



FELIX

The Student Journal of Imperial College London



Imperial 3rd most
prestigious uni in UK

PAGE 4 **NEWS**

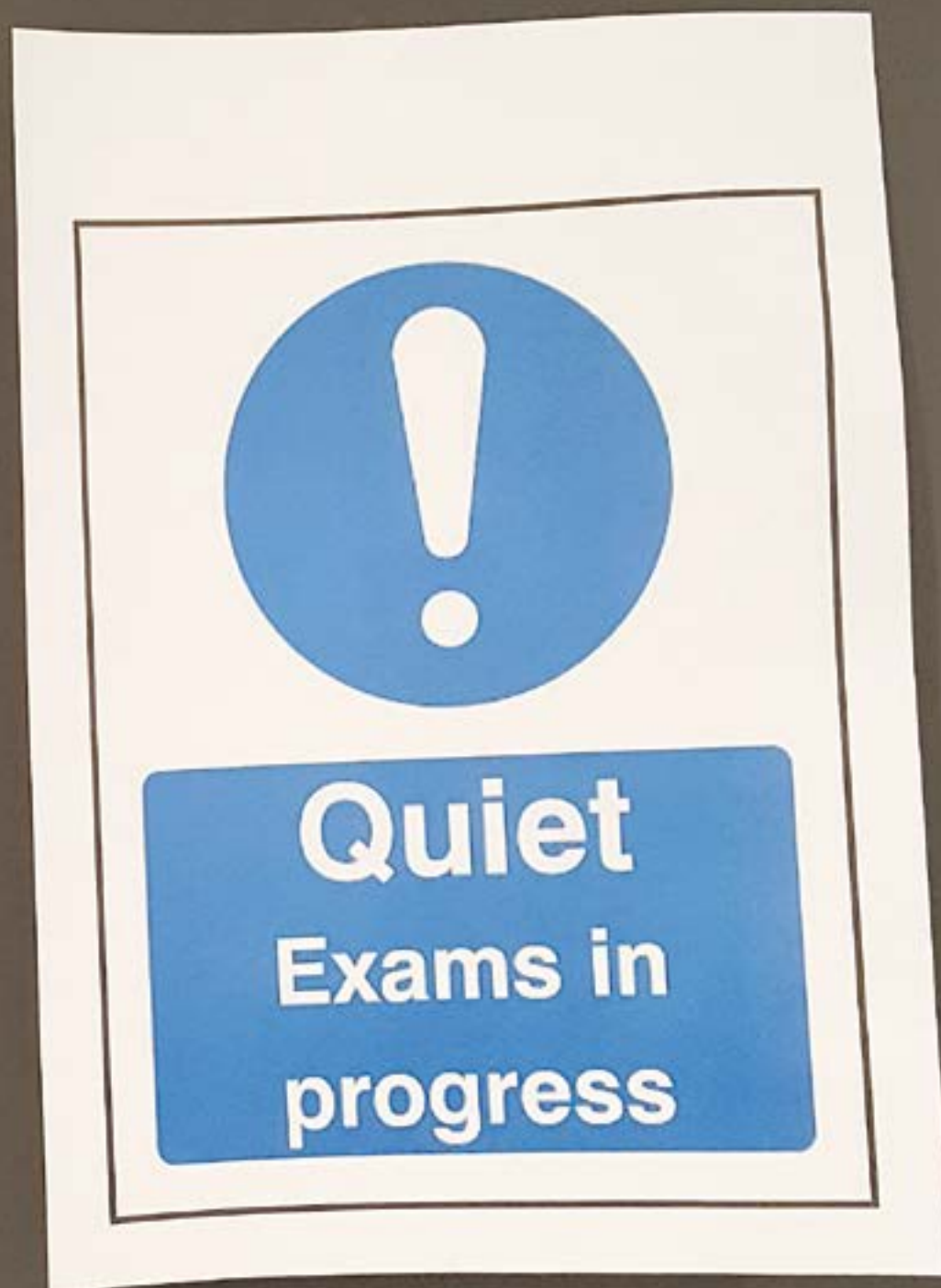
We need to talk about
Israel

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EXAM MISHAP AS STUDENTS GIVEN TEST WITH ANSWERS ATTACHED

- First year geophysics students surprised to open file that included solutions
- Test will be replaced with coursework unit



FELIX EDITORIAL



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This editorial has been a long time coming, and I know you’ve all been waiting for this: the FELIX view on the Labour anti-semitism row. Just kidding! I can’t think of anything I’d want to give my inexperienced view on less, except maybe last week’s sex toy review.

What do you get when you combine controversial, emotive articles (no, not the sex toys) with exam season? Loads of angry comments of course! Lord bless the internet and its many dudes. I’m all for debate friends; debate is content and without content, I would cough and splutter, then literally die. But, when you insult writers (as a boy arguing with me under a Facebook status once said to me, “ad hominem anyone?”, except he spelt it wrong) or spew out and out hate speech against religions or races, I have to step in. Yes, that means your comment is getting deleted, brave anonymous commenter! You know your argument is on point when

you’re too frightened to put your name to it.

Nowadays, you do have to log in to comment on articles. You can still remain anonymous to other FELIX website surfers, but our webmasters will know who you are. You can still up or downvote comments without being logged in, so the people have free reign to decide whether they agree with you or not. So yes, you can still post bile. But guess what? In the last issue of term, I’m printing all you dickhead’s photos on the front page with a big caption that says “LOOK HERE FUTURE EMPLOYERS”.

I’m assuming the same keyboard heroes that scour the online comments calling me a slut with pro-Muslim bias don’t subscribe to my weekly leftie ramblings on page two of the newspaper (unless you’re just here for the cute picture of me, of course!) but people do seem concerned that their comments are getting deleted. Censored, even. If you attack our writers personally, rather than for their arguments,



you’re getting deleted. Just like if you went up to one of our writers at the union, and shouted, “IT REALLY SEEMS LIKE YOU WENT TO STATE SCHOOL BECAUSE YOU LIKE SEX AND YOU’RE GOING TO REGRET EVERYTHING YOU’RE DOING YOUNG LADY”, they would like, probably throw a drink at you and you’d only have yourself to blame.

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SAT-SUN 7-8 MAY

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Students sign up to three year £125,000 housing contract by accident

They didn't realise they couldn't sublet the place

Grace Rahman
Editor-in-Chief

This week, college is coming to the aid of three Imperial students who accidentally signed a three year tenancy agreement for a flat on Queen's Gate that they can't afford.

The house, which has three bedrooms, was advertised at £800 per week in total, which amounts to a hefty £267 per student per week in its current state.

Their intention was to sublet the

To add insult to injury, the flat is unfurnished



It does look nice, though.

place to a couple of other students, to take the rent down. Unfortunately, they signed the contract before finding anyone else and have already paid a hefty deposit, believed to be in the region of three grand. After

reading back through the contract, they realise they are not allowed to sublet, and so are trying to get out of the deal.

The landlord, who lives in New York, has already charged them the

first month's rent upfront, which amounts to around £3500.

The students found the house, which has two bedrooms and one large reception room, via Foxtons estate agents.

They run the risk of getting sued if they don't pay up, since the contract is a legally binding document. Their situation is made all the more urgent by the fact that some of the students' study visas could be in danger.

To add insult to injury, the flat is unfurnished.

Imperial Student Hub is believed to be helping the students try and get out of the contract. The Hub's manager told FELIX that landlords and letting agents often tell students that other groups are looking at the property to pile up the pressure to sign. They also said it was "extremely important" to read and understand the contract and that students can bring their contract into the Student Hub if they want it checked over. To avoid the situation these students have got themselves into, it's also worth asking for a break clause, so you can stop the lease early if need be.

"It's a catch-22 nightmare," one of the students told FELIX.

When asked what advice they would give students to avoid getting into similar trouble, one said, "I would tell them to talk to their parents before making big decisions."

I just got my PhD, will you marry me?



Photo Credit: Imperial College London

Adorable or terrible? At Wednesday's postgraduate graduation ceremony a student who, judging from his gown, had just completed a PhD, proposed to his girlfriend onstage at the Royal Albert Hall. Cameras are set up that project close ups of those crossing the stage up onto a screen behind it for the audience to see. After shaking hands with the President, each student has their moment in the sun, where their post-graduation faces are shown on the big screen for all to see. Some choose to smile embarrassedly, while braver students will dare to do a thumbs-up or peace sign. This unnamed student whipped out a sign and a comically large engagement ring. How do you follow that? Judging from the scenes outside, Sharon said yes.



Imperial ranked the 3rd most prestigious uni in Britain

The Times Higher Education World Reputation Ranking came out this week

Grace Rahman
Editor-in-Chief

Imperial has been named the university with the 3rd best reputation in the UK, and the 15th best in the world.

This puts us down one place on last year's rankings, which was down one from the year before.

This latest Times Higher Education rankings system is based on reputation, which is separate to their world university rankings, in which Imperial places 8th in the world and 3rd in the UK.

As usual, Imperial's British rivals were Cambridge and Oxford, who came 4th and 5th for reputation in the world respectively, which is down two places each on the year before. They came after Harvard, MIT and Stanford this year. Interestingly, Cambridge beat Oxford for reputation, despite the fact that in the actual world rankings, not based on perception, Oxford still trumps Cambridge.

Arguably, a university's brand is



Mate do you have a safety pin? Photo Credit: Thomas Angus

important for attracting the world's best students and researchers, and employers' perception of a university is just as important when you're trying to get a job after graduating.

Although British universities are well-represented, Durham and Bristol had both disappeared from the top 100. UCL came in just behind us at 20th. Asian universities

saw the most dramatic improvement in rankings, with the University of Tokyo beating Imperial in 12th place.

The rankings were created after quizzing a panel of 10,000

This puts us down one place on last year's rankings

academics from several different countries, making judgements on the reputation of each university. The placing relied on these academics' perception of each university's teaching and research. Each academic surveyed was asked to name up to 15 universities that they thought were the best in both research and teaching. Scores for these two categories were then combined at 2:1 (research:teaching) to give an overall score for each institution. Each score was then compared to the most commonly named college (Harvard) to create a ranking.

Imperial A cappella group wins world championships

They were even featured on the worldwide Snapchat story

Grace Rahman
Editor-in-Chief

In a series of events that could have come straight out of a Glee episode, Imperial's male A Cappella group, The Techtonics, managed to win first prize at the finals of the international competition for university A cappella groups in New York. They are the first ever British team to win.

The competition, made famous by the film *Pitch Perfect*, was held in The Beacon Theatre on Broadway. Teams from North America and the Europe competed in several rounds of the competition to be in with a chance of being one of

the ten groups to perform at the final, which was featured on the worldwide Snapchat story.

The Techtonics were up first on

Three band members got stuck in a lift an hour before the performance

the night, but disaster nearly struck when three band members got stuck in a lift an hour before they were due to perform.

On their victory, chair Will, said that "trying to get the trophy back on the flight home was nightmare".

After qualifying for the international competition after winning the semi-finals that were hosted here at Imperial, the Techtonics attempted to crowdfund their flights.

They were somewhat successful, raising £565 of the £6000 they needed for flights. They also used profits from sales of their album to raise the money.

The group will be attending the Edinburgh fringe in August.



The lads performed songs by British artists. Photo Credit: Joe Martinez



Laing O'Rourke awarded another Imperial contract

The building contractor has already sponsored a centre in the Civil Engineering Department

Grace Rahman
Editor-in-Chief

This week it was announced that the contract for the large tower to be constructed at the Imperial West campus will be given to Laing O'Rourke.

The £76 million project will be to build a 34-storey block that will include 192 apartments, with 59 of those reserved for "Imperial key workers". According to college, these flats for staff will be priced below market rate.

This is the third project at the White City Campus that has been awarded to the firm. The contracts for the two buildings that make up the £200 million 'Translation and Innovation hub' which is due to be finished this summer, were also given to the company.

Laing O'Rourke is the largest privately-owned construction and engineering company in the UK.

In 2010, it signed a deal with Imperial to launch the Centre for Systems Engineering and Innovation, as part of the Civil and Environmental Engineering department, but it also has ties with Mechanical Engineering and the



It's looks alright, I guess. Photo Credit: Imperial College London

Business School. The centre hosts several PhDs.

In 2013 the company also began sponsoring an annual prize for final year projects in Civil Engineering, presented to one student a year at graduation. This is set to continue until 2018.

The new White City campus represents a huge corporate step for Imperial. The area will be managed by the Imperial College

ThinkSpace, which will run office and lab space for startups. The new translation centre is being funded by investors including Santander

and the Higher Education Funding Council for England.

It will also house parts of the Chemistry Department, but it is

still unclear which undergraduates will be moving from the South Kensington campus.

Geophysics sets students exam with answers at the bottom

In a classic example of exam season drama, first year geophysics students were given a paper with the answers at the bottom.

Students quickly realised the error and told the invigilators, who allowed the students to leave the room without starting the exam.

The test, which took place on the computers in the RSM, was uploaded as a file that also contained model answers.

It will be replaced by a coursework module and is worth 6% of first year marks for geophysics.

According to the department, the decision to replace it with coursework was taken after "immediate discussions" with the students who were due to sit the exam. It is understood that the

coursework will assess the same learning objectives.

Students were starkly warned not to tell FELIX about the incident and that it should stay "within these four walls", given the media interest in similar incidents in the past.

Mishaps like this are not unheard at Imperial. In 2014, a EIE first year paper was handed out to students with the model answers stapled to the back. After giggles from the room, the invigilators removed the solutions, and allowed students to continue with the test. The story was covered by The Daily Mail.

Last year second year students in the physics department were set an impossible question in a Quantum Mechanics exam, but were marked on it anyway.

The geophysics department told FELIX it would "of course review procedures following discussions at examiners' meetings in June 2016".

A college spokesperson told FELIX: "It is a College priority to adhere to the highest standards of academic integrity, ensuring that appropriate advice, support and guidance are in place to support students and staff. To this end a steering group – part of the Academic Standards Framework – is reviewing assessment practices and procedures across the College. This incident will be taken into consideration by the group as part of their ongoing review."

GRACE RAHMAN



The tower on the far left is the latest contract to be given to Laing O'Rourke.

Photo Credit: Imperial College London

FELIX COMMENT



comment.felix@imperial.ac.uk

In defence of ales

Ales are heavenly elixirs that don't need to be cold and fizzy to taste wonderful



Jian Li Chew
Writer

Every Friday I pick up a copy of FELIX to glance at the headline, look at the centrefold to see if I recognise anyone in it, quietly complain to myself that my half-hearted attempts at developing a six-pack have yet to succeed, read Hangman, lament the fact that it's only one page long, and amuse myself with the idea of running for FELIX Editor just to convert the whole damn thing into 32 pages of Hangman 4 teh lulz (note to Grace, I'm not actually seriously going to do it).

Which is why when, this time, I actually flipped through what the cat brought in, I saw a picture of four beautiful, cold, gleaming chalices of my favourite alcoholic drink on Earth, and got deflated by dear Pietro's lengthy denunciation of it. Now, if I were not wizened by the deep, harrowing abyss that is the 9Gag comment section, I'd have screamed out "I'm offended!", to which my roommate would have said "Hi offended, I'm Dad". Instead, I accept his concession to accept people who love ales, but

Heavenly
exquisite
elixir
brewed by
angels and
unicorns

then, I'm bored out of my wits and am looking for something to divert me from cold, hard reality.

