequency of messages, particularly at night, might point to a partner, while messages during 9am to 5pm might be tied to co-workers.

Using metadata in this manner, it is relatively easy to understand who one's close contacts are. This basic information is already valuable, even if third parties do not have access to the messages themselves (content data). If companies know your friend just bought a MacBook, this could also be interesting to you and showing Apple ads may be especially valuable (called collaborative marketing).

In our society, there are three major groups that have interests in the digital space: criminals, governments (with its police/intelligence services), and companies.

I) Criminals

Cybercrime is on the rise, and it is natural that we want to protect ourselves from it. It is estimated that by 2025 global cybercrime will cost \$10.5 trillion in damage annually. To put this in perspective – comparing the cost of cybercrime to GDPs would place cyber-

crime right behind the two biggest economies in the world, USA and China.

Cybercriminal activities can range from phishing emails (e.g. fake emails from your bank that ask for your PIN), to ransomware attacks (the criminal steals your data and asks for a ransom to unencrypt it), or using data leaks to gain username/password combinations for different services.

Best tips to protect yourself personally: use passwords only once per service (use password managers to keep track), activate MFA – Multi-Factor Authentication, keep your software updated, and encrypt your data – so that if your device is stolen, your data cannot be accessed.

II) Governments

In an increasingly digital world, governments are pushing for legal access to more of our data, in order to fight crime more effectively. Last week, remarkable news broke that the EU plans to build backdoors in E2E encrypted communication (used by WhatsApp, Signal and Co.) – to better investigate child pornography. Despite this, many childcare organizations, such as the Deutscher Kinderschutzbund (German Child Protection Alliance), have said that scanning all communication is unnecessary and disproportionate, as only a tiny proportion of child pornography happens via messengers.

This fires the assumption that politicians use the argument of child pornography to gain more access to data for their own benefit.

Here it might help to distinguish between free (such as UK, USA, Canada), partial-free (such as Singapore, Philippines), and non-free countries (such as China, Turkey). For years, we have seen a quite stable proportion of non-free countries, but an increasing number of

countries are becoming more authoritarian. The rise of digital technology may have facilitated this shift – control of the Internet is tempting for governments, as it is an effective resource for owning conversation: Digital surveillance allows to identify and control controversial views and to monitor opposition members.

And in free countries? It is hard to say. To some extent, digital surveillance helps to prevent crime and terrorism (as in all countries). At the same time, it provides democratic governments with more power – and though they may not use it today in anti-democratic ways, they could in the future, for instance, by identifying (and possibly fighting against) opposing views to the government.

III) Companies



Shoshana Zuboff (American Author, Harvard professor) has established the term Surveillance Capitalism. Her argument reads as follows: Companies, in the neo-capitalistic world, seek to maximise profits. Increasing access to data in the past few decades has provided them with a new way to do so.

By analysing data, companies are not only able to better understand customers, but – and this is the crucial part – are able to predict and trigger demand from a specific person. A good illustrative example is Pokémon Go; you

might remember the hype in summer 2016 about collecting Poké Balls while walking around with your smartphone. What many do not know is that companies, for instance fast-food chains like McDonalds, paid Nintendo to place valuable Poké Balls in their restaurants. The idea is simple – people walking into a McDonalds to catch a Pokémon are far more likely to buy a Big Mac.

Obviously, the hype behind Pokémon Go is gone today. However, it shows effectively that even behind a fun, free game, companies will go for ways to make money.

And this mechanism also applies when we google or scroll through Instagram's or TikTok's newsfeed. Companies show us targeted ads – things they know we are interested in and would buy. This consequently leads to far more effective advertisements – more people are buying the promoted products or services, which increases revenues for companies. Try an experiment yourself, the last time you bought something online: Have you seen an ad before buying these new wireless earphones? If so, would you have bought them if you had not seen the advertisement? Often enough, we would have not. And in those scenarios, our demand was manipulated. It is like parents knowing your favourite sweets – and motivating you to tidy up your room if you want yet another yummy chocolate ice cream. We do what they want because parents know what we want. And today firms know this, too.

Nonetheless, data privacy and security are very important – stay tuned for next weeks how-to guide: What you can do to better protect your digital privacy!

How to solve the problem of snakebites?

► *Snake-Man injected snake venom daily to make himself immune to it and scientists are researching a universal antivenom*

Wang Guo Staff Writer

Snake bites are one of the most neglected tropical diseases in the world. There is no economic incentive to invest as much in the research of antivenoms to cure snake bites because most of them happen in developing countries, where there is less available funding for research, and people are less able to afford the antivenoms, so pharmaceutical companies have not got economic incentives to produce antivenoms. But this is an issue as 130,000 people die every year due to snake bites. A sustainable way to deal with venoms should exist to guarantee that everyone who is bitten by a snake can survive it.

You may have heard that you need snake venom to make antivenom, but why is that? To make an antivenom requires first extracting the venom from the snake. Only a tiny drop is obtained, as producing venom is very costly for the snake. Therefore, hundreds of extractions are needed to have enough venom to create a viable treatment against snakebites. The venom collected is then injected into large mammals such as horses or sheep in non-lethal doses for months. The venom triggers the immune system of the animal to form antibodies to neutralise them. Once the concentration of antibodies is high enough, it's time to extract the animal's blood. The blood is processed to purify the antibodies and finally, you have your antivenom ready.

A snake must be milked several times to get decent amounts of venom to make antivenom and they take months to produce sufficient antibodies. To obtain a vial of antivenom is usually an expensive and laborious project. A single vial costs over \$1500 and the patient usually needs 20-30 vials to recover completely, so the final cost is around \$30,000 – 45,000. In addition, most of the patients don't know which snake species bit them, which forces doctors to inject different types of antivenom for the most com-

mon snakes in that area. The high costs of antivenoms dramatically reduce their availability in developing countries. However, these countries have got problems with venomous snakes whereas developed countries do have not that high abundance or diversity of venomous snakes. Australia is the biggest exemption, but to be fair, everything in Australia can potentially kill you.

What potential solutions are there to this problem? Here, I am going to discuss two solutions: one comes from 'Snake-Man', and the other is a universal antivenom.

Bill Haast, a.k.a 'Snake-Man', has been bitten 173 times by venomous snakes - a world record. He survived all of them because he injected venoms daily, in non-lethal doses from 32 snake species to build his natural immunity against snake venom. Another of his accomplishments is handling more than 3,000,000 venomous snakes during his lifespan, which was not short - he lived to 101 years old! He suspected that his outstanding good health was due to the venom injections and indeed, there is ongoing research into the potential therapeutic applications of snake venom. Bill Haast saved many lives by donating his blood, which was rich in antibodies against snake venom. Could we inject people regularly with snake venom to give them immunity, and allow them to save others from snakebites? There are several advantages to this method compared to injecting horses. First, you solve the distribution mismatch problems by immunising the locals, and not all of them require immunisation as their antibodies can be used to immunise others, so it's also cost-effective. Second, you will not need to maintain as many large mammals and the method would only need to be applied where there is a shortage of antivenom. Third, as the antibodies are extracted from humans and not from

large mammals such as horses, we reduce the risk that the receptor suffers an adverse immunological reaction to the antibodies. However, the biggest problem would be convincing the someone to volunteer for daily venom injections, as this is a painful process. It will also take time, but as it targeted and proven method, it could be implemented successfully in hotspots of snakebite within 4 years.

