

# Imperial College and Coldplay to cut coal and planes

Credit: Imperial College London

**Sam Lovatt** Editor-in-Chief

Imperial College London has announced a collaboration between the world-renowned band Coldplay and the Grantham Institute for Climate Policy and Environment to assess the impact of the band's upcoming Music of the Spheres world tour.

The collaboration will also allow the band to convey a more informed and reputable message on climate change to its fans, many of whom "climate scientists find it difficult to reach".

Coldplay said "we've spent the last two years consulting with environmental experts to make this tour as sustainable as possible" and that they want "to harness the tour's potential to push things forward" on a global scale.

The band have produced a webpage associated with the tour, outlining an extensive array of sustainability initiatives. Based on the three principles 'Reduce', 'Reinvent' and 'Restore', the band have listed 12 initiatives aimed at making the tour as sustainable as possible, and more widely impacting global emissions with recapture and mitigation work.

Highlights of the website include a huge first-of-its-kind battery, produced by BMW based on their i3 model of car, that will be used to power the entire gig each time they perform. This battery will be charged by solar tiles installed around the stadium and be linked to a "kinetic floor" which will convert energy released by dancing fans into electricity, in turn powering the gig.

The tour route has been designed to



*Professor Martin Siegert - Co-Director of the Grantham Institute at Imperial College*

include as little air travel as possible, and where they can the band will travel using commercial flights rather than a privately chartered plane. They do concede

that some privately chartered flights will be inevitable.

Coldplay announced in 2019 that they were taking time out to contemplate the sustainability of their tours and how to make them as environmentally friendly as possible.

They aim to reduce carbon emissions by 50% compared with their 2016/17 tour, and to significantly

invest in recapture initiatives to offset use where it is unavoidable. This will draw down "significantly more CO2 than the tour produces".

The hope is that Coldplay will pave the way for an industry-wide change, where music tours contribute significantly less to global emissions in the future. The band are one of a number of trailblazing artists committing to eco-friendly and carbon negative touring.

In 2019, prominent singer-songwriter Billie Eilish announced her upcoming tour would be as "eco-friendly" and "green" as possible.

Last month, data compiled by the Bristol-based electronic group Massive Attack from touring was used by researchers at the University of Manchester (UoM) to produce a

number of recommendations for the music industry in order to mitigate its climate impact going forward. The study produced a roadmap for the whole industry, which largely overlaps with Coldplay's initiatives in the recent announcement.

Imperial College and UoM did not collaborate on their endeavours despite the similar goals. When asked about collaboration between the institutions, Grantham Institute Co-Director Martin Siegert responded "We are in very close contact with UoM and over 80 other universities and research centres through the COP26 Universities Network that we (the Grantham Institute) initiated and lead".

Part of the Grantham Institute's target for the initiative is to assess how



**THEY AIM TO  
REDUCE ARBON  
EMISSIONS BY 50%  
COMPARED WITH  
THEIR 2016/17  
TOUR**

# EDITORIAL

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The Felix Editor on

## Political Polarisation

The results of the political leaning survey keep coming in, with a distinct hint of online disinhibition. Some people just didn't like the survey, some assumed I was a Marxist (somewhat missing the mark), but more commonly people criticised the survey for being too sweeping to let those answering it properly express their opinions.



I would like to be clear: this survey was not produced for you to accurately express your political views. We ask intentionally broad and binary questions to glean clear answers that we can display in somewhat interesting infographics and compare to our 2019 version of the same survey.

I believe that political polarisation is one of the most counter-productive phenomena in the Western world today. People sort themselves into as many different tribes as suits them and each position becomes sorted into the political left or right (or Labour vs Tory in the UK). I'm just thankful that we're not as partitioned in the UK as those in the US are.

Studies have looked into behavioural changes within a group of humans when they are divided into arbitrary teams and given various options of reward at the same time as being told what the other teams will receive. For example, team A gets to decide whether they get £100 and team

B gets £80, or they get £90 and team B gets £50. The teams are not in contest with each other, there is no winning or losing team, and the money will make no difference to the rest of the proceedings, yet more often than not the group in charge chose to get less money if the other group was detrimentally affected more than they were.

This competitiveness and tribalism seems to be a fundamental part of human nature, yet we can all see that it's getting worse. There is absolutely no need for mask wearing to be a left vs right issue, yet large swathes of US Republicans (and the Conservative MPs in the House of Commons) refuse to wear them. If you go back 70 years or so there is no clear ideological difference between the Democrats and Republicans, and it was even the Democrat Dixiecrats in the south who tried to uphold racial segregation laws. No there is not a single Democrat less liberal than the most liberal Republican.

Swinging back to the original point, the Felix Political Leaning survey does not have the same affect as current social discourse. "if you had to pick one" is not the same as "you have to pick one". If you'd like others to know your exceptionally nuanced and important political opinions, I strongly encourage you to write an article for the Comment section. Otherwise, grow up.

## 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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Felix is a longstanding institution which has produced some of the finest student journalism in the country, won awards and broken stories that end up in national news.

Felix provides an outlet for all students and staff to review, read about and report on whatever they want. Anything you feel passionate about can be transcribed, honed to perfection with the help of our Section Editors and published both in print and on the website

Writing on what you're passionate about is the best way to deepen your interest and expand your horizons (also, if we're honest about incentives, a lot of the sections get you free tickets and it looks good on the CV)

If you're interested in writing for us, get in touch with any of the section editors at their submissions inbox (e.g: if you want to write for Arts, email [arts.felix@imperial.ac.uk](mailto:arts.felix@imperial.ac.uk)), or the Editor-in-Chief at [felix@imperial.ac.uk](mailto:felix@imperial.ac.uk)

**We need writers, editors, copy-editors, illustrators, photographers and more!**

## **Keep The Cat Free**

Since 1974, "Keep the cat free" has been Felix's motto and a central tenet of its operation. The phrase applies in three aspects: editorial independence, free to read and free to write.

Editorial independence does not mean unfettered free speech. Just because we can say something doesn't mean we should. Felix will always be an inclusive environment for as many people as possible. This being said, Felix does not conflate offence with harm, and any content that is not illegal or deeply immoral can be published at the Editor's discretion, with the following statements in mind.

The paper will never hold a formal political agenda, nor will it be reliant on advertising for funding, despite the occasional inclusion of ads.

These ads will never dictate what is run in the paper.

Felix retains the right to criticise anyone and is accountable to the law in terms of defamation. As part of the Union, Felix is part of a charity that exists to represent and support students. The paper will always seek to strike a balance between public interest and student welfare.

Since 1971 the paper has been free to pick up and read and will remain this way indefinitely.

The paper will always be a place that students, staff and alumni can write freely. This statement applies exclusively to the aforementioned groups, and guest posts, paid or otherwise, are never accepted. In the same spirit, Felix will never financially reward any contributions from the above groups.



*Coldplay performing in 2017*

## Continued from page 1

effective messaging from a band such as Coldplay can be on altering the behaviour of their fans. Dr Jem Woods of Imperial's Environmental Policy unit added that "well-off countries... simply can't continue with the behaviours and activities that we used to do if we... stand a chance of effectively combating climate change and mitigate the terrible impacts it will have on our society and environment". A large proportion of emissions associated with gigs are from the fans travelling to and from the venue.

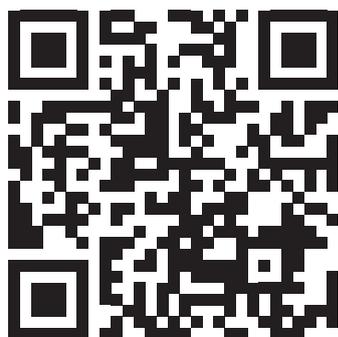
Regarding personal impacts, Siegert added "The emissions on touring are very small in a global context. That's not the point however. We each need to consider how to reduce our (very small) individual carbon footprints if we are to tackle the climate problem. Coldplay are one of the first movers and what they learn can be translated to others. Importantly, they have a huge voice and global reach with which to explain the problem and encourage others to take ownership of their own emissions".

The collective Music Declares Emergency released a series of

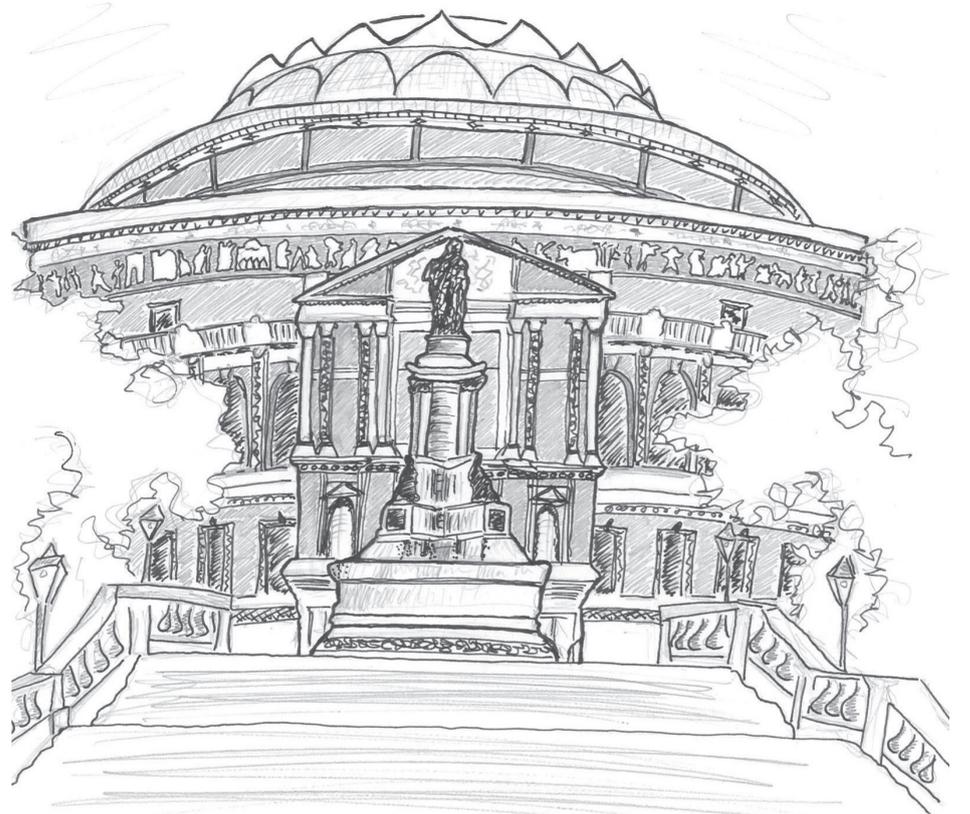
announcements leading up to Earth Day 2021 in April this year, standing for the music industry as a whole to change its ways in order to combat climate change. These announcements highlighted the sustainable work already being carried out by UK music groups and high hopes for a green recovery after the pandemic.

Sustainable touring initiatives are few and far between pre-2019. Recovery from the pandemic seems to mark a significant turning point in attitudes towards touring and climate change.

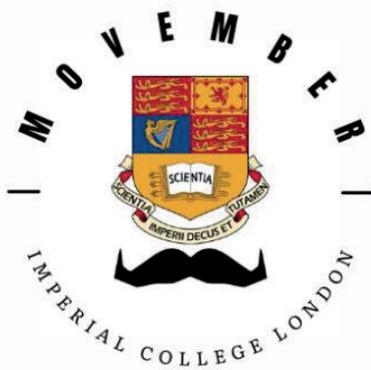
### *Coldplay's sustainability website*



## Royal Albert Hall turns 150



And that's all we've got to say on that. Beautiful drawing by Jacopo Zhaoyang Hu (Engineering Department) though



# MOVEMBER

## @ IMPERIAL COLLEGE LONDON 2021

Our fathers, partners, brothers and mates are facing a health crisis that isn't being talked about. Men are dying too young. Long before their time. **As the leading charity changing the face of men's health, we're taking action.**

We need to stop men dying too young.



## WE NEED YOUR HELP THIS YEAR:

### 1 JOIN OR CREATE A TEAM

[Join the Big Mo on Campus challenge here](#), you can join an existing team or create your own! We're here to help every step of the way, starting with the Captain's handbook and fundraising guides!

### 2 MO BRO AND MO SISTA FUNDRAISING

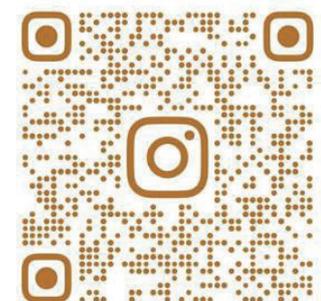
Whether you join as a Mo Bro or a Mo Sista, the Mo the merrier! We'll be supporting your personal fundraising and hosting events you can attend throughout the month - all towards changing the face of men's health.

### 3 HOWEVER YOU MO, YOU'LL SAVE A BRO

Grow, Move or Host - however you choose to Mo will save a bro!

- 1 - Mo, grow or draw on that moustache you've always thought you'd look fine in.
- 2 - Move 60km however you want for the 60 men we lose to suicide each hour.
- 3 - Host that party or that dinner, gather some mates and have fun with it!

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## ARTS



## FROZEN: THE MUSICAL

By EAMON AKIL FARHAT

MAGIC IS IN THE AIR AT THE THEATRE  
ROYAL, DRURY LANE!

page

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Edited by:

VAIDHISWARAN RAMESH  
ALEX JACKSON

## Theatre

## East is East: Not just another dysfunctional immigrant family

Credits: Photo/Pamela Raith Photography

## East is East



Where? Lyttelton Theatre, National Theatre

When? Until 30th October, 2021

How much? From £20

Reviewed by Eamon Akil Farhat Arts Writer

In 25 years, Britain has changed a lot, but Ayub Khan Din's look into the home of an immigrant family living in the north of England in the 1970s shows that much is still the same. The show stars a new generation of young and diverse actors playing six English-Pakistani teenagers — a few of whom also starred in *Ackley Bridge*, another of Khan Din's creations. Whilst they embody characters set years before they were born, the joy and the pain they portray still feels very fresh.

George (Tony Jayawardena) came to England almost 40 years ago, married his white English wife Ella (Sophie Stanton) and, seven children later, is still trying to keep a firm grip on his teenagers' lives. George is funny, almost a caricature with his strong Pakistani accent, but also stubborn and, as we find out later, can get very, very angry. The chemistry between their children, especially the four middle children, Maneer (Joeravar Sangha), Tariq (Gurjeet Singh), Saleem (Adonis Jenieco), and Meenah (Amy-Leigh Hickman) shines through clearly. After only a few interactions we already feel as though we know these characters as fully-formed individuals — it is easy to recognise our-

Credits: Photo/Pamela Raith Photography



Noah Manzoor plays Sajit, the youngest son.

Sophie Stanton and Tony Jayawardena in *East is East* at the National.

selves and our family members in their natural portrayals. The oldest brother, Abdul (Assad Zaman), brings a distant energy as he experiences the pressure of making up for his disgraced older brother. The youngest, Sajit (Noah Manzoor) seems to have obsessive-compulsive disorder; Manzoor plays the role with many little ticks and we get the sense that Sajit tries his best to shut himself away from the trauma of his dysfunctional family.

All the siblings struggle with their identity. Religion, culture, and family are all interwoven and hold different meanings to each of them. The heartfelt dialogue between different members of the cast shows the nuance of the second-generation immigrant experience: stuck between the cultures of their ancestors, the traditions with which they were raised, and the land they were born in. The play is backdropped by the outbreak of war and violence East Pakistan (modern day Bangladesh). This intensifies in the second half, mirroring the drama in the characters' lives as arranged marriages are cunningly forced upon the eldest two brothers. The situation seems impossible for the siblings to navigate, that is until Saleem sits down and calmly explains to his stubborn Pakistani father that his older brothers don't want to get married, and this is not their time. The audience erupted into laughter, a rather sinister inside joke that embodies the shared identity of many immigrants.

Although immigrant families have many challenges to navigate, the love and comedy is also a staple, and this shines through the production. One especially memorable scene sees Meenah and Maneer lip-syncing to a Bollywood classic — this begs the question, why are there not more Bollywood musicals being staged on the West End, they would be a blast! Maybe Khan Din's next work should explore a more musical medium. I would love to see immigrant experiences from the female perspective as, in this play, Meenah, the only daughter, felt under-explored.

For something that feels fresh yet warm and familiar, with lots of laughs and an extremely talented cast, *East is East* is definitely one to catch while you can.

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## Theatre

## Ten reasons why I'm wiser

Credits: Photo/Elisey Buncelmans

## 10 Reasons Why

★★★★★

**Where?** Arcola Theatre**When?** 8th and 9th October, 2021**How much?** From £12Reviewed by **Laura Casas** and **Aya Hayakawa** Arts Writers

London is known for its world-renowned arts, historical sites, and fruitful businesses but the essence of this exciting city lies in the people that live in it. *10 Reasons Why* is a play by Nicole Botha inspired by real letters from Londoners asking for change. Through poetic words and honest interpretations, this play gives ten people a platform to speak about problems that many of us face but are rarely discussed.

One particularly emotional story focused on a man learning to appreciate the small joys of life that he used to take for granted, now that they are no longer the norm. For all of us, 2020 brought a Christmas like no other. While many spent the festive season without their loved ones, unable to ignore the loneliness and hopelessness that came with it, there were still many lessons to be learned. This individual's monologue starts with him alone on Christmas day. The turn in the story arrives with his neighbours, who came to share their food. This small act of kindness and generosity moves him to tears, shortly before his own family show up on his doorstep. It was clear that his authentic portrayal had struck a chord with most of the audience.