Now some of you may wonder why I'm doing this. Why are you picking a fight for no reason and belabouring a dumb, moot point? To which I reply that I descend from a family in which my father met my mother when he gatecrashed a wedding my mother was attending, and one in which my mother



Like me, you can enjoy classy beverages like this. Photo Credit: Brewdog

pranked her colleague by telling her that a certain Ms Lyon was asking for her, and gave her a phone number to call, which turned out to be the Zoo.

In complete disagreement with my dear Pietro, I believe that ale is the most heavenly exquisite elixir brewed by angels and unicorns. Being unable to rely on being ice cold or fizzy like lager in order to actually taste good, it tastes good on its own merit. Every wholesome, rich, textured drop is a delight to the senses, and, being heavy, I feel like I'm having a real, proper drink which feels like a full meal instead of the bad lager, which, devoid of all content, serves only to get you wasted. It's not that I don't like lager. Hoegaarden, Carling, Tsingtao and London Lager (the yellow tap at Eastside) are definite beauts, and I can swallow down Carlsberg, Heineken and Stella anyday, but ales are in a whole different league.

Coming from a country where the local alcoholic scene consists of the world's second highest alcohol tax after Norway, a piteous selection of lagers (Carlsberg, Heineken, Tiger and not much else), a large population of teetotallers and social disapproval, the UK is a dream! I'd never seen more than five taps at a bar before (granted I don't go out

much).

As a history and trivia buff, I know that ale is the traditional type of beer that was drunk all over the world before a new type of yeast was introduced, giving rise to lagers. This was the stuff the ancient Egyptians drank, and which your ancestors probably drank (But not mine. Mine drank tea), and when the time came for everything to change, the British, in a quintessentially British move, decided to stay out of it.

On your point about how ale ruins nights out, I respectfully disagree, it's the only thing that allows me to go on nights out. Beer is about the only alcoholic drink I can tolerate before my alcohol flush kicks in and turns my face redder than the on my first date. It's the only alcoholic drink that tastes good on its own. I mean if vodka tasted good instead of potato juice with a strong hint of industrial solvent, you wouldn't need to mix it in with coke to hide the taste. Also, I can't afford whisky and good wine, and I don't dare try the hard liquor China passes off as beer (Moutai, anyone?).

And don't get me started on craft beers. Don't you denounce craft beers! They're the one thing that rescued the American beer industry by flooding it with actual, quality beverages. You, in your spirited

snobbery (pun fully intended) have failed to see the multitudes of American beer lovers who hail their rescue from the clutches of Budweiser, Coors, and Miller which they had to gulp down for decades with tears in their eyes. It is the passionate, can-do, experimental attitude of brewers who made America great again, in the hard work, value-adding type of way, not in the build a wall and encourage xenophobic racism while waving your tiny orange hands kind of way.

In short, we get it Pietro. You don't like ales, its fine, but you don't need to rub it in everyone's faces. But, as a Malaysian speaking to an Italian, let me extend an olive branch of peace, and while we can agree to disagree on ales, we can both agree on two very important points. English food is boring, and Budweiser tastes absolutely disgusting.

Also, I
can't afford
whisky and
good wine



We need to talk about Israel

You can criticise Israel without being anti-semitic



Jonathan Masters
Writer

It's like that old saying goes, 'you wait for one anti-semitism scandal, and then three come along at once'. First was the election of Malia Bouattia as NUS president, whose labelling of Birmingham as a Zionist outpost was quite problematic, then came the four-year-old posts of MP Naz Shah saying that the people of Israel should be relocated to America (okay, more than a little more problematic). Finally, the nail in the coffin for the Labour party's anti-semitism problem, the former Mayor of London compared the intentions of Israel to that of Hitler. Well. That is very problematic.

This has led to calls for Jeremy Corbyn to address the "rife anti-semitism" within his party, and indeed the left as a whole. Okay, so how do I say this? Ken Livingstone was completely wrong, Naz Shah posted things that should not have been posted, but maybe, just maybe, not being a fan of the state of Israel is not anti-semitic, and has more to do with distaste for its foreign policy and the 50 year occupation than for Jewish people?

Israel
continues
to get away
with the
human
rights
violations it
commits

One of the principal problems is that the term 'Zionist' carries the baggage of centuries of anti-semitic sentiment in the form of the belief that Jewish people are part of some shadowy organisation that controls the world from behind the scenes – obviously this belief is anti-semitic

and a hokey conspiracy theory.

It should also be acknowledged that the idea that Jewish spiritual, cultural, and political identity resides in the land they were forced out of – and indeed the idea of creating a state to unite the Jewish people – was in response to the continuous persecution of the Jewish people.

My issue comes with the fact that these anti-semitic allegations may soon become shorthand for any accusations towards the state of Israel, thus denouncing any constructive discussion on foreign policy. Ken Livingstone's statement comparing Israel's motivations to those of Hitler was the headline-grabbing statement; however, the rest of his statement was this: "The simple fact in all of this is that Naz made these comments at a time when there was another brutal Israeli attack on the Palestinians".

It is my personal opinion, and that posed by the three figures mentioned in the first paragraph, that the State of Israel continues to get away with human rights violations that it commits in the name of self-defence in the 21st century.

Here is a quick rundown of those committed in the last 12 months, according to Human Rights Watch or Amnesty International: In a

report published in April 2016, it was found that the number of Palestinian children arrested and detained along the West Bank had doubled since October, defying international laws that dictate a parent or guardian must be present, and this came along with reports of child abuse by the Israeli security

Politicians
must be
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Israel

service towards these children.

In March 2016, it emerged that Abd al-Fatah al-Sharif, who was alleged to have stabbed an Israeli soldier, was executed with an assault rifle after being wounded. This has been re-ordered and a legal case to prosecute the soldier in question for war crimes continues; however, the

Israeli forces rarely prosecute any of their soldiers accused of war crimes.

Finally, the Israel Defence Forces (IDF) launched an aerial offensive in Gaza on July 8th, followed by a ground offensive on July 17th. The UN has identified 538 children among the 1563 Palestinian civilians killed.

It is also worth noting that Palestine is not an entirely passive country – there are frequent suicide bombings and stabbings which are attributed to Hamas, meaning they are not blameless in the conflict.

To any normal person, the vocalisation of objections to the murder of children and the violation of human rights should be able to be placed in a public forum without fear of being labelled as either racist or anti-semitic, two of the worst things I could ever imagine being called.

Equally, politicians must be able to voice valid criticisms of Israel, for they are supposedly the ones that could enact some change, make them criminalise torture, hold those responsible for committing war crimes accountable. However, if every time we try to have a constructive conversation about Israel it is shut down by either offensive racial slurs or a reluctance to criticise, then what's the point?



Why can't we all just get along and stop committing war crimes? Photo Credit: Al Jazeera

FELIX COMMENT



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Can men advise on how to respond to sexual harassment?

Come back to me when you've had years of practice



Vivien Hadlow
Comment Editor

Picture the scene: A friend of yours has just told you about an experience of theirs, one in which they experienced discrimination, and they're pissed off. Why did they tell you? So you could explain to them how their reaction to the situation was wrong, right?

It's not news that many women have to deal with a whole lot of harassment based on their gender. Sometimes it's obviously misogynistic ("I like the way your tits bounce") and sometimes it's more subtle ("you should smile, beautiful"). It's the kind of harassment that, on the whole, men don't experience, and it can be difficult to convey just how prevalent a problem it is – which is why it's important to talk about it.

When I talk to my friends – male or female – about being harassed, what I'm looking for is support. I have been told multiple times by harassers (and some family members) that if I dressed differently I'd be left alone. I have been told this while covered apart from the face and hands. It's bullshit.

Although I know that it's not my fault when I get harassed, it's important to me that my friends reinforce this, instead of somehow making me feel responsible; in this, most of my friends are great, indignant on my behalf and

sympathising with how annoying, upsetting or scary it was.

However, I've noticed a trend in some of my male friends' responses when I come to them to vent about some random guy who felt the need to tell me how attractive (or not) I was: telling me I should have behaved differently.

I recently came home frustrated after having almost identical conversations with two men on the way home, both of whom took issue with my ignoring them when they "just wanted to give [me] a compliment", wanting to have a bit of a rant and get on with my day.

My friend, a man, was naturally

what, then, was I supposed to say? Should I have smiled and laughed along, reinforcing their belief that their comments were acceptable, all the while itching to leave as quickly as possible?

I have tried this strategy and it does not work. You cannot play along forever; there comes a time in any situation like this where you have to tell the harasser "no". You ignore them, you tell them you're in a hurry, you tell them you're not interested, that you don't want to give them your number, that you want them to stop talking to or touching you, that you are 'taken', and sometimes one of these is

When you don't face sexual harassment on a regular basis it is harder to empathise with how it feels



Sometimes "no" isn't all you gotta say. Photo Credit: radioactivecookies.com

on my side, but criticised my response, saying that I "shouldn't get so confrontational".

To clarify, I had told the men that their comments were unwanted and unsolicited – I didn't raise my voice, swear, or even respond until they became verbally aggressive when I ignored them. That's not to say I didn't want to, but for me, an encounter like this is a mental battle between "I want to provoke this person into reconsidering their behaviour" and "I don't want to provoke this person into becoming violent" – the latter generally taking precedence. When these men became angry at being ignored, I felt my safest option was to engage. But

enough, but sometimes not, and there is no one phrase which will instantly deter further attention. In short, there is no right way to react.

Of course, the primary concern should always be personal safety, but when this happens on a regular basis, "Sorry, I have a boyfriend" starts to taste increasingly sour in your mouth. So, sometimes, you get "confrontational" by pointing out that you're not interested in a stranger's thoughts on your appearance.

I know that my friend was just concerned for my welfare, and his advice given with good intentions, but when you don't face sexual harassment on a regular basis it

is harder to empathise with how it feels, so it's infuriating when men give helpful comments such as "I'd be so sassy [in response to harassment] if I were a woman", "why didn't you just say you had a boyfriend?" or "I don't get it, he's just talking to you."

If you're a man and a woman is telling you about a time when she got harassed, there are a couple of things you should know: First, there are countless other instances she hasn't told you about. This is not the only time.

Second, you cannot know how you would respond in her shoes because you have not experienced those countless other instances. Don't try to tell her what she should have done, but be responsive to her feelings – if she's telling you because it was funny, agree that it was funny, and if she's telling you because it upset her, agree that it was upsetting. Don't tell her that her emotions are wrong, and definitely don't tell her that she's overreacting and it wasn't harassment at all.

There is no one phrase which will instantly deter further attention



100,000 species unknown for every known species on Earth

Lef Apostolakis
Science Editor

Researchers from the IU Bloomington College of Arts and Sciences believe there could be around a trillion species inhabiting our humble planet, one hundred thousand times more than the species we currently know of. Of course, the vast majority of these undiscovered species are microbes, still this new estimate tremendously

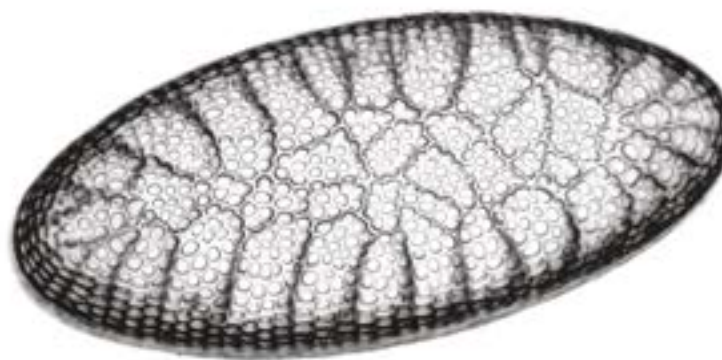
estimate said. Indeed in a rapidly changing world undergoing another mass extinction, identifying new species is crucial.

Uncovering diversity on Earth, has been a task many studies have attempted. However past estimates have either grossly fallen short of the true magnitude of earth's diversity, or have completely ignored microbial communities.

That's not to say such approaches were unjustifiable. Naturally numbers of some species are easier to calculate than others. For example we know of approximately 5000 mammal species and the likelihood of there being a large hidden repository of undiscovered mammals somewhere in the world is highly unlikely. Additionally, there is a positive relationship between small body size and high diversification rates, meaning that groups of smaller organisms tend to have more species. This is why there are so many more invertebrate species in comparison to mammals, birds or even reptiles. At the same time, the smaller the organism in question, the higher the chance it has been overlooked, which is what makes microbial diversity especially tricky to estimate.

"Until recently, we've lacked the tools to truly estimate the number of microbial species in the natural environment," Lennon points out. "The advent of new genetic sequencing technology provides an unprecedentedly large pool of new information."

The IU scientists used a combination of microbial, plant and animal community datasets from



With over 200 genera they still only represent a fraction of Earth's diversity.

Photo Credit: Picturepest

a variety of sources and ecological theory to create this new, rigorous estimate. In total a mega-sample of 5.6 million species from 35,000 locations across the globe was compiled, from 35,238 distinct efforts sampling everything from bacteria, archaea and fungi, to trees, birds and mammals..

They suspected that aspects of biodiversity would scale with the abundance of individual organisms, and indeed found a powerful trend of biodiversity changes across scale of abundance.

This estimate is coming at an interesting point of our understanding of microbial services. For example recent studies have shown that the human virome (the community of viruses that are part of our bodies microflora) may have beneficial effects on our health. In 2014 it was shown that a strain of Murine norovirus in mice, is more than just a non-intrusive genetic hitch hiker, but actually helps restore damage done to the intestine and immune system. More importantly the virus is genetically transmitted from parents to offspring, meaning the benefits associated with carrying the virus become genetic.

Another important service microbes offer is acting as potential sources of new meds. This becomes particularly important if we think about the progressing antibiotic crisis. More and more infections are developing antibiotic resistance and becoming super-bugs. Last September, a strain of Super-gonorrhea started spreading around Leeds. Last year, scientists

developed a new antibiotic, the first in 30 years, by successfully culturing a gram negative soil bacterium. More importantly they developed a

Of those cataloged species, only about 10,000 have ever been grown in a lab

technique which allows the culture of 'unculturable' microbes in lab conditions.

So far less than 10 million species of microbes have been classified. "Of those catalogued species, only about 10,000 have ever been grown in a lab, and fewer than 100,000 have classified sequences," Lennon said. "Our results show that this leaves 100,000 times more microorganisms awaiting discovery -- and 100 million to be fully explored. Microbial biodiversity, it appears, is greater than ever imagined."

Science & the City

Humans have always looked up at the sky in awe and fascination. For thousands of years we've searched for light and guidance in its movements, while hanging our fables and myths on the celestial bodies like regal robes. And little wonder – almost all of the elements in our bodies are made from cosmic stardust, spewed out from the fiery bowels at the hearts of stars billions of years ago. As the astronomer and philosopher Carl Sagan quoted famously, "We're made of star stuff."

