New mathematics partnership gives hope to post-Brexit research

Imperial has partnered with a French research agency to open a maths lab, which will promote collaboration between the UK and France as Britain enters a post-Brexit world.

The International Joint Research Unit (UMI – unité mixte internationale) is the first research collaboration between the UK and France’s National Centre for Scientific Research (CNRS) – Europe’s largest fundamental science organisation. The UMI will have equal status to a CNRS lab, meaning academics will have the same funding and resources as their continental counterparts. The focus of their work will be on areas including number theory, mathematical analysis, biomathematics, and financial mathematics.

"Professor Craster said the unit 'serves as proof these times of uncertainty need not be times of stagnation."

The UMI will be headed by Imperial’s Professor Richard Craster. Speaking to Radio 4’s Today programme, Professor Craster said: “The new partnership serves as proof that these times of uncertainty need not be times of stagnation.”

Professor Craster was not the only person to make an oblique reference to Brexit when commenting on the UMI Abraham de Moivre (named after the French mathematician). The French ambassador to the UK, Jean-Pierre Jouyet, described the UMI...
Undergraduates invited to take part in this year’s National Student Survey

Students have this week been invited to take part in the annual National Student Survey (NSS), through which they can give feedback about their course.

The survey, which is open to all final year undergraduates, opened on the first of January and will run until the end of April. Last year’s NSS saw a successful boycott by a majority of UK students, and this year’s responses would help the University understand where it is excelling but also where it can improve.

The NSS last year was marked by a boycott, which saw twelve universities omit their NSS results after they failed to reach a 50% participation rate – the minimum requirement for inclusion. Universities are ranked in the survey by the TEF, an awards scheme which would have allowed universities to raise their tuition fees in line with inflation. In October, however, Theresa May announced plans to freeze tuition fees at a maximum of £9,250 until 2019.

The NSS is sent out every year to all final year undergraduates at UK higher education institutions. It asks 27 million questions across a number of domains, such as “Assessment and Feedback”. It is commissioned by the Higher Education Funding Council for England (HEFCE), and undertaken by Ipsos MORI.

Professor Buitendijk has asked final year students to complete the survey online. They said the NSS gives students “a chance to have a lasting impact on Imperial” after they left the university, and their responses would help the University understand where it is excelling but also where it can improve.

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**Physics students sent email reminding them to conduct yourself sensibly**

Joanna Wormald
Deputy Editor

Students were reminded that homophobic, sexist, and racist language are not acceptable. The email also quotes the physics department's student handbook, warning: “violent, aggressive, disruptive, or other undesirable behaviour can be met by a fine or suspension.” The email states that the university understands that the email was not prompted by any specific incident, but to remind students that such behaviour is unacceptable.

**Overshooting graphic sexual violence was common**

Students were told to contact their tutors if they had concerns about their course or other undesirable behaviour. They were reminded that safety tests have confirmed safe buildings. A spokesperson confirmed that the department will be replaced by new cladding, while academic buildings have been used to build the greenhouses, which are not part of Imperial's investments. A review of Imperial’s cladding was following the tragic Grenfell Tower fire, which began on the 14th June 2017, and spread rapidly through the 24-storey structure, leaving 71 people dead.

**Bath University’s Court has urged Glynis Glimey to leave immediately, rather than in Feb 2019**

Joanna Wormald
Deputy Editor

Dame Glynis Breakwell has been at the centre of a long-running argument around senior pay at universities. The vice-chancellor of Bath University is facing pressure to leave immediately following a controversy over her pay. Dame Glynis Breakwell made £471,000 in the year up to April 2017, and had received thousands of pounds in benefits in kind, when she announced her retirement last November. She planned to step down from her role at the end of November 2018 and take a year off. This would allow her to continue to collect her full salary until February 2019.

A successful vote of no confidence – the highest paid vice-chancellor – over her pay. The university’s Court has ruled that Dame Glynis Glimey should leave immediately, rather than in February 2019, according to the Times. The Court has ordered the vice-chancellor to leave immediately, rather than in February 2019. It has already ordered the vice-chancellor to leave immediately, rather than in February 2019.

**Vice-chancellor of Bath University asked to leave immediately amid ongoing pay row**

Fred Fyles
Editor-in-Chief

The SACAs, which had the highest number of nominations ever last year, officially open on Monday, 15th January. Last year 831 nominations were received in total for the SACAs, with 330 nominations received for Students’ Union’s Deputy President. The university’s Court has ordered the vice-chancellor to leave immediately, rather than in February 2019.

**Student Academic Choice Awards set to officially open nominations this week**

Fred Fyles
Editor-in-Chief

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**Woodward awaiting new cladding, while academic buildings confirmed safe**

Fred Fyles
Editor-in-Chief

A review of Imperial’s cladding has been following the last summer’s tragic Grenfell Tower fire, in which more than 100 people died. The review were made available to Felix around five months after Woodward Buildings, in North Acton, was found to have cladding that failed the safety tests. When asked in December of last year, a College spokesperson told Felix they were retesting tests carried out by the Building Research Establishment (BRE) and advice from consultants before carrying out the replacement. They said: “We expect to have these around five months early in the new year and will take all necessary steps.” The review was unable to identify the exact specifications and origins of the polyurethane panels used to build the greenhouses that failed the Grenfell Tower fire. A spokesperson for the College said polycarbonate “often contains some form of additional fire retardant,” and the panels usually achieve the “reasonable” level of flame resistance. The greenhouse, which is not part of Roden’s Hill staff, was established in 2012 as part of a research project in science education. The panels were removed following the tragic Grenfell Tower fire, which began on the 14th June 2017, and spread rapidly through the 24-storey structure, leaving 71 people dead.

**The bucolic campus of Bath University has been the centre of a debate on VC pay // Wikinews**

Fred Fyles
Editor-in-Chief

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Imperial physicist recognised in Blavatnik Awards for young scientists

Dr Claudia de Rham was awarded a Finalist title, in the first year the awards were open to UK scientists.

Dr Claudia de Rham said winning the prize was a "huge honour".

"Dr de Rham said winning the prize was a 'huge honour'"

Dr de Rham thanked the Blavatnik Foundation, which established the awards in 2007, for the "huge honour" of winning the prize. She said: “My area of research is theoretical physics with an emphasis on gravity and cosmology. Our findings are always more of a fundamental nature, with little prospect of practical applications. 

“I am therefore delighted to see this fundamental research being recognised within the physical sciences and engineering community, as I believe it is essential for the development of society.”

The Blavatnik Awards’ citation for Dr de Rham’s work said: “It [Dr de Rham’s research] has revolutionised our understanding of the nature of gravity, founding a new field of study that connects cosmology with particle physics and the nature of spacetime itself.”

Dr de Rham credits her work to collaborators, giving particular thanks to Dr Andrew Tolley at Imperial’s physics department and Professor Gregory Gabadadze at New York University for their teamwork.

“Collaboration and sharing ideas is the single most important aspect of our research,” said Dr de Rham. She added: “I will use this prize to continue nurturing my existing collaborations as well as foster further collaborations with young scientists worldwide.”

3 years on…

Has anything changed?

This term, Felix is investigating misogyny at Imperial. Three years after Imperial College Women’s Rugby was let down at Varsity, we want to know if anything has been done to change the on-campus culture.

We want to hear from you! Take our anonymous survey to tell us about your experience of misogyny and sexism while at Imperial. If you have got any questions, or want to take part in further research, please email felix@ic.ac.uk
Politics

Palestine: apartheid, ethnic-cleansing & discrimination

Friends and comrades of Palestine deliver a fighting response against the Felix article published last November about the Israel-Palestine debate.

In today’s 140-character world, it’s all too easy to blur the line between fact and fiction, and apply false assumptions leading to fallacious beliefs.”

When we opened the Felix edition containing an article entitled “A response to those who criticise the Balfour Declaration”, we were eager to read on: an opinion most likely opposing our own, and written by two Imperial students – thus presumably logically thought out and supported by evidence. What better way of challenging one’s own beliefs? Unfortunately, we got as far the second paragraph before we began to find misrepresentations of well-known statistics alongside unsubstantiated arguments and sweeping generalisations throughout the article.

Because the authors will not hear from us what Zionism is, then let’s take a closer look at Theodor Herzl’s proposals for a Jewish homeland – the very same man that coined the idea of Zionism. Herzl himself stated that antisemitism could not be defeated or cured, only avoided, and that the only way to avoid it was the establishment of a Jewish state. These claims were made by him after witnessing the blatant anti-Semitism that was present at the Dreyfus case in Paris. Beginning in late 1895, Herzl wrote Der Judenstaat (The State of the Jews). The book argued that the Jewish people should leave Europe either for Argentina or, preferably, for Palestine, their historic homeland, if they wished to. Herzl then negotiated with the British regarding the possibility of settling the Jews on the island of Cyprus, the El Arish region in the Sinai Peninsula in Egypt, and Uganda. So, quite clearly, the establishment of a Jewish homeland in Palestine specifically was not his utmost priority, since, although he mentions Argentina or Palestine as choices, he generally refers to the location of Herzl himself, as well as Arthur Balfour when he signed the declaration. So we return back to the same question posed in the initial article: Why is it then, that Palestinians have suffered ethnic cleansing, and exist as second class citizens in the state in Israel?