All venomous snakes, from the cobra to the viper, have a common ancestor: the first venomous snake on Earth, which then evolved into the venomous snake species we see today. The venom from this original snake contains proteins that are present in all other snake species, as their venoms derived from this original venom. Therefore, if we track which proteins of the venom are universal, we could develop an antivenom that could work effectively against all venomous snakes worldwide, or at least ameliorate the damaging effects of different poisons. But right now, we

don't know which proteins are universal, and there is another theory which suggests snake venom could have evolved independently in a number of different species, which would mean they may not all share the same proteins. Snake venom is one of the most complex organic substances with hundreds and hundreds of proteins that sometimes are very similar to each other. There is still much more work to be done in this field.

Snakes are beautiful creatures, but dangerous, especially if they have venom that could potentially kill. Dozens of thousands of people die each year in developing countries because there is not enough antivenom for everyone. 'Snake-Man' is a marvellous example of how someone can enhance your immune system to protect against antivenoms, and there remains the possibility of developing a universal antivenom.

Photo credit: Dfpindia, CC-BY-SA-4.0



Saw-scaled viper, a highly venomous viper found in the dry regions of Africa, the Middle East, India, Sri Lanka and Pakistan

ARTS

DIVISIVE HISTORICAL DRAMA
 BY WALEED EL-GERESY
THE BREACH IS A NEW PLAY BY
 NAOMI WALLANCE

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Edited by:
ALEXANDER COHEN
ALEX JACKSON

Exhibition

The wonderful world of ASMR

The World of ASMR

★★★★★

Where? *The Design Museum*When? *Until October 16th*How much? *From £7.20 (student prices)*Reviewed by **Alexander Cohen** Arts Editor

ASMR, or autonomous sensory meridian response, has slowly but surely established itself as an Internet subculture. Videos of people ('ASMRtists' as they are now known) whispering or brushing, microphones to elicit a relaxing tingling sensation can be found all over YouTube and TikTok. Is there aesthetic value or a deeper meaning behind these videos, or will it fade away like other internet fads? Regardless, a new exhibition at the Design Museum explores the weird and the wonderful world of ASMR.

The exhibition begins by outlining the different types of ASMR experience. Visual ASMR creations from Oscar Petterson's Rotating Rings or Andreas Wannstedt's Slice It Up focus on the visual, often hypnotic, ASMR experience as opposed to an audio-based one most found online. Some ASMR experience are "unintentional" such as in the work of Bob Ross, the television painter whose show *The Joy of Painting* brought a proto-ASMR experience to millions in the early nineties.

Examples of his art line one of the rooms alongside



A new exhibition at the Design Museum explores the weird and the wonderful world of ASMR.

a film of the artist at work. The art he produces is not beautiful. For the most part it is kitsch and tacky, unworthy of much cognitive interrogation. But through the act of painting, the delicate monotony of mixing colours, dabbing his brushes gently in them, and wiping paint onto his canvas, he elicits a meditative sensation. I found myself in a trance, as if the afro headed American's dulcet tones were lulling me into a higher state of relaxation. There is an anti-intellectualism here; audience members are not required to think but rather just to feel, not in an emotion sense, but in a physical one. It is this shared feeling, knowing that everyone else

Credits: Photo/Ed Reeves

feels what you are feeling, that is the foundation of the ASMR to community. The World of ASMR gives serious critical attention to the phenomenon whilst also exploring the culture around it. The emphasis on "digital intimacy" acts as an antidote to digital alienation, doom scrolling, or social media induced anxiety. This is the concept at the heart of Marc Teysier's Prototype for Artificial Skin for Mobile Devices. The work consists of a silicone coating, evoking the appearance of venous skin, coating a phone: the phenomenological experience of human skin and human experience in clear dialogue with the phone's hard plastic exterior, but also the ethereal digital world it enables. It is reminiscent of David Cronenberg whose horror film Videodrome sees a nightmarish fusing of body and technology. Except here the object is mundane, something that could easily find a way into our lived reality.

Needless to say, many of the exhibits are interactive. Julie Rose Bower's ASMR studio invites participants to create their own ASMR experiences by interacting with a range of objects linked to headphones to induce a tingling feeling. But the highlight of the exhibition are the works that do not just elicit an ASMR experience, but actively question the nature, and interrogate the consequences of said experience.

Tobias Bradford's that feeling/immeasurable thirst has the aura of a Dada ready-made both in its physical form and its sense of humour. The work consists of a silicon tongue rendered in spine chilling detail with dribbling saliva and taste buds, powered with a small humming motor to simulate movement. It waggles and wriggles; placed at eye level it is almost sexual, inviting its viewer for a French kiss, mocking us in its ability to mimic us. It is comical, but it evokes ideas about Transhumanism and Cyberpunk.



The exhibition is open until the 16th of October.

Perhaps this what is so simultaneously disturbing and fascinating about ASMR. Bradford's work is a reminder that our bodies are nothing more than biological machines. Given the right inputs, certain responses will result. As autonomous and free as I feel, my body is just responding to its world, to the various stimuli it encounters. For some that might be terrifying. For others it is reassuring, something undeniably stable and predictable in a chaotic world.

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Tickets are as low as £7.20 for students!

Theatre

A jump into *The Breach*

The Breach



Where? *Hampstead Theatre*

When? *Until June 4th*

How much? *From £10 (student prices)*

Reviewed by **Waleed El-Geresy** Arts Writer

Hampstead Theatre is cosy; its stage slanting downwards towards the audience, grey and completely empty. The lights go out and darkness descends. Suddenly, the stage is illuminated, and we jump into *The Breach*, a new play by Naomi Wallace.

The story follows Jude and the protective love she harbours for her younger brother Acton. We witness the effects of the fallout of a foolish, high-stakes game

of one-upping that Acton plays with his older friends Hoke and Frayne to conform with the others. The shadow of a dark and shameful event beginning to emerge; an occurrence so dark that I did feel that at times I had to suspend my disbelief that these children, in all their naivety, could have gone through with it.

The audience are initially spirited back to 1977 where a conflict between patriotism and the growing unease at witnessing the effects of a war in Vietnam has filtered unconsciously through to a generation of children growing up. Throughout the play we flit between this time and 1991 when the grown up children reflect on their past. Here, *The Breach* manages to capture the surreal contrast between the harshness of reality and the innocence of the children experiencing it, as they grow to be adults and try to come to terms with new-

Credits: Photo/ Johan Persson

found guilt and discomfort about their pasts.

Terrible events are juxtaposed with the banal, representing the oblivious way in which the characters experience such things as children. One striking example is when Jude and Acton play a game where they imagine their father thinking about Velveeta on rye bread as he falls through the sky to his death in an unconscious effort to cope with the cruel world their minds aren't big enough to internalise.

The script is dotted moments of light and darker humour (risqué jokes about sexual consent), as well as sporadic solemnity. The younger Jude is brought to life through Shannon Tarbet's fiery and touching portrayal that captures the warring emotions of a girl who must grow up too fast, as she sacrifices herself to protect her brother Acton (Stanley Morgan) from harm and struggles to decide how (and whether) to keep the awkward amorous forays of Hoke (Alfie Jones) and Frayne (Charlie Beck) at bay.