We've used the skies to navigate lands and seas, to determine the earth is round, to learn about Earth's physical history

For the past few centuries, the development of science and technology has accelerated our understanding of the vast unknown universe, its complex laws and infinite horizons. With the abundance of technology in our lives we may take it for granted, but landing a man on the moon was no easy feat in the 1960's. So why haven't we gone back? We answered the call of the sea and promise of distant lands, so why have we run back to safety from when we dipped our toes in the cold shores of the cosmic ocean? We've made and sent objects into space that have now passed the edge of our solar system – 12 billion miles away, but human exploration has been limited. Certainly there are massive challenges to overcome in advancing our technological capacity.

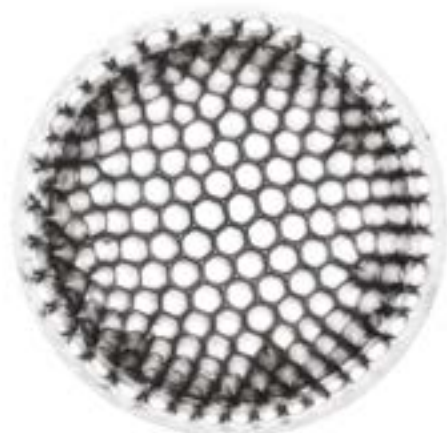
The greatest challenge of all however, is money. In a world where money is wasted for violent objectives and polluting the delicate ecosystems of our planet; exercising our vast intellectual capacity, with the potential to answer the deep human drive for exploration is largely ignored. In the US alone, the 2011 military budget was almost \$200 billion USD higher than the entire NASA budget over 53 years from 1958-2011. It's disappointing that we are not pressuring our governments to increase funding for this kind of awe-inspiring research, to help us understand more and more clearly our place amongst the beautiful and mysterious bodies of the cosmos.

NAOMI STEWART

Estimating the number of species on Earth is among the great challenges in biology

broadens our understanding of Earth's biodiversity.

"Estimating the number of species on Earth is among the great challenges in biology," Lennon, one of head scientists behind the new



Diatoms are one of the most diverse taxons on Earth. Photo Credit: Picturepest

Sh!t Science

The key to eternal youth is being ginger... kind of

MARIANNE GUENOT



Money can't buy this pale, creamy baby-face babes. Photo Credit Noodles and Beef

At Sh!t Science, we believe that all science, no matter how stupid it sounds, has a purpose and adds to the sum of human knowledge. This week: the science of gingeriness.

You'll have seen this story. From Prince Harry to Julianne Moore, the honorary heads of the ginger committee are strewn across the most reputable science sections. The reason? Ice cold revenge! It is now scientifically proven that even though you are growing older and saggier by the minute (yes...you are), redheads are more likely to remain as baby-faced as when you were making fun of them in school. Well... they look a bit younger. Well... by two years. Maybe not the greatest payback for years of mockery.

The study behind the finding was published this week by a team of scientists from the Erasmus University. After asking people to estimate the age of the 2693 members of their cohort based

solely on pictures of their faces, the scientists cross-referenced the 'perceived age' with differences in their cohort's genotypes. They found one gene that could be associated with youthful looks, the MC1R gene. This gene codes for the melanocortin1 receptor, a protein which regulates the ratio of pheomelanin (a blond or red pigment) to eumelanin (a brown or black pigment), which gives hair its shading. The youthful look was associated with a particular variation of the MC1R gene. These gene variant codes for a melanocortin1 receptor, which in turn produces very little eumelanin, and is subsequently associated with red hair. And there you have it, red hair is linked to youthful looks.

'That's it?', I hear you cry? 'All that genetic encoding and screening for that?' I agree, but as always, this study actually represents a tiny step in a much bigger endeavour. While the first genome took 13 years to

sequence, an entire human genome can now be sequenced in days. This staggering progress has encouraged the hope that through the reading of our genomes, we would finally be able to predict and prevent disease. Programs such as the Rotterdam study, the Leiden Longevity study and the Twins UK studies, have provided huge repositories of thousands of genomes. This information allows us to filter through millions of bytes of data to look for the elusive genes that could be responsible for Alzheimer's disease, the genetic malformation which causes the terrible Parkinson's disease, and also the gene that makes us look younger when we're not. That is the power of Big Data, and we should expect to see many more of these studies in the coming years.

Natasha Khaleeq
Writer

This week's science picture

Halley's Comet, a ball of ice and rock left over from the creation of the Milky Way, only makes an appearance every 75 years, so sadly we have to wait until 2061 before we get another glimpse of it. However, we are in the midst of meteor shower. Earth is twirling through the tail of Halley's Comet. Therefore, it is inevitable that tiny debris falling into our atmosphere will burn up leading to a month-long annual spectacle called Eta Aquarids. Lucky stargazers in the southern hemisphere will witness 30-40 meteors flying through the night sky per hour whereas the northern stargazers will see 10-20. The best time to view this spectacle is in early hours of morning before twilight, 5th - 7th May. A dark remote spot away from light pollution is a better place to witness the shower but you won't need any fancy astrophysics equipment if you decide to. Don't worry if you miss it this time as late October will provides the Orionid meteor shower.



A long exposure shot of a meteor shower from Groningen. Photo Eddie Yip



Science, what's good?

Jane Courtneil
Science Editor

The cost of antibiotics

Paradoxically, antibiotics are essential for fighting bacterial infections, but they also make our bodies more prone to further infection. New research at the University of California is trying to illuminate the paradox. The chain of events begins with antibiotics depleting the 'good' bacteria in our guts. These bacteria are necessary for the breakdown of gut fibre which produces butyrate, an essential organic acid for gut lining cells. With decreased availability of butyrate, the oxygen consumption of these cells declines, and thus oxygen levels in the gut increases. These conditions favour the growth of Salmonella. The research links levels of butyrate-producing microbes to inflammatory bowel disease. Further research is needed though to see if Salmonella is the sole culprit.

Byndloss et al. 2016 @ Cell host & Microbe

Plankton hitchhikes currents

When we consider the impact of climate change on our oceans, we often think of overfishing or coral bleaching. People rarely consider the impacts on drifting planktonic species, invisible to the human eye. Their lack of observability should, however, not lead to disregarding their importance. Drifting plankton comprise the oceans "lungs", and support fisheries across the globe. Scientists at the University of Technology, in Sydney Australia, and Imperial College London have been modelling how such plankton drift along the ocean currents to understand the impact of climate change on these species. As plankton hitch a ride on ocean currents, they're often subjected to temperature changes of up to 10 °C. These exposures to various temperature changes are thought to play a role in how plankton may respond to climate changes. So any previous studies will probably need to re-evaluate their predictions take into account these effects.

Doblin et al. 2016 @ PNAS

DNA as data storage unit

Where would you store your data? Magnetic tapes? Hard drives? What about DNA? It is possible to store and retrieve, say, 10,000 GB worth of data in a tiny pink DNA smear at the end of a test tube. DNA stores data in a code of A,T,C and Gs. Computers store data in a digit code of 0s and 1s. If you produce nucleotide strands in the lab, combinations can then be developed to produce a code standing for letters, numbers or other digital information, combining these two languages. This allows compacting of information to a smaller degree ever artificially achieved with human technological developments. In addition DNA can protect the data, which can remain unchanged for thousands of years. Scientists can even employ PCR techniques to produce large quantities of DNA strands increasing the chance that the DNA strand picked contains the information we want. The future of storage is here and it's genetic.

Bornholt et al. 2016 @ Association for Computing Machinery

New marker for autism found

When it comes to the best treatments available for autism, early intervention is key. Despite this, autism in most children is not diagnosed until they're four years of age, when challenges in communication, social disabilities, and repetitive behaviour patterns become apparent. Researchers at UT Southwestern medical centre have recently identified an Autism Spectrum Disorder (ASD) blood biomarker, which allows early identification with an accuracy of up to 80%. They found that boys with the disorder had significantly reduced levels of the IgG1 antibody. The 25 peptide compounds that bind to IgG1 serum protein were then analysed, and one was isolated, now identified as ASD1, which could diagnose the disorder with a 66% accuracy. Combining ASD1 with measures of thyroid stimulating hormone levels subsequently increased accuracy of identification to 73%. However, more testing must be carried out for further validation.

Deng et al. 2016 @ Scientific reports

Air rage fueled by class wars

Forget road rage, what about air rage? As flying is becoming more and more frequent for many, it is important we understand what gets us so hot and bothered under our seatbelt. Long queues, delayed flights, little leg room are only a few of the inconveniences that drive up our cortisol levels. However, new research conducted by Katy Decelles at the University of Toronto's Rotman School of Management and Micheal Norton of the Harvard Business School found that air rage is more likely to occur when the plane has first class seats. Class inequality seems to bring out the worst in people. The study didn't go into depth as to why this was the case, however previous research has indicated that people exhibit a decrease in general well-being when they feel they are treated unfairly or unequally. So if airlines want to ensure smoother flights for their passengers, they may want consider doing away with classes altogether.

DeCelles et al. 2016 @ PNAS

Is it time for a move to frozen foods?

Alexandra Lim
Writer

Breakfast this morning got me thinking. It merely involved microwaving frozen bread prior to making French toast, but the nonchalant routine reminded me to extol the virtues of frozen food, something I think many of us tend to overlook.

Sadly, the modern consumer is inclined to look down on frozen goods. We scoff at the stiff-edged bags roughly clumped together in the freezer aisles, associating the 'less-for-more' prices with poor quality and unnecessary teeth breaking. Truth be told, the lower prices are not in any way linked to poorer quality. Frozen food is simply much cheaper to produce and sell

compared to its fresh counterparts, hence the less hefty price tags.

A recent study illuminated the very reason why we should resolve our issues with anything that's not 'fresh and whole'. Food stored at -20°C in the freezer compared to that stored at 4-5°C locks in many more key nutrients and antioxidants. We could be doing ourselves a world of good just by freezing more seasonal fruit and vegetables this way. We enjoy all the nutritional goodness they have to offer without having to sacrifice any volume.

Note the word 'seasonal' here. Freezing produce that has to go at some point, or tastes better at one time of year than another, will let us enjoy all the most desirable flavours and textures for as long as we want. It was found that many anthocyanin flavonoids (that help protect our livers and decrease blood pressure)

are preserved for several months in foods such as blueberries. Similarly vitamins such as riboflavin (B1) and Vitamin C are not only successfully preserved, but can even be found in higher quantities in frozen foods than in fresh produce.

Bread's another good example highlighting the value of freezing. This is how it works: Before baking, starch granules in dough are geometrically arranged, but this nice geometry is changed once water is added to the mix and dough is left to rise before baking. Starch absorbs the water and the granules take on a more irregular form. They however start to undergo recrystallisation after baking, the cooling process allowing the granules to revert back to a more regular geometry. The continuous recrystallization process is what contributes to staling, which unfortunately occurs much faster in

the fridge than if you chuck your loaf into the freezer.

Of course, we still have to be a little picky. Freezing creates ice crystals, and the more water content a fruit or vegetable has, the bigger these ice crystals, so it would be

a good idea to leave things like mushrooms and lettuce out of the picture. Otherwise, most anything can be frozen, including meat, fish, bread, and even most aromatic spices. Go ahead— freeze it up!



Eat your frozen veggies kids. Photo Credit: Rosana Prada



A guide to Eurovision 2016

The top ten countries to look out for at this years Eurovision Song Contest

After Måns Zelmerlöw's victory for Sweden in Vienna last year, this year sees "Europe's favourite TV show" head to Stockholm for the third time in the competition's

history, and it's set to be a big one! We'll also see a massive change to the voting system, with each country awarding two sets of points each: one from their televote, one from their professional jury.

42 countries will participate, with Australia being welcomed back after their debut as a special guest last year as well Bosnia and Herzegovina, Bulgaria, Croatia and Ukraine returning after absences

from the competition. Portugal are not returning this year and Romania were disqualified at the last minute due to non-payment of debts to the European Broadcasting Union (their song was one of my

favourites, I'm not even bitter).

Here are my top ten songs to keep an eye out for, comprised of some of the bookies' favourites as well as some of my own, in no particular order:



Montenegro



Photo Credit: Eurovision

Highway
'The Real Thing'

I loved Montenegro's song last year despite the odds of it winning being 100/1. This year the odds are 500/1 but again there's something about it that I can't get enough of, probably the driving guitar riff of the chorus. 'The Real Thing' by **Highway** is a powerful but cheesy, rock-come-dubstep song that probably won't qualify for the final, but will certainly get the arena going during the semis. Then again, Montenegro beat the odds last year and ended up not only qualifying for the final, but also placing a very respectable 13th. Can Highway do the same this year? (I doubt it.)



Malta

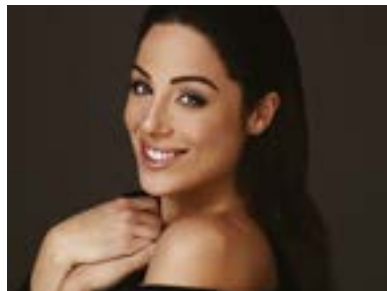


Photo Credit: Eurovision

Ira Losco
'Walk On Water'

Ira Losco represented Malta in 2002, placing a very impressive 2nd in the final. Fourteen years later and she's back again! She'll be singing 'Walk On Water', a punchy, crowd-pleasing song that's one of the favourites to win. I'm less convinced, finding it a little forgettable, but it's sure to place in the top ten. Can Ira beat her 2002 attempt and bring Eurovision 2017 to Valletta? It's a definite possibility!



Australia



Photo Credit: Eurovision

Dami Im
'Sound Of Silence'

Before you go rummaging through your GCSE Geography textbooks, I know, Australia isn't in Europe and no, I haven't misspelled Austria. Eurovision is massively popular down under and so they were allowed to enter the competition last year as a special guest to mark the 60th anniversary of Eurovision, being told that they could only come back again if they won. They came fifth, but Europe enjoyed having them so much that we welcomed them back as a regular contestant anyway. This year they aren't messing around, sending **Dami Im** to sing 'Sound Of Silence', a powerful anthem that's almost sure to place in the top five.



Latvia



Photo Credit: Eurovision

Justs
'Heartbeat'

Latvia are sending **Justs** with his song 'Heartbeat', a song that I'm not all too enamoured with. Using up all of its potential with a great first verse that wouldn't sound out of place on a Metronomy album, the song soon turns into a slightly tedious club anthem that somehow both ends abruptly whilst also making three minutes seem like a long time. However it's shown early potential with fans and it'll most likely place in the top ten, maybe even the top five.