What the authors of the response to our article have answered is a pure blatant denial of these facts, ignoring the stories of displaced families living in refugee camps, or children in Gaza with no access to clean water or electricity because the supply is being cut by Israeli when they please. There are countless cases of young Palestinian boys and girls being attacked by illegal Israeli settlers, checkpoints that only Palestinians have to go through in order to carry out daily activities such as going to work, and random searches and detentions carried out at late hours of the night.

Palestinians are being held in prison without trials or accusations (including those who are underage), torture tactics are being carried out during interrogations, there’s a ridiculously long list of discriminatory laws existing against Arab citizens in Israel, the separation wall is twice as tall and four times longer than the former Berlin Wall, and yes, ethnic cleansing did happen, it’s called Al Nakba – in 1948 750,000 Palestinians were forcibly displaced from their homes, with another 300,000 refugees being displaced after 1967; as of 2015, for the UN Relief and Works Agency for Palestinian Refugees (UNRWA) mandate there are 5 million Palestinian refugees.

So no, these are not “sweeping generalisations” or “buzzwords” these are facts, that the writers purposely chose to ignore because it suited their political agenda. Every single listed violation of human rights above has been well-documented, so if you will not take it from us, the oppressed, maybe sources like Humans Right Watch, UNRWA, Unicef, Haaretz, and Wikipedia will be valid enough.

And since the authors cited people that have experienced the South African Apartheid, maybe they will find Nelson Mandela’s view on the conflict relevant: “we know too well that our freedom is incomplete without the freedom of the Palestinians.”

Ed: An online version of the article, with links to references, is available from felixonline.co.uk
The global economy is stalling because of a lack of innovation. Beyond computers, there is no longer a revolutionary mentality towards technology. You can see it in our psychology: we call ourselves the developed world, as if all great strides have already been made. Granted we depict our visions of the future in Hollywood movies, but beyond improved CGI – these visions largely haven’t changed.

If you look beyond the Internet and beyond superficial design, we have done little more than incrementally improve in recent decades. Aeronautics are still largely recognisable from their 1960s blueprints, and while energy has flirted with both nuclear and renewables it remains dominated by fossil fuels. This is because well-established sectors are typically concentrated with a few large companies. These behemoths, despite what their recruitment marketing may tell you, prefer incremental improvements rather than industry-destabilising innovations. These companies are risk-averse – they have shareholders to please and investing in innovation carries risk, particularly in abstract and uncertain areas.

Economics borrows its mathematical foundations from thermodynamics and so a simple thermodynamic analogy should serve to illustrate how this lack of innovation is leading to stasis:

“Beyond computers, there is no longer a revolutionary mentality towards technology”

In thermodynamics, where you have temperature differences, heat will flow from the hotter object to the colder object until they reach equilibrium. To apply this to economics, we can simply refer to technology differences; hot companies are technologically-advanced whereas cold companies are lagging. Heat transfer occurs as the colder company imitates away all the hotter company’s technological breakthroughs until we reach equilibrium.

The end state in thermodynamics is called the heat death of the universe, when the whole universe is at the same temperature and there is no free energy to be exploited. Similarly, under this analogy, an economic heat death would be a state of perfect competition, a market made up of undifferentiated companies with undifferentiated products competing on price.

Profits in a perfectly competitive market are minimal: airlines on average made a profit of $0.37 per $178 ticket in 2012. With such low profits, there is little money to reinvest into the company. Funding gets cut for research and development projects, while improvements to services and facilities start getting cut too. To make higher profits and avoid economic sterility, you must dominate an industry.

There are two ways to dominate a market through innovation. The first is a Google: produce a product magnitudes better than your rivals as Google did with their search engine. The second is an Amazon: create an entirely new market, as Amazon did with online retail. What both have in common is disruption; while not essential, it is perhaps a reason why innovation has been limited to internet-based start-ups. Once on top though and in a dominant position, it becomes even more important to keep on innovating, otherwise all your advances will be imitated away.

Industries such as management consulting and investment banking offer great value in well-oiled economies but they rely on technological breakthroughs for their survival. In the absence of advances, they are merely catalysts to this state of equilibrium, this economic heat death. Consultancies often work to restructure a company, streamlining it to reduce costs, make savings, and unlock profits. There is however a finite limit to this process and gains become increasingly marginal without technological innovation.

Investment bankers make money off bets, predicting when a company is under- or over-valued. In this eventual state of perfect competition, all companies are undifferentiated and correctly valued, meaning there is no more money to be made. To start unlocking money again, there needs to be technological breakthroughs that destabilise an industry.

Though it may be tempting in times of economic struggle to focus on short-term livelihoods by securing positions in these or other long-established industries, it does not guarantee long-term prosperity. For that we need innovators, creators and entrepreneurs, people with a revolutionary mentality, those that see the future as being created, not imagined. This is certainly a riskier pathway as you must forge it on your own – recreating what someone else has already done will earn you nothing. With risk, however, comes reward and those that are successful are often more handsomely rewarded for their boldness.

Today’s face of innovation is arguably Elon Musk: his companies include Tesla, SpaceX, SolarCity, The Boring Company, Neuralink, Hyperloop, and more. Though his cult following may present him as divinely blessed, the success of these companies is instead enabled by thousands of innovators. If there is something to be learnt from Elon Musk, it is that his vast number of projects are evidence that opportunities to innovate still exist.

If we are to reinject dynamism into our economy, then we need to be bold and start taking risks in our career choices. At Imperial we have great scientific foundations and exposure to cutting-edge technology, putting us in prime position to be the innovators and the entrepreneurs of the future. So, let’s be bold and let’s be ambitious!
Why faith schools are just grammar schools by another name

The government has committed to remove the cap on selecting students by faith, so faith schools are poised to make a comeback, but they have the same problems as grammar schools.

Faith schools are about to become a major topic of conversation in UK politics. The new education secretary, Damian Hinds, has committed to remove the 50% cap on the number of students belonging to a certain religious denomination at a school. It is thought that this would benefit primarily Catholic schools, due to elements of Canon law that prevent Catholic schools from turning potential Catholic students away. Therefore, there have been no further openings of any other Catholic schools in protest at this law. A Department of Education spokesman stated that the reason the cap should be scrapped is due to the fact that Catholic and CoE schools consistently perform at a higher level than other schools. It is worth pointing out that the same cannot be said for Muslim and some Jewish schools of which there have been new openings since the 50% cap was introduced 10 years ago...

In opposition to this proposal are the previous education secretary and Ofsted, who have stated that by allowing schools to select 100% of their intake by faith it will not only deny parents access to good local schools, but will also lead to increasing segregation that has been nicknamed “education apartheid.”

Personally, as an atheist, I am totally opposed to faith schools in general, as I do not believe that faith should play any part in the running of a state. Faith, in my opinion, should be a deeply personal thing that you do not project onto others and therefore is not present in the running of schools or the selection of pupils for schools. That does not mean to say that I rule out encountering religion in a school environment – in fact, I positively encourage it – but it should be taught in such a way as to be totally impartial and discuss the moral and ethical implications of each religion separately.

If I was being radical, then a further proposition I would make would be to prevent children from practicing religion until they are old enough to adequately understand it. I believe that certain variants of faith foster an unhealthy and backward view of the world that is not productive in today’s society. If Theresa May is serious about ensuring that British values are at the core of the curriculum then she will have to address the fact that many variants of faith today do not embrace these values. Therefore it seems counterproductive on her’s and the government’s part to take this step, but this probably stems from a lack of clear ideas on exactly what British values are and what they stand for, due to the divisive nature of the idea of British values.

I imagine instead that the main reasons for the push towards faith schools is purely due to the pushback on grammar schools. Theresa May went into government with the grand plan to expand grammar schools through-out the nation, because she believes that they encourage social mobility despite all evidence to the contrary. However, the implications of encouraging grammar schools have solely resulted in a large scale failure to better provide social mobility or higher quality education for people in the area, often resulting in extra provision in areas that did not require it, leaving the state of chronic under-provision in other areas unresolved. It also did not help that there was significant stigma attached to grammar schools from when the decision was made to abolish them, which made the proposal more unpopular.

I believe that the motivation that Theresa May has for pioneering faith schools is under the mistaken belief that they will benefit pupils by providing a higher quality of education without acknowledging the role of British values. I think that the push towards faith schools is due to the pushback on grammar schools, Theresa May went into government with the grand plan to expand grammar schools through-out the nation, because she believes that they encourage social mobility despite all evidence to the contrary. However, the implications of encouraging grammar schools have solely resulted in a large scale failure to better provide social mobility or higher quality education for people in the area, often resulting in extra provision in areas that did not require it, leaving the state of chronic under-provision in other areas unresolved. It also did not help that there was significant stigma attached to grammar schools from when the decision was made to abolish them, which made the proposal more unpopular.

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Why Macedonia is relevant again

Grumpy Bastard turns his sights to the history of Macedonia. Yes, you heard right: Macedonia. Don’t ask, just enjoy it.

Macedonia as a country has a very proud and ancient history. Originally the home of the Mycenaean Greeks, after their demise, Philip of Macedon arose to kick the shit out of Athens and Sparta and then bequeathed his army to his son. Better known as Alexander the Great, he was then able to beat the living hell out of Darius of Persia. This was unfortunately over 2000 years ago, and Macedonia has quietly sat on the sidelines of history ever since.

Now, of course, the time for Macedonia to make its triumphant return has arrived!