Another noteworthy story was told by a young woman who feared for her safety on the tube. On the way back from a night out, she is wearing revealing clothes that a man takes as an invitation to stare, call her out, and touch her. The tension throughout the first half of the monologue was effectively intensified by the accompanying music by Josh Tenor. This was only relieved when she found her group of friends as she alighted at



Nicole Botha's play is inspired by real-life stories written by Londoners.

her station. The sense of community we immediately felt as an audience left us all with warmth and comfort as, on stage, her friends approached her, complimented her outfit, and made some banter. Alongside these anecdotes, other issues were touched on: including racism, urbanisation, and other discrimination due to religion and sexuality.

*10 Reasons Why* is part of *Today I'm Wiser*: an outdoor festival motivated by a collective desire for change. The festival features work across many genres from classical adaptations to new works-in-progress. We certainly recommend this play for its relatable and honest storytelling. Though this particular play had a short run, there are still tickets remaining for other shows at Arcola Outside — the Arcola Theatre's new outdoor performance space!

## Today I'm Wiser

*10 Reasons Why* ran as part of Arcola Theatre's new outdoor festival *Today I'm Wiser*.

*"Today I'm Wiser... inspired by the present and fuelled by the collective desire for change, features work across different genres, including bold adaptations of classics, new writing and works-in-progress"*

Look out for our review of the show *Broken Lad* from the same festival in next's week's issue.

## Musical

## The most magical show there ever was

## Frozen: The Musical

★★★★★

**Where?** Theatre Royal, Drury Lane**When?** Until 26th June, 2022**How much?** From £20Reviewed by **Eamon Akil Farhat** Arts Writer

In the lobby of the beautiful Theatre Royal, Drury Lane the magic in the air is palpable as dozens of little Elsas and Annas doddle around. The adults present

look on fondly, remembering how the immense success the 2013 film captured the imagination of so many: little do they know that the West End production they are about to see will leave them as spellbound as an 8-year-old girl.

The performance effects were truly otherworldly, as Elsa (Samantha Barks) gestures around the stage ice appears in the most beautiful way. In moments of anger, huge shards of ice explode out with such speed it makes the audience jump. Even without the commotion of snow and capes flying everywhere, the set design was

remarkable in isolation. The wooden palace, flowery garden, and chalet-style shop sets are so detailed and intricate they are almost pieces of art.

Sometimes, stage adaptations of such popular films find it hard to stick to the script whilst deviating enough to explore a fresh take and ensure the production is stage worthy. *Frozen* managed to skate that fine line. I enjoyed the additional songs and, although the lead up and transition into *Let it Go* seemed a bit forced, once the audience sees an ice palace built before their very eyes, and the magical transformation of Elsa into her

## ARTS

Credits: Photo/Johan Persson

sparkly icy dress, they quickly forget this minor bump in the road.

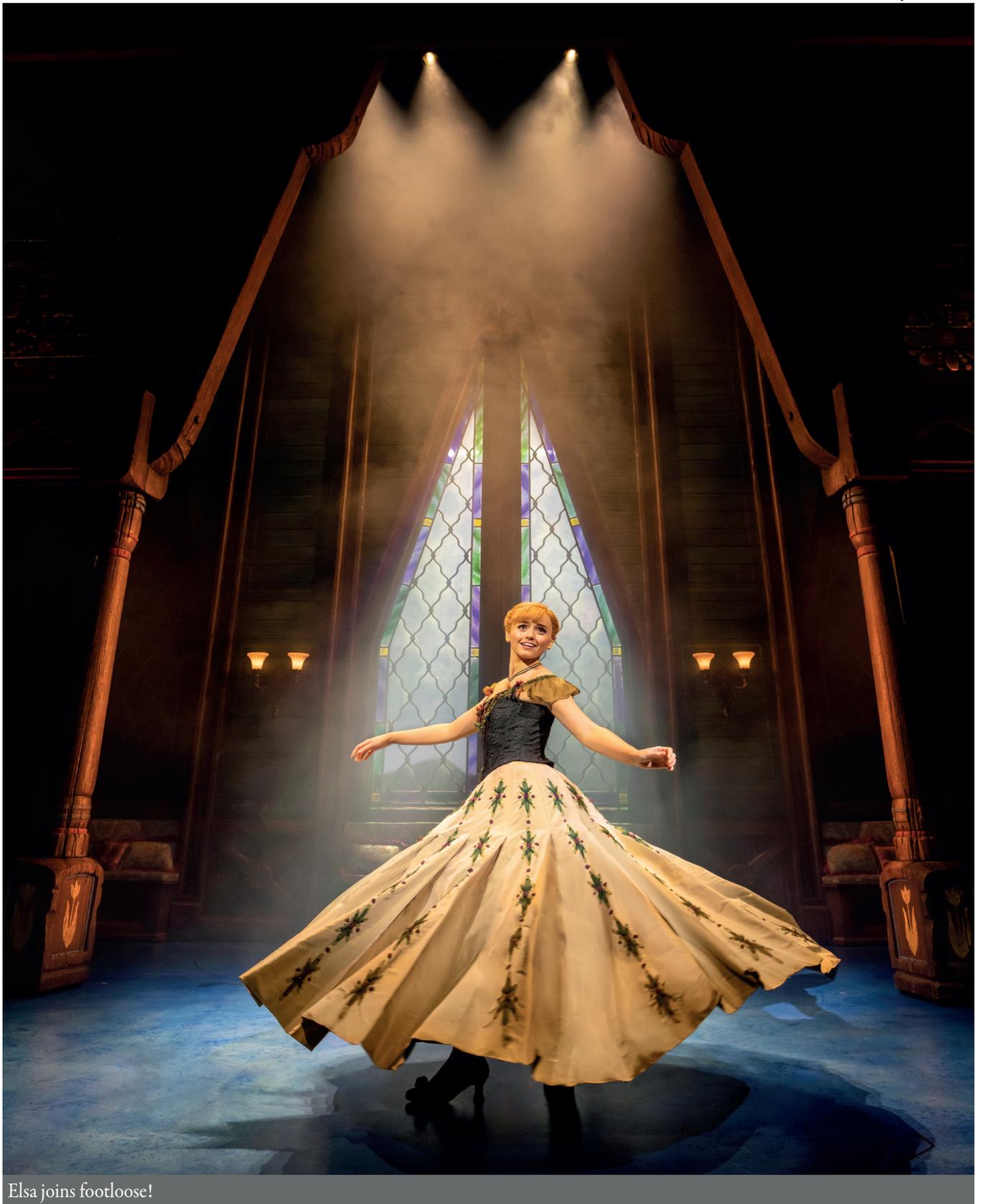
It is a shame that Elsa gets little interaction with others on stage (such is her icy character, I suppose) as she is often alone in her beautiful ice palace, flawlessly belting out ballads, as goofy Anna (Stephanie McKeon) is given more room to develop through her meetings with a string of peculiar characters. Both actresses bring something different to the roles. Barks sings impeccably and embodies Elsa's icy demeanour, while McKeon's high energy and fun tone works perfectly for the younger princess.

One of the most adored and recognisable characters from the movie, Olaf (Craig Gullivan), enters late in the show but still manages to capture the most laughs and love from the audience. Kristoff (Obioma Ugoala) is another character oozing with personality and portrayed by a performer who exudes even more talent. It would have been great to see more of him, rather than only a ten-minute song about the Danish concept of Hygge featuring naked dancers coming in and out of a sauna. This was funny at the time but didn't add that much to an already jam-packed show where some characters needed a bit more time to shine.

The special effects and overall stage design were so sensational it sometimes felt as though other aspects of the show were easily overlooked. For example, the choreography of the large ballroom dance numbers. In the first half, the ensemble were easily overshadowed by other happenings on stage but, in the final ice scene, their coordination and ability to portray the emotion finally began to shine.

The young girls who portrayed Young Anna (Summer Betson) and Young Elsa (Minaii.K) must be commended for their difficult task of opening the first thirty minutes of the show. Betson, who makes her West End debut playing Anna, showed extraordinary talent, perfectly conveying the young energetic princess while singing, dancing, and bicycling all over the stage.

Overall, this is a must-see show, even the purist of theatre lovers can appreciate the spectacle and, for anyone else, the effects will blow you away, and the refreshing story will make you a bit teary but very happy.



Elsa joins footloose!

## WE WANT TO HEAR FROM YOU

*Hello readers!*

*Hope you enjoyed this weeks Arts section.*

*We want to hear your honest feedback and suggestions for the section.*

*How often do you read Arts section on the website and from the print paper?*

*Let us know!*

*Do you want to see more content of a certain kind?*

*Let us know!*

*Is there a writer you like (or hate)?*

*Let us know!*

*Do you think we are doing something wrong (or something GREAT)?*

*Let us know!*



*Alex Jackson and Vaidhiswaran Ramesh  
Section Editors*

# Crazy weather and the future of attribution science

► Science writer Shirin Ermis discusses the link between weather and climate, speaking to climate physicist Dr Fredi Otto, Senior Lecturer in Climate Science at the Grantham Institute (pages 10-11)

**Shirin Ermis** Science Writer

If you too have started many conversations this past summer with a comment on the crazy weather, you are in good company, dear friend, and you likely had a lot to talk about. Floods in Germany and China, heatwaves in the Pacific Northwest and Canada, and tropical cyclones in Bangladesh. The media has brought us a constant stream of news about extreme weather events this year. It almost seems unnatural now not to talk about the weather as a manifestation of the climate and immediately go over to a heated discussion about mitigation of further climate change.

But this thinking is relatively new. For decades, weather and climate were seen as two very separate things. While weather is what we witness in our everyday lives, climate is the average of weather over many years - often the time frame scientists discuss is 30 years. Trying to learn about the climate by observing the weather on just one day was frowned upon. As a consequence, scientists working on extreme weather events such as heatwaves, flooding or tropical cyclones usually kept a very low profile in the media.

Climate physicist Dr Fredi Otto noticed this but she also could not help but realise that while scientists kept quiet, those with political agendas did not shy away from commenting on extreme events whenever they happened. Her ambition was to bring the scientific discussion on extreme weather events into the public. Her ascent into the TIME 100 Most Influential People list

along with her collaborator Geert Jan van Oldenborgh<sup>1</sup> speaks of their success.

The two researchers founded the initiative 'World Weather Attribution' (WWA) which is specialised in creating studies that analyse how climate change changes the likelihood of extreme events. WWA produces these studies in almost real-time, often while the event is still ongoing or only a couple of days after the event. Naturally, while we are all still processing what happened, we are much more likely to pay attention to their analysis.

The methodology of the group makes use of incredibly detailed climate simulations. Typically, they would compare simulations of possible weather in a climate that includes greenhouse gases by humans and simulations with-

out these emissions. The researchers would first decide on an aspect of the extreme event, like 3-day average temperatures or rainfall intensity in a specified region of the model and compare the statistics in the two simulations. This process of event definition, that includes decisions on which weather variables to use, what time frame to look at, and what areas to look at, actually is crucial for the result of an attribution study. It is also where most of the uncertainties of these studies originate.

Let's look at that in more detail for the recent flooding in Germany and Western Europe from July. The group decided to analyse the statistics of rainfall in the two simulated scenarios; one with and one without anthropogenic climate change. The observed extreme event

was defined as the maximum one-day rainfall in a wider area of Western Europe. This wider area had to be chosen because the flooding in just the smaller area that it occurred in this year was so unprecedented that the sample size of similar rainfall events in the models was too small to produce reliable statistics. Looking at the probability distributions of rainfall events in the two simulations and comparing them to the strength of the observed event (see figure), the researchers then classified how likely the observed event was in each scenario. Through this analysis they were able to express whether or not the observed event had been made more (or less!) likely through climate change. The result for the large area that they chose was, that it had been made 1.2 to 9 times more likely by climate change.

Attribution science can also help policymakers and local populations understand which type of extreme events are becoming more likely with climate change. This can be done by giving return periods for certain types of weather events. The floods in Germany for example are believed to be a 500-year event. Nonetheless, in a recent article published in the Financial Times, the chair for least developed nations at the UN climate negotiations in 2015, Giza Gaspar Martins, voiced doubts. He flagged attribution science as a privileged scientific pursuit, taking emphasis away from desperately necessary adaptation and mitigation efforts in the global south. Dr Otto will explain in the interview overleaf how she still sees attribution science as an integral part of the adaptation effort.

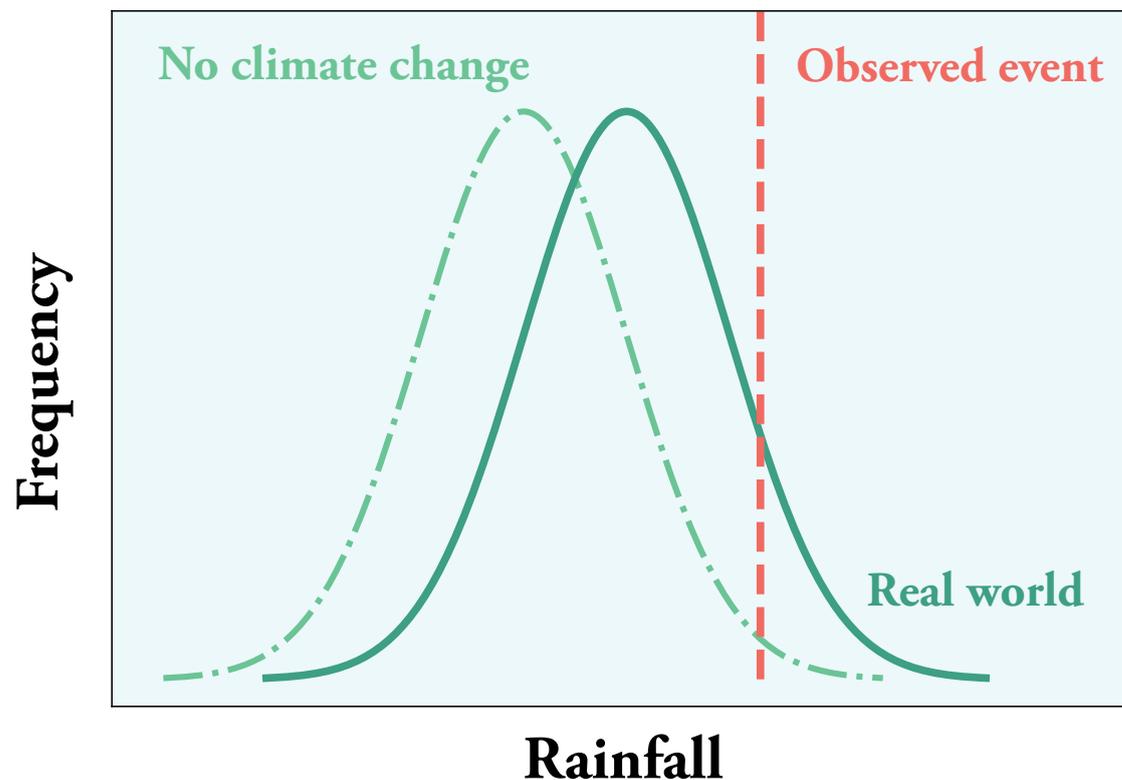


Illustration of the general idea of attribution science. Rainfall amount is on the  $x$ -axis, the frequency of the corresponding events is on the  $y$ -axis. The distribution of rainfall events depending on their strength can be obtained from the climate model simulations. The observed event appears in the real-world distribution in a higher frequency than in the world without anthropogenic climate change.

<sup>1</sup> Prof van Oldenborgh sadly passed away last week. We offer condolences to his family and friends and all who knew him. His work has greatly influenced attribution science and although we are focussing on Dr Otto this week, we acknowledge his immense contribution.

## SCIENCE

# An interview with Dr Fredi Otto

► *At the end of a very eventful decade at the University of Oxford, Dr Otto is joining the Grantham Institute at Imperial this year. Science writer Shirin Ermis spoke to her to discuss her research, and what she wants to focus on next.*

Shirin Ermis Science Writer

**S: You were co-director of the ECI (Environmental Change Institute) at Oxford and held an associate professorship there. Why did you decide to come to Imperial? Will you build a community around weather attribution here?**

F: So, I think the last question is really easy to answer; I hope so very much. [...]. But at the moment I am still trying to figure out how Imperial works and what I am doing. And WWA is also coming with me so that will be based at Imperial. Why did I come to Imperial? Well, I think that the Grantham Institute is a really great institute that has a large emphasis on impact and also has support for that. They have a comms team, they have a policy engagement team, they have all the connections to Westminster and local decision-making which I think is really important and interesting and an important part of my work. [...] I think the Grantham Institute, they have fantastic people working on mitigation but they don't have that much on the adaptation and loss and damage side and so I am also a good fit for them and it's not just that they are good for me.

**S: What are some of the questions in extreme event attribution you want to answer while you're at Imperial?**

F: I think we have made huge progress in the last years on the physical science, weather side. That is, how we conduct these attribution studies and which methods to use, how to use the models,

how to quantify uncertainty and so on. But I think where there's a huge area of research that still needs to be done is on the link between the social or the real world. What about a weather event is actually causing the damages? [...] Mostly, when we do climate science research, we look at things that are easy to get out of the climate model, so the hottest day of the year, 90% rainfall intensity, and so on. But what actually leads to damages is often a combination of different meteorological variables – and of course exposure and vulnerability. And so, understanding what it is about the weather that we are vulnerable to and also understanding the role of vulnerabilities and exposure in turning a weather event into a catastrophe is where there is still quite a big research gap [...].

