

CORPUS CHRISTI COLLEGE
EXPANDING
HORIZONS 2018



SCHOLARSHIP
REPORTS

Thanks to the generosity of a number of US alumni the College was able to establish the Expanding Horizons Scholarship Fund. The fund is open to all current undergraduates and graduates. In its inaugural year (2017) it provided scholarships for nine students to spend between four and eight weeks in the United States or a similar period of time in a non-OECD country. In 2018 a further eight students received a scholarship. Each scholarship provides up to a maximum of £5,000 and offers the recipients an opportunity to experience the United States or a non-OECD country with the aim of building connections to form a basis for greater understanding and shared purpose, allowing them to expand their horizons and hopefully have a transformative experience.

The scholarships have a wide remit and aim to provide broad educational value beyond the scope of the applicant's academic course at Oxford. It is hoped that the trip will also involve significant exposure to the local people and culture of the area/country. The sorts of activities that the scholarship cover include taking an academic course not related to the applicant's current degree, working for an NGO, doing an internship in a business or laboratory, volunteering or taking part in local project.

A number of alumni have generously offered opportunities to our young people to work or study overseas during the summer for which we are extremely grateful.

It is anticipated that we will fund at least three students to spend time in the United States and a non-OECD country during the summer of 2019 and our intention is to continue to raise funds to enable us to offer this scholarship in the years to come.

This booklet contains the reports of the 2018 Scholars which we hope will inspire both donations towards continuing the scholarship for the years to come as well as to enable current students to find out what is possible and to encourage them to apply for a scholarship which will, as the evidence shows, expand their horizons.

We are grateful to the following alumni for their generous donations to fund this scholarship:

Gerard Baker
Todd Breyfogle
Edward Britton
Robert Brown
Daniel Clodfelter
Nicholas Cornes
Stephen Croft
Andrew Davis
Karin Galil
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Tim Tilton
Jonathan Towle
Nicholas Walter
Ford Weiskittel

We are grateful to the following alumni for supporting our students in offering positions within their laboratories or internships within their companies:

Beth Lawrence (Clarice Lee)
Steve Peggs (Arthur Morris)

We would also like to thank alumni who offered positions that we were unable to fill.

The recipients of the Expanding Horizons Scholarship 2018 were:

William Baker – second year English student

Anastasia Carver – fourth year Classics student

Beatrix Grant – second year English student

Hannah Johnson – second year English student

Clarice Lee – first year Physics student

Arthur Morris – first year Physics student

Alice Rubbra – third year History & Politics student

Rima Shah – third year Maths student

William Baker

I arrived in Uganda with little idea of what to expect. Sure, I was aware of what it is impossible not to be; its British colonisation, and the bloody cost of independence. But I had wanted to go Uganda because, for me, it was an idea without any detailed associations.

Driving from Entebbe airport to the capital Kampala, I was struck above all by the greenness of what I could see from my window. Uganda has a temperate climate and fertile soil; it should have been surprising had it been anything other than green. I realised, then, I was surprised because what I saw did not mirror the image of 'Africa' I had unwittingly held: arid and dusty. It turns out that I did already know Uganda without having ever stepped foot there - only what I knew was completely wrong.

While I was unaware of the expectations I had of Uganda, I was acutely aware of what they might expect from me: or rather, of the worst that could be expected of a white student volunteering and working there. 'Voluntourism' is something of which we should be suspicious, too often motivated as it is by what is called the 'white saviour complex'. It is almost impossible not to be self-conscious and self-suspicious when involved in supposedly altruistic aid in post-colonial countries. And this is no bad thing: in fact, this is probably exactly how a Brit in Uganda should feel.

This sense of unease never fully left me. It did fade, though, to be replaced by the hesitant but hopeful conviction that what I was doing was in some small way useful and worthwhile.

What I was doing was working at United Social Ventures. Every year, 50,000 Ugandan graduates enter the job market. Only 10,000 jobs, however, are created in the formal economy every year, and most of these do not go to Ugandans who have just graduated. One consequence of this is that many people start up their own businesses: by some metrics, Uganda is the most entrepreneurial country in the world. However, many of these youth-led start-ups fail. This is the problem United seeks to address: it offers incubation, partnership and business mentorship to youth-led social ventures, with the aim of making these projects sustainable and scalable, of making young people the agents of positive social change.

Two of these ventures are Faces Up Uganda and the Kitabu Buk Project. Faces Up uses the creative arts to mentor young people and equip them with the skills they need to flourish. Most of my time and energy went towards working with Faces Up: I did three days each week in their office in the Lugala district of Kampala. By the time I first met its team leader, Ssekito Kalule Emmanuel - or Emma as I know him - Faces Up had already worked with over 600 students and 21 schools since its foundation in 2016. Everyone in the communities they worked with seemed familiar with, and grateful for, their visits to school. These visits usually took the form of 90 minute sessions which would focus on goal-setting, or talk about good and bad influences at school, or look at communication skills. Painting and drawing were often used as tools to make these sessions more engaging and less like regular schools lessons, which are, from what I've been told, often far from engaging.