The reason for this return to glory is simple. Yes, Greece is now united and the sarissa is no longer a revolutionary invention capable of winning battles against any equivalent power. It is no longer the time for a group of noble companions to gallop across the plains of the Middle East and trample all in their path. For a country that isn’t allowed to use good money, teenagers with an internet connection will happily write a reality that more closely resembles your beliefs that you can share with your easily manipulated and gullible friends and family.

It really is remarkable that a people trodden down so far after generations of a communist dictator’s rule have bounced back to truly understand what democracy is really all about: lying, but lying convincingly.

The thing I am possibly most impressed by is the fact that they really get what people want to believe down to a tee. I mean there are some great satirical news sites such as Southend News Network (Milos Yiannopoulos’ favourite) but I don’t feel they reach a wide enough audience to qualify as truly influential. Macedonia though, managed to make amazing things happen, such as getting people to believe that Donald Trump would make a good president or that banning people from Islamic countries would have a significant impact on terrorism. What a nation!

“Fake news means true power now lies with Goran, the fake news editor in the city of Veles”

just Macedonia due to an ongoing dispute with the dead economic power of Greece, the Macedonians – or more accurately the residents of the former Yugoslav Republic of Macedonia – have discovered a revolutionary new weapon and a new people to conquer. The weapon is of course fake news and the victims are gullible members of democracy’s everywhere.

Yes, the Macedonians are now the world famous purveyors of articles designed to fool readers into believing a different reality that more closely conforms to their beliefs. Forget Black Mirror’s crazy technology and Kremlin stooges attempting to hack the American election, in today’s day and age it is important to remember where the true power in the world lies: with Goran the fake news editor in the small city of Veles. Want someone to believe in a paedophile ring centred around a pizza restaurant? Goran’s your man! As long as you’re prepared to pay the price.

New Year, New News!

Felix are setting up a weekly newsletter, delivered straight to your inbox. Get all the best news, culture and sports every week.

Get the cat on the go!
Can writing a to-do list really make you fall asleep faster?

Insomnia is a big problem for many, but new research suggests that by writing down what we’ve got to do, we can get better quality sleep.

E verybody has one of those nights where you stare at the ceiling in the dark, thinking about the books that you have to return by Friday, the present that you have to get grandpa for his birthday next week… the list goes on and on – and you just cannot sleep!

If you can relate, this article may hold the solution.

Insomnia is a common problem in the modern world. Whilst mental health issues or light exposure from our phones may impact how fast we can fall asleep, one common cause of poor sleep is the worry posed by upcoming tasks in the future.

These unfinished tasks are shown to have a high level of cognitive activation, such that thoughts can pop up automatically at various times during the day.

To combat this phenomenon, it was shown that bedtime writing may help you to fall asleep faster. In cognitive behavioural therapy (CBT) for insomnia, therapists will often ask patients to write a ‘worry list’ to unburden anxieties. However, it was unclear what exactly you should write about in order to help you sleep.

To answer that question, scientists from Baylor University in Texas recruited 57 healthy volunteers for a one-week sleep study. Half of the group were asked to write down a list of tasks they had completed in the past few days, while the other half were asked to scribble a to-do list for errands that they have to run in the next few days.

Both writing activities required five minutes before bed, and the time needed to fall asleep was measured using overnight polysomnography – a machine that measures brain activity.

Surprisingly, though many would suspect writing a to-do list prior to sleeping would cause more worry, as you would be reminded of all the things you need to do in the coming week, the reverse is true! Participants who wrote down a to-do list fell asleep faster than those who had a shorter to-do list. Contrarily, people who wrote a detailed account of their past activities needed more time to fall asleep. This can be explained by various reasons. One explanation is that unfinished tasks are shown to have a high level of cognitive activation, such that thoughts pop up automatically.

“Making lists allows you to offload worries, therefore reducing the amount of time needed to fall asleep”

Asleep. Completed tasks in the past are not worrisome, hence do not need ‘off-loading’, so writing a list has no impact.

The quantity of writing is also important, as volunteers who completed a longer to-do list fell asleep faster than those who had a shorter to-do list. This can be explained by various reasons. One explanation is that busier people may have a longer completed-task list, and may find it more difficult to sleep as they have higher stress levels.

A second explanation suggests that thinking of past events can lead to the activation of thought processes for future events. For instance, if you think of the PowerPoint you made yesterday, it may prompt you to think about the presentation for next week, therefore triggering more worries. Though this potentially opens a new door to a free and easily administered sleep, larger studies are needed to conclude whether this could help people with insomnia or mental health issues.

Nevertheless, next time you are unable to fall asleep, rather than writing your diary, get a pen and start writing a to-do list instead!

DOI: 10.1037/xge0000374
Entire industries rely on data analytics to develop consumer-centric products. This has been driven by the need to understand customer behavior and preferences in order to provide personalized experiences. As a result, companies are using data analytics to tailor their products and services to meet the needs of individual customers.

DNA storage is an emerging technology that uses DNA as a storage medium. The idea is to encode digital data as DNA sequences and store them in a library of DNA molecules. This approach offers several advantages over traditional hard drives, including increased storage density, robustness, and resilience to data loss.

However, there are also challenges associated with DNA storage. The technology is still in its infancy, and there are many technical and logistical hurdles to overcome. One of the main issues is the cost of DNA synthesis and sequencing, which can be prohibitively expensive. Additionally, there are concerns about the environmental impact of large-scale DNA storage operations.

In summary, DNA storage is an exciting area of research with significant potential for the future. As the technology matures, it is likely to become a more viable option for data storage, especially for applications that require high storage density and robustness.
Organoids are *Nature’s* method of the year

For almost a decade, researchers have been investigating the possibility of using stem cells to form organoids: three-dimensional, multicellular assemblies that mimic the structure and function of organs. Organoid models have now been established for multiple organs, including the brain, liver, and kidney, using adult or pluripotent stem cells. More primitive tissues, for example the optic-cup, have also been established as organoids, opening up new avenues for the study of eye formation.

Developmental biologists Yoshiki Sasai and his group established this new avenue for research: in vivo development of organoids. Sasai is known for his work on a cell type important in eye formation, retinal epithelial vesicles, the flexible distal portion of which folded inward to form a shape resonant with the embryonic optic cup. It is an excellent example of how organoid development often strongly resembles natural embryonic development, giving researchers the opportunity to study developmental processes and organogenesis (the development of organs).

Some methods for generating organoids from embryonic stem cells involve providing cells with minimum differentiation information and enabling them to self-organise. Other methods provide stem cells with signalling that is known to result in the differentiation into specific cell types. Regardless of the method employed, the resulting organoids can be used to increase our understanding of human processes and development, including disease. Organoids are especially useful for the study of genetic disorders that exert their malignancy in utero, and do not have accurate animal models. Cerebral organoids were recently used to model aspects of lissencephaly, a brain disorder in which the brain itself does not exhibit the usual folds seen in the cerebral cortex. This research identified a mitotic defect in glia, a cell type important in human cortical development.

While being an incredibly useful tool, organoids are far from the perfect models for study. A significant issue that arises from the use of *in vitro* organoids is the lack of a vasculature to sustain growth and development of organoids past foetal stages. It is not yet possible to introduce functional blood vessels into petri dish organoids, and current research is only able to link organoids to a circulatory system by transplanting them into live animals. Perhaps in the future, more complex *in vitro* organoids will arise, with researchers eventually being able to grow entire human organs.

Are robots the future of tissue regeneration?

The applications of robots span many disciplines – far beyond what one might see on *BBC’s Robot Wars*. Robots themselves have long had several applications in the medical field, but only recently have researchers demonstrated the effectiveness of their use for tissue regeneration. At Boston’s Children’s Hospital, researchers conducted a proof-of-concept study using a tissue-regenerating robot on the oesophagi of five pigs. The robot consists of two motorised rings and an external control unit; as it is only attached to the oesophagus, it does not affect other organs. The motorised attachments, in the form of rings sutured to both ends of the oesophagus, place traction forces on the tube via a control unit external to the body. This creates tension on the oesophagus, which is being stretched. The magnitude of traction forces can be adjusted using this programmable control unit, and the robot pulls the oesophagus in both directions either with more or less force. A skin-like barrier surrounds the device to protect the motorised unit from various bodily fluids. It is widely known that mechanical forces and mechanotransduction in cells play an important role in tissue growth, and this robot looks to take advantage of that knowledge.

During this study, researchers increased the ring separation distance by 2.5mm each day, in all five pigs for either eight or nine days. This separation resulted in the oesophagus, and therefore induced mechanical forces. After the 2.5mm separation each day, the mechanical forces on the oesophagus were measured. Following ring separation, these forces immediately increased proportionally to the separation distance, and exponentially decayed in the day following separation, indicating tissue proliferation. The oesophagi lengthened with increasing ring separation distance, as the circumference and thickness of the muscular layer surrounding the oesophagi were maintained, showing that lengthening, as opposed to stretching, was indeed occurring. On average, the pig oesophagi lengthened by 77%. This result is ground-breaking, as the right amount of force needed to be applied to tissue to promote growth is as yet unknown.

In *vivo* tissue engineering is typically done using cell-seeded scaffolds, which induce cell proliferation, but may fail due to lag-time of vascularisation or the hosts immune response. Robotic implants for tissue regeneration mitigate these challenges. Due to this novel tissue-generating robot, oesophageal atresia and short bowel syndrome – two conditions that are usually birth defects which cause years of discomfort – may have found their cure. This novel application is a potential replacement for otherwise invasive, risky surgeries with long recovery periods. The team plans to next test the device on large animal models before moving on to clinical trials in the future.
We are all still humans

Last term, Felix named Humanz as one of the most disappointing albums of the year. Not happy with that, Sabina Nowakowska tells us why Gorillaz is more than just a band, but an ideology.