**S: Interesting. Extreme event attribution has become extraordinarily popular with the media. Was that your wish initially and are you happy with how the media mostly portrays attribution?**

F: We founded WWA, the initiative where we do these studies rapidly on the timescale that feeds into the public discussion of these extreme events while or shortly after they have happened. So yes, it was the intention to be part of that discussion. Before we did WWA, people did ask about the role of climate change when an extreme event

happened, but scientists usually kept quiet and didn't say much, so the question was answered by people with only a political agenda. We wanted to change that to bring scientific evidence into that debate so that we get a more realistic understanding of what climate change actually means. Given that that was our intention, I'm very happy that it has been so successful and so many people, across the science community, are working with us and are working on these studies and that the media are picking it up. I would say I'm mostly happy with how the media reports it, apart from the fact that there is too much focus on the numbers. Phrases like, "It's become X times

more likely", have come to dominate coverage. The context of exposure and vulnerability which we always give in these studies doesn't often make it into the media reporting. And I think that's definitely not just the fault of the media, but also that we haven't quite found the right way of communicating that [the context of exposure and vulnerability] in our press briefings. [...] It's a really fine line between highlighting that we are in the era of loss and damage, that climate change is happening and already causing losses - but that, on the other hand, there's a huge amount that you can do locally to be better prepared for extreme events and adapt to them and often a large driver is not the weather event itself. If it is, then climate change is only a small driver amongst many others. [...]

**S: But then to focus on loss and damage, do we really need attribution science at all?**

F: I don't think we need attribution to deal with loss and damage in an individual context to help people who have lost. I do think in a global picture we need attribution to realise how big the damages actually are, so that we know how much finance we need to mobilise in order to deal with loss and damage. I think for that, larger scale picture attribution is important but not on a local scale.

**S: Interesting.**

*Continues on page 10...*

Illustration credits: Hannah Akther-Rashid (Mechanical Engineering, Imperial College London)



If you would like to interview or write about interesting researchers for Felix Science, we welcome you to email the editors at [science.felix@imperial.ac.uk](mailto:science.felix@imperial.ac.uk) for more details.

*Continued from page 10...*

F: It's important that we don't put the message out, "Oh this is climate change so it's the responsibility of the global north, there's nothing you can do". I think that's not true and it's never the only thing that leads to losses and damages.

**S: That's an interesting position. So you're emphasising that we have to adapt to climate change as well and make communities more resilient to extreme events.**

F: Not only that we have to but also that we can. I think it's important to give agency to not make everyone feel completely disempowered.

**S: So then, do you do extreme event attribution mainly for the media or do you do it for adaptation planning as well?**

F: For mitigation we have an inventory of emissions for every country, we have metrics for how we measure our emissions. For adaptation, we don't have that. We have no inventory of losses and damages; we don't know what the impacts of climate change globally are. We have no great method on how we measure them, so there's no metric quantifying what good adaptation actually is. And a lot of that is not something that you can necessarily quantify with natural science. I think it is important to get a more comprehensive overview of what the impacts of climate change actually are, and from that side, attribution is actually helpful. [...] I think in the small scale, you understand your vulnerabilities when an extreme event actually happens. Doing an attribution study, looking at which aspect of the weather has actually led to this, is also useful locally because you can then know where you need focus in the projections. We need to take that into account in our local ad-

aptation planning.

**S: Very nice. Finally, what are the big challenges for attribution science in the years to come? Which problems do you set out to solve?**

F: Well, I think a big problem with climate science in general, but with attribution in particular, is the huge bias towards the Global North. We have far fewer studies in the Global South, we also just have less data. And when there is data, there are studies that one could do, but they are not done. I think understanding what climate change means on local scales on which we make decisions, and in the Global South, is something I would be really keen to help [with]. Of course, I know it's important that these studies are driven by people from these regions but to do that, we, as the Global North, have a big responsibility to help with funding. And we already talked about vulnerability and exposure

- and what events actually cause damages. What are we actually vulnerable to? There are more technical things as well. In WWA we have a protocol of things that we always have to do and have to do in a similar way so things are transparent, and everyone can reproduce what we do. We have some statistical ways of evaluating the climate models and then deciding whether to use them or not. But I think there's a lot of room for improvement in how to identify which processes your model needs to be able to reproduce in a meaningful way, so that you can actually use it. I think there's a lot of work left.

*The author and Felix thank Dr Otto for the time she took to explain the future challenges in attribution science and its role in society. We are excited about Dr Otto's work and welcome her warmly to Imperial.*

Photo credits: Wikimedia Commons



Firefighters pumping water out of a tunnel in Liege, Belgium. Belgium, along with many other countries in Western Europe, experienced severe flooding, as part of an ongoing trend of extreme weather, which scientists have attributed to climate change.

# A Review of CRISPR: a blessing or a curse?

Wang Guo Science Writer

Of all the available gene-editing tools such as TALENs or ZFNs, there is none as disruptive and controversial as CRISPR-Cas9.

CRISPR is a family of DNA sequences found in organisms of the Archaea and Bacteria domains. These sequences, and the associated Cas9 protein, play an important role in the bacteria immunological response against bacteriophages (a type of viruses that only infect bacteria). In a nutshell, Cas9 is an enzyme that can bind and cleave specific DNA sequences, where recognition of these specific sequences is directed by a sequence of nucleotides known as guide RNAs (gRNAs) that Cas9 binds to. The gRNA-Cas9 complex searches the bacteria genome for the DNA sequence complementary to the gRNA. Once the DNA sequence is found, Cas9 cuts down across both strands. This break in the bacteria genome initiates the cellular process of genome repair, during which scientists can introduce desirable changes to the genome. The Cas9 protein can also be engineered to perform other DNA-editing functions, such as point mutations (as opposed to insertions or

deletions) and DNA recombination.

Its acronym was given by a Spanish professor from the Universidad of Alicante named Francisco Mojica, one of its discoverers, around 30 years ago; although we had to wait until the past decade to see a real jump of CRISPR from academic research to a ground-breaking gene-editing tool. We attribute this merit to three scientists: Jennifer Doudna, Emmanuelle Charpentier and Feng Zhang.

Currently, there are three main streams of research with CRISPR: the development of CRISPR-Cas9 technology, the usage of CRISPR as a molecular marker, and genetic engineering. The last application is undoubtedly the most exciting and complex one. A recent example of this is the creation of transparent squids in July 2020 by the Marine Biological Laboratory, based in the USA. Cephalopods have one of the most advanced nervous systems of the entire animal kingdom. Thus, transparent squids would ease the research of the nervous system and maladies associated to it. Other medical applications of CRISPR-Cas9 genetic engineering are also popular fields of research. Many dire diseases are caused by gene mutations: can-

cer, cystic fibrosis, phenylketonuria, and many more. In theory, CRISPR-Cas9 could locate those defective genes and correct them, curing the disease in consequence. However, the practical application of genetic engineering in clinical medicine is still far as it depends on the development of a more precise and effective CRISPR-Cas9 technology.

CRISPR-Cas9 is advantageous in its preciseness. The guide RNA targets a specific and short sequence of DNA, and can target changes to individual nucleotides. What makes it superior to other gene-editing methods mentioned in the introduction, TALEN and ZFN, is the ease at which CRISPR can be adapted for different uses. The basic Cas9 enzyme does not need to be re-engineered each time, only the guide RNA needs to be changed, unlike TALEN and ZFN where an entire new set of proteins is required for each new target sequence. The cost of using CRISPR-Cas9 is also relatively low, for example, you may buy a home kit CRISPR-Cas9 for less than \$300.

On the other hand, we cannot neglect that this technology requires improvements in terms of reliability and effectiveness. Genes are complex. Indeed, our

understanding of the function of each gene and how they interact with each other are still incomplete. Therefore, manipulating our genome probably can potentially cause catastrophic and unexpected consequences. Furthermore, editing of genome of germline cells might cause irreversible changes in the following generations. The most famous case is probably the one of a Chinese scientist named He Jiankui, who manipulated the DNA of two babies to presumably prevent them from contracting HIV because their father was HIV-positive. He Jiankui's intentions could be truly altruistic, even though most media claimed that his only motivations were fame and wealth. Without further deliberation, the Chinese justice system sentenced him to prison and prohibited him from conducting biological research forever.

To conclude, CRISPR-Cas9 has the potential not only to change how we view life, but to change the fundamental rules of the game. It is undeniably an exciting path, but we should consider everything related to genetic engineering with caution.



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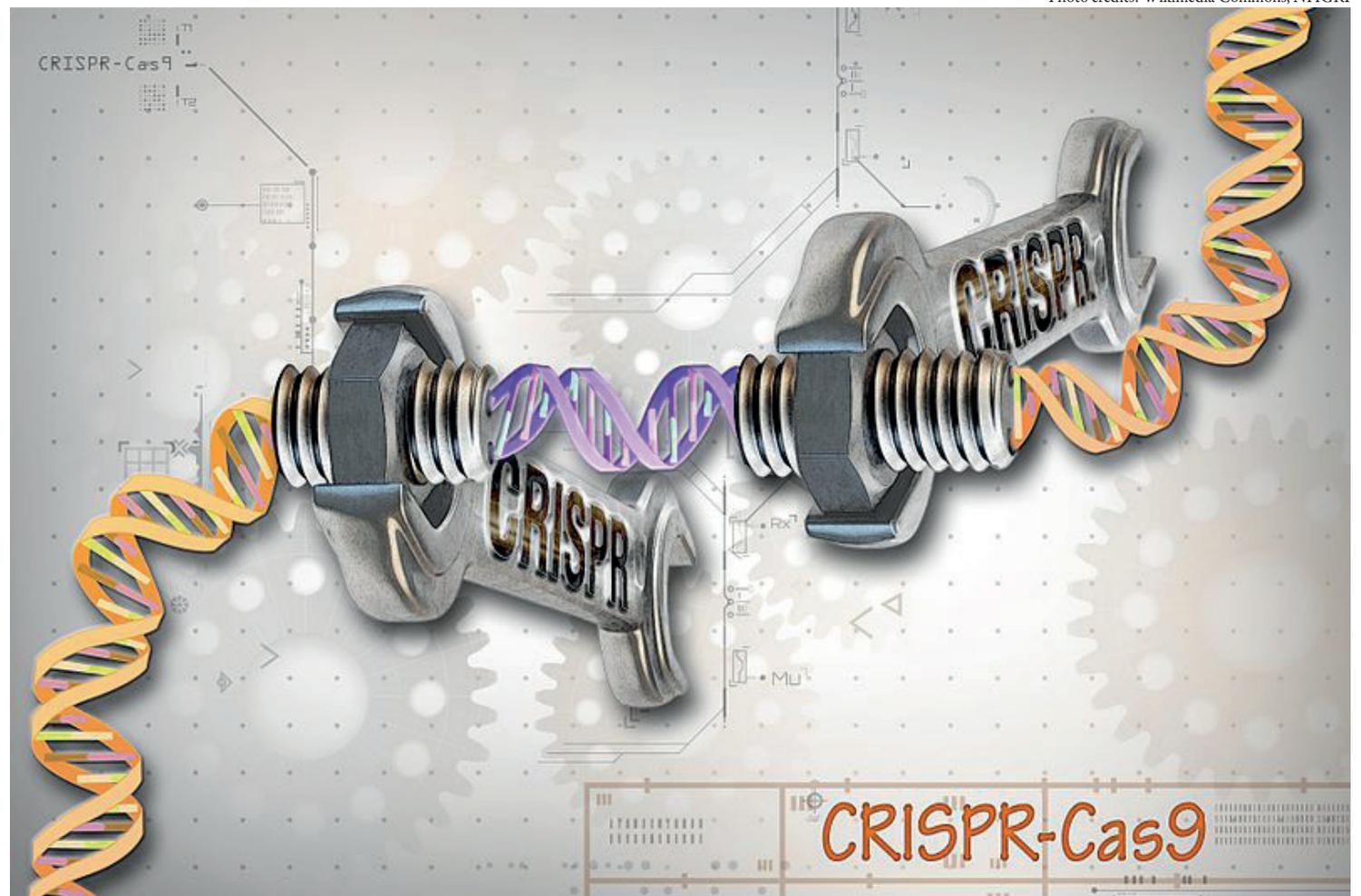


Photo credits: Wikimedia Commons, NHGRI

# Apple's Environmental Hypocrisy

Shrey Bohra Tech Writer

Accompanying every Apple launch event there is a significant amount of self-congratulation, proclaiming the company's achievements to those who will blindly believe them. With the rise of environmental consciousness in the general public, Apple have also started to tout their green credentials. Actions are more important than words, and Apple's actions paint a picture of yet another company motivated only by profit, regardless of what they claim.

Reduce, Reuse, Recycle – the order exists for a reason. Although recycling is still much better than sending devices to landfill and refining virgin resources, it is still an incredibly energy intensive process. Reducing consumption is by far the best way to reduce your environmental footprint, and no amount of recycling efforts by Apple will be able to counteract the real harm they are doing by restricting repair efforts.

For most of the modern era, we have taken the right to repair for granted. Once you have purchased a product, why should anyone have the right to tell you how to use it? If your car breaks down, you can take it to any mechanic; if your boiler fails, you can call the local plumber; if your watch runs out of battery, you can get it swapped at any shop you find. In recent times, however, there has been an alarming reversal in the status quo. With no legislature to protect consumers, companies are free to make repairs as difficult as possible, turning consumers into cash cows. For better or for worse, Apple sets the trends in technology, and they have been at the forefront of this change.

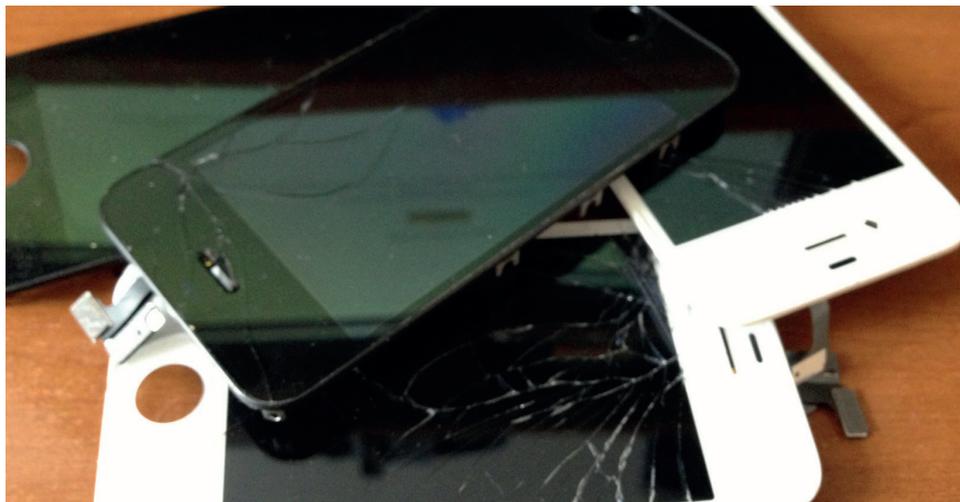
Take, for example, the back glass of modern iPhones. The majority of the in-

dustry uses normal adhesive which can be softened by heat, with an easy repair process costing about £40. Apple, however, use a permanent adhesive and then weld their camera lenses to the frame after the glass is in place. Apple will charge you upwards of £560 to repair this – or, conveniently, about £100 less than just buying a brand new iPhone. It does not matter if this new iPhone is made from 100% recycled materials or not – the point is that there should be no need for it in the first place. Designing devices like this is effectively designing e-waste.

Not content with forcing independent repair shops to spend thousands on specialised equipment to do these repairs, Apple has started to restrict the scope of these businesses even further. In recent iPhone models, Apple has started to pair key phone components such as the battery, screen, and cameras to the phone at the factory. Swapping these components – even with genuine replacements from a brand new phone – will disable key features and cause error messages to come cascading into your notifications. The only ones with the power to override these messages are Apple themselves. More niche repairs are simply not possible outside of Apple's ecosystem, with exclusivity contracts on component manufacturers forbidding them from selling spare parts to repair shops.

To put it simply, Apple has been spending vast amounts of R&D time and money, not to improve their product but to make it difficult to repair. This is a cost that is paid by all of us – the consumer, local businesses and the environment are all suffering due to Apple's obsession for control, and this is a trend that must be stopped.

Photo credits: Wikimedia Commons



# This week in Science...

## FROM IMPERIAL...

### Potential energy production from rooftop solar panels could exceed energy used in 2019

In a first of its kind study, researchers at Imperial College London, University College Cork and Columbia University have identified “hot-spots” where placement of solar panels could generate the most energy. The article published in Nature Communications identified 0.2 million km<sup>2</sup> of rooftop area from 130 million km<sup>2</sup> of global land surface area and calculated the total global potential for petawatt-hour to be generated. They found it could be 27 petawatt-hour per year (compared to 6pwh used globally in 2019). Solar panel technology and affordability is improving, but the usefulness of this energy production will yet depend on developments in solar panel energy storage.

### Fruit flies smell even when asleep

Have you ever been peacefully woken up to the gorgeous smells of fresh toast, sizzling eggs and bacon, to realise you were starving? Me neither, but I know some fruit flies who have been so lucky. We have long known that human can process “salient” information (information that requires subconscious processing, like the smell of food or the calling of your name) whilst asleep. Researchers at Imperial College London used an ethoscope to perform high-throughput behavioural analyses on thousands of fruit flies, and found they respond to a number of odours, particularly those they are averse to. More impressively, they found that starved flies are more responsive to food odours than non-food odours. The researchers also found the region of the brain that stays awake during sleep, which is harder to trace in humans.

