THE WRITE ANGLE

Letter From The Editors

Founded in 2020, 'The Write Angle' is Exeter Mathematics school's official student newspaper. This is an accumulation of works from our students, run by a collection of student editors and technicians, posted on a biweekly basis. Here you can see articles, opinions and insights into life at EMS. We encourage all students to participate, whether by submitting articles or becoming a part time editor.

The Beginning

Hello and welcome to the first issue of 'The Write Angle', Exeter Mathematics school's official student newspaper. As a collective, we feel immensely proud to share our anniversary week with the anniversary of one of the greatest advances in the history of journalism. 206 years ago this Saturday, 'The Times' became the first newspaper in the country to be produced by a steam powered printing press. This decision was made in secret by the paper's founder John Walter II, who announced in the Sunday issue:

"Our Journal of this day presents to the public the practical result of the greatest improvement connected with printing, since the discovery of the art itself."

As with many advances in technology, this decision sparked controversy within the community. Hardest hit of all were the workers who had previously operated the manual printing press. The new Koenig machines had been installed at Printing House Square in secret, under the cover of nightfall, for fear that the most affected communities would riot in the streets and seek to sabotage John Walter's plans. Fear can make people do strange things, and although his fears of a 'new wave of luddites' were justified, the reality of a sudden dismissal angered the workers under his charge. These workers were promised a continuation of wage until they had acquired new work, and because of this, no riots regarding the introduction of steam power at Printing House Square have been recorded.

Despite his controversial actions at the time, John Walter II is remembered by history as the man who revolutionalised journalism through the introduction of the steam powered printing press. Capable of printing 1,100 double-sided sheets an hour, steam presses made 'The Times' the first newspaper capable of meeting the circulation demands of the general population. A larger audience allowed 'The Times' to become less susceptible to political bribes, as the paper's advertising slots became highly desirable by companies hoping to advertise to a similarly wide population.

It appears as though a new age is among us once again in the time of COVID-19, as we are seeing a rise in the publication of E-Newspapers due to the increased risk of infection. Many in-person clubs and societies have been forced to cancel, and as such we are seeing a decrease in student morale all along the country. It is the Write Angle's hope that the paper will become a club remotely accessible to all, either through the submission of written pieces, or voluntary participation in the editing process. It is the paper's belief that all students have the right to be heard, and we will strive fortnightly to make this possible.

Accommodation Blog

With many students attending EMS living in excess of an hour away, accommodation offers a home away from home for many of these individuals. After a busy day at school people come together to cook, socialise and procrastinate about their studies, this leads to a very strong sense of community amongst the students in accommodation. Currently, the veggie kitchen is attempting to go through every type of soup possible, whilst the meat kitchen is joyfully reiterating the basics such as spaghetti bolognese, pasta and fajitas. Not that there is anything to complain about, as the majority of meals this year have been relatively tasteful and, on average, not entirely tragic (so far).

Something that is new to this year is the Thursday activity evenings. Each alternating Thursday, a group activity is arranged by the accommodation staff, and the different flats compete in order to win the challenge. Being at the maths school, loopholes are of course discovered. We all know the spaghetti and marshmallow challenge, instead of restorting to average techniques like attempting to create the tallest tower, one kitchen simply stuck a marshmallow to the ceiling. They won.

The building is full of characters, different and alike, who all find their people, or remain content in their own company. There are peers available always, for a superficial chit-chat or some much needed support. Everyone is accepted, whether socialisation is a need for you or something to be avoided, you will find your place here.

Profiling

Profiling is when companies collect vast amounts of your data, in order to determine what kind of person they can define you to be. This data is then put into a profile, and can be sold to other companies, to find out what people are likely to purchase, or to perhaps even make a product. Through analyzing your data, they can determine what kind of products you would buy, helping to provide more information about what will sell. This works the same with advertising, showing you targeted ads based on what 'the algorithm' thinks you may want to buy, based on the data that they have collected.
This, as a concept, could be beneficial.The content recommended to you would be more enjoyable, meaning that the companies are providing you with a platform that you are more likely to enjoy. However, in extreme cases, this kind of content pushing can lead to radicalization.

For example, say you're a little skeptical about whether or not the earth is 'spherical'. You may watch a video about some flat earthers, claiming that the earth is not, in fact, 'spherical'.
From this, 'the algorithm' then recommends you other videos about flat earthers, and from there more and more videos are being recommended to you about the conspiracy of the earth being flat. As your 'recommended' becomes dominated by content surrounding this topic, your exposure to these ideals increases causing the concept of a flat earth to become normalised. As you invest yourself into this conspiracy, you start to seek out other like-minded individuals on social media. Now, flat earth conspiracy theories have monopolised your recommendations on all social media platforms- but it keeps escalating. You have become locked in an echo chamber and before you know it, the earth is flat. This has become your true internal belief, and because of this you're leading rallies and pushing out your own content to convince others of the earth's true shape.