“Gorillaz say ‘We’re a brand, an industry, a one of a kind pop-cultural phenomenon.’”

2017 saw a lot of big album releases and a lot of comebacks. Probably the most anticipated return (at least for me) was Gorillaz. Expectations were huge, and the hype-building skills of the Gorillaz team were proven to be beyond compare.

The anticipation had already begun to accumulate late in 2016 when Jamie Hewlett and Damon Albarn let slip in interviews that a new Gorillaz album was in the works and would, in fact, be out soon. Their famed avatars (2D, Murdoc, Russel, and Noodle) started appearing in the media, and updates on their lives were slowly unveiled, bridging the gap between phase 3 and the incoming phase 4. Everyone was getting ready for the big comeback. However, 2016 soon came to an end leaving the impatient fans with no new music from the world’s favourite virtual band. It was exactly one year ago – January 19th, the day before Donald Trump’s inauguration - when we finally heard the first Gorillaz song since 2012, ‘Hallelujah Money’, featuring one of the most promising and original new artists around – Benjamin Clementine. Murdoc and his crew started creeping into the collective consciousness, using all possible platforms of expression. From posts on social media, interviews, Spotify playlists through videos and smartphone app to murals, posters and secret gigs. They had everything covered.

As always, the team behind Gorillaz pushed technological limits to bring their ideas to life. This time around, apart from cool animations and even a 360° video, they also created a portable, eco-friendly recording studio and produced an augmented reality app The Lenz which showed Gorillaz-related content whenever you pointed your smartphone camera at something magenta. What’s more, 2D and Murdoc even gave their first ever real time animated interview, blurring the boundaries reality and fiction. In the world where avatars are given so much importance and cartoon characters are not only present in the show business, but become influential politicians – Noodle, 2D, Murdoc and Russel seem more real and relevant than ever before.

Gorillaz have always been more than just music – they’re a brand, an industry, a one of a kind pop-cultural phenomenon. But let’s talk about the album itself. On the 28 April 2017, the wait was finally over and HUMANZ dropped. While some fans immediately loved it, others were a bit disappointed (see Felix issue 1678). I would not call it a masterpiece; there were a couple of songs that didn’t quite match the standard of hits like ‘Clint Eastwood’ or ‘Dirty Harry’. Nonetheless, there were many great tracks (e.g. ‘Strobelite’ or ‘Charger’) and the album overall was received well.

Accusations of having too many guests on the record and not enough Damon made by some fans are rather pointless. Gorillaz has always been a collaborative effort and the musicians involved changed over the years. Collaboration lies at the heart of HUMANZ. The title says it all – HUMANZ is about the humanity crisis we’re going through. And it’s not just represented in the lyrics; the album carries the message non-verbally.

Juxtaposition of individual human voices and rich, warm sounds of gospel choirs, with machine generated music resulting in a good quality, cohesive album is itself a metaphor of a human race that can find its place in the artificial world and work as one. Despite dealing with tough issues, HUMANZ ends with a positive message. You may say that finishing the record with words “We got the power to be loving each other no matter what happens” is rather infantile. I agree. We’ve heard slogans about coming together and sharing one love a million times by now. But when Gorillaz say it, I actually believe them, because they support their statements with action. It is the most apparent in their live performances. Seeing this diverse group of people coming from various musical backgrounds, young and old, black and white, famous and unknown, rappers and singers putting on a fantastic show at the O2 Arena on 5th December 2017 was truly uplifting.

The gig was wonderful. The band, smiling at each other, dancing, spontaneously hugging and simply having lots of fun on stage, proved that the coexistence is possible and even enjoyable! The long setlist included old hits (‘Feel Good Inc.’), new bangers (‘Andromeda’), great renditions of slightly forgotten tracks (‘Every planet we reach is dead’) and homages to iconic artists who are no longer with us (’Style’). With two drumkits, all sorts of electronics and a multitude of other musicians on stage, the sounds were extremely powerful and kept the crowd going for over two hours.

The show culminated with the beautiful ‘Demon Days’ from their 2007 classic, leaving the audience with a big red sphere on the screen and the choir repeatedly chanting “To the Sun!”

The song is still relevant after a decade. It gives hope and acknowledges that to cope with hard times, it is important (but difficult) to stay optimistic: “In these demon days it’s so cold inside / So hard for a good soul to survive/ (...) Pick yourself up it’s a brand new day / so turn yourself round / Don’t burn yourself, turn yourself / Turn yourself around into the Sun”.

With that in mind we can enter 2018 hoping for some good changes in our lives and in the world around us. But above all waiting for the rumoured next Gorillaz album!
Nine years after Oasis’ acrimonious split, the Gallagher brothers are still at it, desperately clambering to be the better sibling. With a new solo album out from each, Ziying Fang gives his verdict on who came out on top.

TO THE POINT. Are Booker’s; ‘Brianstorm’. Was a disappointing me- nates in phrases like “...all of music to support the artist. The vanity project that is life itself. That or deal with the terrible truth that fans who couldn’t deal with the boredom of Britpop, decided to Betty Boop. I didn’t. Perhaps, not but it’s all there is a talent for ballet, but I suppose that’s part of his charm. The same can be said of Noel’s, whose “Holy Mountain” reminds me pleasantly of Franz Ferdinand and their psychedelic passe-façon- ing a girl on a date it is material for Noel’s for Literature; “Perhaps not, but it’s all there is a talent for ballet, but I suppose that’s part of his charm. wholesale goods today. Noel Gallagher may have as much in words as a grizzly bear on ice has a talent for ballet, but I suppose that’s part of his charm. Anyone who’s been around the block a bit. Fourty-piece orchestra was not there for show; they didn’t waste no time landing into audacious-layered lyrics and experimen- tally-flavored harmony. Britpop fans had they had the courage to age to an affair with the capricious mistress of Fame and Fortune, it could’ve been them. Their only recourse now is to have it in ears as much melodically as possible. Noth- ing enough on the lyrical front, like Noel’s. What I build the dreams, and the self feeling you’ve wanted time on the ‘arty farty’, like an evening out listen- ing to prog-rock backed by Poetry Slam. Not enough on the lyrical front, like Noel’s. What I build the dreams, and the self feeling you’ve wanted time on the ‘arty farty’, like an evening out listen- ing to prog-rock backed by Poetry Slam. Not enough on the lyrical front, like Noel’s. What I build the dreams, and the self feeling you’ve wanted time on the ‘arty farty’, like an evening out listen- ing to prog-rock backed by Poetry Slam. 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With TDE’s bench ready to drop and a possible new Queen of rap, here’s what we’re looking forward to in 2018

His legacy beyond doubt?

Drake’s days of dominating the charts are behind him, and it is surprising to see him fail completely in the dark, with little more than the presence of “experimentation sounds” and a few Insta-stories supporting the album to go by for ASAP. Music has seemingly taken a backseat to his other interests-high-fashion and acting. It will be interesting to see if his next project can recapture the highs of his stellar previous albums.

Chance The Rapper

Chance The Rapper dominated 2016 and has since held the position of hip-hop’s golden child. His second album, Coloring Book, received three awards at the 2017 Grammy’s and he was crowned the critical darling seemingly do no wrong. However, the murmur of discontent have been bubbling under the surface in the culture and Chance has found himself having to deny rumors of being an “industry plant” and defend his claims of being independent. Chance has the potential to grab the hip-hop throne therefore it makes his follow up to Coloring Book even more crucial.

Kanye West

Kanye West and the Turbo Grafx 16

We still haven’t heard from Kanye West since the cancellation of his listening party in Saint Pablo tour and his recent barrage rants on Twitter seemingly do no wrong. Following several killing features of this year (Motorsport and ‘Wake Up’ Come to mind), Nicki’s solo efforts have completely missed the mark. Fans are tired of hearing her repeat her favorite phrases, ‘these hitches is my own’ and even more so desired for her to drop an entire project. Lil Wayne combo feature (or the Young Money camp package) couldn’t stop her single, ‘No Frauds’, from flopping. With the meteoric rise of Cardi B’s rap career it will be interesting to see how Nicki’s records fare, as she is now paving the way for Cardi to drop her major debut album. I’m intrigued to hear what she has to say and like to see how Nicki delivers with this upcoming album.

Cardi B

In two years, Cardi B has transitioned from stripper to reality TV star to the first female rapper to claim the top spot on the Hot 100 chart since Lauryn Hill in 1998. Cardi has taken the music industry by storm and her hilarious social media antics have earned her fans to cross the world. The success of her breakout single, ‘Bodak Yellow’, naturally led to the inevitable question of whether she would be able to follow it up. She answered this question by becoming the first female rapper to simultaneously land her first three entries in the top ten of the Hot 100. ‘(‘Bodak Yellow’), ‘MotorSport’ and ‘No Frauds’.

Cardi first announced that her debut album would be released in October, but with her buzz still growing at fever pitch, she took the wise decision to delay its release. This is.Cardi’s time to drop her major debut album. I’m intrigued to hear what she has to say and like to see how she delivers with this upcoming album.