## FROM AROUND THE WORLD...

### Largest koala chlamydia vaccine trial commenced in australia

Researchers in Queensland, Australia have commenced the largest clinical trial of a vaccine against *Chlamydia pecorum* in koalas. Chlamydia is rampant in koala population, with some populations testing up to 100% for the debilitating and often deadly disease. Since 2018, Australia has seen its koala populations decline by around 30%, chlamydia is one of the driving forces behind it. The research group has spent over 10 years developing this vaccine. Initial trials have proven positive, with the vaccine reducing both infection rate and symptoms. In this trial 200 koalas at the Australian Wildlife Hospital will be vaccinated, and the efficacy of the vaccine will be assessed by comparing the hospitalisation rates of these koalas with 200 who are unvaccinated.

### Lucy explores the asteroid belt

NASA's Lucy spacecraft launched this week atop an Atlas V 401. Lucy, named after the hominin fossil, will conduct fly-bys of 8 different asteroids over its 12-year mission duration. It carries a variety of scientific instruments derived from earlier NASA missions, along with a golden plaque bearing quotes, poems, and songs from people around the world including Imperial alum Brian May. Although Lucy might have left Earth rather spectacularly, it is not yet time to say goodbye – it will return three times for gravity assists, using the Earth's momentum to slingshot it towards its destination.

# ENVIRONMENT

Edited by: MONAMI MIYAMOTO  
MARIE MORI  
MONIKA YORDANOVA

## Man's best friend - a menace to wildlife

View online here! 

**Srigan Moharir** Environment Writer

With an ever-increasing human population, our love for dogs has also grown multi-fold in the past few decades. However, as a society we have collectively turned a blind eye towards the devastating impacts that one billion domestic, feral, and free-ranging dogs impose on wildlife globally.

Reports and studies have highlighted that feral and free-ranging dogs have been largely responsible for disrupting ecosystems by killing wild animals, transmitting dangerous diseases, and even interbreeding with other canids. Studies have revealed that feral dogs are a potential threat to 188 endangered and threatened species globally. They have also been responsible for the extinction of 11 vertebrates in the recent past. With an exorbitant number of feral dogs roaming around close proximity of various wild reserves, they can compete with other carnivores for prey. There has been vast evidence of this including camera trap records showing dogs feeding on wild carcasses

Such scavenging and killing of wild animals by feral dogs have exacerbated the negative impacts of dogs on wildlife especially in biodiversity hotspots like India. A striking example of this is the Great Indian Bustard, only 150 of which remain in the wild, which has been threatened by feral dogs in Rajasthan (State in India). Since the feral dog density is high compared to natural predators, the frequency of prey species getting attacked in the forest across India has been extortionate.

In the UK, wildlife can similarly suffer at the paws of 'feral cats', which roam across the countryside killing local wildlife and threatening the populations of European Wildcats through transmitting diseases and interbreeding with them. Speaking of diseases, this is another way that feral dogs can threaten wildlife. Free-ranging dogs are known to carry diseases like Rabies which are transmitted to animals like, wolf, jackals, deer, foxes etc. during their close encounters with these wild animals.

While activities like predation,

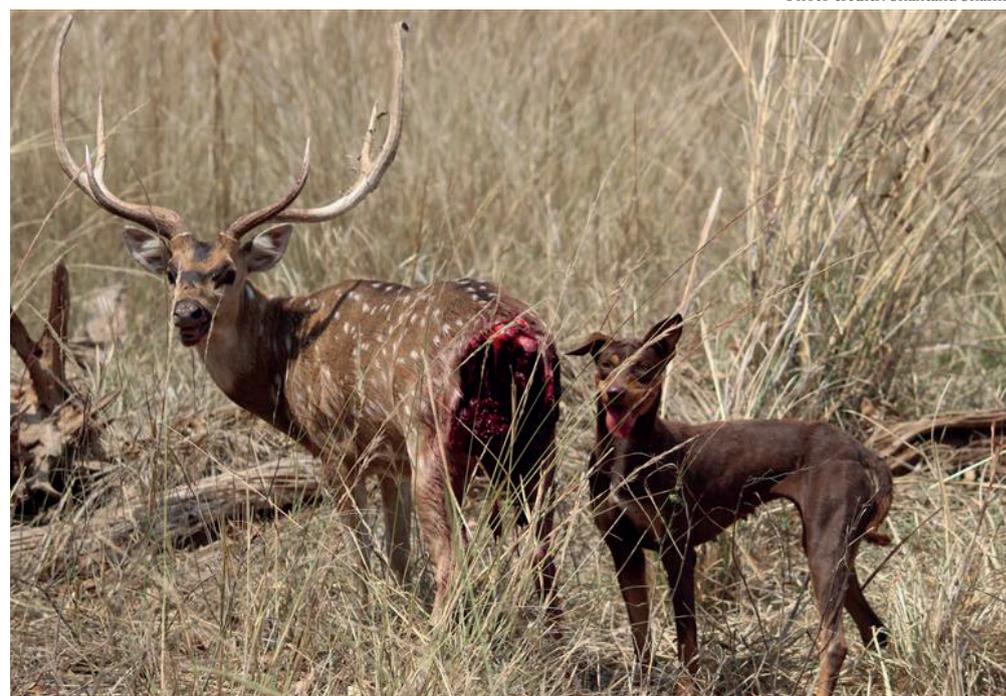


Photo credits: Shantanu Sharma

hybridization, disease transmission through feral dogs and their repercussions on wildlife have been reported through several studies by conservationists, efforts towards mitigating these effects have not been investigated in their entirety. Unfortunately, the primary way proposed to deal with the issue is through the inhumane killing of feral

dogs, rather than considering more sustained methods like animal birth control, dog sterilization or restricting the free-ranging behaviour of the animals. Hopefully, through future emphasis on these strategies we can minimize the encounters dogs have with the wild animals thus, helping numerous endangered species to persist in the wild.

## Coach accused of greenwashing

**Marie Mori** Environment Editor

Coach, the designer brand known for its high-end bags and shoes, has come under fire after environmental activist Anna Sacks posted a video on TikTok exposing the company for their unmistakable greenwashing. The video shows Sacks holding up handbags that have been purposely slashed and damaged by Coach employees, under instructions from the company to do this. Sacks explains that the reason for this is a tax loophole that allows these bags to be categorised under accidental damage – leading to a reduced tax bill. After the unwanted merchandise is cut up, employees are told to throw them away in dumpsters behind malls, which is where they were found by Tiffany She'ree (@

dumpsterdivingmama on Instagram), whose hobby is combing through dumpsters to find salvageable goods.

All this is in stark contrast to Coach's merchandise repairing scheme, Coach Re(Loved), with the slogan "Don't Ditch It, Repair It". Coach has a policy of taking in damaged goods from customers and repairing it for them. On their website, they state that "it's another small thing we can do to keep bags out of landfill and reduce our impact on the planet". The thousands of people who have voiced their opinions on this controversy online seem to all agree that the irony of this is unbearable.

However, this type of practice is not exclusive to Coach – it seems to be a common theme among clothing retail brands. In 2017, Swedish brand H&M

was famously exposed for allegedly burning 12 tonnes of unsold clothing each year, despite pushing an image of sustainability in their marketing. British luxury brand Burberry admitted in their 2018 annual report to destroying £26.6 million pounds worth of merchandise to retain a reputation of exclusivity in their products. Across the board, ranging from affordable companies to high-end designer brands, there is a glaring problem in the fashion industry.

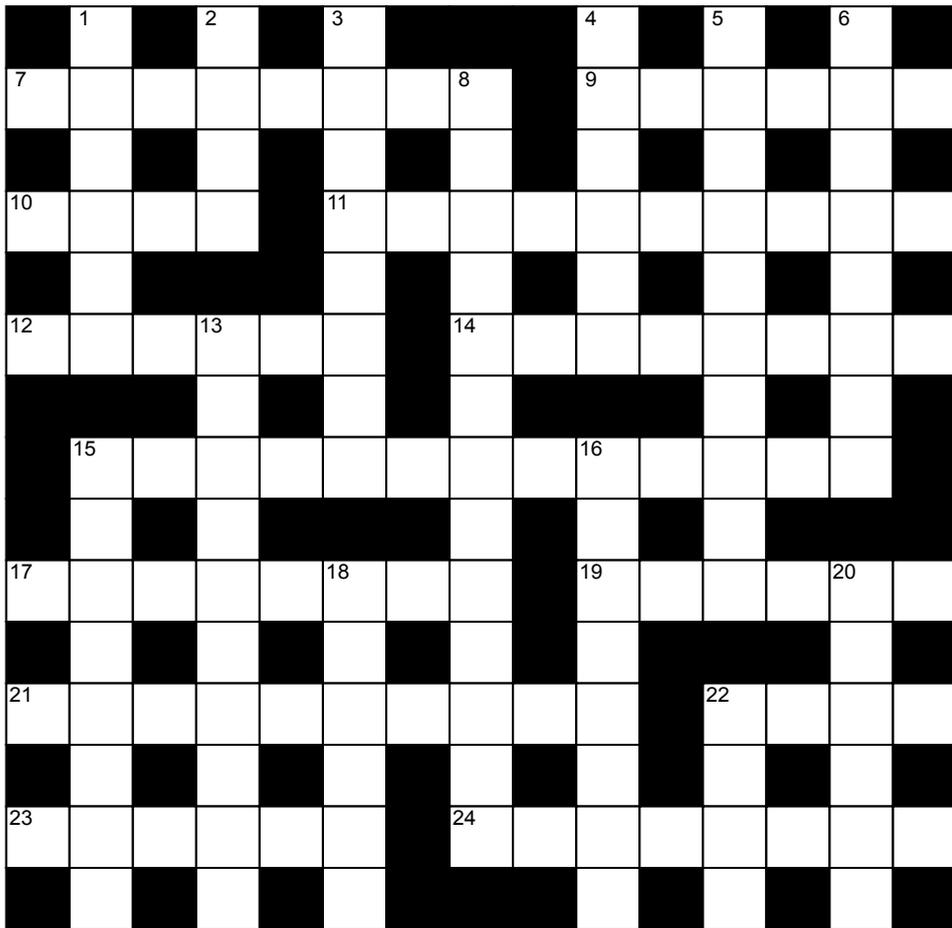
After Sacks' TikTok inevitably went viral, Coach saw a 44 percent plummet in online sales. Following the backlash, the company published an apology post on their Instagram, stating that they have "ceased destroying in-store returns of damaged or unsellable goods". They also mentioned that last year, they do-

nated \$55 million to "low-income families, individuals in need, those re-entering the workforce and educational programs" – an interesting inclusion that commenters under the post described as a performative apology. This type of response seems to be a classic case of being sorry that they got caught, not that they did it in the first place.

This controversy points to the bigger problem of consumer culture and the fashion industry's large-scale habit of polluting the environment. Clearly, there is something wrong with the way these companies operate and policies to prevent these types of practices should be implemented.

**CRYPTIC Crossword Grid**

**CRYPTIC Crossword Clues**



**Across**

- 7. Embarrassing failure caused on the road? [3 5]
- 9. As such orally delivered music is? [6]
- 10. Tips collected by the lookalike. [4]
- 11. Hints about top-grade leftovers. [10]
- 12. Time to show the ropes of figurative speech. [6]
- 14. Investigates park being overwhelmed by bugs. [8]
- 15. The justification the future spouse gave for becoming a landscaper. [13]
- 17. Live player editing remaster. [8]
- 19. I beg to satisfy. [6]
- 21. Examined the mission I have clumsily done. [10]
- 22. Heartily appalled at the gathering storm. [4]
- 23. Terms of release given by the father figure. [6]
- 24. Central heater I established to be in restaurants. [8]

**Down**

- 1. One pitching to sleep? [6]
- 2. Singing style in Cats. [4]
- 3. Soaring right around the soldiers' post. [8]
- 4. Weeps at the point when he uses the crystal ball. [6]
- 5. Informally, respectable person – but described as more than that? [4 6]
- 6. Neither a rook or rat can be found inside, they read. [8]
- 8. Hastily measure inch on protection. [4, 9]
- 13. Declaration of occupation? [10]
- 15. Before that strange ritual, almost disembowel via the throat! [8]
- 16. Previous subject about to change and get quicker. [8]
- 18. I am recklessly directed to be sent away. [6]
- 20. Organ causing bad temper? [6]
- 22. Rope around the opening. [4]

**Easy Sudoku**

**Normal Sudoku**

**Difficult Sudoku**

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

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

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

**Puzzles Notices**

New week, new puzzles for our Felix readers!

Hope you enjoyed last week's puzzles. This week we also have (for the very first time in ages) an article in the Puzzle Section, so be sure to check that out!

We also received a good amount of participations last week so thanks to all our lovely puzzle solvers for your submissions!

We thank our contributors:  
Lito Chatzidavari for laying out most of this section  
Freya Morris for the sudokus  
Stanley Scott for the crosswords and amazing article  
Ameena Hassan for everything else

P.S: We are still looking for editors and writers!

**Points**

Cryptic crossword	5 pts
Easy, Normal, Difficult sudoku	2, 3, 4 pts each
Regular crossword	3 pts

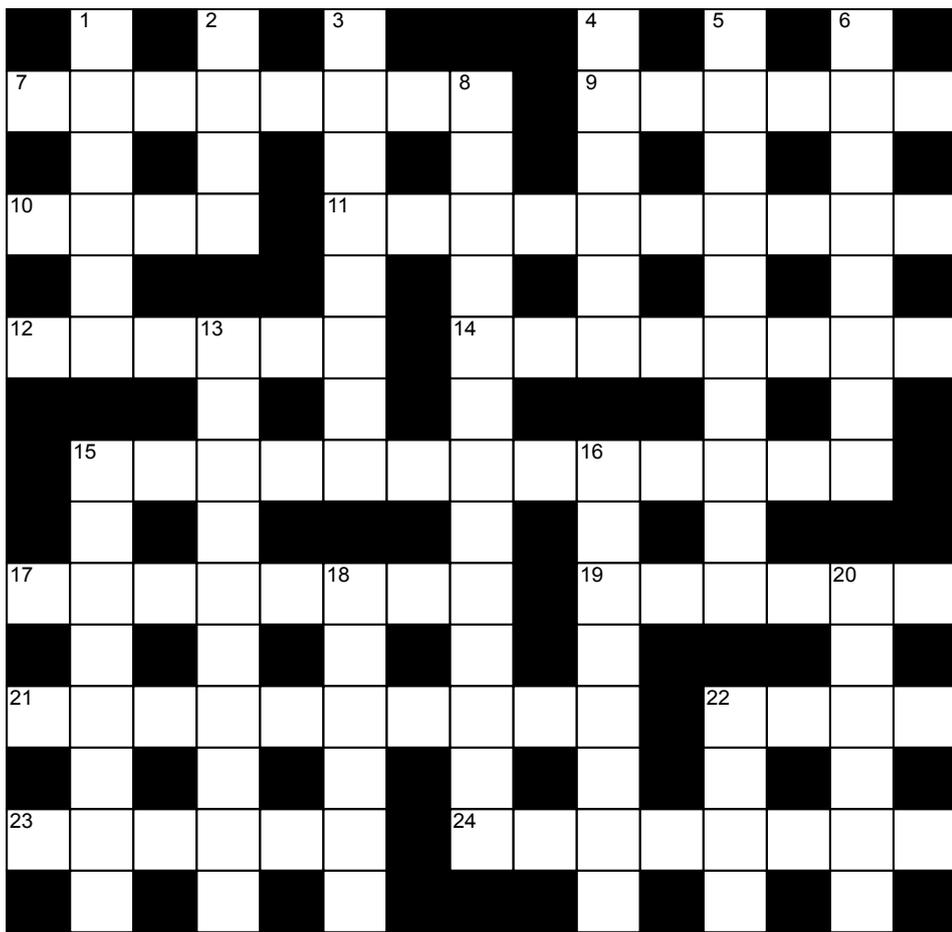
**FUCWIT**

1. Plont Palace	27
2. Deep-Fried Charizard	20
2. Pancakes, surely?	20
3. Front Row Quad	16

And we have a tie for our second place this week! Thanks you for all of those who submitted their answers this week. You can send this week's attempts to fsudoku@ic.ac.uk before Wednesday 27th 12:00.