It is concerning to notice this method of content pushing is not too dissimilar from grooming. Similar techniques are employed to that of a predator, showing the danger that profiling can inadvertently bring.

This kind of radicalisation can go for any kind of extremism. Perhaps you'll become a strong environmental activist, or you'll start supporting a particular political party, or perhaps something more sinister. Whatever it is, the more data (biased or otherwise) you accumulate,

the narrower your world can become. In cases such as the radicalization described above, extremist groups benefit greatly from profiling. It is very easy for such cases to occur, as people are regularly exposed to vast amounts of topical content from just a few consecutive searches, due to a small spark of curiosity in everyday life. It could be said, in situations such as these, that the user is also benefited as they are being introduced to more like-minded people. With the exposure to radicalism like environmental activism, everyone benefits. However, people being exposed to more dangerous extremist groups can have a long-term negative effect not just on the user, but on society as a whole. as the groups gain more traction and therefore become more dangerous.

In the case of profiling for targeted advertisement, both the user and the company benefit. The company can bring a larger audience to their product and therefore sell more, increasing profits. The user can easily view more products that they may be interested in buying. However, the fast, simplified ads may lead to the user investing less time in learning about the company, therefore causing them to put their money into less ethical businesses without being aware, increasing the amount the company's poor ethics impact society, as it gains more profit and influence.

If an individual is adamant that they are against profiling and therefore go out of their way to ensure that they do not give away any of their data, that can be jeopardized by others allowing themselves to be profiled. This is because, at some point, the adamant individual will have to give up a miniscule amount of their information. Perhaps even just their name. From that name they can see the profile of other people with that name, they are able to see the average age for a person with that name and start promoting content targeted at that age group, based on the profiles of others in that age group. Being able to get targeted content from just a name shows that if you were to give away your name, age and gender (which is impossible to avoid giving away at some point), they can considerably narrow down the type of content that you are more likely to consume. This is you being profiled. They are taking this small amount of data and using the profiles of similar people to profile you.

This abolishes the right to remain private, to not be profiled. The blame for taking away a person's right to be private, should not be put on those giving away their data; just as you have the right to privacy, you also have the right to not exercise that right. Instead, we should be blaming the system as a whole.

The unfortunate truth is there is no way of fixing the system to accommodate both sides. If no one shared data, then people would not be able to benefit from targeted content. If everyone shared, no one would have the right to privacy. If there was an option to be profiled, then those agreeing to share data take away the right of privacy for those not willing to, and those not willing to share are not allowing their profile to help influence 'the algorithm', leading to poorly targeted content and bad profiling. There is no fix, and no company is volunteering to change something profitable, therefore, it is the way it is.

Global Affairs

In what could be described as one of the more chaotic US elections in living memory, Democratic presidential nominee, Joe Biden will become the 46th President of the United States of America. While this is a great victory for the Democratic party and those who wished to make Trump a one-term president, this victory still rings hollow for many people. Although Biden may have won, just like in 2016, the polls significantly overpredicted his result. Furthermore, Democrats fared poorly in congressional elections, maintaining overall control of the House but losing seats. The Senate, on the other hand, which the Democrats hoped to gain control of, seems just as out of grasp as ever.

Joe Biden has been chosen to preside over an America more politically tumultuous than ever, since the Civil War. His effectiveness as a President will now be judged by how he deals with key points of contention such as the climate crisis, the Black Lives Matter movement and the ongoing Coronavirus pandemic. To his proponents, he is the vice-president under which the Affordable Care Act was passed and the person who managed to reassemble the Obama coalition that enabled his election, something that Hillary had failed to do. To his detractors however, he and his vice-president, Kamala Harris, are uniquely unqualified to deal with the issues before them. In 1994, as the then Senator for Delaware, Joe Biden drafted the Clinton crime bill, which is widely considered to be one of the major contributors to the current mass incarceration crisis. Kamala Harris, a former district attorney, during her own bid for the Democratic nomination was seen to be too vested in the criminal justice system to be able to make meaningful change. What is done in the next two presidential terms will also play a crucial part in our ability to avoid the most exorbitant excesses of climate change. Joe Biden has a questionable record on standing up to the fossil fuel industry and his plan for net-zero carbon emissions by 2050 would require continued support by successive presidents, something that cannot be counted on, as the rise to power of Donald Trump's showed.