Pardison Fontaine

Pardison Fontaine, born Anwar Richard and known as Pardison Fontaine, is an American rapper from Staten Island, New York. He began his career in the early 2000s and has since released several mixtapes and EPs. Fontaine gained prominence in 2017 with his debut album, "The Last Forever," which features a collaboration with rapper A$AP Rocky. Fontaine's music is characterized by its fusion of hip-hop and R&B, with influence from genres such as soul and funk. His lyrics often discuss themes of life, love, and relationships.

Fontaine's career has seen a steady rise, with his debut album receiving critical acclaim and chart success. With his unique sound and engaging stage presence, Fontaine continues to make waves in the music industry, and his upcoming project is highly anticipated by fans and critics alike.

Pardison Fontaine's music is known for its smooth, soulful beats and his distinctive raspy voice. His songs often explore themes of life, love, and relationships, with a focus on personal growth and self-improvement. His music has resonated with fans, making him a prominent figure in the hip-hop scene.

Fontaine's upcoming project promises to be exciting, with fans eagerly awaiting new music from the talented rapper. With his established fan base and impressive work ethic, Fontaine is poised for continued success in the years to come.

Pardison Fontaine's music is also known for its catchy hooks and memorable riffs. His songs are not only enjoyable to listen to but also provide a window into his personal experiences and thoughts. Fontaine's ability to blend different genres seamlessly has earned him praise from critics and fans alike.

With his latest project, Fontaine continues to push the boundaries of hip-hop, merging it with elements of R&B, soul, and funk. His music is a testament to his versatility and dedication to his craft, and it is certain to captivate audiences once again.

Fontaine's music is not only enjoyable but also serves as a source of inspiration for many. With his uplifting themes and relatable lyrics, Fontaine's music has the power to connect with listeners on a deep and personal level.

In summary, Pardison Fontaine is a rising star in the hip-hop industry, known for his unique sound and engaging presence. With his upcoming project, fans can expect more of the same, with a mix of soulful beats, catchy hooks, and relatable lyrics that continue to captivate audiences.

Fontaine's music is not only a reflection of his experiences but also a testament to his growth and development as an artist. With his latest project, Fontaine continues to push the boundaries of hip-hop, merging it with elements of R&B, soul, and funk. His music is a testament to his versatility and dedication to his craft, and it is certain to captivate audiences once again.

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Your Union events

Coming up in our bars

Super Quiz
Every Tuesday
20:00-22:00

Cocktail Night
Every Tuesday
18:00-23:00

CSP Wednesday
Every Wednesday
19:00-02:00

VK Ipop
This Friday
20:00-02:00

Cocktail Club
Every Tuesday
19:30-23:00

We love Wine
Wednesday 13 December
18:00-20:30

Pub Quiz
Every Thursday
19:30-23:00

PGI Friday
Every Friday
16:00-23:00

Free Pool
Every Day
17:00-23:00

Pub Quiz
Every Tuesday
18:30-23:00

Sports Night
Every Wednesday
18:00 onwards

Cocktail Night
Every Friday
17:00 onwards

Get exclusive offers, discounts and more on our bars’ Facebook Pages.

imperialcollegeunion.org/whats-on
Debut novel challenges traditions of the Arab world

Saleem Haddad’s first novel Guapa follows a day in the life of a gay man in an Arab city, questioning deep-set societal expectations

The first time I heard of this book was when I watched the author being interviewed on an Arab channel. Not having watched the interview from the beginning, I didn’t know what the novel was about, but I was intrigued by their discussion of Arab culture and traditions. When I learnt that the book follows a gay Arab man in an unnamed Arab country, I knew I had to read it.

The novel follows one day in the life of Rasa, a twenty seven-year-old gay man, living with his grandmother, who in the book represents the voice of societal expectations. It is set in an Arab city rocked by the events of the Arab Spring. The day begins with his grandmother finding him in bed with Taymour, his lover of three years, whose wedding Rasa is to attend that very evening.

As we follow Rasa throughout this day we get a clear, vivid insight into the political uprisings, his upbringing, Arab culture and tradition, and the

respite that Guapa, a bar with an underground gay club, brings him.

Frankly, I was quite surprised by how well Haddad handled such difficult themes with relative ease. He was able to capture so well how stifling some cultural and traditional expectations can be – expectations that are based on a nonsensical inheritance of traditions passed religiously down every generation. He deftly showed how the concept embodied by a small word like eib, or shame, can be used to dictate one’s behaviour lest you draw too much attention to yourself. And, of course, let us not forget the all too important question attached to every action one commits: What would people say?

Being an Arab myself, I completely understand how rigid society’s definition of what is acceptable can be, and how reluctant people seem to be to do anything, no matter how insignificant the action, for fear of how others would perceive it. Haddad was able to depict these restrictions and their consequences so well in Mimi, Rasa’s old high school friend. Seated beside Rasa during the wedding, she keeps leaning in, whispering to him her little secrets – how overbearing her mother-in-law is, how she regrets never doing what she wanted but what society demanded of her.

While the novel is easy to read, the writing did seem slightly stilted at times and one can tell that this is indeed a debut novel. But that does not detract from the important themes it considers; Haddad has masterfully handled many crucial and difficult topics. Rasa’s grandmother is the epitome of a domineering Arab matriarch, so faith-fully depicted, especially through her speeches, which made me laugh to the point of tears at times.

In my opinion, it is high time that we have an open, transparent dialogue of homosexuality in the Arab world. We all know or have heard of a gay Arab person, but steadfastly refuse to confront it and have a serious conversation about it. Some are strongly opposed to it, due to religious and cultural reasons, while others tolerate it as long as it is kept out of their sight.

Although countries like Bahrain and Jordan have not criminalised homosexuality, LGBTQ individuals still face discrimination if they outwardly display their sexuality. The majority of the Gulf States have prison terms for male homosexuality, and it is punishable by death in Saudi Arabia and Iraq. I believe these views are slowly, but surely, evolving.

My visit to Liverpool in summer coincided with Pride. I was transfixed by the intense energy the participants brought to the city, through the music of the marching bands, the choreographed dances, and the sheer number of participants. I saw people bearing flags from various Middle Eastern countries including Iran, Kuwait, and Oman. There were a few protestors voicing their discontent, but that hardly affected the festival’s atmosphere.

Considering the more progressive views of the younger generations, a discussion on treatment of LGBTQ Arabs needs to be had; hopefully, this novel will encourage it.

“He deftly showed how the concept embodied by a small word like eib, or shame, can be used to dictate one’s behaviour”

“Haddad has masterfully handled so many crucial and difficult themes”
Sundance Film Festival: Start as you mean to go on
Twelve months ago Sundance kicked off a wonderful year for film – what will the 2018 edition bring?

It is increasingly common for actors, and those in other fields, to make their directorial debuts at Sundance. Last year saw Taylor Sheridan complete the boldest trilogy he wrote, following up Sicario with Hell or High Water by stepping into the director’s chair with Wind River. This year it is the turn of Paul Dano (period drama Wildlife), Rupert Everett (Oscar Wilde adaptation The Happy Prince), Idris Elba (crime film Yardie), comedian Bo Burnham (comedy Eighth Grade) and rapper Boots Riley (comedic fantasy sci-fi Sorry to Bother You). While not making their second feature, debut directors like Eliza Hittman, Dee Rees, and female directors including Ava DuVernay, Damien Chazelle and David O. Russell have all got their big break at Sundance, either through the Institution’s many film programs, workshops, and labs, or through premiér ing their early projects at the festival, underlining Sundance’s prominence in shaping the modern cinematic landscape.

Yet the last couple of editions of the Sundance Film Festival have seen a further evolution, with prestigious films premiering there in the hope of scoring major awards and producers desperately seeking distribution deals. 2017 saw an all-time high for films being picked up, with the likes of A24, Amazon, Acura, Focus Features and Universal all vying for Sundance’s premiere. The festival has become an integral part of the independent film world. Since then Sundance has been an integral part of the Sundance Film Festival, underlining the prominent role it has played in the modern cinematic landscape, with the likes of A24, Amazon, Acura, Focus Features and Universal all vying for Sundance’s premiere. The festival has become an integral part of the independent film world.

Let us now turn our attention to what the 2018 festival has in store. As usual with Sundance, a host of the films are directorial debuts from new faces, and a great part of the fun is discovering budding directors. For example, British actor and writer Sam Vann has made his directorial debut with Homecoming, a comedy biopic based on a true story, and featuring Joaquin Phoenix as a paraplegic cartoonist John Callahan. The intriguing subject of the film will be portrayed by Joaquin Phoenix, with the man who directed him in his breakthrough performance more than twenty years ago in The Big Lebowski.

“Gus Van Sant enters a dark comedy biopic based on controversial, quadriplegic cartoonist John Callahan”

The film promises to be a dark comedy biopic based on controversial, quadriplegic cartoonist John Callahan. The intriguing subject of the film will be portrayed by Joaquin Phoenix, with the man who directed him in his breakthrough performance more than twenty years ago in The Big Lebowski.

“Sundance has been an integral part of the independent film revolution”

“Careful of your fingers Rob”

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“In other words, Darkest Hour resembles any other over-reliance on a formulaic shots and tracking decisions on the road to the Oscars it resembles a pale, dead dinosaur. An enjoyable whodunit, but not a film that does much new, or stick in the mind once the credits have rolled.

“Gary Oldman showing us how it’s done-kirk”

Gary Oldman showing us how it’s done-kirk
Three Billboards Outside Ebbing, Missouri

A messy, ham-fisted take on race and violence

Three Billboards Outside Ebbing, Missouri heads into the Oscars as a front-runner, but Martin McDonough's third feature tries to take on the history of violent hate, political brutality, and falls flat.