PUZZLES

**REGULAR Crossword Grid**



**REGULAR Crossword Clues**

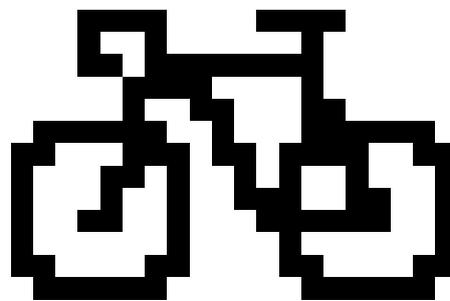
**Across**

- 7. French scuba-gear inventor. [8]
- 9. Made porcine sounds. [6]
- 10. "The Emperor's New Groove" villain, played by Eartha Kitt. [4]
- 11. 3rd most successful? [10]
- 12. Gift wrapping element. [6]
- 14. Inactivity. [8]
- 15. 2x as many buses? [6 7]
- 17. Motley crew. [4-4]
- 19. Former Saxon kingdom, now a county. [6]
- 21. 4th arrangement of charges? [10]
- 22. Lacking tact. [4]
- 23. Mere curiosity. [6]
- 24. More cowardly. [8]

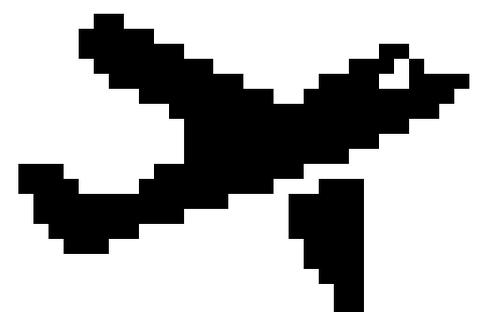
**Down**

- 1. Russian, long-snouted dog. [6]
- 2. Home to over four billion people. [4]
- 3. Watchperson, lookout. [8]
- 4. Gymnastics event, \_\_\_\_\_-horse. [6]
- 5. Practitioners of magic. [10]
- 6. Stereotypical features of drunkards. [3 5]
- 8. #1 goal in physics? [7 6]
- 13. Was stoic about. [7 3]
- 15. Cocktail with a rum base, optionally frozen [8].
- 16. Singer-songwriter 'Elvis'. [8]
- 18. Talisman. [6].
- 20. Murphy and Izzard, for example. [6]
- 22. Shelter top. [4]

**Nonogram #1**



**Nonogram #2**



**Easy Sudoku**

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

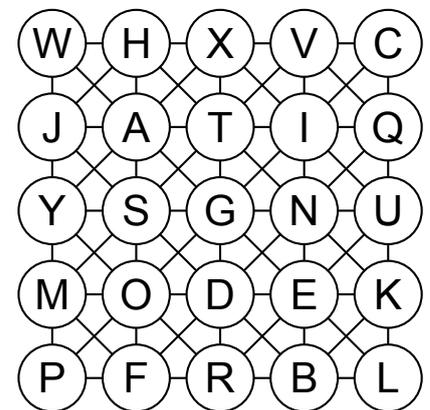
**Normal Sudoku**

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

**Difficult Sudoku**

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

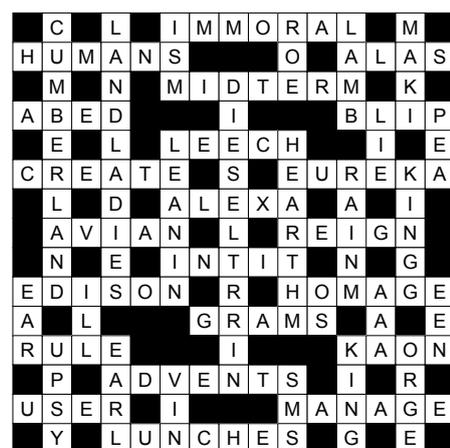
**Gogen**



**CRYPTIC Crossword**



**REGULAR Crossword**



**Pyramid**



**Minesweeper**

	1	*				*	
1	2	1			1	1	1
*				*			
1	2				1		1
		*	1		1	2	*
			2	*			1
1		1	*		1		
*	1						1
1	2	1				*	1
		*		1			
1		1	*				1
*			1	1	1		*

# How to solve Cryptic puzzles

Wow your friends with your superior crossword skills!

**Stanley Scott** Crossword Writer

Cryptic crosswords almost always seem daunting and inaccessible to those attempting to start solving them. Speaking from my own experience, my view of the puzzle used to be one of exclusivity, with seemingly endless rules to learn in order to crack the cryptic. I know that many of those unfamiliar with them simply discard the task as impossible. However, with a little practice and understanding of how the clues work, a cryptic crossword can be not only accessible, but deliciously satisfying to solve.

## The grid

As with any crossword, the puzzle consists of a grid of squares, white and black, with the white squares being filled in by you, dear cruciverbalist.

## The clues

Of course, the clues of a cryptic crossword are what makes it cryptic. The key to it is that, when you know the rules of the cryptic, the answers to the clues should certainly feel justified (if a little evil sometimes). There are four main types:

### 1. Instructional

Most clues will, in one way or another, tell you exactly how to “build” the word. We’ll later discuss how to identify different instructions, but for now let’s look at an example. The answer to ‘Went around the pond-life. [4]’ is NEWT. The clue is an instruction to take the word WENT, move it AROUND, to obtain a word for POND-LIFE. Note that the clue contains the definition of the answer (newt = ‘pond-life’) and the rest of the clue is the instruction. Almost all cryptic clues will follow this structure, containing both the definition and instructions.

### 2. Double definition

These clues are short phrases, with two words meaning the same thing. An example from last week’s crossword is ‘Lower basin. [4]’. The answer is SINK: both words mean SINK, but in different ways.

### 3. Puns

Pun clues are just what they sound like – puns. An example from last week is ‘Scowl when you draw a terrible card. [7]’. This one is GRIMACE, with scowl being the definition, and GRIM ACE being a pun for ‘terrible card’. Note that punctuation, such as the space here, is ignored in the construction of words. Simply put, only write letters in the boxes! A crueller clue of this type last week was ‘Fat-free fish? [5]’, with the answer SPRAT. The solver needs to know that a SPRAT

is a fish and also the character in the rhyme beginning “Jack SPRAT could eat no fat...”. The pun here is a lot looser than for the previous example, but still appreciable (I hope!).

### 4. Implied definition

Perhaps the trickiest of all cryptic clues are those in which the definition is implicit. Last week, we had ‘How one could describe the acne-ridden clown? [4]’, for which the answer was PIED. Unlike the other clues we have mentioned, the definition isn’t really in this clue explicitly; rather, the clue is asking for a word that could describe a clown, but also someone who is acne-ridden. We have a hybrid clue, using double definition (PIED as in blotchy and PIED as in having had pies thrown at one’s face) but in a covert way.

### Indicators

You’d have my sympathy for saying that this all seems impossibly convoluted. However, there are many indicators of the various things clues will be instructing:

### 1. Anagrams

Every cryptic has anagrams. There are countless hints that the letters in a clue are an anagram, normally associated with movement (e.g. ‘around’, ‘about’, ‘running’), with madness (e.g. ‘wild’, ‘crazy’, ‘party’), or with potential (‘can be’, ‘made into’, ‘possibly’).

Last week we had the clue for PERSIA being ‘As ripe as a land can be. [6]’ – the indicator being ‘can be’, and the definition being ‘land’. Therefore, we get the name of a land which is an anagram of ‘as ripe’.

### 2. Abbreviations

Crossword abbreviations appear throughout the clues. Single letters or short abbreviations that appear in the word will be signified in the clue. For example, ‘left’ in the clue will often signify the letter ‘L’ in the word. There are hundreds of possibilities for these, but a rule of thumb is that the abbreviation will either be a very well-known one (such as MP for representative), or one you would see in real life (P for parking is seen on signs, so is a valid abbreviation). There is a Wikipedia list of these abbreviations which I strongly recommend bookmarking.

### 3. Locators

Often the position of parts of a word in relation to others will inform you of the whole word. Words like ‘in’ or ‘inside’ indicate one word inside another, whereas ‘by’ and ‘next to’ indicate words side-by-side. ‘Down’ clues sometimes include the words ‘on’ or ‘below’ to indicate stacking. An example is last week’s clue for THRONG: ‘Cram right into the undergarment. [6]’. The definition is ‘cram’, with the abbreviation for ‘right’ being inserted into the word ‘thong’.

### 4. Reversal

The word ‘back’ or ‘up’ can signify reversing the letters of a word. For instance, ‘Put the gas back, it needs reflation! [3]’ is the clue for SAG.

### 5. Sounds-like

The words ‘We hear’ or anything to do with speaking/hearing can indicate homophones. E.g. ‘I hear dampness is expected [3]’ means DUE, with the word dew (for dampness) sounding like due (for expected).

### 6. Bridges

My personal favourite type of clue is the deceptively simple act of hiding a word in plain sight across two or more words. Last week we had ‘Some cheap, ugly dog. [3]’, with the word PUG written across the words ‘cheaP, UGly’ (remember to disregard punctuation!).

“**HOWEVER, THERE ARE MANY INDICATORS OF THE VARIOUS THINGS CLUES WILL BE INSTRUCTING**”

There are many nuances to solving cryptics, but I hope this can serve as a start, and to show that it really isn’t impossible. I recommend reading the “Solving Cryptic Crosswords for Dummies Cheat Sheet” on dummies.com for more information on them. That resource proved invaluable to me in my first months of cryptic solving.

Above all, if the words just aren’t coming to you, then don’t panic! Looking back at a clue with fresh eyes is often all you need to get it.

The crosswords are called cryptic for a reason too: they’re really tricky! So don’t worry if it takes you a while to complete them. No cruciverbalist worth their salt would advise otherwise.

CATNIP

# Imperial Athletes announces changes to sport at Imperial

Sory Rewart NegaFelix Paris Correspondent

Imperial athletes (IA), the much criticised system for sports club funding, implemented last year have announced that they will be responding to complaints that the system does not provide value for money, that it makes little sense for smaller, solo sport societies and that it erases clubs' individuality with a rebrand and a new way of working.

Launching after Christmas, Athletes of Imperial (AI) will, spokesperson Pasho Ver told NegaFelix, "robustly respond to students concerns in order to deliver the best version of sport for Imperial students". These changes come from a series of student and staff consultations done between last November and

January.

NegaFelix reporter Mick 'Marmalade' Fronk has been able to have a look at the proposals before they are published next week.

There is some sadness among the student community about the demise of the beloved IA organisation. Feb Senton, a fourth year Civ Eng student and keen athlete told NegaFelix "I am really sad to see Imperial Athletes go. As a weekly golf, rugby, football and water polo player as well as a semi-serious rower and triathlete I found the £25 joining fee really economical!"

Agreeing to speak to NegaFelix under a false name,

a source, described as high up in the Union, Romeo Venusden said "To be honest, having the College do all of this is going to take a lot of work off my, I mean someone's, plate".

A prominent club captain, Rugger McKickabout was relaxed about the changes saying "I don't really understand what people didn't like about Imperial Athletes. We got loads of money every year. But I don't want to come across as indifferent to the situation of smaller clubs. So if any other club captain can beat me in a pint downing contest then I will be happy to give them 10% of our social event budget."

## Our correspondent writes

The changes put forward in the AI mission statement are clearly meant as rebuttals to accusations made by students. However, it is clear that AI have made a number of errors in their survey and consultation process which have led them astray.

While some of these changes are comical, a rule banning any form of face covering was clearly aimed at students who did not like wearing COVID masks, though it also names swimming goggles, cricket helmets, fencing masks and gumshields in its prohibition, other rules are less benign.

The decision to provide students with a fully itemised bill at the end of each week will certainly let students see where their money is being spent but the creation of a new class of sport societies called "Povo socs" offering sports such as nose picking, underground bare knuckle boxing and mud flinging for the low price of only £1.50 a year might create more problems than it solves.

Meanwhile, club history and individuality has been addressed with a total prohibition on uniforms of any sort. Smaller clubs that found the Imperial Athletes membership price too high for them will also be folded into one another in order to make their existence economical. The report contains a number of suggestions of the new and exciting sports that might develop out of this, including Post Modern Pentathlon consisting of Pole Dancing, Archery, Parkour, Ultimate Frisbee and Sailing as well as Snooker Fencing, in which epees and sabres lunges are used to knock balls around the table

# Imperial fails to impress in the Earthshot competition

Sory Rewart NegaFelix Paris Correspondent

The recent Earthshot prize announcement ceremony brought disgrace to the competing Imperial teams. Of the 5 categories available, Imperial's teams came last in every single one. Here is what the judges said about the ICL efforts.

## *Protect and restore nature Prize*

The joint Imperial Engineers and UCL psychologist team working out of the City and Guilds building were told that their plan to "arm animals with modern weapons in order to give nature a fighting chance" was both irresponsible and missed the point. The judges did concede however, that the flamethrower hippo

was pretty cool. Not even the cutting edge work done by the UCL team to imbue their test subjects with burning hatred towards humans nor their ability to hit a moving target at 300 yards was found praise worthy. The team are not too disappointed, however. Since the competition they have been approached by numerous

state organisations interested in their work. Feb Senton, lead researcher, told NegaFelix that their most recent project, a wasp that can both sting you and tell you to go fuck yourself was going down very well.

# Imperial fails to impress in the Earthshot competition..

## *Clean Our Air*

The Imperial entry in this category unfortunately stumbled at the first hurdle when their lead researcher, 98 year old Dr Lam Sovatt, misheard the category title. The judges did thank Sovatt for his efforts, however, and said that his new shampoo had given them “more volume” than they really thought was possible.

## *Revive Our Oceans*

The plan to build a giant defibrillator to “shock the oceans back into action” was always going to be controversial. However, commentators, when watching the two 70-meter-wide paddles being lowered into the ocean off Scotland, would never have predicted just how controversial Aan Faylward’s team’s invention would be. Now wanted in over 60 jurisdictions, Aan is currently on the run. It is not predicted that fish will return to the North Sea for at least 70 years.

## *Build a Waste-free World*

Aiming to reduce the incidence of dangerous oil spills and inefficient engines, there were high hopes for Gulu Load, Professor of Interdisciplinarity’s submission. However, her team ended up coming last in the competition overall. A “flamethrower to burn all the oil before it can be wasted” has been submitted for an Ignobel prize.

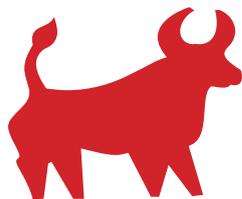
## *Fix Our Climate*

Working in a team with pop star and Coldplay front man Chris Martin, the Imperial team had inspiration strike when watching the Black Mirror episode with all the bicycles. Inspired by the solely positive tone of the episode, they took inspiration from the rest of screenwriter Charlie Brooker’s oeuvre to develop a choose your own climate adventure game, in which participants have to make decisions such as: which cereal to have at breakfast and when to flee your low lying costal home and become a climate refugee



### ARIES

This week a data breach reveals that your home address is at BR2 6AN



### TAURUS

This week your interviewer asks you to run him through his CV



### GEMINI

This week a new cheat code is discovered at the large hadron collider, unlocking increased walking speed for you



### CANCER

This week you get through to your dad



### LEO

This week Amazon insinuates it is you, customer, who is responsible



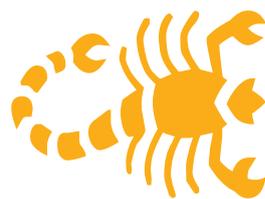
### VIRGO

This week you get into the spooky spirit by imagining the next five years while trying to get to sleep



### LIBRA

This week you watch Tom and Jerry with subtitles



### SCORPIO

This week you watch The Lion King (2019). A great film but you wish there was an animated version



### SAGITTARIUS

This week you watch the Exorcist and realise nothing will ever be as scary as the patriarchy



### CAPRICORN

This week you play Cards Against Humanity with your friends from Halls. No one has fun



### AQUARIUS

This week you buy a t-shirt from BooHoo that says “Climate Crisis Now” to really show your anger



### PISCES

This week a data breach tells you the top 10 silliest nicknames staff members have for you

### QUOTE OF THE WEEK

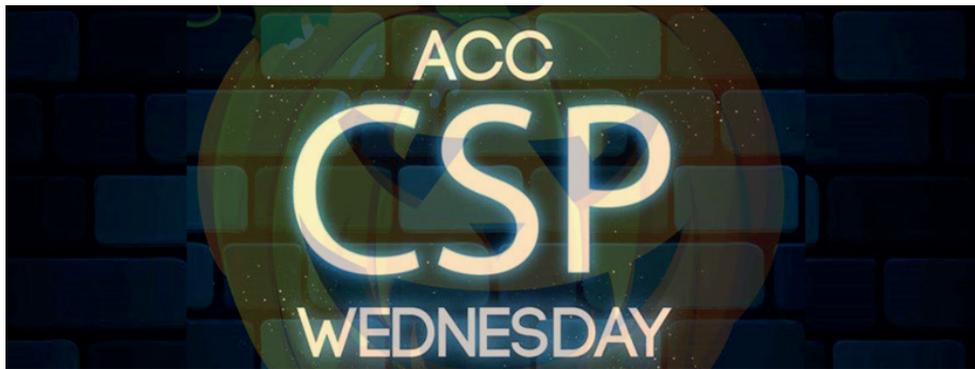
“I’m not sure about this whole ‘quote of the week’ thing” - *Guy who came down to the office on Wednesday*



 Autumn  
Elections 21

**Find out who's  
representing you this year**

**[imperialcollegeunion.org/elections](https://imperialcollegeunion.org/elections)**



## ACC CSP WEDNESDAY

Wednesday 27 OCTOBER 2021 | 19:00 - 01:30 | Beit Bars

Get hyped for the first ACC night of the year! This will be Halloween themed as well so we look forward to seeing your best costumes!

Tickets are £10 and they can be bought here:  
[imperialcollegeunion.org/whats-on/event/10361](https://imperialcollegeunion.org/whats-on/event/10361)



## POSTGRAD PIZZA

Thursday 28 OCTOBER 2021 | 19:00 - 21:00 | h-bar

Calling all Postgrad! Trick and TREAT YOURSELF on Thursday 28 October in h-har with some delicious pizza, spooky vibes and great music. Bone appetit!

Tickets are £5 and they can be bought here:  
[imperialcollegeunion.org/whats-on/event/10362](https://imperialcollegeunion.org/whats-on/event/10362)



## MUSICAL HALLOWEEN BINGO

Friday 29 OCTOBER 2021 | 20:00 - 23:00 | Metric

Join us and the Blingo crew for a hilarious night of bingo, beats and bling. Expect lip sync battles, dance offs, more bling than you can throw a zimmer frame at and an out-of-your-seat bingo experience driven by an all killer, no filler Hip Hop, RnB soundtrack, with a spooky Halloween twist. Stick around afterwards for our Metric Club Night! **Grab your £5 tickets here:**

[imperialcollegeunion.org/whats-on/event/10363](https://imperialcollegeunion.org/whats-on/event/10363)



## HALLOWEEN SPOOKTACULAR

Saturday 30 OCTOBER 2021 | 19:00 - 01:00 | Metric

**Dick and Dom** host a spooky evening in da Metric, the perfect way to celebrate Halloween. Beware - we can't guarantee they won't Beit! Join us if you dare...