There isn't much in the way of a set or props, give or take a blanket, an encyclopaedia or two, and Acton's guitar. Such is the way with many modern productions, and in this character-focussed play I didn't mind it too much. The darkness and minimalism did manage to give a sense of memories being recounted.

Overall, Wallace does offer us something in *The Breach*, if not through the realism of its plot, then through the reality of the way it captures the paradox of children's lack of awareness in the grown-up world of rape, war, and death happening in the background.



The cast of *The Breach* star until the 4th June this year.

There's more reviews and Arts content online at felixonline.co.uk!



ENVIRONMENT

Edited by: MONAMI MIYAMOTO
MARIE MORI
HAHYUN LEE

Explaining the nine planetary boundaries

Zanna Buckland Books Editor

With the recent quantification of 'novel entities', one of the nine planetary boundaries, you may be thinking: what are these planetary boundaries, what do they mean, and how do they relate to climate change and environmental issues? Well, if you were wondering (and even if you weren't), here is a brief rundown of the boundaries and why they are significant for our future.

The 'planetary boundaries' were defined and developed in 2009 by Swedish scientist Johan Rockström and a group of researchers at the Stockholm Resilience Centre to describe a set of quantifiable categories for Earth's ecological systems and processes. Each category details how humanity is impacting the health of the planet and helps us direct our focus toward the areas that need it most. The boundaries are quantified with respect to a 'safe operating space', within which we can maintain the conditions of the Holocene (our current climate era).

1. Climate Change – core

Climate change is a term most of us know all too well. While it seems the term 'climate change' (or 'climate crisis') is becoming synonymous with the idea of a potential apocalyptic future, it is important to distinguish it as an individual environmental issue among many. It is, however, defined as a 'core' category, as it tends to create knock-on effects for the other boundaries.

Climate change refers specifically to changes in seasonal weather patterns for different areas of the Earth. Deviation of a country's climate from how it should be at a given time of year negatively affects its ecosystems.

A quintessential example is the later freezing and earlier melting of polar ice caps in winter. This is caused by the warming of the Arctic circle's climate and results in habitat loss for polar bears (among other creatures), for whom the ice caps are a winter home. The impact of a decrease in polar bears reverberates throughout the ecosystem, with more seals (a bear delicacy), resulting in lower

levels of fish in the sea.

Climate change is quantified by average surface temperature measurements over different parts of the planet (degree of relative warming).

2. Change in Biosphere Integrity – core

Biosphere integrity refers to the balance between living creatures and resources on the planet, and the maintenance of biodiversity. Previously named 'biodiversity loss', this boundary quantifies the extinction and endangerment of animal and plant species due to human activity and environmental changes. This is also a core category, as biodiversity is a key factor in maintaining the health and natural balance of ecosystems.

- Extinctions per Million Species per Year (E/MSY)

A relatively easily quantifiable value, the baseline rate has generally been estimated as 1 E/MSY (without human intervention). By comparison, the current rate is estimated to be 100-1000 E/MSY at best, which has brought about discussions of us being part of the 'sixth mass extinction event'. Extinction events occur when the extinction rate significantly exceeds the baseline, such as at the end of the Cretaceous period (when dinosaurs were wiped out).

- Biodiversity Intactness Index (BII) – not fully quantified

Similar (but not identical) to the extinction rate, the BII measures how well a given area's biodiversity has been maintained. For an ecosystem to be well-functioning and resilient, it should have a BII of over 90%, while the BII of an at-risk ecosystem would be under 30%. As it stands, global BII values range from around 30% to 90% (by country). The UK is in the lowest 15% of countries, with a BII of ~50%.

3. Land-System Change

In the land-system change boundary, a 'land-system' is any area of land that contributes to an ecosystem. A major example of a land-system change is the conversion of natural forests, wetlands, etc., into arable land for farming. The deforestation involved in this process

results in decreased biodiversity and decreased natural carbon capture. Land-system changes also have implications for food security, as there is less variation in food sources for wildlife, and genetically similar crops are also more likely to succumb to diseases. This change is quantified by the percentage of wildland transformed into land for farming or other human activities.

4. Freshwater Use

We have known for a long time that freshwater is a scarce and limited resource – only 3% of the world's water is fresh and drinkable, and 2.5% of that is trapped in ice, soil, and the atmosphere. We generally have water-treatment systems for well-connected cities and suburban areas, but many underdeveloped countries still do not. The populations of such countries are – or are in danger of – being subjected to freshwater shortages. Not only is our own society heavily reliant on the resource of fresh water, but so are millions of species of wildlife. The safe operating boundary for freshwater use has been set to 4000 km³/year, and we currently use about half of that value, although demand is significantly higher, and around 70% of the freshwater used is for agriculture alone.

5. Biogeochemical Flows

In layman's terms, with respect to soil and plant health, biogeochemical flows are the movement of the essential elements nitrogen and phosphorus, vital for healthy plant growth. The carbon cycle is also a biogeochemical flow system – one which has been altered significantly by increases in carbon emissions – but this is not quantified as part of this category.

- Nitrogen Cycle

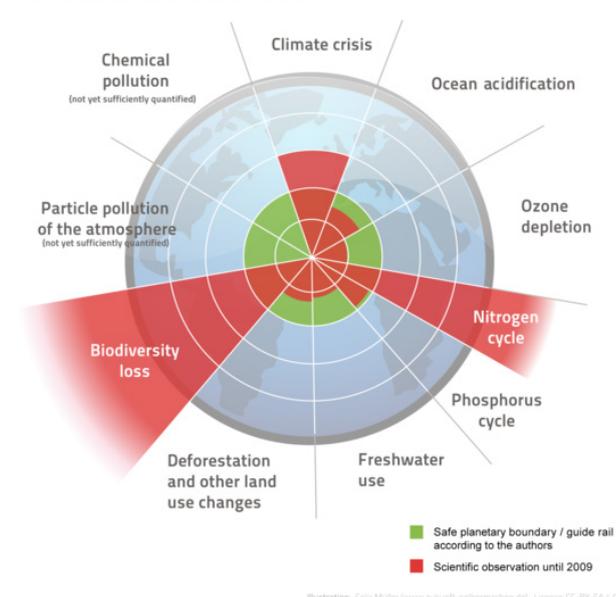
Nitrogen travels through the biosphere through absorption by plants such as algae, which are then eaten by animals (e.g. fish), trapped in their waste, and then released back into the system

(soil or water) through decomposition. The artificial addition of excess nitrogen into the environment through fossil fuels and fertilisers is disruptive to the natural cycles of nitrogen. Nitrates can feed algae to the point that they choke other wildlife of oxygen in water systems (eutrophication), while nitrous oxides contribute to pollution and ozone depletion. Human activity contributes to more nitrogen processing than all-natural cycles combined, creating

Planetary Boundaries

after Johan Rockström, Stockholm Resilience Centre et al. 2009

Photo: Wikimedia Commons



Rockström's nine planetary boundaries

huge excesses of reactive nitrogen and nitrogen-based compounds.