McDonough has exuberantly, innumerable interviews, it is done without nuances, in the main, it implies: McDonough was a fake. While it may not directly state a Trumpian smear of perceived injustice, the language of the piece is set in stone:

McDonough's voicemail is in the film, but it reveals the political landscape of how little more than a half-dozen voices call for a complete work. 

Three Billboards is a neat film, but it serves as McDonough's acting chops. He is thus far without a narrative direction, the script.

Ultimately, despite the best efforts of the cast, the film's screenplay is what lets it down. While McDonough managed to do well with Le Boeuf, his Brigitte-set recap, Three Billboards has honed his biting, ironic take on the world.
Charley Brooker is back, with six new episodes of his dark sci-fi anthology. But how do these episodes compare to previous seasons?

As season 4 kicks off with a dramatic setup, it’s not just a new show, but new premise – this time the technology of the past is used to represent anything from ancient Roman times to space stations. How does this compare to previous seasons?

**‘Arkangel’ season 3**

Starring: Rosemarie DeWitt, Maxine Peake, Kiran Sonia Sawar, Andrew Gower.

**Director:** Joe Nolet

**Script:** Charlie Brooker

**Season:** 3

In what is not just any other story, but a classic idea stretched over two seasons, the episode opens with a doctor to feel what their patients feel. This is a less about the episode's themes, but more about the character and the mystery of how human nature works. It is clear that Slade’s intention with the episode is to create an unsettling tension within the viewers, and he does this well, putting us on the edge of our seats. As part of the Black Mirror universe, however, something seems missing. It resembles a survival horror – almost a very good one – which is a genre that has been done to death on TV and film, and videos games. And it lacks what sets such horror apart – a gripping back story. We’ve been dropped right into the middle of a post-apocalyptic world, with no sort of explanation of how things got to be that way. This is obviously, a deliberately chosen choice, but then the episode ends with a reveal that tries to impose some kind of narrative where there wasn’t one before it leaves us wanting more. There are enough individual elements of ‘Metalhead’ to add up to a stellar episode, but they never quite come together to satisfy a compelling whole.

**‘San Junipero’ season 3**

Starring: Marielle Heller.

**Director:** Joe Nolet

**Script:** Charlie Brooker

**Season:** 3

‘San Junipero’ season 3’s ‘San Junipero’ is immediately heady, and plowing on towards some new territory that no one could have anticipated as a cohesive whole.

**Where ‘Hang the DJ’ falls short of the standards expected of it in the final minutes**

David Slade, creator of ‘Black Mirror’, is not just a master of the small budget, but also a master of the big screen. His decision to shoot ‘Metalhead’ with its ilk have gamified the dating process, but three reasonable ideas have not been fully explored, and three even more of a reveal in itself. Slade seems to be moving towards a new direction, but the reality is that viewers are left with more questions and no obvious answers.

**‘Hang the DJ’ season 4**

Starring: Joe Cole, David Slade.

**Director:** John Hillcoat

**Script:** Charlie Brooker

**Season:** 4

‘Hang the DJ’ is a sappy Star Trek parody, but it would comfortably pass average episodes, so a thematic shift away from camp fireside tale has a stereotype of the ‘80s and ‘90s. 'USS Callister’ does not raise somewhat alarming concerned that slot that much. This is where the parallels down a road away from the missed opportunity for a return to quality we have not seen in season 3, and not a step forward. For Black Mirror to remain relevant (which it almost certainly does), we have to shift our viewing completely remote to actual human behaviour. This time the technology is a device to keep the viewer’s memories, the setting is somewhere in Scandi-navia where everyone has massive houses, and the human instinct is… a propensity to violently murder people!

**‘Metalhead’ season 4**

Starring: Musse Pekke, Clou Drey, Jaka Dvenci.

**Director:** David Slade

**Script:** Charlie Brooker

**Season:** 4

‘Metalhead’ to add up to a stellar episode, but they never quite come together to satisfying a whole.

**Black Museum**

Starring: Douglas Hodge, Lamia Wright.

**Director:** Colin McCarthy

**Script:** Charlie Brooker

**Season:** 4

‘Black Museum’ is headed, and still buckling us in, letting us know where the episode is headed, and plowing on towards some new territory that no one could have anticipated as a cohesive whole.

**Union Council looked pretty different this year**

Union Council looked pretty different this year. Black Mirror, ‘USS Callister’ does not raise somewhat alarming concerned that slot that much. This is where the parallels down a road away from the missed opportunity for a return to quality we have not seen in season 3, and not a step forward. For Black Mirror to remain relevant (which it almost certainly does), we have to shift our viewing completely remote to actual human behaviour.

**Felix’s thoughts on the special episode**

I saved the best until last. I’d heard from Twitter that this was one of the best episodes of the new season – comparable to the 1000 Frank and Amy are nothing – realistically, there is no other possibility. Where the episode really falls short of the classic episodes is in its final minutes, where the 1000 Frank and Amy simulations realised that the dating game was just a self-defeating display, and raise somewhat alarming concerned that slot that much. This episode has to say about modern dating (that Tudor did not even have the power to bring the virtual dating process?), but also seems to provide any solid reason for clamping that the pair is a 99.8% match. Would they have passed the test if they had decided to leave the virtual arena alone? Earlier seasons of Black Mirror have not relied on chance character decisions, at least on this scale; and the depictions on such this season shows a decline in the quality to be expected of the show going forward.

**Black Mirror’s future**

Black Mirror’s future plays host to a number of grassroots artichokes and exhibitions, of which we shows three, in short twenty minute bursts. It begins with its weakest segment, in which a medical device that allows a doctor to feel what their patient feels goes badly wrong – not because of any instant of human nature, but rather because it simply malfunctions. It is then followed by two better parts, which – with acceptable flaws – lead up to a conclusion that is genuinely surprising. But no amount of shock can disprove the fact that this episode isn’t an ex- cepitional idea stretched to its logical conclusion, but rather because it simply malfunctions. It is then followed by two better parts, which – with acceptable flaws – lead up to a conclusion that is genuinely surprising. But no amount of shock can disprove the fact that this episode isn’t an ex- cepitional idea stretched to its logical conclusion, but rather because it simply malfunctions. It is then followed by two better parts, which – with acceptable flaws – lead up to a conclusion that is genuinely surprising. But no amount of shock can disprove the fact that this episode isn’t an ex- cepitional idea stretched to its logical conclusion, but rather because it simply malfunctions. It is then followed by two better parts, which – with acceptable flaws – lead up to a conclusion that is genuinely surprising.
Hard Sun – Five years until the world ends in this melodramatic miniseries

Agyness Deyn and Jim Sturgess have enormous fun in Neil Cross’ show, which is completely bonkers, but fails to make the most of its interesting premise.

From writer Neil Cross, who masterminded Luther, comes a series that gives a twist to the tradition of quintessentially British escapist police drama. The story follows Elaine Renko (Agyness Deyn) and Charlie Hicks (Jim Sturgess), two detectives who stumble upon a government leak describing ‘Hard Sun’ – a catastrophic event that will cause the end of the world in 5 years’ time. Set in an alternative present, the six-part series weaves a flush of expected cop-drama themes with a looming doomsday plot.

What ensues is a slick drama that appreciates its premise but isn’t in love with it; there are many different back alleys the plot could’ve taken but it cops-out and strays away from the enormous potential in its premise. Neil Cross sticks to what he knows, and this can be frustrating.

The whole series has a certain visual style as if it were adapted from a graphic novel, but not enough substance to justify its aesthetic. Its ambitions are clearly set high, as it tries to delve into an intelligent exploration on morality, religion, and justice, but the frequent pantomime-y dialogue lets itself down. If you expect anything more than a standard police drama, it is pedantic and dissatisfactory. Hard Sun is bonkers, starting with the unconventional set-up, but a part of its indulgence is seeing how everything works out in the end, apocalypse and all. It is a lot of fun for the most part: each episode follows a loose formula presenting a different murder case that somehow, unconvincingly, relates to the ‘Hard Sun’ of the title. The over-dramatic universe of Hard Sun is life as we know it, but on Class A opioids— and that is its pleasure. The six episodes rivet along sweetly at a rewarding pace. Neil Cross goes all out this pet project, eager to please the fans, to flex his detective drama muscles and Hard Sun makes a cute addition to his expanding résumé.

The whole series was released on BBC iPlayer from 6th January, made available for a month. With the rise in popularity of on-demand TV and a growing culture of binge watching, more and more content seems to be moving online with all episodes released at the same time.

While it’s unlikely that we will see any further of Hard Sun and its world in the near future, I think it has enough of a certain charm about it to become an underappreciated gem for fans of the current wave of contemporary British crime drama.

Hard Sun is available on BBC iPlayer now.

Felix is Recruiting!

We’re looking for new writers, editors, illustrators, photographers, grammar nerds, and computer whizzes to get involved with our great team. No experience needed!

If you’re interested, email felix@ic.ac.uk
Have you made a SACAs nomination yet?

Great teachers make a difference! We know this because none of us would have got this far without them. So why not show your appreciation with a SACAs nomination? There are 8 categories and students can submit as many nominations as they like. There’s also a category for best support staff because, let’s face it, they’re the unsung heroes of our academic experience. So let’s show that performance matters by rewarding excellence in academic and support staff. Every nominee gets a coveted mug and winners are announced in May.