Grab your £10 tickets here:  
[imperialcollegeunion.org/whats-on/event/10365](https://imperialcollegeunion.org/whats-on/event/10365)



More info & events: [imperialcollegeunion.org/whatson](https://imperialcollegeunion.org/whatson)



# FILM

## New Film Release

# The French Dispatch

Does Wes Anderson's latest entry live up to the hype?

Yasmine Chan Film Writer



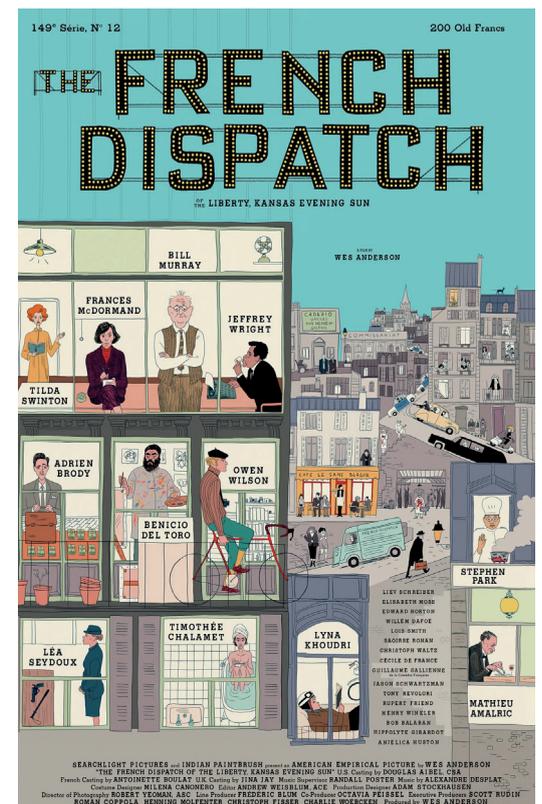
The French Dispatch, starring Bill Murray, Benicio del Toro, Frances McDormand, Jeffrey Wright and many more stars, is one of the most highly anticipated films of the year. The story follows the esteemed editor-in-chief of a European publication, whose death inspired his editors to publish the works of his best writers as a memorial edition.

I was fortunate enough to catch the film at the London Film Festival 2021. If you're like me, who did not read up much about the film before the viewing, you might be as pleasantly surprised by it as I am. The French Dispatch is unlike any of the other Anderson films I've seen, yet it remains to be stylistically recognisable. It takes on a much larger scale than his previous works, as The French Dispatch consists of three independent stories, strung together merely by the publication the stories are from. If this classifies as an anthology film, I think it fails the same way as most anthologies do – some stories are weaker than the others.

The first story follows an artist who created paintings from the prison where he is serving a life

sentence. It has the absurd humour from Anderson's previous works, and in my opinion, stands out the most because of Adrien Brody's deadpan performance. The second story touches on student-led revolutions. The tale is interesting but not exciting enough to keep the momentum from the first story. Last but not least, the third story brings the audience on an adventure to save a kidnapped kid. Visually, this is the most appealing part. Animations are weaved into live-action in such a creative and imaginative way that you wouldn't expect from a film, even if it is directed by Wes Anderson.

The French Dispatch is stunning to watch, but at the same time hard to follow. The dialogues are meanderingly long, and jokes get lost while the audience is still processing the lines. If it is to mock how writers often come up with terribly long sentences, I stand guilty for this. Long lines work well on paper but not on screen. It is the least accessible Wes Anderson film so far, making The French Dispatch a letdown for someone who generally likes his crafts.



## New Film Release

# Dune



Zanna Buckland Books Editor

A word to the wise: if you're not a patient person, this film probably isn't for you... That being said, the third remake of 'Dune', originally written by Frank Herbert, is thoroughly immersive. Despite not having seen either of the first two versions, Denis Villeneuve's iteration is acclaimed by fans to be the most true-to-the-novel 'Dune' yet. Ignoring the star-studded cast for a moment, the vast, expansive scenes created by cinematographer Greig Fraser and his team highlight the real stars of the show: Star Wars-esque forts and spaceships that tower over everything. Dragonfly-inspired hovercrafts portray a refreshing take on the evolution of human aviation.

Throughout the feature, mesmerising shrouds of mist and sand reflect the intrigue surrounding the plot while simultaneously hiding the formidable, full-toothed sandworms that inhabit the dunes, albeit rendering some scenes a little visually dull. This is by no means a fast-paced film, and intermittent flash-forwards make

it a slightly trippy experience, but keep in mind that audiences should be expecting a sequel by late-2023.

Action-packed scenes do come around, and slower sections provide time to process the occasionally confusing storylines. It may even be pertinent to save deciphering the plot until afterwards.

Despite the mountain of expectations that follow them as the third manifestation of their respective characters, the list of featured A-listers - Timothee Chalamet, Zendaya, Rebecca Fergusson, Oscar Isaac, Josh Brolin, Jason Momoa - give mostly stellar performances. Although fitting for the relatively serious tone of the film, the intense orchestral soundtrack running throughout the feature can be at times overbearing and ostentatious.

In conclusion, coming back to the idea of patience; if you're looking to see a full-on action film, I would recommend 'No Time To Die', or 'Venom: Let There Be Carnage' instead. But if you're in the market for a moving, breathing piece of cinematic art, get yourself a ticket and take a seat.

FRIDAY 22ND OCTOBER 2021

# MUSIC

Edited by: ROSIE MILLNS  
& TARA PAL CHAUDHURI

## Don't miss the gig - The Wytches @ The Lafayette, 29th October

Every time I have tried to catch The Wytches has been a massive drama for me. The first time was before



a Drenge gig in 2019, when the band pulled out shortly before the tour, and the second time I spent it drunk crying in the bathrooms of Moth Club. I am hoping it is third time lucky for this tour of their most recent album, *Three Mile Ditch*. The Wytches play some of my favourite doom-inducing dark-psychadelia, and their gig could not be at a more appropriate time than Halloween weekend.

## TODAY IN MUSIC HISTORY- 22ND OCTOBER

IN 1969, PAUL MCCARTNEY RESPONDS TO AND DENIES THE RUMOURS THAT HE DIED AND WAS REPLACED WITH A LOOKALIKE.

IN 2012, TAYLOR SWIFT'S RED WAS RELEASED, FEATURING ICONIC HITS SUCH AS 'I KNEW YOU WERE TROUBLE', '22', AND 'WE ARE NEVER EVER GETTING BACK TOGETHER.'



## Interview

# Passing the Aux to Melissa Worm Gilani

Interview by [Rosie Millns](#) Music Editor

Every week Felix speaks to an Imperial student to find out what the Imperial community has been listening to. This week we spoke to biochemistry student, singer, and guitarist, Melissa Worm.

**What was the last song you listened to?**  
I Need a Girl (Part Two) by Diddy.



**What is your favourite part about that song?**  
The beat

**You're stranded on a desert island and can only listen to three albums for the rest of your life - go!**  
I don't really listen to albums.

**What about artists?**

Dave, Red Hot Chilli Peppers, and Bruno Mars.

**You're at a party and somebody passes you the aux. What are you putting on?**

The song I last listened to - I Need a Girl (Part Two) by Diddy.

**Who is your guilty pleasure artist?**  
Stevie Wonder

**Who is your musician crush?**  
Bruno Mars



*View online here!*



*If you want to talk about your favourite songs in Felix, email us at [music.felix@imperial.ac.uk](mailto:music.felix@imperial.ac.uk)!*

## Single of the week

# Chaos Space Marine by Black Country, New Road

Written by [Rosie Millns](#) Music Editor

One of London's finest bands return just eight months after their debut album with a new single to announce their second album, *Ants From Up There*, due for release on Feb 4th. The whimsical song is a change in direction from the band's post-punk roots, and creates space to highlight the eclectic mixture of instruments in the band in a style not dissimilar to jazz big-bands. It is always sad when a band who's style you love changes their sound, however BCNR have been playing songs such as 'Basketball Shoes' from *Ants From Up There* live long before their first album was even announced. Whilst I am disappointed that I may never get to see many of the songs from *For the First Time* live, I am eagerly anticipating studio-recordings of some of BCNR's most beloved songs.



## MUSIC Felix Recommends

# Working for the Knife by Mitski

Written by **Pallavi Ojha** Music Writer

The fatalistic synths wail and moan in this dark, twisting new Mitski track. Gone are the strumming guitars of *Puberty 2*, instead this fresh sound puts Mitski's classic melancholic melodic lines against moody electronics reminiscent of Kraftwerk or Joy Division. 'Working for the Knife' evokes this anger and grief at the loss of a dream and her despondency at the path she's stuck on. The relentless drum track mimics this feeling of hopelessness we see in her lyrics: "I used

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**MY ONLY GRIPE IS IT'S TOO DAMN SHORT**

to think I'd be done by twenty / Now at twenty-nine, the road ahead appears the same / Though maybe at thirty I'll see a way to change". There's something nightmarish about what she's describing and yet I am obsessed. I hope this serves as a perfect taster of what's potentially to come in her long-awaited 6th studio album. My only gripe is it's too damn short. Hope you had a nice hot girl summer 'cause Mitski says 'it's sad witch autumn, hun'.

## Hippo Campus Return With 'Boys'

Written by **Joe Riordan** Music Writer

Only two months after releasing their EP *Good Dog, Bad Dream*, Hippo Campus are back. The Minnesota-based band announced the release of their third album *LP3* with the release of a single, 'Boys'. The new track perfectly combines the ethereal beauty of their debut album *Landmark* and the new direction they took on *Good Dog, Bad Dream* – experimental production which creates sounds and effects that I am excited to see recreated live. 'Boys' is the beautiful concoction that has emerged from all these past sounds, and it is phenomenal.

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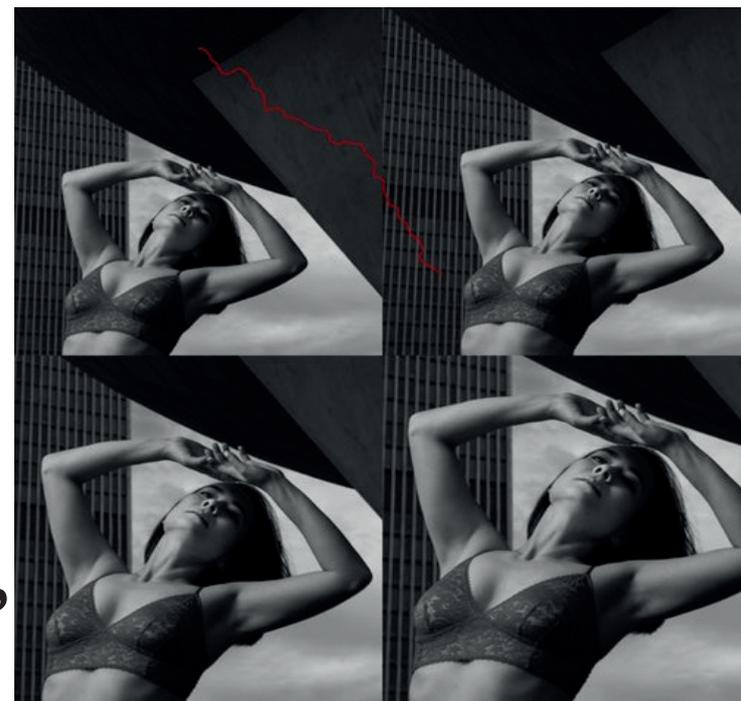
**AT DIFFERENT POINTS IN YOUR LIFE YOU FEEL DIFFERENT WAYS AND THAT'S OKAY**

now.” The sound of 'Boys' definitely reflects this sentiment. It is more refined and feels more grown-up compared to any of the bands' previous songs, both sonically and lyrically. Luppen said, "It's also about exploring sexuality, and the elusiveness of it. I've always felt that sexual preference is something that exists beyond the binary. At different points in your life you feel different ways, and that's ok." The track is about that journey and mirrors the ups and downs taken, heard between the huge choruses and the stunningly empty bridge that includes only vocals and a dreamy synth before building back up to a massive chorus.

Along with the album announcement, Hippo Campus also released a short run of European tour dates including three in the UK with one at London's very own venue, The Garage. As I'm writing this, tickets go on sale in exactly 21 hours, and I will be trying my hardest to get them. I urge everyone else to listen to 'Boys', wait patiently for *LP3* on February 4th 2022, and try to catch Hippo Campus live when they visit the UK next year.



The track is produced by Jake Luppen, lead singer of the band, who said "it was about this party I went to where I had all these crazy experiences and then woke up feeling like, 'I need to change my life right



Join the DICE waiting list to try and get tickets to Mitski's soldout gigs at The Roundhouse and O2 Academy Brixton on April 28th and 29th!

### Hippo Campus tour

Hippo Campus' UK tour starts in February 2022.

- Feb 1st - Stereo, Glasgow
- Feb 2nd - Deaf Institute, Manchester
- Feb 3rd - The Garage, London

Tickets went on sale at 10am on 21st October.

Don't miss out!

## Felix Recommends

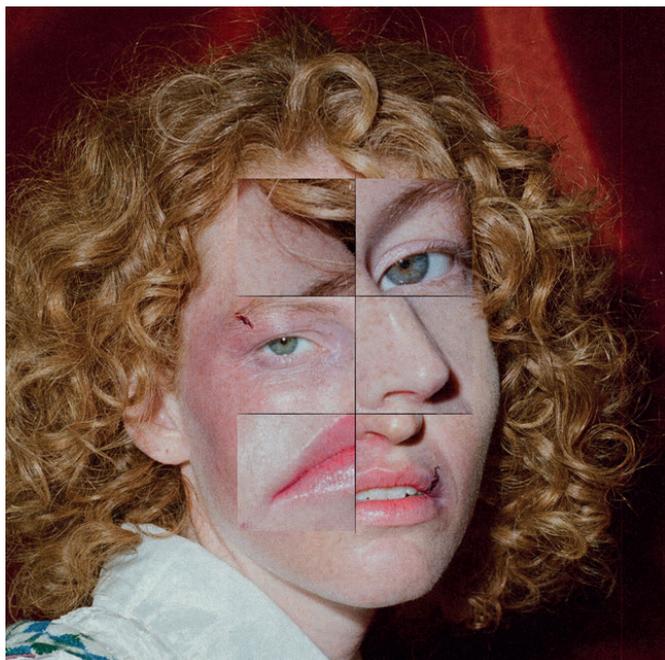
## Dandelion by The Greeting Committee

Written by **Joe Riordan** Music Writer

The first time I listened to The Greeting Committee was in January 2019 when Spotify suggested them to me, so I have whatever algorithm that was responsible for that to thank for the discovery of one of my favourite bands. The track I heard was 'Hands Down', an energetic love song driven by bright guitars and upbeat percussion. Now, the band have released their second studio album *Dandelion* and gone are the professions of love by lead singer Addie Sartino but the lyrical charm that she possesses still shines on every track.

At its core, *Dandelion* is a break-up album. Addie told *Atwood Magazine*, "Elise [my girlfriend] and I have been together for five years. But in 2019, we broke up for about four or five months and I was just devastated." The album is a guide through Addie's mind during the process of the breakup. The album is about accepting that we all experience grief, it is about dealing with the grief and finally, it is about the growth we see on the other side of it.

The first track on the album (which was also the first single that was released from the album), 'Can I Leave Me Too?', sets off on the grieving process. It is a plea to the person you have lost. The first line, "why does everyone drive the same car you do?", is something anyone can relate to. When we lose someone or something important it becomes hard to go about daily life without being constantly reminded of the loss. The ability to create such relatable moments within her



lyrics which are so personal highlight Addie's incredible song writing talent.

The feelings explored in the album can be seen changing as the album progresses with grief being explored through bargaining, self-loathing and the ups and downs of healing. Just as the cathartic and driving 'Make Out' ends, the self-referential 'So It Must Be True' begins. 'Make Out' is one of my two favourite tracks from *Dandelion* (I can't choose between it and 'How Long?'). It is the most fun track on an album that is inherently about sadness and perfectly encapsulates letting go of all cares. The kazoo-like sounds in the breaks (which I think are heavily distorted backing vocals, but I am almost definitely wrong) are one of my favourite new sounds on a track

I've ever heard. The track reminds me of artists like The Regrettes or Lauran Hibberd with its gritty guitar, almost conversational vocals - and ending with a 'bleurgh' from Addie, the regret after certain nights out is contained within one sound.

The conversational vocals continue at the start of 'So It Must Be True'. Addie speaks directly to the listener: "back to the wall / this record is one long sigh", "here's your love song, cause it's what everybody wants." The song is self-referential at heart, even referencing The Strokes, who are one of the band's own admitted influences, in the line "going all Julian" as a guitar plays a part that would fit perfectly on *Is This It*. After the freedom of 'Make Out', 'So It Must Be True' realises that the feelings of love are still there for the person that was lost despite all the grief experienced. It is the frustration felt when loving someone even though you feel you should hate them.