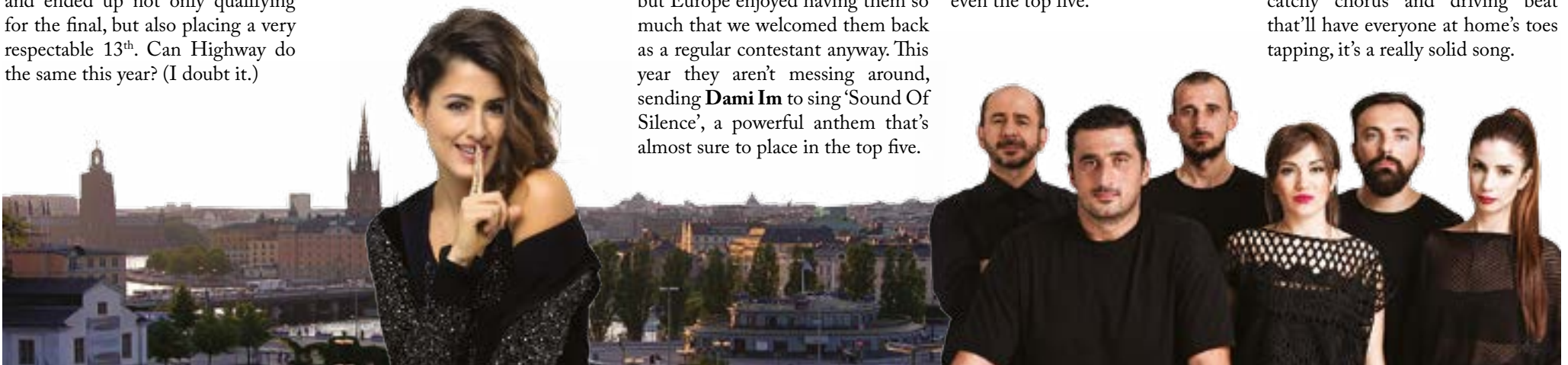
Russia



Photo Credit: Eurovision

Sergey Lazarev
'You Are The Only One'

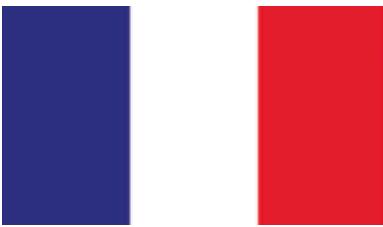
Russia came second last year, much to the dismay of the arena, with 'anti-booming technology' having to be employed for the first time in the competition's history. This year they're favourite to win, sending **Sergey Lazarev** to sing 'You Are The Only One', a song that is pure Eurovision. With its infectiously catchy chorus and driving beat that'll have everyone at home's toes tapping, it's a really solid song.







Cyprus



France



Sweden



Bulgaria



Estonia



Photo Credit: Eurovision



Photo Credit: Eurovision



Photo Credit: Eurovision



Photo Credit: Eurovision



Photo Credit: Eurovision

Minus One
‘Alter Ego’

Amir
‘J’ai Cherché’

Frans
‘If I Were Sorry’

Poli Genova
‘If Love Was A Crime’

Jüri Pootsmann
‘Play’

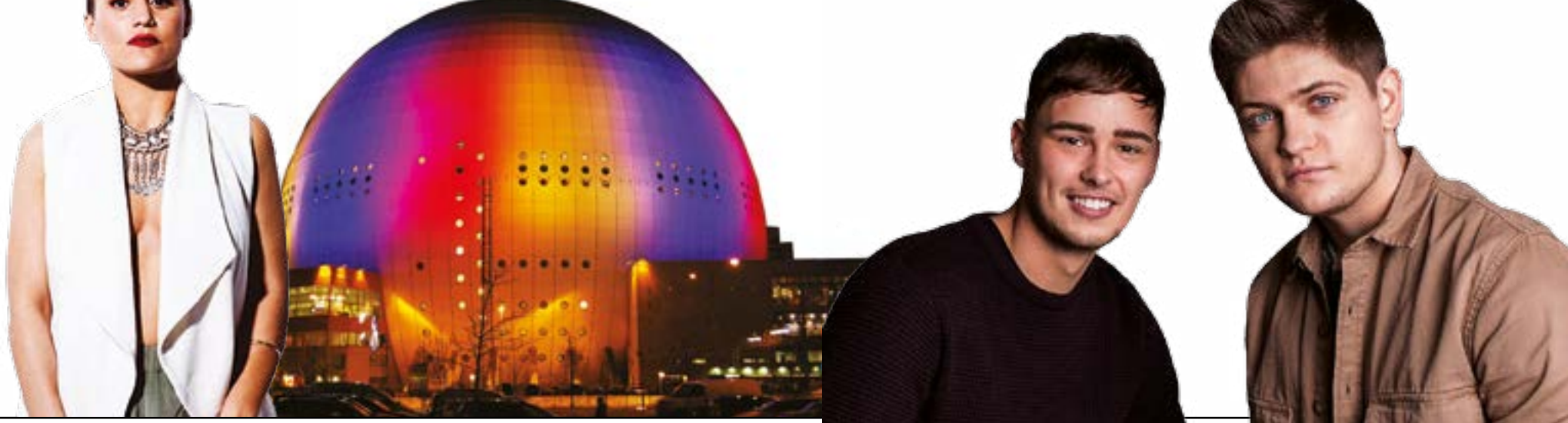
Minus One are representing Cyprus with ‘Alter Ego’, one of the few rock songs this year. Eurovision can be a tough place for rock groups who aren’t dressed up as monsters, but I think ‘Alter Ego’ has enough pop influence to qualify for the final, and I love it! Cyprus has never won the competition before, in fact the best they’ve ever placed is fifth. They don’t look set to beat that this year but a top ten finish for this song would be a success.

Being a member of the Big Five, France automatically qualifies for the final, and this year it’s set to finish in the top three. **Amir** will sing ‘J’ai Cherché’, an upbeat, catchy, feel-good song that’ll get the arena going and the viewers voting. Though it’s not in my personal top three, I wouldn’t be sad to see this win. After all, Paris is pretty close to London (somewhere the competition definitely won’t be held next year).

This year’s host nation takes Eurovision seriously. Very seriously. Their selection process, Melodifestivalen, is one of the most watched shows in the Swedish television calendar and is probably the most rigorous selection process in Europe. This year, by some miracle, **Frans** and his song ‘If I Were Sorry’ won and will represent Sweden. By an even bigger miracle, it’s third favourite to win. How what I think is a painfully boring, monotonous, middle-of-the-road song is so popular is a mystery to me. Nonetheless it’ll definitely make the top five, maybe make the top three and could well win.

Bulgaria first entered Eurovision in 2005, and has only gotten to the final once. They’re returning to the contest for the first time since 2013, sending **Poli Genova** to sing ‘If Love Was a Crime’. A returning artist, Poli represented Bulgaria in 2012, failing to qualify. This year she’s set to do well with this upbeat, powerful anthem. I’d like to see Bulgaria place in the top five, because I love the song.

If George Ezra were to perform a song by Gary Barlow, you’d have Estonia’s entry this year. The deep-voiced **Jüri Pootsmann** will sing ‘Play’, and I love it. Dark, subtle and jazzy, it’s one of my top songs this year. It’s not expected to do particularly well, but I’ll class it qualifying for the final as a success. Go Jüri!



And I’ve not forgotten about the United Kingdom! For the first year I’ve not included the UK in my list, because our chances of doing well are particularly slim this year. I like the song, ‘You’re Not Alone’ by **Joe and Jake**, but it’s a tad forgettable and isn’t helped by us not being too popular with Europe at the moment (owing to a certain referendum).

We’ll struggle to get out of the bottom five this year, maybe we’ll even place last. But that’s nothing new, and it’s all part of the fun! And that’s not all. There are 31 other songs in this year’s contest. 18 will perform in each of the semi-finals, with ten from each joining the Big Five plus Sweden in the Grand Final. The perfect procrastination material: the semi-finals take place on the 10th and 12th of May, with the Grand Final following on Saturday the 14th. Don’t miss it!

JAMIE THOMAS



Another year, another Death Grips leak

Henry Eshbaugh
Writer

The most avant-garde of avant-garde rap groups has leaked yet another album: *Bottomless Pit*. And it's exactly what you'd expect. It's so good it's bad. It's so bad it's good. And it's self-aware. We've reached peak irony, and I for one love it.

The band is hard to pin down stylistically. Clearer influences are dishwashers and industrial motors. If one listens carefully, they may discern **MC Ride** rapping, gibberish-ing, and occasionally screaming incoherently. Flatlander, sometimes known as "Andrew," produces, and is possibly having a seizure at the mixing board (someone should check on him). Zac Hill puts down drum tracks that sound like **Questlove** on crack – you might know him from Hella, or a one-off with Weiss and Cameron (you know, **Pearl Jam** and **Soundgarden**) featuring nothing but drums, appropriately titled 'Drumgasm'.

The band is erratic. This is their first effort after their pledged breakup. "We are now at our best and so **Death Grips** is over." "Plz give us more," cried the internet. "You're right, we might do another," said the band. Being a Death Grips fan involves grueling masochism; the cancelled shows, their evasive nature (having done, to my knowledge, only one interview – with Pitchfork, a few years back), and the constant push to inaccessibility with every new album.

MC Ride's characteristic aggression is worthy of special notice. "I don't care about real life" is the hook from the first song off *Jenny Death* – titled 'I Break Mirrors With My Face In The

Being a Death Grips fan involves grueling masochism

United States,' delivered with Ride's trademark insanity. Like, really? Incoherent screaming and pledges that "You're fit to learn the meaning of a beat down" ('No Love' off *NO LOVE DEEP WEB*) grace his performance. Ride's artistic touch has left every Death Grips album to date littered with primal violence. "IT GOES IT GOES IT GOES IT GOES / GUILLOTINE!"

And yet, it all fits together. At the service of the band is a boatload of talent, and a healthy sense of irony and self-consciousness. Combined with punk ethos, the one sentence that comes to mind to describe the group is, "Eh, screw it, why not?" Each past effort has succeeded in the past because you don't expect it to – it's perfectly composed, and hideous at the same time.

And now, the new album. *Bottomless Pit* is... exactly what you'd think would happen. 'Hot Head' is by far the most inaccessible track, complete with Ride literally screaming nonsense with wild abandon over bucking synths. The synths still sound like they're being played out of a blown-out speaker, and Hill still serves up some pretty gnarly drumming.

But, the band continues to push



A bottomless balloon pit? Photo Credit: Death Grips

their sound in new directions. Ride's rapping has become ingrained into the texture of the song. The stuttering beats on 'Three Bedrooms In A Good Neighbors' mix with cyberpunk-esque vibes coherently. The riff to 'Bottomless Pit,' the album's closer, is a straight-up punk banger. 'Trash' starts with a V-I fanfare, over which Ride raps unusually conventionally. On '8080808,' they actually sample 'Lock your Doors' off *NO LOVE DEEP WEB*. "Why?", you may ask. Well, why not?

Also, 'Warping' is if a bad acid trip was a song.

The lyrics are best described as the incoherent ravings of a psychopath. I'd repeat some of the stranger verses here, but Cale might think I've had a stroke and phone an ambulance. The band projects an ethos of hedonism and nihilist existentialism; why bother making sense in a world

without meaning? If I were better at philosophy, I could tell you how this is all an excellent criticism of late capitalism or something, but I think I'll leave that to better reviewers. I dunno, man, carve out your own meaning. But there's some neat stuff there.

Ten years ago, this album would have been massacred by critics. Today, they love it. Perhaps this speaks to some generational divide, with respect to a newfound sense of irony, a fatalist zeitgeist without regard for form, structure, or objective aesthetics which manifests in this piss-take of "real" music. Indeed, in their break-up note, Death Grips refers to themselves as a "Conceptual art exhibition, anchored by sound and vision, above and beyond a 'band.'" Or maybe the lack of sleep from exam stress is killing me, and I have no idea what I'm talking about. Either way, if you like the style, you won't have more fun with an album this year.

Why bother making sense in a world without meaning?



The back cover of Death Grips latest album. Photo Credit: Death Grips

Bottomless Pit is out now



Where are all the women in hip-hop?

Ben Collier
Writer

With hip hop, as a genre and a culture, passing its 40th anniversary in recent years, a female presence is as absent as ever. This is, of course, not for a lack of talent. Ignoring some examples like **Iggy Azalea** and **Kreayshawn**, there is a lot of female talent to be found in the realm of hip hop music. But when I go onto the featured rap artist page on Spotify I only see two women (**Missy Elliot** and **MC Lyte**) and around 60 men. As someone who wants to see more **Lauryn Hills** in the world, I really have to question why this is.

The obvious answer ties into ideas of masculinity. Traditionally, hip-hop music is synonymous with ideas of toughness, bravado and the 'alpha male'. This creates a culture where any aspiring female MC must be a "boss ass bitch" in order to be taken seriously. This is true for gangster rap anyways. As for the mainstream, any women that do make it big are often hypersexualised in an effort to appeal the average male hip hop fan.

One need only look to the career trajectory of **Nicki Minaj** from 'Playtime is Over' to 'Anaconda' to see how this 'sex sells' ideology ends up shaping the output of the majority of female MCs.

Female rappers rarely talk about sex from any position of power

Ultimately, whilst the topic of sex is something which features heavily in the lyrics of a lot of male rappers, the way it is approached here is



Lil Kim, Missy Elliot, Lauryn Hill and Foxy Brown. Photo Credit: Vibe Magazine

totally different. With a few notable exceptions (e.g. Missy Elliot's 'Work It') the way in which most female MCs talk about sex just shows us men's sexual fantasies from the other side. Female rappers rarely talk about sex from any position of power. "You can fuck my girls too, daddy I'm-a condone it" and "yes you be the boss, and yes I be respecting" are literal Nicki Minaj lyrics. It's a world away from her

verse on 'Monster' isn't it?

This masculine culture is shaped by both the artists and the fans. The success of rap songs nowadays is largely determined by internet communities mostly made up of young males. These groups are perhaps not the most open to listening to female MCs. As a result of this, hip-hop culture remains very accepting of a lot of misogynistic language and ideas.

In the end, asking why there aren't more women in hip hop seems to be comparable to asking why there aren't more black country singers. I think there is hope though; perhaps with a progressive movement away from the 'gangster rap' culture of the past towards the sound and philosophies of rappers like **Chance the Rapper**, **Lupe Fiasco** and **J. Cole** we'll see more women come up. I hope so anyway.



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Son of Saul stares into the abyss

The horror of the Holocaust is brought to life in László Nemes' astonishing debut

Son of Saul



★★★★

Dir: László Nemes. *Script:* László Nemes, Clara Royer. *Starring:* Géza Röhrig, Levente Molnár, Urs Rechn. *107 minutes.*

Jonathan Masters
Writer

Although admirable is an adjective too-often used to describe films whose artistic vision falls short of the final product, there is no word that I can think of more suited to describe Hungarian Holocaust drama *Son of Saul*. In most Holocaust dramas, the cinematic narrative is structured in order to create the most emotionally charged story possible – to give the impression of the gravity and sheer scale of the Holocaust and the victims created by the Nazi dictatorship. *The Boy in the Striped Pyjamas* comes to mind, where everything – from the euphoric music, to the dialogue, right down to the nuanced acting – is engineered in order to profit from an emotional response from the audience, the cynical possibility of an Oscar hanging somewhere in the near future. In the end, these films seem to almost trivialise the topic of the Holocaust, and while their aims may be noble, this method lacks emotional subtlety and creates a work with the feeling of emotional artifice. You may have guessed that *Son of Saul* is the complete antithesis of this. It is a piece of art that will endure years to come, not just this past Oscar's season.