- Phosphorus Cycle

Phosphorus is cycled similarly to nitrogen but without any of its compounds being released into the atmosphere. Again, artificial introductions of phosphorus and phosphates in fertilisers can disrupt the balance of the phosphorus cycle, causing water pollution and excessive algal growth. Phosphorus and phosphate production by humans is only slightly lower than that of nitrogen.

6. Ocean Acidification

The acidification of oceans is a topic related to climate change, as it too results from greenhouse gas emissions – specifically carbon dioxide. As carbon dioxide dissolves into seas and oceans, it forms carbonic acid, which lowers the pH of the water and has damaging

effects on sea life. Increased acidity also amplifies the impact of global warming, an example being the bleaching of coral. Acidic waters weaken coral growth, making it even more difficult to resist and survive the bleaching caused by increasing temperatures. Other man-made compounds (such as nitrates, phosphates, and sulphur dioxide) can also contribute to this acidification. Ocean acidification can be measured by aragonite saturation (a measure of carbonate ion concentration); decreased saturation damages and destroys aragonite-based structures such as shells and coral. Pre-industrial aragonite saturation was 3.44, while the current value is ~2.9, and the safe operating boundary is 2.75.

7. Atmospheric Aerosol Loading – not fully quantified

Atmospheric aerosols are microscopic particulates that escape from Earth's surface into its atmosphere. These can create both air and water pollution and affect the water and weather cycles,

influencing climate change, biodiversity, and global warming. Aerosols are generally defined as PM_{2.5} (less than 2.5 µm in diameter). Primary aerosols such as soot and sea salt are picked up naturally from the Earth's surface. In contrast, secondary aerosols are formed by physical or chemical reactions, creating particles such as organic compounds, greenhouse gases, or acidic liquid droplets. Atmospheric aerosols affect heat and light transmission, cloud formation, and other climate phenomena and impact the health of living organisms. However, due to the complicated nature of aerosol interactions and behaviour, the loading and boundary for these particles are yet to be quantified.

8. Introduction of Novel Entities (Chemical Pollution) – recently quantified

Chemical pollution is relatively self-explanatory, with 'novel entities' defined as potentially toxic and long-lasting substances that are introduced to

ecosystems. Examples of novel entities include heavy metals such as lead and mercury, chemicals such as pesticides and detergents, radioactive materials, and microplastics. Invasive species can also be considered 'novel entities', as they can have an extended and harmful impact on their new environments. A new scientific paper has defined the boundary for novel entities as 'when annual production and release increases at a pace that outstrips global capacity for assessment and monitoring'. They also concluded that this is the case, and we are already operating outside the safe space for novel entities.

9. Stratospheric Ozone Depletion

The ozone layer is a vital entity in the stratosphere that filters out harmful UV radiation from sunlight on its way to Earth. Ozone-depleting substances can destroy this protective layer, creating a clear path in the atmosphere for UV rays to pass through. Severe UV radiation can cause scorching of the Earth's surface, affecting both land and sea ecosystems,

as well as causing skin cancers.

Fortunately, the Montreal Protocol, which regulates emissions of ozone-depleting substances (see Issue 1798's Science section), has been successful in allowing the ozone layer to repair itself – a huge win for environmental policy!

The planetary boundaries are important for shaping and directing human activity going forward, and defining the current degree of severity for each category can inform the issues that policymakers and governing bodies focus on. Despite their distinct categorisation, there is no denying the interconnectedness of each area, centring around the cores of climate change and biosphere integrity. Adapting our behaviour to improve one category will inevitably have a positive impact on some of the others.

Climate refugees and the loss of agency

Hahyun Lee Environment Editor

Along the north coast of Papua New Guinea live the Murik people. The Murik were first recorded by the Dutch in 1616 and left relatively alone until their land was colonised and set ablaze by the Germans in World War One, then briefly occupied by the Japanese in World War Two. 1975 saw the independence of Papua New Guinea, and now the Murik people number up to 1,500, spread across five main villages. The Murik live primarily through fishing and commerce, trading not only smoked fish, baskets, tobacco and so on, but even non-material goods like basket designs and dances. They are also among the first to be called climate refugees.

The sea level of Papua New Guinea has risen at a rate more than double the global mean (7mm per year) since 1993, as highlighted in COP23. This will only worsen in the future, with predicted cyclones and rainfalls of greater intensity, higher wind speeds and stronger coastal and inland floods. With the predicted warming of 1.1 °C per year by 2030, the future is not bright for Papua New Guinea, as we expect to see its fisheries

and crops destroyed, dislocating even more people.

The story of Papua New Guinea falls in line with a common trend we have been seeing: smaller, marginalised populations in the global South suffering problems not caused by them but by larger economies in the global North. And though we can observe the material consequences of climate change in the lives of the Murik, we must also consider how the local societies and cultures respond to such changes. Do they see this as the potentially species-ending threat that many of us see it as, or do they have a different understanding to ours?

David Lipset, professor of Anthropology at the University of Minnesota, conducted an ethnography on the Murik in the wake of severe coastal erosion from high tides in 2007, looking at the various attitudes of the Murik on these tides and how they relate to the religious beliefs and customs of the population. Lipset grounds the Murik's attitudes within the history of changing human agency towards nature. Whilst explorers of the past saw nature as an 'untamed expanse' upon which

humans could assert their mastery (Lipset even argues that the adoption of GMT in 1884 established mastery of time over nature), we are now in a situation where we can no longer control the effects of our own decisions: our mastery supersedes agency.

And so it goes for the Muriks that Lipset talks to. In the ethnography, he notes two main responses to the tides. Among the politicians and upper-middle-class, the common sentiment was one of weakness: the tides are a significant act of nature, and any local efforts will be ineffective, denying agency on their part. Meanwhile, the more local villagers, though still expressing uncertainty and fear, saw the tides as not without precedent and proposed magical solutions. A man from the Wewak town said that these tides, as well as the tides of the past, were events with symbolic and ritualistic meaning, representing a pact with their ancestors. With a gift of food thrown into the ocean and an erected platform for each prior lineage, the water spirits would restore the beaches to their prior beauty.

It is likely no surprise which attitude Sir Michael Somare (Prime Minister

of Papua New Guinea) adopted when speaking to the UN about reducing greenhouse gas emissions. In requesting the world's nations to cooperate, Somare tacitly accepted the lack of Papua New Guinea's local agency in tackling its problems with climate change. This shows a shift in how our society interacts with its environment: changes to the environment can only be achieved on 'distant, globalised terms'.

It would be easy to dismiss the people of Wewak as they throw food into the ocean in hopes of a magically restored beach. Lipset states 'Because global risks are understood as incalculable, unlimited, and unaccountable, and their location in space and time is global, rather than territorial, ... local agency ... become[s] problematic.' In that case, can we even say there is a more reasonable way to respond to this problem where there cannot be local agency? Are we performing as much of a ritual as the Muriks when we pick up litter or pick the train over the car? Can we really blame them?