*Dandelion* also does what *This Is It*, The Greeting Committee's first studio album, didn't always manage - it feels gigantic. Pierce, the bassist in the band, credits this to Dave Fridmann who mixed the album. It is music to walk down the street to and feel on top of the world. Tracks that are sonically massive are perfectly followed by others that are beautifully sparse. This is most noticeable between 'So It Must Be True' and

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**WHEN WE LOSE  
SOMEONE  
IMPORTANT IT  
BECOMES HARD TO  
GO ABOUT DAILY  
LIFE WITHOUT  
BEING CONSTANTLY  
REMINDED OF THE  
LOSS**

“

**IT IS THE  
FRUSTRATION FELT  
WHEN LOVING  
SOMEONE EVEN  
THOUGH YOU FEEL  
YOU SHOULD HATE  
THEM**



'Wrapped Inside of your Arms' which is the single love song on the album that Addie wrote around 5 years ago at a similar time to 'Elise', a single from 2017 written about Addie's long-term girlfriend of the same name.

The album's heartbreak can be felt even more after knowing this. 'Elise' is possibly one of the most beautiful

love songs to have been written in this century. It is personal and yet relatable. After listening to 'Elise', it is easy to imagine the pain that led to *Dandelion* after the breakup. By the end of *Dandelion*, the grief felt has not yet been overcome but it has been accepted and healing has begun. With 3 tracks on the soundtrack and a cameo in Netflix's 'To All the Boys: Always And Forever', hints of an upcoming tour and a stellar second album, The Greeting Committee are definitely on their way to being a chart-topping band

and I'd recommend everybody to listen to them.



Photo credits to Envato Elements



Bitcoin... Dogecoin... ooh!

# There's only one way that Crypto's going – up.



Cryptocurrencies are going up and down, but will it now start rising?

*Cryptocurrency has been in the news for a while now, but why are things really kicking off lately?*

Sean Yu

Cryptocurrency Investing Lead, ICIS.



Honestly, I couldn't think of a time that's more exciting than now to enter the space of cryptocurrency.

Yes, I know, that sounds fairly cliché, and you hear that all the time from YouTube advertisements, but I'm saying this from the bottom of my heart... there is no better time than now to enter the market of cryptocurrencies.

Why? Well, it's not because we just had a historical bull run in April that added 60,000 millionaires to the planet, nor because bitcoin increased by more than 7 millions times (yes, that's right, you could convert that to 700 million percent, if you like) in price since it was first launched back in 2009, but because of the every cool thing that is currently happening within the space.

Before we look at some specific applications of cryptocurrency, it is essential to understand that most cryptocurrencies run on what's called a "decentralised network", which means that there are no centralised authorities that could obtain the exclusive rights to alter data stored on this network. This is crucial, and you will see why soon.

Taking the most well-known case of cryptocurrency, Bitcoin, to act as an example, we could see how some cryptocurrencies could be used in cross-border transactions (basically, two people that live in two different countries). Somebody could argue that Bitcoin's value is so unstable that it is not suitable for being used as a currency. 0.001 Bitcoin might today be able to pay off your weekly groceries, but tomorrow might not even buy you a pot noodle! That is true in a sense, hence why 'stable coins' such as USDT and USDC are invented, whose values are linked to the values of USD – the US Dollar, which makes their value relatively unchanged most of the time, unless USD experiences a big fluctuation in price. This is also done in a much cheaper manner than say,

TransferWise, or Revolut, because there is no middle company that's taking the cut from international transactions. Instead, every computer (or 'node') on the blockchain that supported the transaction would obtain a fee from the transactional costs. But, since blockchains can't do M&A deals, once a better blockchain with cheaper transaction fees come out, it wouldn't be bought by Apple or Facebook, but rather, it would get customers as people would simply prefer to use it more due to the lower fees.

You see? Decentralisation allows for better market competitions, as bigger blockchains don't necessarily have that advantage if they don't regularly update their technologies and they also can't just overtake the smaller blockchains by throwing billions of dollars at their face. This is why smaller blockchains such as Solana and Avax are gaining traction recently, as they are cheaper to use, and also faster in terms of the transactional speeds.

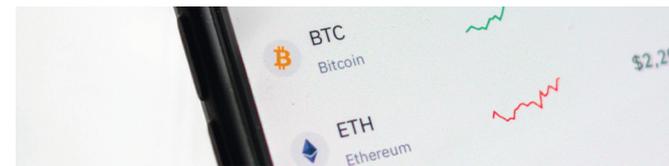
Furthermore, I'm pretty sure all of us have had those weird experiences, where we are just having a chat with friends on some random topic that we have never searched up on Google before. However, a few minutes after your conversation ends, your Instagram ads start to display relevant contents of what you have just discussed with your friends. That sounds kind of creepy, doesn't it? The truth is, the software you use wants to collect your data and then sell it to a big tech company (like say, for example... Facebook), which could utilise this data to provide more tailored advertisements towards you. Of course, they could also use this data to train their A.I., or, simply store them, for many other purposes.

That is quite common nowadays, with tech conglomerates dominating the data world. However, many geeks (including myself) hate that. So, many smart engineers came up with the solution to store the data not in any single company's storage place, but on everybody's computer. What's more important is that although this data is stored on these computers, they are not accessible to the owner of these computers, unless they have what's called the "secret key" to these data. The exact mechanisms of how this work goes

into too much detail, but if anyone is still reading until now, I strongly recommend you to search for how blockchain technologies work, and how WEB 3.0 works.

That being said, this is exactly what some cryptocurrencies are currently trying to do. Take for example, GRT – the graph network. It's a new way of transmitting data (known as a 'protocol') that utilises WEB 3.0 technology. It behaves like Google, but instead of your search history being collected by any company such as Google itself, it is being collected by every computer that participates in the blockchain that is lying below the application interface of GRT. It is decentralised. If someone wants to spy on this data, they will have to break into the blockchain, which is virtually impossible. The GRT is essential to every part of the economy on this search engine, hence why GRT is valued so highly.

There are many other applications, such as decentralised data storage, decentralised video streaming, decentralised commercial banking, so on and so forth. You do see a pattern here though. These monopolised industries are usually the first to be challenged by cryptocurrencies. It is essentially a social revolution where authorities are being challenged. This is geeky, but this is the future of tech, unless you enjoy a tech world where only FAANG exists and all other start-ups are just there to be acquired by them.

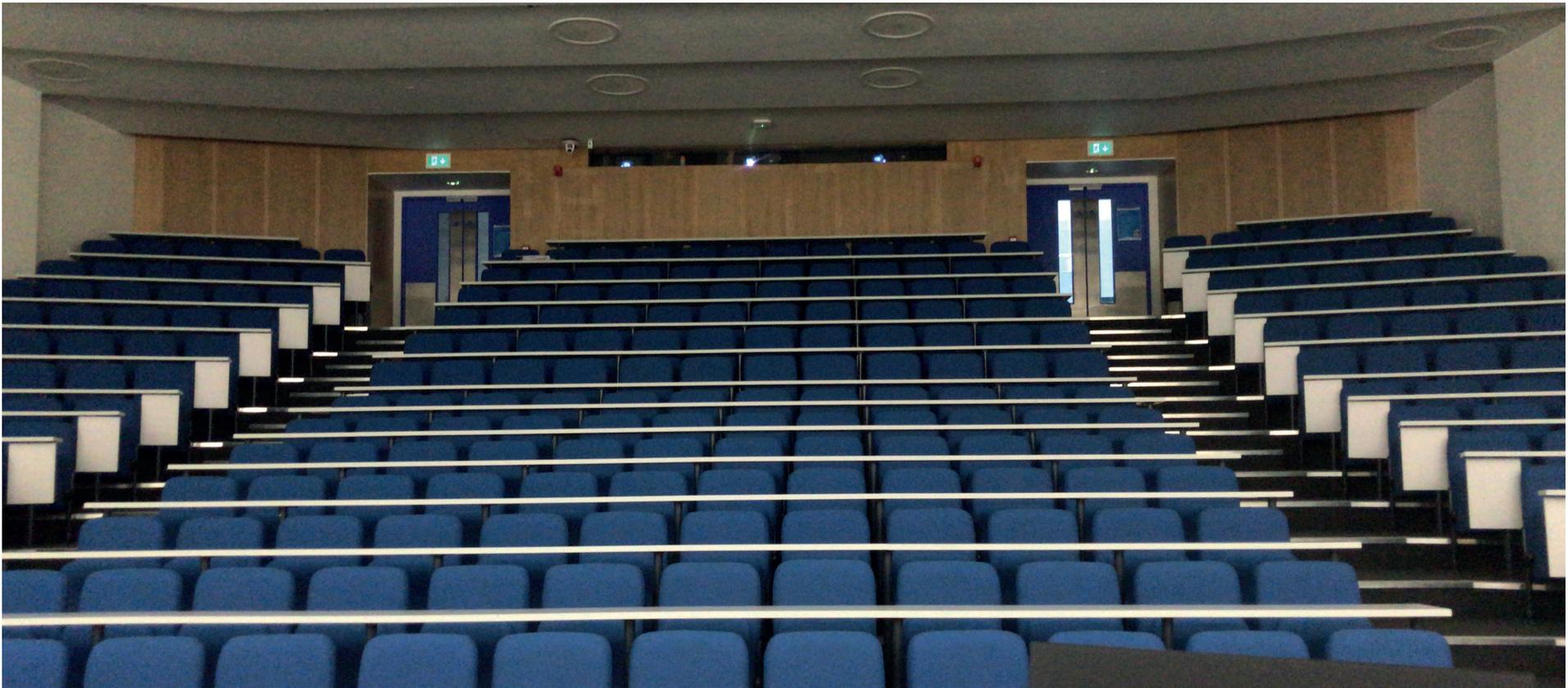


People say the asset class is purely speculative, but the same was said about junk bonds 30 years ago and they are now an essential part of any fund manager's portfolio. Would the same happen to cryptocurrencies? Only time would tell, but one thing for sure is... if the cryptocurrency space does keep growing and eventually mature into a market similar to those of bonds or equities, then the early participants would surely not regret their decisions.

## A CRYPTOCURRENCY INVESTING LEAD I SEE... WHAT IS THE INVESTMENT SOCIETY DOING WITH CRYPTO THIS YEAR?

Well, we think cryptocurrency is the future. For that reason, we've dedicated 10% of our capital fund, QT Capital to research the various cryptocurrencies available and monitor their movements as time passes. Sean here is leading our research into the field with his wide knowledge of how they structure and work.

# The Investment Society's event listings page – Volume 4

**INVESTMENT**
**Events at Imperial this week**


Our camera broke, so here's the lecture theatre where the magic happened – nearly all the seats were filled!

## SEC – Lecture 2

Saturday 16<sup>th</sup> October 2021 10:00 – 12:00 **IN-PERSON LOCATION TBC** (OPTIONAL LIVE-STREAM VIEWING ON TEAMS AVAILABLE)

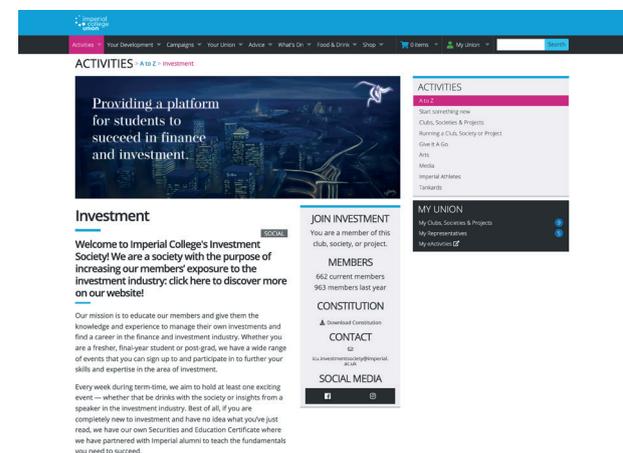
### A big thank you to everyone who was able to attend Lecture 1!

It was a magical view to see an entire lecture theatre filled again in pre-pandemic fashion and the comments we received were really great to hear, ranging from "great organisation" to "fabulous lecturers" and "smashing slides". One audience member told us they'd "never seen so many people in a lecture theatre before, which felt odd to say at all", so to hear that all of you enjoyed

it was exactly what we were looking for!

Lecture 2 is coming up, and we're going to work on the feedback you made about the delivery of the slides and the pace of the lecture to make it more comfortable for you.

**PLEASE NOTE YOU MUST HAVE BEEN PREVIOUSLY ENROLLED ON THE COURSE TO ATTEND** – this is to keep track of any (unlikely but possible) COVID outbreaks. *We look forward to seeing you this Saturday!*



An Introduction to AmplifyMe and the Finance Accelerator Simulation  
27 Oct 2021  
16:00 onwards  
**LOCATION TBC**

Join Amplify on the 27th October to experience the same trading simulations used by the worlds leading banks to enhance your market awareness. Gain hands on experience of both the sell-side and buy-side giving you exposure to life as a market maker as well as an asset manager.  
**Contact George Spencer** (gws19@ic.ac.uk, see right) for more information)

▲ M P L I F ▼

A masterclass in the basics of Investing and Investment Strategies  
15 Nov 2021  
TIME TBC  
**LOCATION TBC**

Join Etoro on the 15th November for a masterclass in the basics of investing in stocks, commodities and cryptocurrency, while also going into more advanced investment strategies. Led by Sam North, this event is perfect for those starting out their investment journey while also enhancing the skills of the seasoned professional.  
**Contact George Spencer** (gws19@ic.ac.uk, see right) for more information)

ETORO

We're also working on other events to bring you over the coming year!  
If you're a society and you're interested in helping us set them up, drop us a shout:  
icu.investmentsociety@imperial.ac.uk

### Spring Weeks Guide

**PRIDE In Finance**

**Quantitative Investment**

**BAME In Finance**

## Look at what you're missing out on!

# Securities & Education Cert-Watch (1/4)

*The Securities and Education Certificate is a qualification awarded by Imperial's very own Investment and Finance Societies. It is being run by Imperial students to teach other Imperial students the fundamental knowledge about Investment and banking that is required for a career in these fields which have been shrouded in mystery due to over-complicated terms. This is an examined course, so that future employers can also be shown a graded certificate.*

**Ameena Hassan**

SEC student, Writer

If you were present in CAGB for the inaugural lecture that kickstarted SEC'21, you would know what I mean when I say I haven't seen a lecture this well attended for a long time.

The Securities and Education Certificate (SEC) is in its fourth year running and is a joint venture between Imperial's Investment and Finance Societies. It is aimed at undergraduates and postgraduates who are interested in applying to jobs in the financial sector but have not had the opportunity to understand the terminology that these institutions hide behind.

This year's course has transformed through the efforts of the Investment and Finance Societies and is such a departure from their usual course that even previous years' cohorts were allowed to re-register.

These talks are given by Imperial alumni and members of the Investment and Finance societies, which allows them to present the course in such a way that complete beginners (like me) can understand.

The four week course runs on Saturdays this month from 10am to 12nn, and features the following topics:

1. Introductions (some basic definitions), Industry Players, and a career focus on Markets,
2. Industry Players, Equities, and a career focus on IBD/Advisory,
3. Fixed Income, Commodities, Real Estate and a career focus on Asset Management
4. Alternatives such as Hedge Funds, Derivatives and a career focus on Quantitative Analysts

The first lecture was given by a pair of alums

who graduated in 2014, and they walked us through a few basic terms:

Asset = something you own

E.g. A burger stand, or an uncashed check, or £20 in your pocket.

Equity = portion of ownership in a company

If you start up a burger stand with a friend, you would usually own 50% of the equity of the burger stand. Equity in more technical terms would be the sum of assets minus the sum of liabilities, and this is just fancy-speak for "I bought my burger stand for £30, but I borrowed £20 from my mum to buy it. So the total equity of my burger stand is £10, of which my friend and I own half of."

Financing = getting money

Or in a lengthier definition, either borrowing money (raising debt) or selling off parts of what you own (e.g. shares), which is called raising equity. In our burger stand example, you can access (= get) finance (=££) by borrowing more money from your mum, or raise equity (= worth) by renting out some space on your stand for adverts.

Security = contract to pay something off

In fancy-speak, it's called a 'financial instrument'. Technical terms: An asset or a contract that you can trade and make money from the trade of.

For example, you have blackmailed another friend, and you have in writing that they now owe you £100. That's a security (= promise). You are secure in the promise that your now-probably-not friend will pay you £100 at some point. You can sell off this security to another person, or keep it. Either way, you're getting some money out of it.

Here are a few more technical terms:

Fixed Income (from a debt) = Someone gives you a fixed amount of cash at fixed times, also known as a bond.

Credits = bonds issued out by companies only, and not countries.

For example, you wouldn't be getting credit if you bought bonds in the British government, but you can always obtain a fixed income by charging interest on a loan.

The financial services industry is huge, and comprises sectors that you may or may

not have heard of: Banking, Insurance, Financing, Payments, Investing (and more). However, the biggest sectors are known as sell-side and buy-side, and this is what our speakers focussed on.

Sell-side = access to financing or the ability to trade

Some examples: banks that loan you money, or trading platforms.

Sell-side firms would underwrite loans (do loads of risk assessment, e.g. your mum thinks you trustworthy enough to loan you £20 for the burger stand.

They would also buy and sell shares for a fund, or of a new company. (also called an IPO), e.g. those who decide to buy up advertising space on your stand.

Sell-side is split up into public and private markets. Public markets are those that help market players buy and sell securities, while private markets help other companies access finances.

Sell-side services for public markets are split up into mini-sectors you may have heard, like Sales & Trading, Research, and Public Markets. Private markets can also be split up, but into more fancy terms, like 'Debt & Equity Capital Markets', Mergers&Acquisitions, and Leveraged Finance.

Sell-side companies can be split into two - Buble Brackets, and Boutiques/Trading Firms.