The first indicator that this is unique is the camera work: right from the opening, where titular character Saul Ausländer (Géza Röhrig) discovers a young boy murdered in the gas chambers, Mátyás Erdély's 35mm cinematography focuses directly on the face of Saul, whose eyes sit dark and deep in his skull, revealing the pain he has up to this point endured and continues to endure as the film progresses.

Throughout the film we rarely glimpse anything further away than a couple of meters from Saul's face,



Géza Röhrig brings incredible intensity to *Son of Saul*, described by *Shoah* director Claude Lanzmann as the 'anti-Schindler's List'. Photo Credit: Sony Pictures

and director László Nemes shows incredible constraint and vision to resist capturing the production values or showing the violent atrocities that occur as he performs the tasks forced upon him as a member of the Sonderkommando (prisoner work units at death camps, made to assist the functioning of the gas chambers) such as in the opening scene where he is collecting the clothes of murdered Jews. The film follows Saul as he continues in his attempt to bury the child, who may or not be his son.

To tell this story, we go through hell on earth, focusing on the personal pain reflected in Géza Röhrig's face – the use of a 40mm lens creates a claustrophobically shallow depth of field that keeps most of the nudity and murder out of focus. Reinforcing this is the decision to project the film in the academy ratio, with the near-square image further adding to the oppressive atmosphere.

Additional credit must be given to Tamás Zányi whose sound design

creates the world that is kept out of sight: the screams of the people who realise what their fate, the furnaces in which the bodies are burnt – all locations are given such horrifying sound design that it is impossible not to imagine what occurs just beyond the frame, adding to the immersion created by Nemes.

Son of Saul is edited phenomenally by Matthieu Taponier, who creates such a tense pace that there is never a moment in which the film becomes portentous. Rather, Saul's singular task of burying his son whilst in the midst of a hellish atrocity becomes a thrilling 107 minutes of cinema.

Of course, none of this would matter unless Röhrig had the abilities to carry the film. He undoubtedly has such abilities. The essential difference between film acting and theatrical acting is the minutia, something Röhrig completely understands: each grimace and look transcends whatever subtitles flash at the bottom of the screen, and in numerous profile shots he seems to stare into the very soul of

the audience. In one particular shot we see a smile slowly unfold upon his face – it is shocking how simple an image has stuck with me all of this week, and a testament to the subtlety and mastery of Röhrig's craft.

Although this is a film about a Sonderkommando in a

Géza
Röhrig's
Saul seems
to stare into
the very
soul of the
audience

concentration camp, it would be a mistake to label this as just a Holocaust drama; indeed, like all best stories it seeks to transpose a familiar human experience into the setting of an unfamiliar landscape. It is a story about how, in the darkest times, the ache to embrace traditions and to cling to them is one of the most basic human traits that exists. Whilst Saul and his compatriots are treated as nothing more than animals, the traditional burial that he seeks for his son is a goal that drives him to afford his son one last shred of humanity in an environment where this has been taken from them.

Son of Saul is an experience like no other. Yes, it is oppressively dark (for obvious reasons), and yes, it will haunt you. But it is a cinematic experience like no other – one of the most brutal depictions of the Holocaust ever committed to film, and one that should be experienced in the cinema.

FELIX FILM



film.felix@imperial.ac.uk

The top three *Superhero Films* that aren't *Marvel*

Ok guys, seriously now, Disney is starting to scare me. Now that they own ESPN, ABC, Lucas films, Pixar AND Marvel the ludicrous amount of money they make could, theoretically (and I'm not saying this is a definite), fund a pretty decent world domination effort. I'm just saying. The only way to stop this is to not give their bloated superhero film franchise any more money. Here are some alternatives:

Watchmen (2009)

Based on the graphic novel of the same name by eccentric genius Alan Moore, *Watchmen* demonstrates that Zac Snyder is at least somewhat capable of making a decent superhero film, despite what his most recent offering might suggest. Despite condemnation from Moore himself (unsurprising, he hates all adaptations of his books) *Watchmen* actually manages to hold up. It's not perfect – or as clever as the book – but its surprising faithfulness to the source material and gorgeous aesthetics make it a fitting complement.

Hellboy (2004)

Guillermo del Toro's *Hellboy* was my unchallenged favourite film in primary school. It's not your typical superhero film, but its unique 'del Toro' nature is what makes it stand out. Today, I consider both the original and its sequel two of the most underrated cult classics of all time. I promise this isn't just nostalgia speaking... Ok maybe it is a bit.

The Dark Knight (2008)

I don't know why, but it feels a bit weird putting this film on the list. Everybody raves about it so much that a lot of people are bored of hearing about it. On the other hand, including it makes my job easier because I don't need to do any convincing. *The Dark Knight* is one of the best films ever. Go watch it again.

BEN COLLIER

Captain America: Civil War



Dir: Joe Russo, Anthony Russo.
Script: Christopher Markus, Stephen McFeely. Starring: Chris Evans, Robert Downey Jr., Sebastian Stan, Scarlett Johansson. 147 minutes.

The struggle between good and evil – between superheroes and supervillains – has remained at the centre of the Marvel Cinematic Universe (and blockbusters in general) since its inception in 2008's *Iron Man*. Without exception, the antagonists of the eleven following Marvel films have always represented the worst of humanity (or super-humanity), and the protagonists, while often troubled, are always redeemable. In this marketing-driven universe there is rarely space for moral ambiguity. The third film in the *Captain America* trilogy, *Captain America: Civil War*, escapes this mold by pitting hero against hero in a 'war' over the controversial Sokovia Accords which hope to establish an international body to govern and monitor superhuman activity.

The online marketing leading up to the release of the film asked fans to decide whether they supported #TeamCap or #TeamIronMan, while posters had the two leaders posed against each other, with their supporters in the background. But unlike the marketing campaign,

the conflict the film presents is far more complex: in 147 minutes of superhero action and confrontation, directors Anthony and Joe Russo repeatedly challenge their audience's understanding of vigilantism and the unintended destruction that invariably follows, presenting us with flashbacks to the Avengers' careless destruction in previous films. Like its comic source material, *Civil War* is an allegory for military intervention and war, and the worrying lack of oversight that often leads to death. Captain America (Chris Evans) is a character that has witnessed first-hand the evil of the Nazis and Hydra, whereas Iron Man (Robert Downey Jr.) has seen how Western intervention and his own weapons sales can support and create terror. It is these two opposing experiences and views that go head to head in *Civil War*, verbally as well as physically, through a number of key character conversations. Viewers who have watched from the beginning of the series, and those that have any understanding of history, are likely to enter the theatre with a range of opinions – but ultimately *Civil War* never validates or invalidates any of these. Its final message is ambiguous.

The film's best trait is possibly the success with which it juggles its massive ensemble cast (the cumulative result of a dozen films). Veteran Avengers are given the majority of the screen time, although newcomers Black Panther

(Chadwick Boseman) and Spider-Man (Tom Holland) are given fairly lengthy introductions, and both offer a refreshing variety to the cast that goes beyond mere marketing tools for future films (Marvel's *Black Panther* is set to be released in 2018 and *Spider-Man: Homecoming* in 2017). But with such a large cast there is rarely time for character development, and we are never given an insight into how years of fighting and unintended civilian casualties have affected the emotional state of the team – other than a few tears, Captain America and his crew seem largely unaffected. The film does have the advantage of developing its characters over the many adventures that have preceded it and *Civil War* is very much the culmination of these storylines, but without the context of previous films some parts of *Civil War* are confusing, often nothing more than fan-service.

Many critics noted the excellent action scenes of the last *Captain America* and they return on a larger and more ambitious scale. Each punch and kick of close combat is delivered with crunching realism. The larger battles, including one that lasts over 20 minutes, use a mixture of fantastical special effects and witty one-liners to deliver some of the best action audiences will have ever seen in a comic book film. However, the large cast can cause confusion; it's often hard to discern who is on what side in the frenzy of battle.

While easily forgiven, the film's

soundtrack is largely forgettable compared to other recent superhero films like *Deadpool* or any of DC's output, and similarly the cinematography is never more than serviceable. You would hope that a film with such a large budget and audience might attract someone with more interesting talent. While I would argue that comic books, and by extension comic book movies, have never been about the scenery in which they place their characters, but that doesn't forgive the lack of effort. Artists pour most of their time into designing lavish, eye-catching costumes, and the outfits of *Civil War* are suitably refined, with new members of the ensemble given a large amount of focus. These costumes are often as much a part of the film as the actors themselves, and the new set of heroes on offer will create new fans and ample opportunity for merchandise and product placement in the future.

In *Civil War*, the vastness of the comic book canon is exploited to full effect, with the best comic book moments from decades of source material composed together in a truly unforgettable blockbuster. It reflects the richness of the comic book medium: the endless reinvention, massive crossovers, and ever-increasing spectacle. *Captain America: Civil War* rewards fans for their dedication, offering the best Marvel film to date.

CALE TILFORD



Things get emosh in the latest of the ten billion Marvel films scheduled to come out this year. Photo Credit: Marvel 2016



Documentary corner: *Going Clear*

Ben Collier
Writer

Scientology is not exactly the rarest documentary topic. Countless attempts have been made in the past to expose various aspects of this 'Church' in the past – discussing its history or telling the stories of those who have left its ranks. Perhaps the most famous documentary prior to the release of *Going Clear: Scientology and the Prison of Belief* was the BBC Panorama's *Scientology and Me*. You've probably seen the clip from this programme wherein the host, John Sweeney, explodes at church member Tommy Davis, who managed to finally get under his skin following months of harassment. This is, unfortunately, the usual way these documentaries go: any journalist who has ever tried to independently combat and expose Scientology is quickly met with stalking, harassment, and lawsuits – some Scientology members have even gone so far as to plant child pornography on reporters' computers. Where the HBO special *Going Clear* stands



"Ok, so 75 million years ago there was this evil dictator of the Galactic Confederacy called 'Xenu'...". Photo Credit: HBO

out – other than the incredible level of detail it goes into – is that it's quite hands-off. The presenter, Alex Gibney, gives us his message almost exclusively through the voices of (very) high-ranking ex-members of the church, such as Mike Rinder. I think the backing of the behemoth that is HBO had some part to play

in the fearlessness with which this documentary tackles its subject. Ultimately, *Going Clear* really does serve as the only Scientology documentary you'd need to watch to get a full understanding of the movement.

Almost nothing is left out here: we learn about Scientology's history,

get a suitably in-depth exploration of the mind of founder L. Ron Hubbard, a revealing of its shady underbelly, and even a study of the two celebrity stars of the show, John Travolta and Tom Cruise. A focus on these two celebrities may sound somewhat pointless at first, but throughout the course of the

film one does begin to understand the monumental impact they had on popularising the church. Tom Cruise in particular comes across as an egotistical, Patrick Bateman-esque character – he is very chummy with the current leader David Miscavige, a Machiavellian figure who seems to be focused on massaging Cruise's ego in order to keep him brainwashed and dedicated. Based on the archive footage, it's possible to draw a lot of parallels between Cruise and Kim Jong-un: both appear to be man-children surrounded by insincere admirers, convinced of their own self-importance. For other celebrities involved in the movement, one almost gets the idea that they are trapped, possibly blackmailed using the information from their confessional 'auditing' sessions. Overall, *Going Clear* is the most comprehensive and masterful exploration of this topic I have ever seen. Will its oddly specific ranking as my 'favourite Scientology documentary' be toppled by Louis Theroux's upcoming documentary, released later this year? We'll just have to see.



REYNOLDS
BAR

Launch Event

Friday 13 May
17:30 - 01:00

All students are invited to check out the new and improved Reynolds Bar!

There will be free pizza, refreshing cocktails and a DJ from 20:00.

Go to facebook.com/reynoldsbarcx for more information

imperialcollegeunion.org/whats-on



FRIDAY 6 MAY



TASTER EVENT

FRIDAY 6 MAY | 20:00 - 02:00

ALL BEIT BARS

FREE ENTRY BEFORE 20:00

£2.50 AFTER | £1.50 FACEBOOK GUEST LIST

FEATURING

The Bandoke experience

The Bandoke Experience is karaoke that has evolved into something far more exciting! Instead of performing with a machine you have the opportunity to strut your stuff with a live professional band! They'll be performing alongside our headliner and student acts at the Summer Ball on Saturday 18 June.

COMING UP!

Date	Event	Time	Location
Monday 9 May	Nice & Spiky Comedy	20:00 - 23:00	Union Bar
Every Tuesday	Super Quiz	20:00 - 22:00	FiveSixEight
Every Tuesday	Cocktail Night	18:00 - 23:00	Metric
Every Wednesday	CSP Wednesday	19:00 - 01:00	Metric & FiveSixEight
Every Wednesday	Sports Night	19:00 onwards	Reynolds
1st & 4th Thursday of each month	Pub Quiz	19:00 - 21:00	h-bar
1st & 3rd Thursday of each month	Quiz Night	19:30 - 22:00	The Foundry
2nd and 4th Friday of each month	Karaoke Night	20:00 - 23:30	The Foundry
Every Friday	PGI Friday	16:00 onwards	h-bar
Every Friday	Reynolds Cocktail Club	17:30 - 00:00	Reynolds
Friday 6 May	Summer Ball Taster Event	20:00 - 02:00	Metric & FiveSixEight
Friday 13 May	BPM	20:00 - 02:00	Metric & FiveSixEight
Friday 20 May	iPop	20:00 - 02:00	Metric & FiveSixEight



People, Places and Things

The National's unpredictable triumph is revived in style at the Wyndham's Theatre



Best Actress winner Denise Gough in her as a drug addict in *People, Places and Things*. Photo Credit: Johan Persson

Jingjie Cheng
Arts Editor

As I sat placidly in my seat waiting for the play to start, the announcement to turn off our mobile phones was played. That was all expected. But then the announcement repeated itself, and it seemed that a thousand voices were echoing it at the same time, louder and louder and reaching a mad climax – then in a snap the theatre went dark and a scene from *The Seagull* appeared before us.

That opening sequence caused me much alarm – in my wild imagination I thought the theatre had been hijacked. But it was the first of many points in the play when director Jeremy Herrin makes the experience of the drug and cigarette addicted protagonist the audience's experience as well. *People, Places and Things* tells the story of a

young drug addict seeking help at a drug rehabilitation clinic. Although not an uncommon narrative, this production wins with the intensity with which we are immersed in it, especially in the mind of the girl herself.

The protagonist's identity is as fluid as her delusions

Various known as Nina, Emma, Sarah and Lucy, the protagonist's identity is as fluid as her delusions. Her drug-induced visions are played out in vivid detail to the audience. I gasped as the exit sign on stage swirled

and morphed, and an identically-dressed receptionist popped up beside the first as the protagonist speaks to him in her drug-addled state. Indeed, much of the action happens when the ensemble of Emmas is out, all dressed exactly like her, crawling out of her bed, emerging from the toilet, climbing out of the wall, each convulsed in tormented jerky movements – the visual manifestation of what must be her own delusions arising from drug withdrawal. In this way, the production actually sheds light on psychiatric issues that are rarely discussed in public, much less in such a visceral way.