PUZZLES

Easy Sudoku

			8		9		7
		8			7		3 5
		4		2			1
	5		1				
				5			
					3		7
3				8		1	
6	9		3			4	
8		2			5		

Normal Sudoku

8					2			
			6		1		2	
			4				1 3	
			1			9 3		
9		4				7		8
	3 5			6				
6 5				8				
	2		5	3				
			9					2

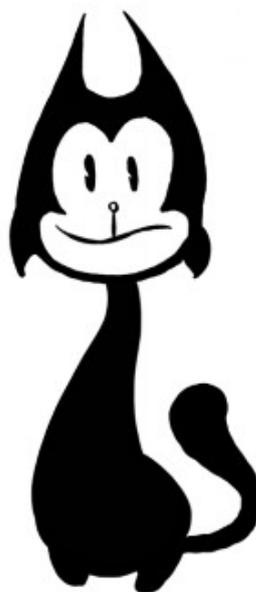
Difficult Sudoku

7 8		3			4		9
2			7				
				6 8	3		
	4						5
		7		4		9	
5							4
		5	8 7				
					5		4
9	3			6		5	8

Points

Easy, Normal, Difficult sudokus 2, 3, 4 pts each
 Minesweeper 2 pts
 Being awesome 100pts*

* Not eligible for FUCWIT points, sorry



FUCWIT

Are we back? I think so. I don't actually know, because I've had my mind boggled by Number Theory. Could the puzzles editors also come back, when they're done with their exams? Thanks!

P.S. We are looking for more puzzle editors - apply at Puzzles.felix@imperial.ac.uk (also, puzzles are due at noon on Wednesday, also emailed to the above, as usual.)

Minesweeper

1		1		1	2
1			1	1	1
2	3				
1			2		
1					1
			1		
	2				2
1		1	2		

Puzzles Notices

If you've not enjoyed exam season, don't worry! You will be able to feast your brains on the usual puzzles next week!
 ~ Ameena

21	8	4	2	24
		4	4	
		2		
4	2			6
3	36		5	4
			2	4
8	2		4	4
				12
		16		
			6	
40				35
	10			
		2		
	3		3	

3	2	8	5	1	7	6	9	4
5	1	6	2	9	4	8	7	3
7	4	9	6	8	3	2	1	5
4	3	1	9	6	2	7	5	8
6	8	5	3	7	1	4	2	9
2	9	7	4	5	8	3	6	1
1	6	2	8	3	5	9	4	7
9	5	3	7	4	6	1	8	2
8	7	4	1	2	9	5	3	6

3	9	2	4	8	6	5	1	7
8	5	1	2	7	3	9	6	4
4	6	7	9	1	5	8	2	3
6	1	5	7	9	8	3	4	2
7	4	9	3	2	1	6	8	5
2	3	8	6	5	4	7	9	1
5	8	3	1	4	9	2	7	6
9	7	4	5	6	2	1	3	8
1	2	6	8	3	7	4	5	9

6	1	2	4	8	9	7	5	3
7	5	4	6	2	3	8	9	1
8	9	3	5	7	1	6	4	2
1	7	8	3	4	5	2	6	9
3	6	5	2	9	7	1	8	4
2	4	9	8	1	6	5	3	7
5	2	6	7	3	4	9	1	8
4	8	1	9	5	2	3	7	6
9	3	7	1	6	8	4	2	5

Physicists complaining leads to dramatic increase in mental health provision

News that the College will drastically increase mental health provision for students suffering mental or emotional fatigue and distress was met with delight by many student leaders.

The College has announced that it will increase the size of its mental health team from two aging dachshunds and a weepy man called David to one “capable of responding to the needs of its entire community.”

This comes after what the College called “an unprecedented surge in demand” which seems to have finally resulted in the taking seriously of student mental illness. Reports suggest that an internal student survey shocked senior leaders by revealing the scale of the disaster currently unfolding. According to a source in the Blue Cube, there has been a 400% increase in the number of people attributing their lack of mental health to the Department of Physics.

One survey respondent, Seb Fenton (3rd year EEE), whose name we have anonymised to protect his

identity, told interviewers that “If I have to listen to my physics flatmate complaining how hard his degree is one more time I think I might put him out of the misery”.

The final report, seen by NegaFelix, suggests that the major driver of the uptick in mental distress was “hearing physics students griping all the time”.

Department student groups have met the news with relief. Parna Apillai, the President of the RCSU, told NegaFelix that natural science students in particular had been hit hard by the physicists moaning, telling complaining students that “If all science can be reduced to physics, why don’t you go whip up some psychology and fix how you feel”.

Unfortunately, our interview with both the Physics Dep Rep and the Physics Wellbeing Rep produced no meaningful information as both spent the entire duration telling us how “[their] degree is so much more complicated than ours” and how “they could do

anything we did three times better” preventing us from representing their perspective.

Famous recovered physicist, Maria Hegelhorn, who now studies this phenomenon, told NegaFelix reporters that the issue was not simply limited to Imperial. In a paper published last year, Hegelhorn suggests that not going outside enough resulted in the strange behaviours common to those in the field.

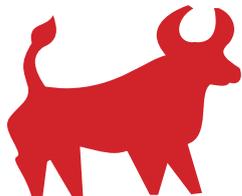
Even Hegelhorn, however, has not totally cured herself of the mentality. Found at the bottom of her paper in very small font were the words “Hahaha-haha take that social scientists, I can just come into your field and do what I want”.

*Allegedly, an earlier draft of the report suggested that students should take responsibility for their own mental health as adults and not infantilise themselves by treating those in authority as surrogate parental figures but this has been dismissed as ridiculous hearsay.



ARIES

This week you solve the problem of your complaining coursemates by bursting your own eardrums



TAURUS

This week you stick a knife into your toaster but don’t get shocked



GEMINI

This week you have a loud wank on the ISS - in space, no one can hear you cream



CANCER

This week you break a mirror and it has no effect on your luck at all



LEO

This week you get your booster jab from the nice guy hanging out under Battersea Bridge



VIRGO

This week you’re compared to Picasso for your misogyny rather than your artistic flair



LIBRA

This week you’re gleeful as Big Tech stocks continue to fall



SCORPIO

This week you trade in the shot of ginger kombucha for a shot of gin



SAGITTARIUS

This week your sleeping schedule returns to normal



CAPRICORN

This week your Italian friend learns to roll her eyes as well as her Rs



AQUARIUS

This week rising food prices cause you to resort to eating your attractive friends



PISCES

This week your decision to twerk mid-viva isn’t received as well as you had hoped

FILM

Edited by: EVA BORRAS
JONAH HEWETT

Felix recommends

Fanatyk

Mój stary to fanatyk wędkarstwa...

Jonah Hewett Film Editor

Once upon a time, there lived a fisherman. Or, rather, a man who fished, unprofessionally but very often; an addicted man in fact, a man obsessed, whose only waking thought is of where his next line will come from. A man whose obsession with all things piscine drives his son insane, and destroys his family.

Thus begins *Fanatyk*, a 2017 Polish short film directed by Michal Tylka. The film is a 33 minute featurette, based on arguably the most famous 'cospypasta' on the Polish side of the internet. Commonly referred to by its first line, "Mój stary to fanatyk wędkarstwa", translated as "my old man is a fishing fanatic", is a story written by a user known only as 'Malcolm XD' and originally published, well, somewhere. Dubious origins are characteristic of 'cospypastas' such as this, although my research in this specific case was admittedly limited by the fact that I can't speak Polish. A 'cospypasta', if you aren't familiar with the term, is a popular internet story posted somewhere – often on popular sites

like 4chan or Reddit – and 'copied' and 'pasted' again and again for comedic value, with slight edits here and there. The etymology is clear.