Nominations close 11 February. Submit yours now at imperialcollegeunion.org/sacas

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Mitigating Circumstances

Is there anything affecting your ability to sit exams or prep for them? You may qualify for Mitigating Circumstances and the Union has a dedicated team to help you with this. Please don’t go at it alone or wait until you’ve underperformed – our Advice Centre is confidential, independent from College, and therefore completely impartial. We also help with appeals, plagiarism, and other academic issues, as well as welfare issues such as housing, benefits and legal advice.

Contact us at imperialcollegeunion.org/advice or call 020 7594 8060

Summer Ball 2018

Summer Ball is one of the biggest events on the student calendar. With only 1,700 people able to attend, it’s no wonder tickets have been selling like hot cakes! Don’t miss out, as the best priced tickets have already been gobbled up by those quick on the draw.

This end of year celebration, held on South Kensington Campus, features a free fun fair, fireworks display, great value food and drink, and amazing performances including a headliner. Thanks to a student vote, this year’s event theme is Roaring 20s.

Get your ticket now at imperialcollegeunion.org/summerball

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This month Imperial will be hosting the second eSports varsity against UCL. It’s just one aspect of the booming eSports industry, which has begun to take hold in the UK over the last few years. With prize pools of millions of dollars, and legions of fans across the globe, eSports are bigger than ever, but where did they come from?

And what can we expect in the years to come?

**GAMES**

Fred Fyles
Fyles@Imperial.ac.uk

**GAMES**

Pressing buttons: How eSports turned into a worldwide gaming phenomenon

As a group of individuals sit around like pinballs, bouncing too fast to keep track, one team, previously on the offensive, are now in trouble, under heavy attack from their opponents, who have bounced back with an increased vitality. The audience hold their breath, while many more will stream hosted on Twitch.

The event is not a football match, or an NFL final, but last year’s iteration, the annual Dota 2 championships – one of the largest eSports events in the world. Similar scenes to those at Wembley are not uncommon. 

On the last day of October, 1972, an announcement was placed on bulletin boards across Stanford University, advertising the first ‘intergalactic spacewar olympics’. For the price of a year’s subscription to Rolling Stone, and the event was photographed by Annie Leibovitz—then a 23-year-old student.
Lights will guide you home: catching the northern lights in the UK

Scandinavian countries are famous for offering the best views of northern lights, or Aurora Borealis, especially visible above the North Magnetic Pole. However, getting up there may not be the best value for money. Luckily, there are some UK locations, where you can enjoy the lights for a short study break.

The UK has quite a few spots where the northern lights, or Aurora Borealis, are visible. As you may have guessed already, you have higher chances to see them somewhere up north, particularly in Scotland. However, you’ll be surprised to learn that Aurora Borealis has been noticed as south as Oxfordshire and Cornwall! But don’t get too excited – this happens rarely, and the chances of seeing them there with the bare eye are definitely very low. If conditions are almost perfect but you still can’t see anything, then try it with your camera, since the eye can’t sense many colours in low light while a DSLR camera sensor can. For a more detailed explanation, ask your biologist friends.

What are they?

The northern lights are, in a few words, a “light show caused by collisions between electrically charged particles released from the sun that enter the earth’s atmosphere and collide with gases such as oxygen and nitrogen”, as explained by Aurora Service Europe. Since this is a phenomenon that can be seen above both magnetic poles of the Earth (and usually happens at the same time), there are also southern lights, or Aurora Australis. And, as the Aurora Service mentions, “northern and southern auroras are mirror-like images that occur at the same time, with similar shapes and colours”.

“The Aurora Borealis has been noticed as south as Oxfordshire and Cornwall!”

Where to see them?

There are many places in Scotland, some popular ones including the Scottish Highlands, Aberdeen, the Isle of Skye (on my own bucket list), and the Galloway Forest Park. In England, you can try viewing them at the Lake District and even Oxfordshire or Cornwall (if they are strong enough). In Northern Ireland, they can be seen from Antrim or Rathlin Island. And if you’re in Wales, try the Brecon Beacons.

For more vibrant colours, you may prefer to travel outside the UK. Other European destinations include Norway, Sweden, Finland, and Iceland. They are close to the UK, and you can find many good deals on flight tickets, so keep an eye out. In Norway, popular viewpoints gather close to Tromso, Alta, and Kirkenes; in Sweden, check out Abisko, Jukkasjärvi, and Luleå; in Finland, well-known Aurora Borealis places are Muotka, Kilpisjärvi, and Luosto; and last but not least is Iceland, where you can see the Northern Lights from locations just outside of the capital Reykjavik or the South Shore.

If you have more time and money to spare, you may want to reach further ahead and travel up to Greenland or Canada.

How to get there?

Another important question is “How am I going to get there now?” I’m afraid to tell you that your options are quite limited. In order to have more chances to see this magical phenomenon, you need to be away from large cities, which means limited or no public transport! Even if there’s a bus or a train, it will most probably not be available at the time you want it. So your options include finding a way to get to the nearest town (plane/train/bus) and then paying someone to drive you to your final destination (which might be expensive) or renting a car yourself (either from London or the closest large city). Car rental could be costly as well, unless you are already 25 years old because most car hire companies have an extra fee for under 25’s (that makes no sense to me because you may be 26y/o but have got your license just two days before but that’s another topic to discuss).

Well, what happens if you don’t have a driver’s license (like me) and can’t afford to pay for overnight taxis? Simply find a friend who has one and ask him/her to come with you. The more, the merrier, and also cheaper!

Last tips

Make sure you spend at least a couple of nights there. It’s not easy to plan such a trip ahead as weather conditions are unpredictable. Cloudy and foggy nights can spoil your view. But there are some online tools that can help. For instance, the aforementioned Aurora Service Europe or Aurora Watch UK, which report the latest information about the northern lights in Europe and the UK, are worth checking out before travelling. They even send out notifications and alerts upon subscription.

Ed: For more travel stories and tips, visit Elina’s blog at empnefsysandtravel.com
Worth the Hype? Dark Sugars

Feeling those winter blues? Well then, some dopamine stimulating chocolate is in order! Resident Food Writer Bláithín Dockery gives us her take on Brick Lane shop Dark Sugars.

First impressions

Before even entering The Cocoa House the luscious chocolate aroma took over me, and I felt myself entering a chocolate haze. The shop has a very earthy vibe, with an overwhelming number of chocolates on display in wooden bowls in every corner. The chocolates looked irresistible, but I was here for the famously hyped hot chocolate. So I pulled myself away from the gorgeous coffee truffles I had spotted, and went to the hot chocolate bar.

The hot chocolates

The board above the counter listed a number of different flavours of hot chocolate such as ginger, nutmeg, salted caramel, and cardamom. I decided to go for something a bit different so I ordered cardamom. The drinks are made right in front of you: firstly the spices are added to the light milky hot chocolate and then they cut up the huge slabs of chocolate (white, milk, or dark) on the counter into thin shards to make the decadent topping. My cup was quite literally overflowing with chocolate.

“Now Christmas is over, winter has lost its charm, and is now just cold and dark”

Brick lane. The founder, Nyanga, opened the chocolate shop following three years of researching cocoa on her family’s farm in Ghana, a real commitment to understanding her product. In 2015, Dark Sugars: The Cocoa House opened, offering rich hot chocolates and an immersive experience where cocoa beans are roasted on-site.

“Worth the Hype?”

Dark Sugars is every chocolate lover’s dream – the aroma of the place alone was enough for me to fall in love. The care that was put into making this chocolatier something special really shows, from the beautiful wooden décor to the amazing flavours of chocolates. The hot chocolate really was incredible and although it is on the pricier side I still believe it is worth the hype.

Price

Hot chocolate: £4.50

Best part

The melting chocolate topping

Worst part

The location (Brick lane is a little far for a daily treat!)
An email was sent out this week to all physics students expressing concern over how unfunny all their jokes were.

Physics students asked to “get better chat”

Physics students asked to “get better chat”

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The Union are encouraging students to “rock it like it’s 1249”

An email was sent out this week to all students in the physics and the Department of Physics and the Faculty of Natural Sciences. With the subject heading “We Need to Talk About Your Shit Chat”, the email gave several examples of what the authors described as “insanely staid chat between students in the department.”

The message, whose recipients are believed to number around 1,500 students, offered a gentle reminder to students of departmental policy: “you are a representative of Imperial’s Department of Physics, and – as such – we expect you to refrain from homophobia, sexism, or laughing at your own cringe jokes about quantum superpositions.” They reminded students: “If you can’t say anything funny, don’t say anything at all.

Felix spoke to the new by-appointed Vice-Provost (Chat Adjudicator), Oscar Wapping, who said that the “chat chat problem” had reached “epidemic proportions.” Imperial is currently a world-leading centre for globally-renowned research, but unfortunately our students are lagging behind when it comes to saying things that are actually funny or interesting.

College has begun an internal review to examine where improvements can be made, and will be offering new Horizons courses in comedy from October 2018. The course, which will be taught by a visiting lecturer from UCL, will include lectures like “If you make a joke in the forest, and nobody is there to laugh, it’s because you’ve got no friends” and “When housemates can’t bicker a linguistic deconstruction of humour.” A representative from the physics department spoke to Felix: “we have high hopes for this new course, which should help improve Imperial’s standing nationally, since, be’s honest, our chat is weak as.”