Perhaps on a more metaphorical level, these multiple selves of Emma represent her conflicted views of the world and fragments of identity that she cannot reconcile. Emma/Sarah is clearly a sharply intelligent girl who overthinks the workings of the world, and creates for herself elaborate, noble excuses for her

drug habit. "How can you sit here pretending that everything is going to be alright when there are people starving in the world?" she asks the therapist. "Drugs are the only way to make me feel authentic, give me

An intense, visceral experience that will give you your high

real experiences. If I deny myself choice," she declares, "then what am I?" These may be the words of a helpless addict, but it is a sensitive acknowledgement of the addict's own perspective that her habit is the only sense of control she feels over her life and her view of the world.

Denise Gough carries her unpredictable character brilliantly. At times, she is a fiery ball of anger eloquently rebutting everything the therapists and her fellow addicts tell her, at other times she's a tormented soul suffering under her drug habits. Behind her prickly exterior lies a girl who desperately wished for acceptance by her mother. This theme of acting and meta-acting was displayed from the start, when the "backstage" curtains fell shortly after the play began to reveal another set of audiences on the other side. Each block of audience is watching and being watched by the other – emphasizing the staginess of the stage in between.

People, Places and Things is an intense, visceral experience that will give you your high (safely), while also getting you to question your assumptions about the world.

People, Places and Things is at the Wyndham's Theatre until 18th June.



The Suicide

An adaptation of the Erdman classic amuses and underwhelms in equal measure

Max Falkenberg
Arts Editor

The National's latest modernisation of an old classic, *The Suicide* has all the potential of a biting satirical comedy with little of the finesse or foundation to really pull it off. While the laughs are frequent and at times provocative, the play struggles to maintain its momentum and leaves little of an underlying narrative.

The laughs
are often
cheap
and hastily
stereotyped

Suhayla El-Bushra's adaptation of Nikolai Erdman's great second play, *The Suicide* concerns a young man, Sam, whose brief thought of ending his life is compounded by an outpouring of support. The community, in all the shapes and sizes of a London council estate,



The cast of *The Suicide* all fighting for Sam's attention. Photo Credit: Johan Persson

all urge him to do the right thing – die for the benefit of their cause. Played by the boisterous Javone Prince of PhoneShop fame, Sam is soft and charming, but lacking the direction that would really make

him shine. With a solid supporting cast including the likes of Paul Kaye and Ashley McGuire, the overall presentation is enjoyable, but not exactly special.

As is so often the case at the

National, the set is a highlight of the production with all the frills and flair of big budget theatre. However, despite its impressive appearance, it feels oddly unoriginal. Thinking back to the shows of 2015, *The Suicide's*

stylised dystopian backdrop, frequent use of multimedia and drum solo soundtrack all bear uncanny resemblance to the production features in *Golem* – a personal highlight from last year's calendar.

The Suicide is far from boring, but the play fails to take that step above and beyond the comedy. The laughs are often cheap and hastily stereotyped – for what should be a fiery political satire, the comedy is a little bland. It is clear that the script is for today's audience with many of the best jokes touching on the current affairs of 2016. However, I can't help but feel that more time in development would have done wonders for this production. Where the script seems to be steering to hilarity, the punchlines are a let-down, and where split second timing is crucial, the text is too fluffy to really hit home. Equally, while the momentum consistently builds as the play goes on, the two and a half hour runtime leaves the last thirty minutes stagnant. The body is there and the intention is clear, but they haven't trimmed the fat.



The cast in all their glory wearing Javone Prince masks. Photo Credit: Johan Persson

The Suicide is running at the National Theatre until 25th June

Union Page

The Sports Review - tell us know what you think!



The Sports Review is a joint project between Imperial College Union and Sport Imperial, aiming to create a joined up, more effective and more inclusive sporting offer at Imperial.

A student body consultation has highlighted a general push towards enabling participation on a more casual basis, with major barriers involving time, location, and capacity of facilities. We would love to hear your feedback before consultation closes on Friday 13 May. To give us your view about sports go to:

imperialcollegeunion.org/news/consultation-sports-review

Sign up to Activities Training

Team Activites are launching the specialised Club, Society and Project training next week. This is specifically for new officers and for principal officers starting to handover.

Training consists of:

- ▲ Handover Training - Friday 6 May
- ▲ How to Get Funded - Tuesday 10 May
- ▲ How to Handover - Monday 16 May
- ▲ Leading and Motivating Teams - Thursday 19 May
- ▲ Leading & Motivating Teams - Monday 23 May
- ▲ How to Get Funded - Thursday 26 May
- ▲ How to Get Noticed - Marketing & Publicity Training - Monday 9 May
- ▲ Room Bookings Training - Thursday 12 May
- ▲ Thanks! Is there any specific text I can use from somewhere? - Tuesday 17 May
- ▲ How to Get Funded - Friday 20 May
- ▲ Room Bookings Training - Monday 23 May
- ▲ Leading & Motivating Teams - Tuesday 7 June

Sign up at **imperialcollegeunion.org/activities-training**

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imperialcollegeunion.org/helloicu



This week on *Game of Thrones*



Taming a dragon; should be as easy as walking a dog. Photo Credit: HBO

Anurag Deshpande
Writer

Following last week's relatively uneventful, measured episode, *Game of Thrones* cranks the dial up to eleven with this one. Last time was the safety briefing; now we've hit the first drop on the rollercoaster.

We open in Winterfell of old, as Bran and the Three-eyed Raven watch the previous generation of Starks in their younger days. The scene serves as an excellent reintroduction to Bran, and an effective way to familiarise the audience with his growing abilities; without resorting to an exposition dump.

We finally catch a (non-stone) glimpse of Lyanna Stark; getting some idea of character. This serves to give us some context on the woman who launched a civil war, and puts her in the forefront of our minds in anticipation of next week; when we'll be treated to perhaps one of the most important events in recent Westerosi history. Interestingly, there is also a glimpse of young Hodor, with his faculties intact. Given the tight pacing of this episode, it seems unlikely that this would be included without cause.

Then, in King's Landing, it's Myrcella's funeral, but first we stop by the pub to pay our respects to

the flasher from Cersei's walk of shame last season. Alongside a very agitated Robert 'totally not the mountain' Strong. I mean, come on, his name is in the credits. This scene is actually pretty funny, and provides a nice respite from all the other seriousness in the episode. In fact,

Last time
was the
safety
briefing;
now we've
hit the first
drop on the
rollercoaster

in general the writing has managed to pull off dry wit pretty well so far this season.

Jamie continues his journey towards not giving a fuck and almost straight up murders the High Sparrow (is it just me that he reminds of Bernie Sanders? It doesn't help that his primary rival,

Cersei, has a little trouble with faithful husbands) in the sept; stopped only by the appearance of a lot of the faithful. This scene also gives us a fantastic line in the form of the Sparrow's coddled warning to Jamie, "I fear a great many things...the father, the mother, the warrior". Cersei's original cold and vindictive persona also makes a bit of a resurgence, after the previous episode's attempts to make her seem more sympathetic and likeable. The balance struck here is just right.

In present day Winterfell, whatever Roose Bolton's

machinations for Ramsey are move forward as his wife gives birth to a baby boy. For about two minutes, that is, when Ramsey decides to stab him to death. Poisoned by his enemies, such a sad way to go. This may be the biggest issue with the episode. Bolton Sr. feels completely wasted, and his arc a massive anticlimax. Maybe there was some

An exciting
indicator
for just how
much is likely
to happen
this season

miscommunication between writer and director, but the constant baiting of Ramsey on his part really felt like it was part of some grand scheme. What other possible reason could someone as supposedly shrewd as Bolton have for pushing Jr. that far? Total narrative blue balls. Oh, and then Ramsey has his dogs eat his step-mum and baby brother. I didn't mind this too much, but his villainy is just reaching cartoonish levels now. Next week, I predict he'll dress up like a ghost and try to scare away Mystery Inc. from the abandoned amusement park.

Back in Mereen, things continue to fall apart, so Tyrion decides to see if he can get the Dragons involved. The scene actually adds some interesting depth to the dragon's characterisation, and makes them feel like more than just the one note killing machines we've seen up till now. Dinklage, in particular, is on top form here, as he does a great job of building tension considering he's working with CGI.

Theon decides to part ways with Sansa and head home; promising to make good to the Starks. But which home? Will he head to the Iron Islands, or to Winterfell, to try and get even with Ramsey. Speaking of the Iron Islands, we're finally reunited with Balon Greyjoy. And then he gets pushed off a bridge. Hey, at least he technically won the War of Five Kings. This also serves as an exposition heavy and storm saturated, albeit still fairly effective, introduction to his brother, Euron.

And finally, at Castle Black, Jon Snow wakes up. Some other cool shit happens too; the wildlings kick Thorne's ass and we get to see the giant again. But really, Snow's resurrection was deftly handled. I'm glad they didn't drag it out too much, since it was fairly obvious he'd be back. Too much narrative focus has been on him until now for that. It's also an exciting indicator for just how much is likely to happen this season. The hype train rolls onto the next episode, where it seems an even bigger revelation awaits.

Game of Thrones is available on
HBO Go



That awkward moment when you're older than your father. Photo Credit: HBO

Imperial's Cost of Living in London Survey



You have until Sunday 8 May to take part



Go to our Cost of Living webpage

www.imperial.ac.uk/fees-and-funding/living-costs/survey

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Imperial puts forward a team in an international sensor building competition

John Welsh
Writer

Imperial College has put forward a team of twelve students to compete in the International SensUs Competition, which aims to produce a creatinine molecular biosensor for healthcare applications. Its applications include uses in monitoring chronic kidney damage, radiology, the cardiovascular system and transplantation.

The other universities taking part in the competition include: The University of Leuven, Uppsala University, The Technical University of Denmark and Eindhoven University of Technology. SensUs is the first international student competition involving molecular biosensors for healthcare applications, and is being organised by students at the Eindhoven University of Technology in collaboration with professors from international universities.

Creatinine is a by-product of the phosphorylation of creatine and is catalysed by the enzyme creatine kinase. Kinases are enzymes which use ATP (adenosine triphosphate, the body's immediate supply of chemical energy) to transfer phosphate groups onto molecules,

The team aims to produce a fully functioning creatinine sensor which rivals those currently available

such as creatine, turning ATP into ADP (adenosine diphosphate). The product of the reaction is phosphocreatine which is used to turn ADP back into ATP in times of high physical stress; phosphocreatine requires low effort to synthesize when the body has



A very happy ensemble on a very successful trip! Photo Credit: SensUs Imperial

excess ATP.

Creatinine is useless to the body so it has to be removed by the kidneys. If the filtration in the kidneys is deficient, the level of creatinine in the blood rises. Consequently, by sensing the concentrations, doctors can determine kidney-associated illnesses in patients. It is therefore a very important compound and any improvements to current sensors will be a remarkable achievement. The sensing of creatinine has four main application areas: monitoring chronic kidney damage, the study of agents that are a burden on the kidneys in radiology, the study of the effects of diuretics on the kidney in cardiovascular studies, and in the monitoring of transplanted kidney function as part of patient care.

Professor Tony Cass and Doctor Christopher Johnson, the supervisors of the Imperial team, act as consultants to the Imperial team and are able to provide guidance to the team due to their extensive knowledge in both biochemistry, bioengineering and molecular biosensors. Although it is a student-only competition, the team seeks help on any specific problems encountered along the way and liaise with the supervisors and various companies to attain

any equipment or facilities needed. Moreover, they have generously contacted companies and are in charge of the teams funding. One company, OrionTM, has kindly supplied free electrodes to the team who are hoping to start working in labs in the summer term.

The Imperial College team aims to produce a fully functioning creatinine sensor which rivals those currently available. The Imperial team is made up of five chemists, John Welsh, Ana Losada, Ning Voon, Onur Guzel, and Taiwo Lawal, four bioengineers, Francesco Guagliardo, Edward Da Fonseca, Valeria Trujillo, and Riccardo Barbano, a biochemist, Rufus Mitchell-Heggs, mathematician, Lawrence Stewart, and a physicist, Thomas Lord.

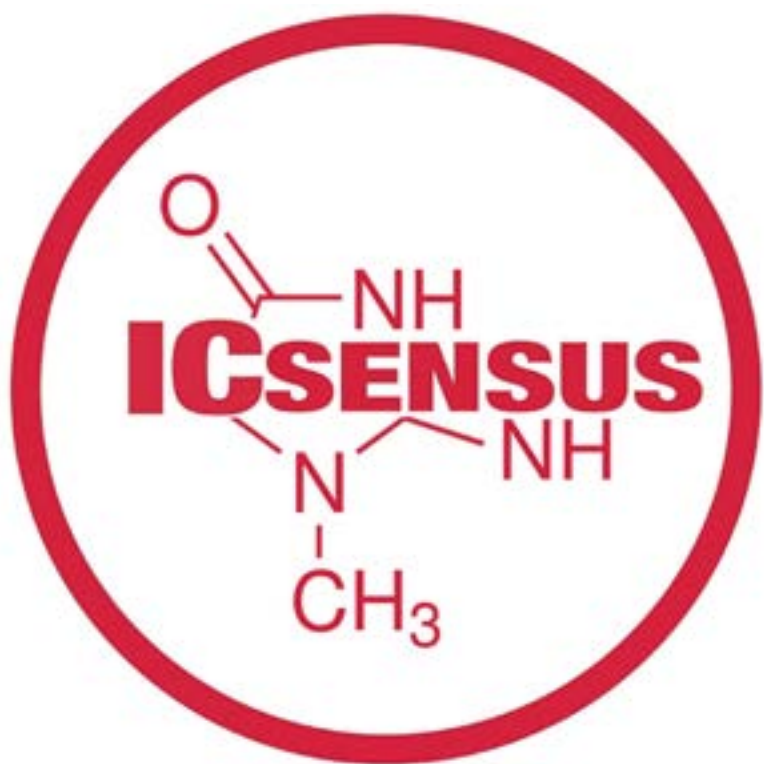
The Imperial team is currently conducting market research on existing sensors by asking various experts in the field including clinicians, GPs and professors. They will use the information gathered to decide whether to improve on an existing model, which uses enzymes to detect the compounds in the blood, or to go in another direction, possibly researching the potential use of molecularly imprinted polymers (MIPs). However, it is

likely that they will split up into two teams so that they can experiment on both MIPs and enzyme-based sensors.

The team will be travelling to Eindhoven University of technology in the Netherlands on the 9th of September to present their sensor. Each sensor will be given 22 samples to be tested over three hours on Friday and on Saturday, the team will present their sensor to the public and a panel of experts, Professor Cass being one of them. Four independent awards will be given out by the end of Saturday: The Analytical Performance Award, based on the precision, range, speed and sample volume; The Creativity and Initiative Award, based on how original the sensor is; The Translation Potential Award, based on future applications in healthcare and how cost-effective it is; and The Public Presentation Award, based on the presentation skills of the teams.

While it would be an amazing achievement for the team to win an award, they are simply happy to have made a functioning sensor and contributed to the scientific field.