The film itself follows the original story quite closely, that of a son slowly driven mad by his dad's fanatic fishing.

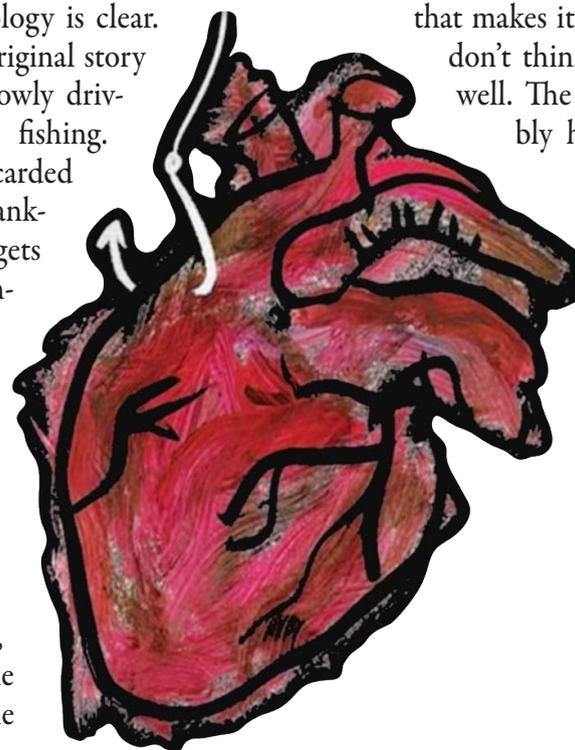
The house fills up with discarded hooks and magazines that bankrupt the family. His father gets into regular fights with his fishing buddies about whether carp are better than catfish.

They eat fish every day – that's the only reason you got into college, his dad says. These scenes are interspersed with the son's narration, verbatim from the original text. It's genuinely quite a funny, well-paced comedy, and the main cast manage to sell the

Directed by: *Michal Tylka*
Starring: *Piotr Cyrwus, Mikolaj Kubacki*
Country: *Poland*
Year: *2017*

subject matter with just the right amount of sincerity. It's the seriousness with which they handle the story that makes it funny – if it were any goofier, I don't think it would have landed quite as well. The Polish sense of humour probably has something to do with that.

Fanatyk is currently streaming on UK Netflix, and at the low temporal cost of 33 minutes it fits almost perfectly into a single 'pomodoro' of your exam season studies. I also recommend finding an English translation of the original cospypasta, if you aren't Polish.



Directed by: *David Robert-Mitchell*
Starring: *Andrew Garfield, Riley Keough*
Country: *USA*
Year: *2018*



Under the Silver Lake

Listen up, cryptic crossword enjoyers

Jonah Hewett Film Editor

Under The Silver Lake is what would happen if Andrew Garfield's Peter Parker did a bunch of acid, had an awful trip, and slept about five hours per week. Or maybe if he just lived in L.A instead of New York. It's a neo-noir homage to pop culture and conspiracy theories – the good kind of conspiracy theories, about hidden messages in Beatles songs and the Masonic Lodge, not the bad modern ones about vaccines and poorly shaped planets. Those were the days, man.

Sam, a 33 year old man with a pretty nice apartment and no discernible form of income, is fascinated by cryptic messages in songs and comic books. He wanders about with his hands in his pockets and looking slightly bewildered – an expression which Garfield really has mastered at this point – and meets a woman living in the same apartment complex as him. They smoke weed together one night, and she and her room

mates have all moved out the very next morning. Her disappearance starts a cascade of unexpected events involving such characters as a naked murderer owl lady, a skunk, a dog murderer, a songwriter, homeless royalty, and an elite cult – to name just a few.

The plot is thick with cyclical detail, and it really is impossible to tell where it'll go next. That's a risky play in a narrative, but the film does err on the side of keeping you interested without being too indulgently weird. The soundtrack – primarily written by American composer Disasterpeace – absolutely rocks, brilliantly marrying mid-century mystery with late-80s pop. Garfield's performance is central to the film, assisted by a brilliant cast of supporting actors including Riley Keough and Jimmi Simpson. It really is a film that's difficult to put into words, so I recommend you just give it a shot next time you're in the mood for a puzzle.

FRIDAY 20TH MAY 2022

MUSIC

Edited by: TARA PAL CHAUDHURI
JOE RIORDAN

Album of the Week

'Are You' by White Flowers

If you're a fan of a Crumb's omniscient synth and slow nod-along-to 4/4 rhythm, we highly recommend White Flowers' new EP, *Are You*. Their heavily reverbed sound complements lead singer Katie

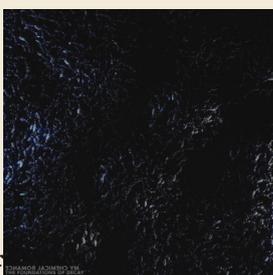


Drew's enchanting heady voice, while occasionally giving way to guitars hugely reminiscent of any good bedroom pop standard. The last song on the EP, 'Singular', is an ethereal and meditative synth piece devoid of vocals, that somewhat pays homage to the artsy duo's love for dark visuals and dreamscapes. Give the EP a listen, especially when you want to make a rainy day unnecessarily emotional.

Single of the Week

'The Foundations of Decay' by My Chemical Romance

Pull out your eyeliner, dig out your skinnny jeans, My Chemical Romance are back! The band have released their first new music in eight years just before they embark on a run of



sold-out UK shows. The new track is as enigmatic and anthemic as anything that has come before. The new track does exactly what its meant to do: transport us all back to our emo phases, maybe restart them if you're lucky or unlucky depending on how you think about it.

TODAY IN MUSIC HISTORY

TODAY IN 2016 WAS THE DAY THE NATIONAL GRACED US WITH A 59-SONG ANTHOLOGY OF GRATEFUL DEAD COVERS (STARRING COURTNEY BARNETT), THE PROCEEDS OF WHICH WENT TO THE RED HOT ORGANISATION TO HELP FIGHT AIDS. HOWEVER, FOUR YEARS PRIOR, ROBIN GIBBS, MEMBER OF THE BEE GEES DIES FROM COLORECTAL CANCER. OH, AND FRANK SINATRA'S FUNERAL IN BEVERLY HILLS TAKES PLACE IN 1998. HOPE THIS CHEERED YOU UP.

Gig Reviews

Two microphones for one man?!

Hippo Campus give a lesson on innovative live performance at London's The Garage

Written by **Joe Riordan** Music Editor

Let me make it completely clear from the beginning that this could be the most biased article I have ever written (even more than the time I had to write about my own band). I absolutely adore Hippo Campus. They're the first band I can remember being properly into. The music video for 'South' appeared on my YouTube sidebar while I watched videos after school in Year 10 so, once again, I'm forced to thank an algorithm that will never appreciate or know what it has done for me. I managed to see the band live a couple of years later when they came from their home of Minnesota to my not-home-but-closest-gig-venue of Newcastle. It was there that I saw the best gig of my life up till then – emphasis on "up till then" because they outdid themselves on their trip to London this week.