For many people a Biden presidency represented a chance to go back to a time when the President respected democracy and governmental norms however those of whom that are nostalgic for the Obama days should be careful for what they wish for. An unruly Senate and an unsympathetic Supreme Court could see a return of Obama-era Republican obstructionism. This election saw many people begrudgingly loan their votes to Biden, but unless he finds a way to surmount the legislative obstacles that stand between him and his election promises, the conditions that lead to Trump's victory in 2016, could arise once more.

Goodbye Blue

Many of us are familiar with 'Blue', the male Spix Macaw first featured in the 2011 Blue Sky Studios musical adventure 'Rio'. Through his 96 minutes on screen, we followed him on a journey 5,635 miles across the globe from Minnesota, USA to the city of Rio de Janeiro on a quest to save his species. We laughed, we cried (well some of us anyway), and we fell in love with that quirky little bird who counted his marshmallows, and studied aerodynamics in a desperate attempt to learn how to fly.

The film ultimately ended on a high note (as with most Blue Sky studio productions). We watched our favourite socially inept Macaw master the art of flight, after single-handedly saving the day and rescuing his love from a tragic demise. In the final scene, we saw Blue living his happily-ever-after deep within the forests of Brazil alongside Jewel and their new family. The introduction of new characters came with the promise of a sequel (Rio 2, 2014), however in reality Blue's arrival in Brazil would have already been too late.

In 2018, the International Union for Conservation of Nature (IUCN) declared the Spix Macaw to be officially extinct in the wild. Their extinction had been theorised in the early 2000's, after only one sighting had been reported in the space of five years (1996-2001). However, it wasn't until 2018 that a study outlining a new approach to species population modelling prompted the IUCN to make it official. What was particularly surprising about the Spix Macaw's disappearance was the fact that, up until recently, 90% of bird species extinction has occurred in coastal/island populations. This species however, resided within the forests of mainland Brazil, far away from coastal regions thought to be more at risk. Infact, over recent years, the rate at which bird species native to continental regions have been mysteriously 'disappearing' has been steadily increasing at an alarming rate.
The cause? Mass deforestation.

This discovery shook the public. How could something *seemingly* so crucial to human advancement have such detrimental consequences? A German foundation for wildlife preservation, founded in 2006, took it upon themselves in 2018 to pioneer the way for the reintroduction of 52 Spix Macaws back into their natural habitats. Despite the fact that the German foundation's plans coincided with Brazil's 'National Plan of Action for the Conservation of the Spix's Macaw' (coordinated by the Chico Mendes Institute of Conservation and Biodiversity, ICMBio), their plans sparked controversy due to the illicit nature by which the birds were procured. The foundation in Germany, that also operates as a small zoo, received a large number of macaws from an anonymous German philanthropist who had purchased them through exotic trade. German law allowed the foundation to keep the donated Macaws, however exotic animal trade has been long since banned in the European Union.

Plans for rehabilitation were set to be in motion by the winter of 2019, when the German birds were scheduled to be handed over to a Brazillian conservation foundation. However, disaster struck when a fire set by a farmer spread into the forest that conservationists had designated to be the release site of the German Macaws, in the August of 2020. This set plans back a considerable amount, as the fire is thought to have destroyed up to 75% of the woodland. Their release has now been scheduled for 2021, yet many are apprehensive that these attempts will be successful. Contrary to popular belief, Spix Macaws are not the geniuses 'Blue Sky Studios' would have us believe. They cannot, in fact, paraglide down the Corcovado mountain without supervision, let alone be trusted to survive alone in their native woodland. A sad reality we must all face is that sometimes what we see in the media is not representative of the world we live in. Take Blu for example. On screen we saw him conquer all odds, find love and have a family. But in reality, by the time he made it to Brazil, Jules would have already been dead.

Good News - Mel!

Before the invention of computers, computational labour lay on the shoulders of people. Such people were named 'computers' by the companies that employed them and were primarily women. This fact is historically relevant as it meant, with the creation of mechanical computers, women were assigned the role of programmers; Programming was seen by society as a simpler, more clerical role then manufacturing the machines themselves, which was a man's job. However, as computer science became a subject of study in academia, the percentage of female computer scientist declined, drastically. It quickly became a male run job. (This was demonstrated well in the 2016 award winning film, *Hidden Figures*. If you haven't watched this already, I would definitely recommend).[1]

The decrease in female participation within the field of computer science may seem like a disheartening topic, however the good news comes as I bring this discussion to our resident female computer scientist, Melanie Dennig. What could be better news than hearing from Mel? If a discussion with Mel about the gender disparity in computer science will not uplift your day, then I truly don't know what will.

Computer science often does not get much recognition in schools, with many secondary schools not even offering it as a subject. Because of this, I was curious about what drove her to choose such a career path, so this was the first question I posed.