To follow the team's progress, like them on Facebook or visit their website: imperialcollege.sensus.org.



fsudoku@imperial.ac.uk

Solo Efforts

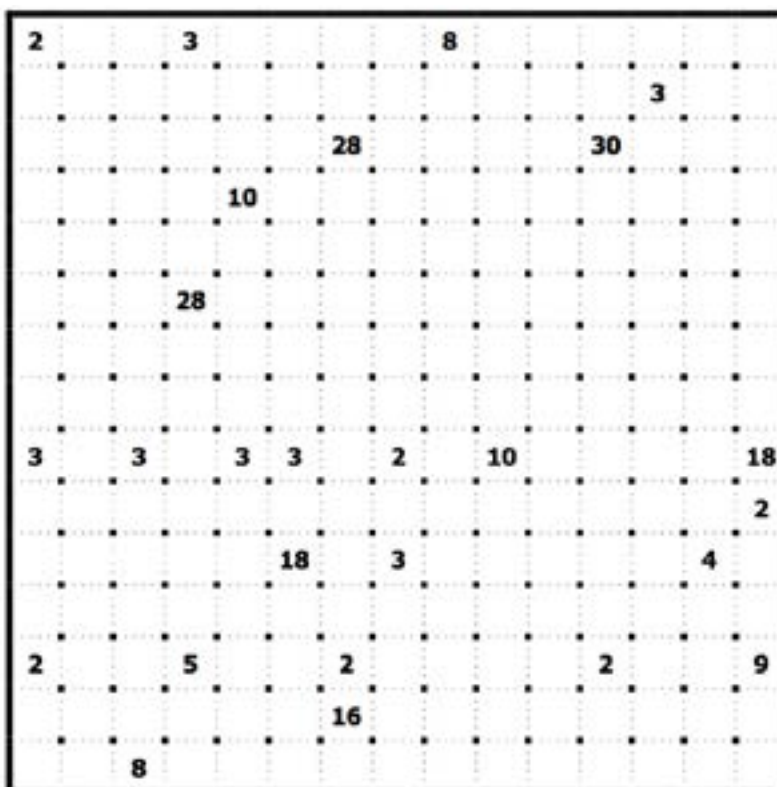
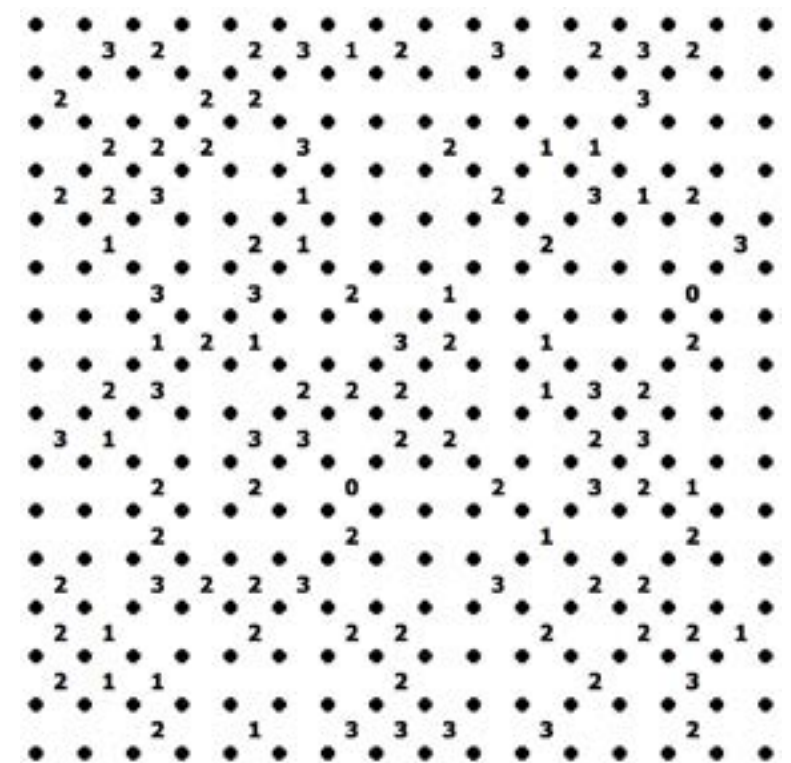
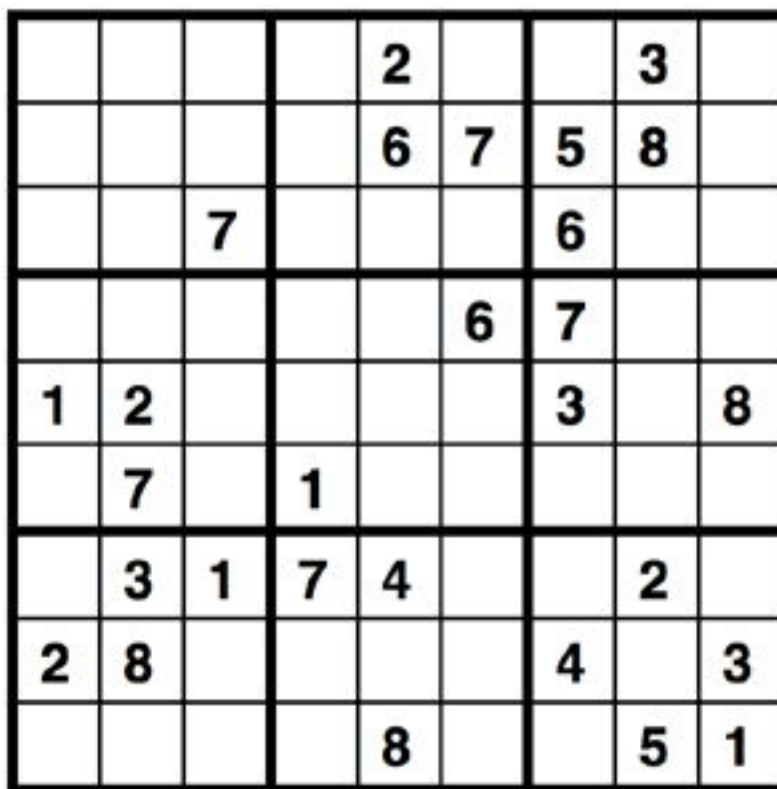
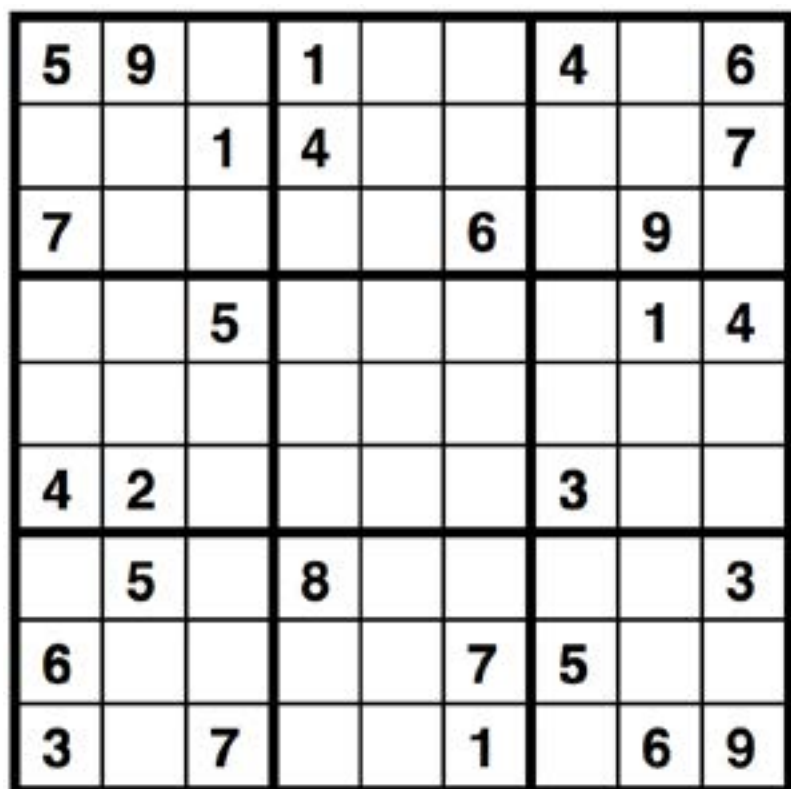
1 st	Cherry Kwok	307
2 nd	Nicholas Sim	286
3 rd	Ayojedi	113
4 th	Greg Poyser	87
5 th	King Lam Kwan	31
6 th	Sunny Amrat	30
7 th	Jan Xu	17
8 th	David Fengchu Zhang	14
9 th	Grace Chin	13.5
10 th	Sach Patel	13
11 th	Harry Secrett	10
12 th	Joshua Wan	8
13 th	QiaoqiaoFu	6
14 th	Jeremy Ong	3
15 th	Megha Agrawal	2

Groups

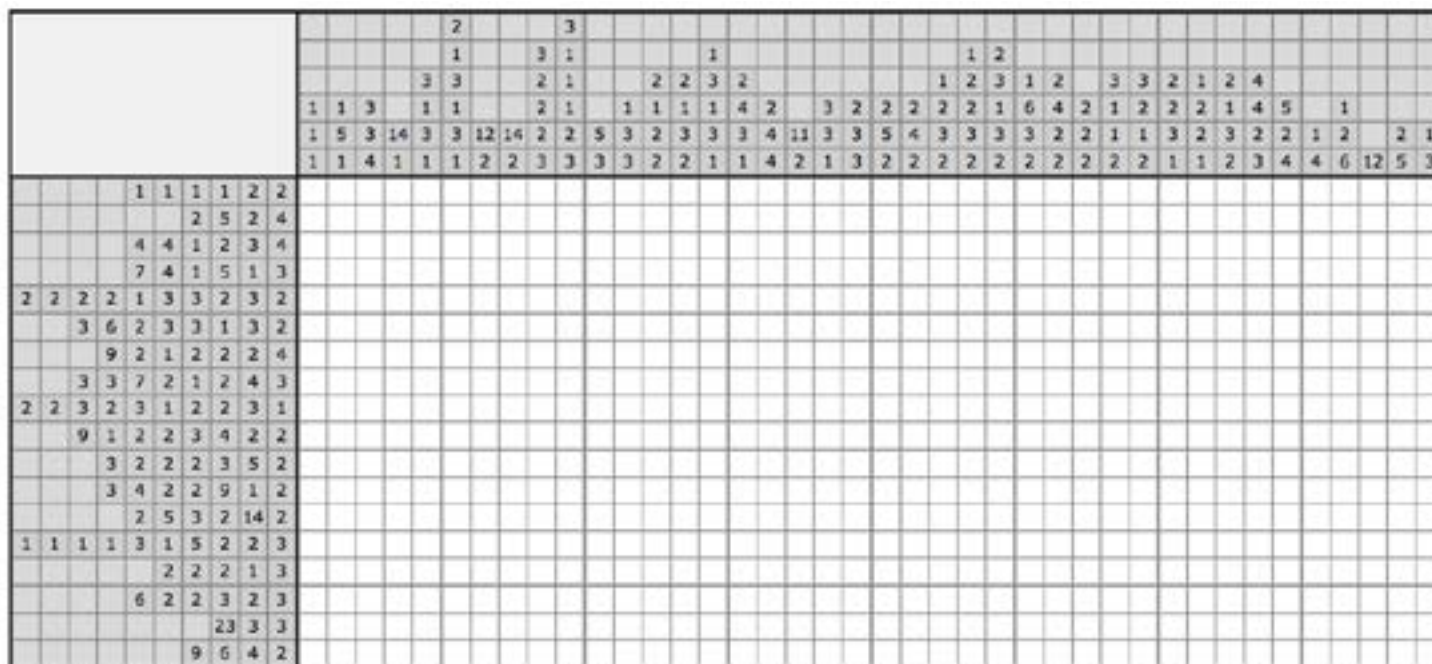
1 st	CP Fanclub	133
2 nd	Pufuletti	118
3 rd	Gap Yahhhh	58.5
4 th	The Gravitons	15
5 th	Parmesan	9.5

Points Available 20

Sudoku	4
Slitherlink	3
Rectangles	4
Nonogram	3
Chess	6



White to move.
Forced checkmate in two.



FELIX HANGMAN



felix@imperial.ac.uk

NEWS WITHOUT THE NEWS



GOLDSMITH SO POSH HE GETS UBER
EXEC TO CORNER SHOP



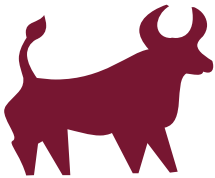
YOUR GRANDAD GETS SNAPCHAT AND
FREAKS OUT YOUR WHOLE FAMILY

HOROSCOPES



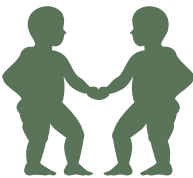
ARIES

This week you get up bright an early in order to vote and exercise your democratic right to decide what's best for London. However, you realise this isn't the Brexit one and so you just scribble 'close the borders' on your form before screwing it up and throwing it at a volunteer.



TAURUS

This week in order to have a more interesting sex survey result to input, you decide to try and have sex in the ethos swimming pool; however, you get locked in and have to drink pool water. However, the chlorine makes your hair so shiny that every one you meet wants to have sex with you.



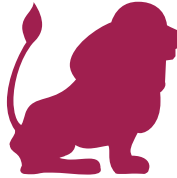
GEMINI

This week you write an anti-Israel article and you decide to go into hiding in fear of Mossad trying to get revenge. I'm basically Salman Rushdie if you think about it.



CANCER

This week, to prepare for a trip to Japan, you are brushing up on your Japanese, learning such phrases as 'two beers please', 'can I buy you a drink' and 'do you keep your contraception in the fridge?'



LEO

This week you are part of a physical fight that breaks out in the library cafe queue between mild acquaintances after arguing over who is busier lately.



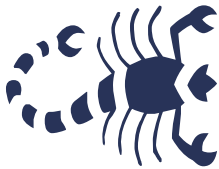
VIRGO

This week you don't bother to vote in the mayoral elections, because the candidates are basically the same, like my two favourite videos – Avatar and a vine of two drunk guys dressed as smurfs fighting.



LIBRA

This week you start a physical fight with someone in the union who is insisting that Beyonce's Lemonade soundtrack is not a cultural phenomenon because it attributes multiple writers.



SCORPIO

This week you're Drake. When girls you like are leaving your album listening party, you go up to them and go, "Can I get a hug, though?"



SAGITTARIUS

This week you realise that life is just one great big RuPaul's Drag Race, with various challenges testing your ability to act, make people laugh and create couture dresses from fabric in a bin. If you can't love yourself, how the hell you gon' love somebody else can I get an amen up in here?



CAPRICORN

This week in the sunny weather you decide to ditch the 40 denier tights and go bare legged. Unfortunately you forgot to shave and a man literally collapses and dies from seeing a tuft of hair on your knee.



AQUARIUS

This week, when graduating, you held up a sign reading: "Hi Alice look I really like you but I just haven't felt the same since we took that holiday together and to be honest it's probably me rather than you so no hard feelings or anything and I hope we can stay friends."



PISCES

This week you're finally invited to a Women@Imperial meeting, but you are banned for life after screaming YASSS QUEEN and doing NUS hand waving every time Alice Gast makes a suggestion.



Seeding the Veggie Power

FELIX receives a response to last week's article from a morally minded vegetarian

Sarah Kakadellis
Writer

The foodies, meat lovers or simply punctilious readers amongst you may remember last week's article raising arguments for meat consumption, or rather, for not feeling guilty about it as long as you accepted the responsibilities. And I thought there would be nothing better than hunting my friend's arguments by growing from them.