After hours in the library studying for my Quantum Physics exam the next day, I rushed from Fulham to Highbury & Islington (endless thanks to Citymapper) just in time to catch the end of the support act, Frankie Beetlestone. At this point I wasn't going to write an article about the night but as soon as Hippo Campus stepped on stage, I changed my mind. The band entered with the hypnotic '2 Young 2 Die', singer Jake Luppen choosing the left



of his two mics to use. Yes, he had two mics, I was confused too. This mic was overflowing with effects from futuristic pitch shifting to otherworldly echoes and delays. When the band released their new album *LP3*, I wrote about my excitement to see how they would recreate the heavily produced sounds they had tailored on the record. The obvious answer came seeing them live. They simply have all those effects with them on stage. Luppen shifted and manipulated his vocals with the dials and buttons connected to the mic as he sang. These tones were most prominent in 'Sex Tape' and 'Bad Dream Baby' from electronic EP *Good Dog, Bad Dream* which took me a while to get into when it was released but now, after seeing it live, might be my new favourite Hippo Campus record.

Opposingly, the other mic was just set up as

normal, enhanced only by some delicate reverb. One of the things that drew me to the band when I first listened to them was Luppen's vocal range and the ways he could contort his voice, diving from silky highs to coarse growls. In 'Boys', a single from *LP3*, Luppen swapped mics for effects when singing the choruses, and returning to the normal mic for the verses. Everyone is used to seeing a guitarist fiddle with pedals for the perfect sound but doing the same for vocals made for an innovative set that lived up to the encapsulating standard of the studio recordings.

While the vocals are astonishing, Hippo Campus really shine when they spotlight their fifth member, DeCarlo Jackson, who plays the trumpet and various percussion instruments. My lacklustre note-taking abilities shone again during the trumpet solos: I just wrote "TRUMPET" and "can't stop talking about the trumpet". Essentially, I loved the trumpet parts, they added a majestic layer to every song that you usually don't find with the indie bands who have similar sounds to Hippo Campus.

I could write about every song the band played, though eventually I think you'd get bored of the endless gushing. Hippo Campus have grown massively as a live act, and as a band generally, since I last saw them in Newcastle. They had a confidence on stage in London that they previously lacked. Luppen exuded energy, matching the crowd who had missed their presence this side of the Atlantic. I can only hope that the band keep the promise they made on stage to come visit the UK more often.



Photo credit: Joe Riordan



View online here!

MUSIC

Newsic

Eurovision cycle of shame finally broken?

As the UK's entrant - Sam Ryder - climbed to 2nd place for the first time in 20 years, is it possible that the UK may finally win again?

Written by **Niamh Heneghan** Music Writer

As countries within Europe (plus rogue Australia) line up to fight for the glory of 'best song', viewers at home split. Some throw a themed party in celebration; others attempt to ignore the monopoly on the TV schedule.

Yet in recent years, fan or no, we have all cringed in shame as the UK failed again and again to shake their losing streak.

In shock over the weekend, having prepared to face the fate of the previous year – last place – viewers switched back over to the Eurovision Song Contest as Sam Ryder rose to the top of the leaderboard.

Competing with his song 'Space Man', Sam Ryder rose through the ranks to become a Eurovision star as well as a Tik Tok one.

First discovered on Tik Tok during the Covid lockdowns, Sam Ryder became the most followed UK artist on the platform. This success translated into a record deal and a sold-out tour of his first album. His classic pop-rock paired with his charisma and 'God of Thunder' style brought great interest and he was soon proposed to be this year's entrant for the contest.

In a stunning turn of events during the final, viewers watched as National Jury votes sent the UK to first place over the anticipated winners - Ukraine. Even the hosts of the show appeared shocked; in the 2021 final, the UK's John Newman came last with zero points awarded from the juries and the public.

For those of you who are yet to experience the process of revealing votes within the competition, the mocked hour-long process builds anticipation as the ranking of the 25 countries shifts with every set of results. The Jury results come first as experts across the nations give their verdict, then the public's voice is added to fray.

Leading up to the last minute, Ukraine gained a sudden surge of voting from the public to reach a well-deserved 1st place. Despite this, the runner up UK delegation looked ecstatic with their 466 points, as Space Man had launched them past all the other contestants and into orbit. There is hope for the future, and now we know that it's possible to reach such heights.

With sudden success after so many years of losses, has the solution been found in mimicking such a performance again?

Perhaps, but maybe the secret does not lie in the type of song or the social media fame of the artist but instead in the perception of the nation sending our entrants. After all, UK entrants used to do well, commonly coming in the top three spots and even winning on multiple occasions.

In the 1990s, record labels stopped putting forward their stars to represent the UK, thinking that the contest was outdated. It was only then that we sank to the bottom of the scoreboard. So, perhaps we

created our own downfall. We decided not to send well-known artists and in turn our results plummeted so that no-one wanted to send any more stars. A poisoned cycle of our own making, resulting in disdain for the competition and fear that competing could ruin careers.

All it took was a change in perception, attributed to a young Italian rock group that toured the world following global success at Eurovision. Måneskin rose to fame following their win at the 2021 Eurovision Contest. They appear to have set the bar for future acts and lit a spark in countries who had forgotten the importance and joy of Eurovision.

Sam Ryder may have finally paved the way for the UK's joy and pride in Eurovision to blossom again.



Gig Reviews

The World's Biggest Band

In a Marvel-esque crossover event, Imperial College Big Band and the Syd Lawrence Orchestra join forces to blow us all away.

Written by **Cindy Liu** Music Writer

I didn't know what to expect when I stepped foot into the Great Hall, waiting for the performance of "The World's Biggest Big Band" to start. As a jazz amateur, I wasn't familiar with big bands' sounds and pieces. Led by Chris Dean, The World's Biggest Band is a unique setup made up of our very own Imperial College Big Band and the Syd Lawrence Orchestra.

Talking to Chris after the performance, I was surprised to learn that the two bands have only

rehearsed together three times. The ensemble opened with the fast-paced Benny Goodman's 'Sing, Sing, Sing', which I was told is a classic big band piece. I was blown away by the power of the first note as it blasted onto my eardrums. One aspect of note was that each section was given its own moment to exhibit their talents. Every piece and song had shining moments from each instrument, like the trumpets in 'Two O'Clock Jump' by Harry James and the trombones by Adam Thomas (from Birmingham, Alabama) in Pat Metheny's 'Dream of the Return'.

After a thirty minute intermission and some drinks (although the bar is open throughout the performance), the second half of the concert was underway. One of my favorite performances was 'Feeling Good' by vocalist Elle Soo, whose smoky

tone paired perfectly with the ambiance of the song. I enjoyed it much more than the widely coveted version by Michael Bublé, but that might just be subjective. We finished on a high with Buddy Rich's 'Love for Sale' - I was blown away by the phenomenal drum cadenza, played with incredible coordination and control.

I have to commend the university musicians for not only keeping up with the professional orchestra, but also driving the momentum throughout the performance. The only personal quailm I had with the concert was that it perhaps lacked a little keyboard attention and the slightly hefty £15 tickets. Despite that, it was genuinely a wonderful introduction to Big Band and jazz; I'd recommend their performances to amateurs and enthusiasts alike.