Mel leant back in her seat - "I sort of stumbled into it."

Through her paramount desire to move to Berlin, she just chose the subject that would allow her to study there as soon as possible. Therefore, she landed in a maths course, despite originally wanting to pursue a more creative degree, which led her to computer science.

Whilst studying at university, she observed firsthand the drop in women studying the subject, claiming that the percentage of women dropped from 30% to 15% by the time she had left university. This is representative of the statistics; the percentage of women in computer science related degrees dropped from 37% in 1984 to 18% in 1990-2010 and by 2019 only 13% of people studying computer science were women.[2]

"The culture in the lab had changed."

With the subject being overrun by men, some interesting behavior began to develop. Insensitivities started emerging, catching the eye of one of the few women in the room, namely in the form of screen savers. In a place of work, what would you consider to be an appropriate screen saver? With a rise in images verging on pornographic being displayed in a professional setting, a conversation on inappropriate screen savers, objectifying women, had arisen. Everyone should feel included in a professional setting. No one should feel excluded as soon as they enter a room.

There are many theories as to why the percentage of women in computer science declined. In the 1980s, advertising for home computers became very male targeted. Some claim that this then set the narrative 'computers are for boys' in the mind of the general public. Girls are often deterred from computers at a young age, as children are much more susceptible to these stereotypes.

Mel's theory on a contributing factor that led to the decline in women studying computer science, is a language related issue. Around the 1960s-80s, a very prevalent field was the development of networks. Networking is home to a lot of technical language. The more feminine culture is likely to be more precise, preferring to understand a word before using it. This then contrasts the more typical computer science culture, which is to use words rashly. This can deter many women, as they cannot integrate into this culture as easily as men can, making them feel more excluded and less likely to be accepted.

The culture surrounding computer science is built more on "definites", as Mel so kindly put it. It feeds into a more masculine culture as you are encouraged to make more noise, to show off your knowledge, and to perhaps even put down those with lesser understanding. This is a culture that can often be seen on stack exchange, a

culture that does not come as naturally to women, and so then excludes women more.
A way of moving towards rectifying this gender disparity in computer science is to introduce more conditionals. To leave room for more perspectives and blur the line between the right way and the wrong way.

As humans, we are all shackled in our actions by bias. Everything we do is influenced by our biases. Therefore, everything that we build is under its influence.
"If we were to allow culture changing products to be built by only a sub-group of society, then that sub-group will dominate over all others."
This illustrates the urgency of diversity in computer science. The culture of society as a whole is moving into a digital age, where everything is influenced by technology, therefore, everything that is technology based is "culture changing". If we allow this male run subgroup of society to manipulate our culture, then culture will change based on their biases. Whereas if we bring forth more diversity, then these products will become less biased, more well-rounded, and as such, so will society as a whole.

Though we cannot be sure that the gender disparity in computer science is getter better, it is important to look on the bright side. Bad news can often seem more appealing and interesting, whereas the bright side is, more often than not, ignored- leaving us in a cloud of melancholy. We can often forget the positive progress as it might go unnoticed.
"If one seeks out positive change-makers, they're there."
There is a great movement in open source, where individuals choose to create purely to share. It is Mel's belief that this is an admirable task, as you could not encourage creativity more. Here, at EMS, we follow this philosophy, we want to share.
"Excellency alone in the corner, is limited to the excellency that one individual can achieve, if they share, others can heighten their excellency and the sharer also gets something back."
This is something that has to be actively remembered, it's not all bad, and it can be a lot better if we do share. There is always a flip side. As long as you look for the positive, then it starts to balance itself out.

References

1. Hidden Figures: https://en.wikipedia.org/wiki/Hidden_Figures
2. Solving the gender gap in computer science and gaming: https://www.stemwomen.co.uk/blog/2019/08/solving-the-gender-gap-in-computer-science-and-gaming#:~:text=Women%20in%20Computer%20Science%20and%20Gaming&text=Today%2C%20women%20taking%20computer%20science,up%20just%2013%25%20of%20students.&text=The%20gender%20gap%20in%20computer%20science%20and%20gaming%20is%20still,global%20gaming%20workforce%20is%20female.

Divine's First Problem

Gihan has now upgraded to having a massive number of phones, rather than just two. He now stores them individually in 99 separate bags. All of Gihan's phones are either iPhone or Samsung. A mugger comes along and wants to steal some of Gihan's many bags. Since the mugger is less competent than Gihan, he can only take 50 bags but he can see inside all 99 of them. Does the mugger have a strategy to ensure that they get at least half of the iPhones and at least half of the Samsungs?