Please bear with me. I know, for most of you, the "Veggie" in the title put you off. But, if you're an Imperial student, it must be that you like challenge, so take it as a challenge and read the article until the end.

Let's start from the beginning. Yes, I am vegetarian. Love vegan cuisine, too. And guess what? I have eaten meat for most of my life, 18 years, which is about 90% – you can do the maths in your own time. Oh, and I love meat. A steak tartare on a sunny summer day? I used to crave them. That's right, I just said it. So just think about that whilst you still believe I am a green hippie trying to convince you that lettuce is so much better than a beef burger. I do actually think that, but that's another story.

Could I kill
a lamb?
Could I
hook a
fish?

Reading last week's article was very inspiring, and people could be surprised by it, but it does relate a lot to vegetarians too. The ethical debate that was raised is exactly the reason why I chose to be vegetarian, and which also explains why I am not fully vegan. But let me explain it to you, with my friend's quote: "If

you're going to consume meat, you need to accept where it came from – a real, living, breathing animal that was killed and butchered." That's how it all started for me, a couple of years ago. I realised something just wasn't right. I would cry seeing someone slaughter an animal and then feel perfectly emotionless – and greedy – facing that roasted lamb in my plate.

So I thought: 'Eat what you could handle alone'. That's my motto. Could I kill a lamb myself? No. Could I hook a fish? No. Conclusion: no meat for me. And I must say I have never felt as serene and full of integrity as I do now. Our 'modern' world has lost the connection between the art of hunting – or fishing, for that matter – and the art of cooking, as consumerism led to a lucrative manufacture industry. Personally, I just could not handle that huge lie I was concealing from my own conscious under the veil of the food chain supply, which made it easier for reality to be distorted.

Still, I have milked cows. I have made yogurt, even butter, and collected eggs from the henhouse. This partly explains why I don't feel guilty about having a wedge of Tomme de Savoie from time to time, or spreading some churned butter on a slice of lightly toasted sourdough bread topped with my neighbour's honey.

Oh, and I don't live in a farm, for the sceptics. Just so that you don't try to find yourself some excuses – I live in a capital city, actually. I mean, the point is not to indoctrinate you. That would be a waste of time. It has to be your choice, and choosing to be vegetarian is more than just not willing to kill unnecessarily, but it is a great starting point.

There are a significant amount of environmental factors that have rooted the veggie power, as I like to call it, even further, and one should not underestimate the impact of the cattle industry on climate change.

The intention here was to give you some thoughts to grow on. Long story short, be consistent with your values. Be true to your morals, and stick to them.



Even crazed communists can be vegetarians – it's very inclusive group. Photo Credit: Wikimedia Commons

Sweet potato curry

And to show you vegan cooking can be easy, delicious and inspiring, if not more so than any other kind, here is a sweet potato, lentil and coconut curry just for you. And no – you will not be lacking protein!

This recipe is all about making it to taste – use lime juice if you want a sourer kick, or up the cayenne for a warmer heat. Feel free to add lemongrass, whole chiles or anything in that vein – but as it's been requested by some readers, this is a recipe with fewer than five spices, so I'll leave that up to you.

Of course, you could always add some browned chicken breasts, or some juicy prawns, but that wouldn't really be in the spirit of the dish! Try it without, and see.

I have
milked
cows. I
have made
butter.

2 tbsp cooking oil- olive or sunflower

2 large sweet potatoes, peeled and diced into 2cm chunks (~1kg)

1 tbsp of turmeric

1 tbsp of ground cumin

2 tsp of ground ginger

2 green cardamom

1 tsp cayenne

(or use pre-made garam masala for the above 5 ingredients – about 2tbsp)

2 cloves garlic, finely diced

1 onion, white or red, sliced

500g green lentils, rinsed

2 tins coconut milk

2 tins diced tomatoes

2 cups green olives

salt, pepper

1 lemon – or a lime, see note above.

Handful coriander leaves

Heat the oil in a large, high sided pan – a casserole dish would be ideal. Once hot, add the cubed sweet potato and get it browning. You want to caramalise each face of the cubes, so stir them moderately frequently.

When almost brown all over, add the spices, garlic and onion. Sweat them for a few minutes, and then add the lentils, coconut milk and tomatoes. Bring to a simmer, and

keep on a low heat for about 30 minutes, or until the lentils are just cooked. If the sauce is now too thick, thin it out with a few splashes of water.

Finish the dish with the green olives and the juice of a lemon, before topping it with some fresh coriander leaves. Serve with some steamed rice.

Mango sticky rice

This is a perfect vegan pudding – especially as alphonso mangoes will soon be in season! If you want to find some, make a trip to Southhall for the best ones.

300g glutinous rice

1 tin coconut milk

3 tbsp sugar

pinch salt

2tbsp coconut cream

2 ripe mangoes

Soak the rice for 10 minutes in excess water. Drain, and add to a microwaveable bowl with water to just cover. Clingfilm the top, and microwave until tender – about ten minutes. Bring the other ingredients, apart from the mango, to a boil and pour over. Let it cool and then serve with the sliced mango.



Flying high with Imperial frisbee

The Imperial discDoctors swan through nationals

Lucy Rowlands & Anthony Featherstone
Writers

Imperial's Ultimate Frisbee club, more commonly known as the discDoctors (or dD) were in a position to bring both a women's team and a men's team to nationals for the first time ever, with the men having qualified in the league throughout the season, and the women finishing highly at Outdoor Regionals qualifier back in March.

Men's 1st Team

Nationals this year started with dD taking on Heriot Watt who took an early lead and never looked back, with the game finishing 8-4 to Heriot – a typical dD start to a tournament!

With much more now at stake having lost the first game, dD came out fighting against a Southampton side that looked a little lacklustre at times. dD capitalised on this with great defensive and offensive play, winning the game 10-1, sending a big message to our next opponents Liverpool.

This next game proved to be very close, with both teams taking the lead at different points, but it was dD's intensive defensive play which won them the game 9-6, and coming second in our pool.

This put us in a crossover with Cardiff, which turned out to be a game of two halves, dD took the first half fairly convincingly 7-4, however after half time, Cardiff came out with some very strong defence play which dD couldn't

break, and Cardiff won the game 8-7.

This left us on Sunday with a round robin against Southampton and Sheffield for a place in the plate final. With fewer players now, dD knew both games would be tough, particularly with a re-match against Southampton who came out fighting, however dD were able to keep the intensity up and won 12-2 in the end. The Sheffield game was very close, with the teams trading points throughout, but dD came out 9-7 winners with great defence play giving them the win.

This put us in the plate final against Kent, a team we had beaten 13-4 previously in the season. With a very small squad from injuries at this point, dD knew it would be a tough game. Everyone came out fighting and gave it their all, with dD playing incredibly well in windy conditions to go 7-0 up, including three upwind points! At this point Kent came out fighting clawing the game back to 7-4, however it wasn't enough as dD won 9-4.

The players can be very proud of winning the division two plate, showing the great quality that we have in a squad with a mix of vast experience and relatively new players.

Women's 1st Team

The weekend started on a cold and sunny Saturday morning, with the women in a good position; seeded 2nd in Div 2, and top of their group.

Their first game was against Manchester, an enjoyable game and an opportunity for the team to find their flow. The final score was 11-1 to Imperial; a great start to weekend.

The second game was against Cardiff, who although seeded at the bottom of the group, proved they certainly didn't belong there by fighting a tough fight against the wind with some good catches in bad wind. Imperial eventually worked it down the pitch though to win the game 6-3.

The final game of pool play was against Sheffield Hallam, who also put up a good fight. They came out



Don't play frisbee if you're not willing to get a bit grubby. Photo Credit: Disc Doctors

with a tight zone defence, and some very safe catches that Imperial just couldn't quite beat and the women lost 8-2. This meant that a tense crossover game awaited against Reading, which if lost would mean the team could only finish as high as 8th. It was a tight game, and points were traded throughout, both teams desperate to avoid being in the lower bracket, but the women worked it through the gaps in their defence with every player contributing. It ended with a tense universe point, which Imperial won to leave them in the top bracket.

Day two started slowly, as the regret of too much pizza and the consequences of sleeping on a cold scout hut floor took hold, but the women came out fighting against Nottingham, the weekend's hosts.

Unfortunately despite Imperial finding their swing quickly and playing some excellent offence, Nottingham were just too strong and won 11-5.

After watching the boys beat Southampton (again), the girls were ready to take on Southampton's women's team. Once again a strong performance gave the women a 10-4 victory.

The final game was against Swansea where the wind picked up and Imperial took the opportunity to bring out their zone defence which they'd been practicing all weekend. It all came together and Swansea just couldn't compete. Combined with some excellent upwind points from Imperial, the women took the final game 10-1, to finish in 5th place.

All in all an excellent weekend for Imperial's inaugural women's outdoor team, playing against some tough teams but they came together and played well as a team. MVP went to Si-Ci Ong, and MIP to Poh Hui Xian (Fish).

Many thanks must go to the captains and coaches for enabling both teams to play so well at this level and to also bring on-board and incorporate new players in the team.

The game finished 8-4 to Heriot – a typical dD start to a tournament!

The women came out fighting



Trials and Tribulations at BUCS Sprint '16

Missing athletes, lost bikes and misdirection from marshalls

Maddy Whybrow
Writer

On Sunday 1st May, seventeen of Imperial's bravest triathletes descended upon the sleepy town of Calne, Wiltshire to compete in the 2016 BUCS Sprint Triathlon. Gathered outside SAF at the ungodly hour of 5:45am, some quick Imperial brains spotted that there were actually only sixteen recruits present; we were missing our secret weapon, scholarship athlete Alistair Wallace. A few panicked phone calls later and it became clear that he had slept through his alarm and was not going to make the rendez-vous. We departed one man down, hoping that he would be able to make his own way to the race.

The rest of the journey went smoothly, even those in the bus driven by Jonny "fast and furious" Singh survived their trip relatively unscathed. Once we had arrived in Calne, the plan was simple. The 500 odd student triathletes would be set off in half hour waves, with the slowest swimmers starting first. They would then complete a 750m swim, 25km bike and 5km run as quickly as possible.

Matt Douthwaite and club captain Sam Jackson fearlessly led the march into battle, setting off in the first wave of the day. Despite concerns from Luis, the TriIC swim coach, about Matt's abilities in the pool, this runner-turned-triathlete put in a solid performance and was the first of the two out of the pool. Once on dry land, Matt found himself in much more familiar territory, storming the bike and run to finish second in his wave with Imperial's fastest run time of the day. Meanwhile Sam was having a slightly more eventful race. His super quick first transition turned out to be more hasty than speedy as he realised part way into the bike that he had failed to attach his race number. Whilst zooming past the marshalls, hoping they wouldn't notice this omission, an unfortunately placed speed bump relieved the captain of his water bottle as it flew out of his bottle cage on to the other side of the road. No longer weighed down by



Quick get a parking space. Photo Credit: Triathlon

these unnecessary pieces of kit, Sam put in decent bike and run times to finish solidly overall.

Next up were Lawrence Tse and John Foden-Shroff competing in wave number two. As some of the few Imperial athletes to have already competed in triathlons, Lawrence and John managed to complete their races with no mishaps, both finishing with highly respectable overall times.

These two were followed by the third wave of Imperial triathletes including Jonny Singh who had somehow managed to find himself setting off at the same time as half the Imperial women's squad. He quickly overtook teammate Lily Battershill in the pool before

putting in the fastest Imperial bike time of the day to finish fourth out of the Imperial men.

Sadly Lily's race didn't go quite as smoothly. In the pool, the wayward foot of a fellow (non-Imperial) competitor connected with her goggles to leave her with a shiny black eye. She bravely soldiered on to the bike, her strongest discipline. Sadly, about halfway round the course, she experienced a race-stopping puncture. After a teary twenty minutes spent sat by the side of the road, she was rescued by some passing cyclists who kindly patched up her wheel and set her on her way. She was massively disappointed by this turn of events but eventually cheered up, especially after disappearing for a short time in the afternoon to be consoled by team mate Jonny.

Leanne Lyons and Anna Lawson were having much more successful races. Having recently joined the triathlon club from running backgrounds, they both put in decent times on the swim and bike but excelled on the run, each completing the 5km in under 23 minutes, no mean feat after having already been racing for over an hour!

The next Imperial triathletes to set off were Edmund Jones, Alice Spencer and Madeleine Whybrow. Ed was the first of the three to leave the pool but fell into a spot of misfortune when one of his

aero bars fell off part way into the bike, leaving him with a lopsided aero position and very odd looking handlebars. Not letting this faze him, he completed a solid bike and run time to finish fifth out of the Imperial men.

Next to finish in the pool was Alice but sadly her speedy swim was not matched by the rest of her race where she was left a little disappointed by her bike and run. Last but not least, Madeleine left the pool, keen to put the swim behind her to get on with her beloved bike. True to form, she put down the fastest bike time of the Imperial women finishing solidly overall. The next Imperial athlete to compete was Marcel Admiraal, swimming in a wave on his own. This was his fourth BUCS Sprint Triathlon and his experience served him well as he completed a great race, scoring a personal best in the process.

The sixth wave containing Imperial competitors set off at midday and featured Greg Jones and Freya Espir. Despite being a very inexperienced cyclist, Greg absolutely stormed all three legs of the race, with notably quick swim and run times. His bike went less smoothly, however, as he spent the first couple of kilometres working out how to change down a gear before taking a tumble after an unfortunate encounter with a roundabout at high speed. Despite these upsets, he still put down a

great time, finishing third out of the Imperial men.

Freya was having even more trouble in her race. Slipping on a corner on her way out of the pool, she started the bike with a few injuries but carried on regardless. However, a missed turning and some dubious directions from a marshal saw Freya complete an extra 5km on the bike. Impressively, she completed the rest of the race although was obviously a little disappointed with her time!

Up next was next year's captain and resident French heart-throb Tom Bartissol. Despite a slow second transition, during which it took him several attempts to complete the usually simple task of putting shoes on, Tom's overall time was very impressive and he placed a strong second out of the Imperial men.

Last but not least, Alistair Wallace and Jessica Prior were racing in one of the final waves of the day. Borrowed from the swimming club for the weekend, Jess turned out to be the true star of the day. Both her run and swim were the fastest of all the Imperial girls. However, even more impressive was her bike. Despite it being the longest distance that she had ever cycled, she smashed the 25km, beating most of her teammates and bringing in the fastest overall time of the Imperial women. For Alastair, however, most of the drama had taken place before he had even reached the start line. After missing the first checkpoint, the experienced triathlete had travelled to Wiltshire via train, bus and taxi. All had gone smoothly until he reached Calne, where he realised that he had left his bike on the train. After some negotiations with the train company, his bike was on its way back to London and he was paired up with one of the club bikes for the race. He went on to put down strong swim and run times, earning him a solid first place out of the Imperial athletes.

Overall, the day saw some promising performances from a mostly inexperienced squad. The team triumphed despite the (numerous) mishaps and we are already looking forward to the rest of the triathlon season and the chance to learn from our mistakes and to improve on our performances.

He spent the first couple of kilometres working out how to change down a gear