Photo credit: Cindy Liu

Three small and simple actions that improved my wellbeing

► *A brieflist of helpful yet simple things that I started doing to improve my wellbeing during term time.*

Anonymous



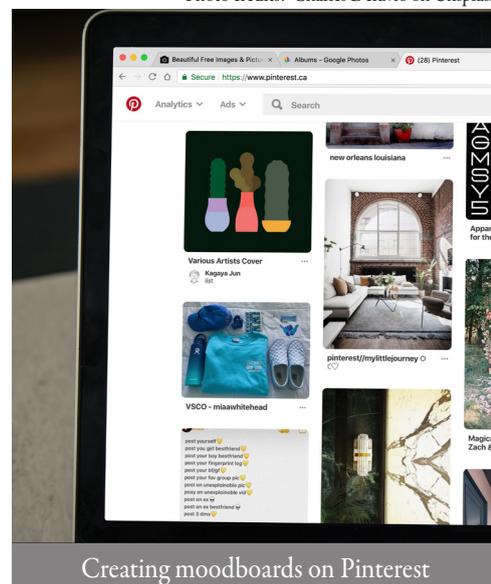
I would like to begin this article by stating that I am not a therapist, nor am I a life-coach, or a psychologist. I am simply a student who has struggled with my mental health and wellbeing for almost my entire time at Imperial. That said, there are two reasons why I have written this article. My first reason is personal, I wanted to reflect on how far I have come as a result of my own efforts. My second reason is that I simply wanted to share some tips that may help anyone who is in a place I was in not so long ago. I would describe that 'place' as a form of purgatory – an almost stagnant position in my life. In that position, I knew that I had to make some changes if I wanted to reach 'the good place', because the easier option would have me either stuck in the middle or regressing back to 'the bad place'. Although by that point in time I had been on antidepressants for almost a year, received mental health support through my GP, and received regular wellbeing support from my department's Wellbeing Advisor. I felt I had gotten as far as the antidepressants and the external support could get me. The Final Boss, if you will, was me.

VISUALISING WHAT I WANTED TO DO USING PINTEREST

I specifically chose to start using Pinterest as, I knew that it would be very difficult to convert the time I spent scrolling through Instagram or Twitter to zero, so I decided that if I were to scroll through content – I would rather it was content that I carefully curated with a strong intention of inspiring myself. Pinterest allowed me to build collections of images that helped me to identify the areas of my life I wished to

focus on. As intense as that may sound, it was more akin to me creating and developing mood-boards that were essentially multiple Instagram Explore pages in the form of themed 'Pin-boards'. At the start of my journey I had no real direction, essentially I did not know what this 'good place' would look like, nor what

Photo credits: Charles Deluvio on Unsplash



I would be doing there. So, by creating these image banks, I gradually was able to build a better image of my future self in my mind, which inspired me to try new things. For example, some of my first Pins were study inspiration images. Since then, I have pushed myself to study in spaces outside my small bedroom – a small change which has yielded amazing results for me when it comes to my studying productivity.

SETTING ASIDE TIME TO ENJOY MY 'OFF' MOMENTS

In a discussion with my Wellbeing Advisor, I was encouraged to use a Pomodoro timer to split up my study time into more manageable and observable chunks. So, I started using this timing technique, and I noticed that each time I was supposed to have a short break after 25 minutes of working, I felt a great

WHAT IS 'WELLBEING'?

Finding a single, universal definition for wellbeing is difficult, especially given the diversity of priorities and lifestyles each individual human being has. Instead, there are general definitions around what wellbeing means. According to the Centers for Disease Control and Prevention (CDC), "well-being can be described as judging life positively and feeling good". As brief as this sounds, the CDC continues to state that wellbeing is multidimensional and thus involves a balance of physical, economic, social and emotional well-being (among other aspects).

internal resistance against the break. In fact, I often found myself a bit stuck as to what to do with my time 'off'. I slowly began to realise that I spent so much of my time when I should not be working, either thinking about work I needed to do, or just not fully focusing on the present if it was unrelated to my academics. So gradually, I forced myself to do something completely remote from my studies when I needed a break.

Photo credits: Cottonbro on Pexels



Savouring the moment with a good book

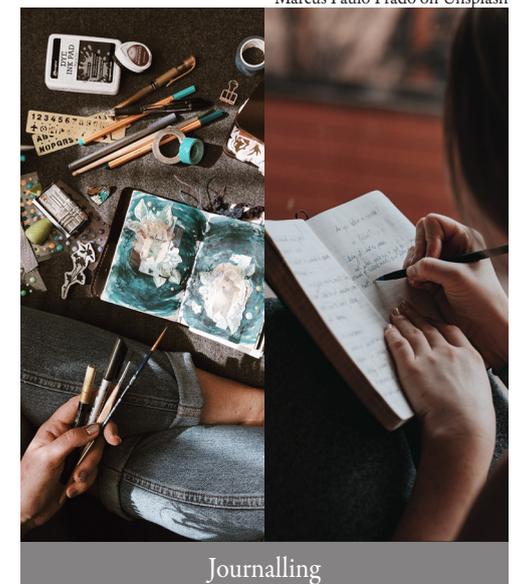
This was a very difficult thing for me to do consistently. I already struggled to savour my relaxation time when I was around my friends, so I rarely set aside adequate time to relax in my own company. Even when I was procrastinating, I did not particularly find myself enjoying that time I spent – it was often me lying in bed chasing crumbs of dopamine through Twitter threads. Therefore, I decided to start with simple things, like staying off my phone as I ride on public transport - all I do now is listen to music

and people-watch as I travel to campus. Then I started do things I loved yet always told myself I did not have the time for. For example, reading a book during the term time. I love reading, and so when I sat down and set aside one hour to just read, with no distractions, I felt a part of myself light up that had been dormant for so long. Reading is truly one of my favourite activities so I am a bit biased in saying this, but I cannot emphasise enough how rewarding it is to switch off from Imperial life by simply reading a good book. In a world full of distractions, sitting in silence and focusing on the words on a page helps to take my mind off things in a way that, say, watching a Netflix show simply cannot.

WRITING AND DRAWING IN MY JOURNAL

After my Wellbeing Advisor suggested that writing my thoughts out would help me detangle from them in moments

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Journalling

COMMENT

where I felt my thoughts overwhelm me, I decided to try journaling once again. This time round though, I decided to not follow any specific idea or structure of what a journal should look like. I also told myself it would be okay if I did not write in it every day, to make the activity of writing seem less of a burden. Once I became comfortable with writing, I ventured into more artistic pursuits in my journal. This was the step that really made me embrace my journal, as the internal chaos of it all solidified its representation of my core self. I had previously treated my journals and diaries as if they were precious goods that may one day be read by someone. Now I do not care. My journal is just for me. It is uncensored and this is so important as it is the one outlet I have for the thoughts that are always racing in my mind. Additionally, the art I do in my journal has helped me explore and define the art I currently want to make. I now find myself rooted in the creativity that I feared I lost on the day I joined Imperial.

HEY YOU! WHAT DO YOU WISH YOU KNEW ON YOUR 1ST DAY AT IMPERIAL?



Felix invites YOU to write a letter/message to your 1st-year-self, reflecting on your experiences here since day 1

Simply SCAN THE QR CODE or USE LINKS AT THE BOTTOM to take the survey

From next Friday, we will share your messages in a special 'yearbook style' section. You can be anonymous, and you can submit photos!



<https://forms.office.com/r/YEUV6Jq3XC>

shorturl.at/ilstG