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‘Feudalism’ announced as Summer Ball theme

ICU continued the theme with the ticketing of ‘Feudalism’. Imperial College announced their Summer Ball theme for this year: ‘Feudalism’. An email was sent out to all students earlier this week, inviting them to “experience life as a medieval peasant, so dust off that hennin, and rock it this week, inviting them ‘Feudalism’. The Union has sold thus far, an inaccurate wimple at 100-yards.”

A representative from the ICU offered costume ideas, such as ‘pox-ted Medieval II: Total War’ or ‘Roaring 20s’, ‘Carnival’, ‘Viking’, ‘Milkmaid’, ‘Emaciated Serf’.

To people were way too much about getting things right. The bar only served mead, and the bouncers were just not having it. The bar only served mead, and the bouncers were just not having it.

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The Union is a regional political group that represents students at Imperial College London. The Union is the official representative body of students at Imperial College London. The Union is the official representative body of students at Imperial College London.
PUZZLES

Nonogram

Fill in neighbouring cells in each row/column to make blocks. Each block is separated by one or more empty cells. The numbers indicate the ordered lengths of the blocks to appear in that row/column.

Across
1. Sharif, film star (4)
3. Briefly seen (8)
9. Seer (7)
10. Shakespearean lover boy (5)
11. Always comfy sales (5)
12. Garb (6)
14. Rubgy collision (6)
16. Disappear (6)
19. Language (6)
21. Odyssey and Illiad (5)
24. Red uniform replacement (5)
25. Contrition (7)
26. Fiddle faddle (8)
27. When? (4)

Down
1. Reverse of the same (8)
2. Arrogant (5)
4. Deadly (6)
5. A good feature (5)
6. Bushido (7)
7. Release (4)
8. Masonry tool (6)
13. Unlucky (8)
15. Sure (7)
17. Chez moi (2,4)
18. Oak baby (6)
20. Newly married woman (5)
22. Merriment (5)
23. Blood relatives (4)

FUCWIT
1 Nonogram of Ketamine 195
2 Q 138
3 Puzzle Snuggle Cuddle Couple 134
4 TioUdin 131
7 Doctor Sudokwho 99
8 Luncheon Pals 98
9 Sports Night is Moist Night 95
10 OK 93
11 Imperial Stormtroopers 81
14 The Indoor Sundial 59
16 Abelian Grapes 55

Send in your solutions to fsudoku@imperial.ac.uk before mid-day Wednesday!

Points Available
Crossword 4
Sudoku 2
Nonogram 4
Total 10

Solutions
IC Cross Country and Athletics go on a Winter DorchesTour

Roman ruins, expensive kebabs, and an orangery on the South Coast.

SPORTS

Fergus Johnson
ICXCAC Secretary

It’s January again, and to offset the misery of the darkest mornings of the year Imperial’s Cross Country and Athletics Club once again had cunningly planned a weekend escape from the bustling capital to somewhere slightly quieter. Last year saw a minibus-load make the trek up North to Tyneside; this time it was decided to head down South.

The destination was set for Dorchester, the historic county town of Dorset and home to the club’s notorious secretary – writer of numerous Felix articles detailing the club’s exploits (including this one).

The journey should have been a breeze relative to 2017’s winter trip to Tyneside, with an ETA of 21:00 after a relaxed leaving time of 18:00. However, nothing is ever that simple. With the crew all aboard one of the Union’s relatively new, majestic Peugeot Boxers, our diligent drivers were completing their final safety checks when they realised that both brake lights were not working, and we could not get authorisation for another bus as the relevant authorities had gone home for the weekend. This set in motion a series of (failed) attempts to remedy the problem before the drivers eventually resorted to calling the RAC (other breakdown companies are available), who fixed the problem in a matter of minutes after a two-hour wait. All this meant a departure time of 22:30 and the resulting clear roads meant the brakes were hardly needed for the two-hour journey down to the South Coast.

The problematic start to the tour did not dampen spirits, however, and the runners arose from their makeshift beds in ‘the orangery’ early on Saturday morning for the short drive to the nearby five km parkrun in the seaside resort of Weymouth (known to local alcohol-fuelled teenagers as Wey-biza). The team posted a strong performance and the usual crowd were impressed by the standard and number of red and navy vests tearing along the gravel, mud, and tarmacked paths.

“Dr. Paul C. A. Olley managed to win his heat, and was one of the club’s stars race simultaneously, before having a mighty brunch and to base and proceeded to a two-hour wait. All this meant a departure time of 22:30 and the resulting clear roads meant the brakes were hardly needed for the two-hour journey down to the South Coast.

The problem starts to the tour did not dampen spirits, however, and the runners arose from their makeshift beds in the orangery early on Saturday morning for the short drive to the English Channel. Winds were high and waves were crashing but that did not prevent some members from venturing into the rather chilly (freezing) waters for a “refreshing” dip.

Sensibly heading briskly back to the warmth of the minibus to avoid hypothermia, the squad headed back to base and proceeded to have a mighty brunch and yoga session (albeit not simultaneously), before setting down to watch one of the club’s stars race on BBC One! Imperial’s Chris Olley managed to battle home in 15th place in the Senior Men’s International Challenge XC in Edinburgh beating last year’s BUCS XC winner on the line.

Feeling newly inspired, the runners donned their running shoes once more – this time for a spot of “DorchesTourism” or to “Explorchester” (you can decide which Strava title is best). Some of the wondrous sights visited on the gentle jog around the town of 19,000 included a number of Roman artefacts including an amphitheatre, an exca vat town house, and a trip down some famously straight Roman roads. A

Ready, Steady, Go: the team gets in the zone before the Weymouth parkrun // ICXCAC

Hardy few then travelled Far from the Madding Crowd to see the house of 20th century author Thomas Hardy (author of Tess of the D’Urbervilles and other works). The team returned to the house exhausted, but there was little time for rest: some tasty fajitas were rustled up for dinner, energetic post-meal games were played, and then it was time to hit the town. Dorchester – not known for its nightlife – provided the weary students with reasonably priced alcohol and much merriment, as well as DJ who seemed willing to take literally any requests and play them no questions asked. All this, combined with a dancefloor containing a wide range of odd locals, led to much amusement and fun was had by all.

On the way home, the team stopped off at the overpriced, monopolistic kebab shop to refuel after a busy day and settled down for a short sleep before the traditional Sunday long run the following day.

After the keenest athletes completed a quick circumnavigation of the town, they returned and collected their slightly better-rested friends for a run out and around “Britain’s finest Iron Age hill fort”: Maiden Castle. The disappointment of almost everyone, it soon became apparent that there is no actual castle at Maiden Castle and it is in fact just a hill. This took nothing away from the blissful fresh air and stunning countryside views on offer, however, and they completed many laps around the summit before returning home to shower, eat, and pack.

The return journey to London was (fortunately) far less eventful than the outward journey and the exhausted team cruised back to campus by 18:30 on Sunday evening.

Hopefully the runners will be fully recovered in time for team’s next race on Wednesday for the LUCAC League at Ally Pally – the hilliest (and muddiest?) so far. For more information about the club, email run@ic.ac.uk.
ICSWP Men’s Water polo narrowly defeated in dying seconds

SPORTS
Samuel Hanrahan
ICSWP Captain

Tides are turning for ICSWP men’s water polo.

Last Saturday Imperial faced a strong University of West England (UWE) side. With Imperial and UWE at opposite ends of the league table, and Imperial missing several key players, UWE were firm favourites coming into the fixture, but Imperial came with an unflappable attitude.

Both sides began cautiously, with neither side wanting to give away easy goals and the focus very much on defence. The first quarter ended with UWE edging the match slightly, winning 3-2. As the second quarter progressed, Imperial’s fears before the game were becoming a reality, with UWE scoring several goals without any response from Imperial. UWE’s tactics were getting the better of Imperial, with chance after chance being created and being wasted with bad shots and worse decisions (editor’s note: like a night in Metric). By half time Imperial were lucky to only be losing 7-3 after some excellent saves by the stand-in goalkeeper David Moores.

With the third quarter beginning, it was clear Imperial were not willing to give up and would fight to get themselves back into the game. This was led by captain Sam Hanrahan and vice-captain Ramon Fernandez-Mir scoring four goals between them in quick succession. There were some emotional celebrations from Ramon, and he dedicated his goals to Christina Duckworth.

As the final quarter began the situation looked bleak for Imperial with the score very much in UWE’s favour and centre back Gian Ameri majored out, no longer being able to take part in the game.

"Imperial continued to push and with just 15 seconds left on the clock Alberto Lauri scored bringing us level”

With only two minutes left to play UWE scored to go three goals into the lead, making any possibility of Imperial achieving a result seem near to impossible. However, Imperial had other ideas, once again showing their determination to get a result. Andrew Duckworth, still on a high after becoming an Irish citizen only hours before the game, began the comeback scoring and bringing Imperial closer to UWE. This was continued when Leo Pashov, on his return from injury, scored. Imperial continued to push and with just 15 seconds left on the clock Alberto Lauri scored bringing us level. The fans went wild, this had to be it, Imperials first points of the season.

Imperial went to press hard and allow no passes to be made as UWE had one last attack. They launched the ball up to their centre forward and with the rest of the team watching on in despair, he scored the winning goal with just 5 seconds left. What had looked to be one of sport’s greatest ever comebacks faltered, failed, and UWE won.

Despite the immediate deflation of such a loss, this was the best performance of the season for the team and it is important that the positives are taken from the game. Imperial will travel to Bristol on Saturday to face UWE again, they will bring the same steely-eyed determination to get the first W of the season.

PHOENIX
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