Buy-side = buy and/or sell securities

For example, someone would like to buy your IOU or sell you another IOU. (e.g. your friend signs an I-Owe-yoU £100 contract)

Now, this can be split into two types of companies. A Hedge Fund can choose to buy advertising space from you whenever they like. A Private Equity Fund would borrow money from a bank to buy your entire burger stand from you, as they think they can bring in more income if they managed it themselves. An example would be someone walking up to your stand and offering you £80 to buy the entire thing.

Some last thoughts on the first lecture:

The slides are amazing and very detailed. This may sometimes make the pace of the talks a bit fast, but if you focus on what is being said, you can always study the slides better after the lecture. This lecture series isn't recorded (unlike all of your normal lectures), so you have to either be there for it or live vicariously through the reviews published in Felix each week.

The course is graded through a combination of attendance and a final assessment. Attending each of the four lectures contributes to 10% of your final grade, and in my opinion, it's worth it. You really do have to watch out for the QR code to register your attendance though, as it's easy to miss in between slides!! There was so much useful information packed into those two hours that just can't be conveyed through looking at the slides. Although I do wish they had been recorded, it's an amazing opportunity either way, and the slides uploaded to

the Teams help with reviewing the material through the week.



**... YOUR NOW-PROBABLY-NOT FRIEND WILL PAY YOU £100 AT SOME POINT, AND THAT'S SECURITY.**



**...AN AMAZING OPPORTUNITY PROVIDED BY IMPERIAL STUDENTS**

# BOOKS

Edited by: ZANNA BUCKLAND

## Book Review

# The Upper World

Benyam Dejen Books Writer

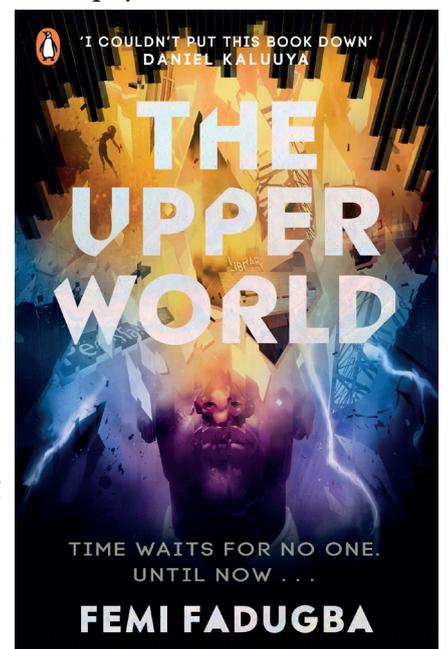
Jump on the tube at South Kensington, take the District Line to Victoria, then the Southeastern train and within half-an-hour you'll land in SE15, Peckham. It's very different to South Kensington. To paint a picture, a friend of mine referred to his commute from the South London district into SW7 as, "a step through a time machine." Much like other areas of Greater London, Peckham continues to transform, as new buildings and people take up residence there, whilst South Kensington firmly retains its antiquated style. SW7 is fondly recognised for this; whilst Peckham is often derisively characterised by the council estate

– a post-war brutalist architecture which forms the backdrop to Femi Fadugba's, *The Upper World*. In this heart-wrenching thriller, we follow the

narratives of two teenagers, Esso and Rhia, separated by a generation, whose lives are haunted by a single bullet fired in a Peckham alleyway. In Esso, we have an introspection into a stereotype that plagues these estates, a teen who is caught in the midribs of gang-violence and in Rhia, we observe the torments of an orphan with a turbulent life in foster care. Femi does justice to the tribulations of both narratives in his storytelling, but what makes this book incredibly unique is his deep explorations of science and philosophy that mould the outcome of the story. *The Upper World* takes its name from the mystic realm that Esso transports to during traumatic events, where he has glimpses into his future and past. Here Femi delivers an education on free will, space-time geometry and Einstein's special theory of relativity through philosophical

allegories and annotated derivatives of the equations. The sequel promises an exploration of quantum mechanics and the multiverse theory which are some of the most fascinating theories found in physics.

Femi has lived in Peckham; he's lived on a council estate, and he's studied physics at Oxford. Few have the credentials and penmanship of Femi to blend these themes so well in a single novel. In all my years I have never read a novel like this, so I was delighted to learn that Netflix have begun working on an adaptation starring BAFTA award winner Daniel Kaluuya!



“**FEMI DELIVERS AN EDUCATION ON FREE WILL, SPACE-TIME GEOMETRY AND EINSTEIN'S SPECIAL THEORY OF RELATIVITY**”

## Book Review

# The Girl with the Louding Voice

Khama Gunde Comment Editor

They say you shouldn't judge a book by its cover, but when I walked past this book in my local Waterstones I was attracted to its bold, colourful display. That said, it was the broken English stamped on the cover in the bold white font that instantly drew me in. I recall thinking why did the author choose to write 'louding' instead of 'loud'?

I would soon find out that Nigerian author Abi Daré was very intentional in her use of broken, or non-standard, English, which she also used throughout the book to embody the narrator and protagonist; a fourteen-year old Nigerian girl called Adunni who was pulled out of school because she couldn't afford the fees. 'The girl with the louding voice' starts with her life of poverty in the small, rural village of Ikati. She strongly desires to continue her education but is limited by the options available to young women in her village, her only option is a forced marriage arranged by her father in exchange for money. When tragic circumstances

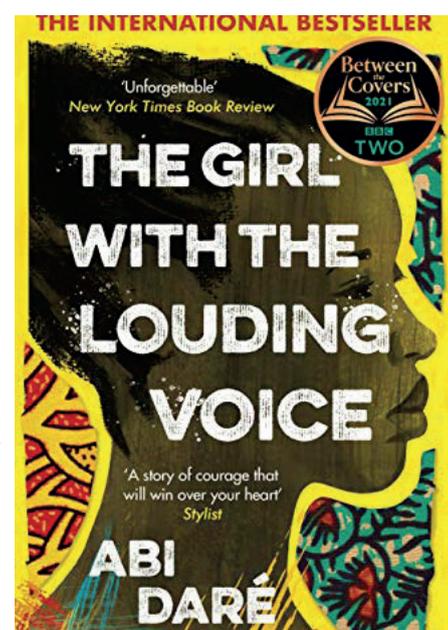
force her to abscond from her loveless marriage, she ends up working in Lagos as a housemaid. Despite the many obstacles along her way, Adunni remains adamant that education will liberate her, and her voice will be heard.

With the harsh situations Adunni faces, it was easy to forget that this is a coming of age story. I appreciated how Daré seamlessly weaves in many social topics and issues relevant to Nigeria. Adunni may be young, but her innocent, feisty, and occasionally naïve, character provides a raw, honest, unfiltered perspective. From child marriage to rape, child labour, abuse, corruption, and class disparity - Daré explores these issues in a way that highlights the misogyny and sexism inherent in the struggles the female characters face. The contrast between these scenarios and the curious, youthful voice spoken in broken English emphasizes the harsh reality facing young girls like Adunni in a patriarchal society.

This is an inspiring book, and it has undoubtedly left a mark on me. The first-person narrative is immersive to the point that you forget that Adunni's character is one whose external voice is consistently repressed

by those around her. Adunni yearns for a 'louding voice' yet to the reader she is heard loud and clear, Daré superbly grants a voice to a character that represents some of the most vulnerable, exploited, and invisible members of Nigerian society.

In the end, it may be reassuring that the difficult life Adunni faces is a fictional one, but the book draws from real life scenarios that many young women and girls are forced into so this is not a book you are likely to forget. Daré allows you passage on an emotional journey alongside Adunni and you will laugh with her, cry with her, and hope with her.



## COMMENT

» HAVE AN ARTICLE IN MIND?  
EMAIL YOUR IDEA OR ARTICLE TO:  
COMMENT.FELIX@IMPERIAL.AC.UK

Edited by: KHAMA GUNDE

# Why isn't Imperial on par with Oxbridge?

► *How to walk out of the shadow of Oxbridge.*

Runtian Wu  
Writer



“How did you fail the Oxbridge interview and come to Imperial?” This was one of the most common (and embarrassing) questions I have heard since coming here. Imperial is one of the top universities, and there was a time, particularly in 2015, Imperial even surpassed Oxford and ranked 2nd in QS World University Ranking. But the weird thing is that despite continuously staying in the top 10 list of QS, Imperial still cannot get rid of the “honorary title”: Top Backup Choice for Oxbridge Students. Of course, coming to Imperial doesn't mean that we're anyway subordinate to Oxbridge students. But from time to time, I would wonder whether there will be a day when Imperial gives up the title of “Oxbridge backup” and proudly stands alongside not only Oxbridge but Harvard and MIT. As Imperial students, we all share the responsibility to better our community, and I believe we all hope this will one day come true. I am writing this article to share some thoughts on this hot

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**WHAT WE  
NEED ARE  
SCIENTISTS,  
ENGINEERS,  
BUSINESSMEN,  
AND DOCTORS  
AIMED TO  
LEAD AND  
CHANGE THE  
WORLD.**

topic, and hopefully, it will light the way.

So, isn't the ranking accurate enough to show the competence? Well, forget about QS ranking. If given appropriate time, an average person won't find it hard to realise that Yale is not on the top 10 list. The same goes for Princeton, Columbia, and UC Berkeley. Top-tier universities don't necessarily need a good ranking to let people know that “they are good”. And in fact, Imperial

owns the title of “top 10” only for QS this year—not in Times, not in US News, and not in ARWU. This is nothing to really brag about, and surely it cannot be our biggest advertisement. Just suppose next year Imperial drops out of the top 10 QS list. How awkward it shall be!

Where are we lagging? Notably, alumni. One of the most significant contrasts between Imperial and top-tier players should be the number of Nobel Prize winners. Harvard has 165, Cambridge 121, Oxford 72, but Imperial has only 14 officially. The Nobel Winner page on the Imperial website has been quiet for more than 40 years (the latest laureate was Abdus Salam in 1979). Frankly

Photo credits: Ben Seymour on Unsplash

speaking, except for a few people like Alexander Fleming, we can barely find any household names. This strange phenomenon has even aroused doubts on whether Imperial is only nominally good. It's not easy to get a Nobel Prize. It's even harder to get household names (how many Nobel laureates' names can you remember?). But that's the characteristic of a top-tier player.

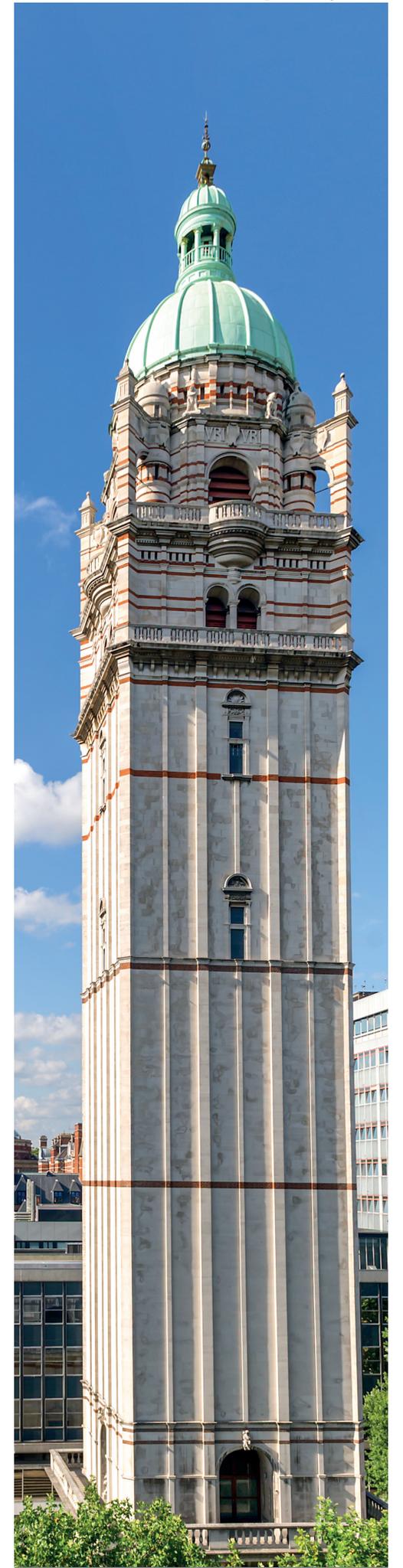
Don't frown. There is a way we can change it. The time has come that we should not be blinded by competition with other universities but flourish in our own unique way. Students, professors, staff, and researchers should not come to Imperial merely for trivial personal interest, namely money. What we need are scientists, engineers, businessmen, and doctors aimed to lead and change the world. What we need most is AMBITION.

Once, I heard somebody say that Imperial lacks the soul. It holds true today. And facing up to this dilemma is more urgent than ever. Last year, we cancelled the motto *Scientia imperii decus et tutamen* to protest against colonialism, yet we're still embarrassingly using the colonial name, “Imperial” College London. Positioning ourselves in the 21st Century where the colonial empire has long collapsed, countries worldwide are caught in a fierce science and technology race, and humans are facing an unprecedented climate crisis, what kind of new role shall we play?

The mission lies on us. The students, researchers, staff—everybody in this university shares the responsibility to find our way forward. President Alice Gast, and the incoming President Hugh Brady, should aim at uniting the university and reigniting the university's mission in the 21st Century. Researchers, students, staff alike—dream big, work hard, go where there is no path and leave a trail.

It's not Oxbridge that matters. They are not worthwhile for us to waste time on them. Ignite the passion, make the difference, and follow our heart. We are from Imperial College London, and we will pave our way.

Photo credits: Imperial College London



Queen's Tower - Imperial campus



Oxford University campus

FRIDAY 22ND OCTOBER 2021

## SPORT

Edited by: AMANDA BARDEN  
KONRAD HOHENDORF

## Want to try and run a Marathon? Heres what its like for Imperial's very own Peter Hardcastle.

Amanda Barden and Konrad Hohendorf  
Sport Editors

We at the sports section of Felix have recently become quite intrigued about the idea of doing a marathon (whether this ever becomes more than an idea is another story...) after supporting a very good friend of ours during their Royal Parks half marathon. Therefore, we thought it best to ask someone who is a bit of an expert in them; Imperials very own head of rowing, Peter Hardcastle. Many of you may not know him but he has been head coach at Imperial since 2017 and before he was a coach he was actually a three time Olympian (2000, 2004, 2008) for Australia as a rower. On top of this he has competed to the very highest level in triathlons,

“

“MY GOAL IS TO COMPLETE THE SIX MAJORS”

culminating in winning his division of Ironman Wales in 2015 and qualifying for the Ironman world championships in Kona Hawaii twice. After these sporting achievements he decided to take things ‘easier’ by focussing on only doing marathons. To this date he has competed in many marathons and repeatedly achieved a sub three-hour time. A few weeks ago, he competed in the Berlin marathon and once again posted a great time. Here he is answering a few of our questions about training for a marathon and what they are actually like to compete in.

*How did you go about training for the marathon?*

Training for this marathon was different to others as I didn't have my normal training runs and routes. I was on holidays with my family over the summer so had to do my best to find

runs here and there. Sometimes there were only hills and sometimes there was only altitude as I was in the Alps. But in general, my training plan is to do three key running sessions per week.

*What is your background in running and how difficult was it to train?*

I have been a rower, then did Ironmans including two World Championships in Kona, Hawaii. I am now running as it's less time consuming.

*What goes through your head during a marathon? It's such a long period of time to be running continuously can you describe what that is like for our readers?*

I break it all down into smaller chunks of each kilometre and sets of kilometres. I also try to run at the pace I want to be at and then relax and focus on my breathing along

with looking at my watch and keeping my heart rate at a certain level. As kilometres tick by I adjust those heart rate levels. This is because if I let my heart rate spike or get caught out running too fast I will pay for it later on in the race. Along with this I look around at all the buildings, landmarks and crowds and enjoy the atmosphere of the event.

*How did you feel the marathon went?*

I feel it went really well. I went sub three hours (2:57:18) which was my goal. It wasn't a personal best but was an enjoyable race. Both half's of the race were very similar, with the last 5km faster than the first 5km and the second last 5km fastest than the second 5km. Everything in the middle was consistent.

*Will you be doing this again and if so, what future events are you hoping to go to?*

Yes, my goal is to complete the six majors. I have now done London and Berlin and still have Tokyo, New York, Boston and Chicago to do.

*What's the atmosphere like in a marathon?*

The crowds in the major marathons are really good as they are lined all the way on both sides of the road. However, the crowd at the start is also amazing. Hearing the top elite runners in the world read out in front of you and starting with tens of thousands of people creates a fantastic atmosphere.

*What tips would you give to someone who's never run a marathon before?*

Start with a training programme that's achievable. Have key sessions each week, these need to be progressive and allow for you to build confidence. Set out your plan prior to the day on how you are going to pace it. Know your nutrition plan and when you're going to consume energy.

Do smaller races first and build to half marathon before running a full marathon. I am happy for anyone to contact me if you want any help or advice.

*What running gear did or did not work for you?*

I don't trial gear on the day. I know my nipples will bleed and I might get a sore toe. However, I might try to invest in getting a lighter singlet as my one holds to much water more.

We hope that this conversation with Peter Hardcastle makes you considering getting into running and potential have a go at racing a marathon. Remember to take it slow and ask for plenty of help along the way if you are new to the sport. There are many sports clubs at Imperial that would love to lend a hand in completing your running, or any other sport, goals. If any imperial student has recently completed a marathon and has anything they would like to add then do not hesitate to contact the sports section.

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“STARTING WITH TENS OF THOUSANDS OF PEOPLE CREATES A FANTASTIC ATMOSPHERE”



Peter Hardcastle picking up his bib number the day before starting the race