The challenge for Faces Up was to figure out what the next step was. In order to expand and look outwards, they needed to return to their origins. What was a Faces Up mentee supposed to look like? Which particular problems was the mentorship addressing? And what was distinctive about its solution to these problem? These questions occupied much of the time Emma and I spent working together. Emma told me at length about his own experience growing up and going through the Uganda schooling system. We looked at the data on the problems young Ugandans faced; at the psychology behind other mentorship and educational programmes; and at the research on the soft skill needed for flourishing and success. And after this, we narrowed the desired outcome of Faces

Up mentorship to the development of five key characteristics: confidence, critical thinking, communication, creativity, and contentment.

The next step was to create a curriculum designed to develop these five characteristics. We came up with ten different sessions, each between one and two hours in lengths. Each session used one of the creative arts in a practical task design to teach, or demonstrate aspects of, communication or critical thinking, for example. We also developed three key metrics which would indicate success or failure of the mentorship by measuring the development of these key metrics. Performance indicators, metrics which allow an organisation to evaluate and communicate which it is doing, are often absent from the many of the Ugandan social start-ups and schemes which fail to last.

After this, we starting writing grant proposals, focussing on two in particular. Faces Up needed money to pilot this new curriculum on a large scale. There's lots of these grants around, but they are still very difficult to get - not least because they are usually results-based, which requires a lot of data about impact, which can be hard to come by in youth-led schemes. At the moment, Emma is waiting to hear about these two grants.

The other two days a week were divided between Kitabu Buk Project and attending workshops given by United on key aspects of designing social enterprises, such as prototyping, or measuring impact.

Kitabu is a book recycler: it collects donated textbooks and stationery from city schools where they are in plentiful supply, redistributing them to rural one where student to book ratios are often 1:20. My task was to talk to the 14 schools Kitabu had already donated to in its work over the past four years, collecting as much data as possible on what the situation was before and after donations. The aim of this was to produce an impact report with key statistics on student to book ratios - such as the average factor by which Kitabu improved the ratio, and the effect of this on attendance or attainment - cross-referenced against research by NGOs, and the Ugandan government's own targets. Working only a day a week, my own impact was limited. Hopefully, though, it was the start of Kitabu being able to measure its own impact more effectively, and thus gain access to some result-based challenges.

Work threw up several challenges. An inevitable one was communication - I had to make sure always that I had been fully understood. Another was a working culture in which being late is very normal, or where resolutions made over email could get lost and forgotten completely: if you wanted things done, it had to be face to face.

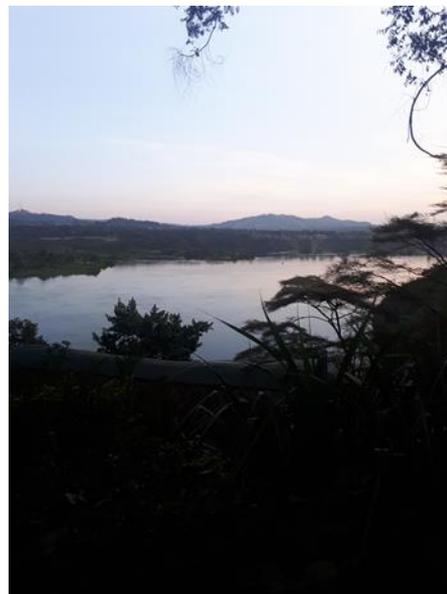
But, overwhelmingly, work was productive, as I was working alongside very intelligent and driven individuals. For their founders, these social enterprises represented not only the hope of a stable livelihood, but also an aspiration to be make their country a better place. Indeed, often the particular issue - whether it be mentoring for children or books to school - had a very personal significance for the founders. While it is an inescapable fact that a good British education leaves you better off in some areas of thinking or analysis - and hopefully, as such, able to be offer useful inputs and advice when it comes to, say, designing metrics - I consistently found myself and my friends at home severely lacking in comparison with the social conscientiousness and altruistic instincts of the young Ugandans I met. It was clear for all of them that their work was vocational more than anything else. This was above all true for Emma and his team at Faces Up; watching him closely for six weeks left a strong impression.

This was the work then: at times frustrating; sometimes stagnant; sometimes disheartening; but more often than not something to which I could happily direct my efforts in the knowledge that it was worthwhile. And, in the cases of Faces Up, a project in which I feel personally invested.

In truth, the work was not the main attraction of Uganda in my anticipation; and nor did in turn out to be in reality. Most my abiding memories and reflections of Uganda are of interactions I

had. What felt new and interesting at the time, and now feels significant in my memory, was the processing of meeting people, not the result of any work.

Some of these interactions took place on the weekends, when I would often travel around the country. I went to Murchison National Parks, to see the wildlife and the waterfall; to Lake Victoria, in Entebbe; and to Jinja, on the Nile. This was a chance to meet Ugandans from outside Kampala. There seems to be culturally a big divide between the rural and urban areas of the country: a guide in the National Park described Kampala to me as the Uganda 'that is written, not lived'. It was also a chance to see the stunning landscape that Uganda has to offer.



Mostly, though, I stayed in Kampala. As a city, it is striking for its variety. It sat originally on seven hills, each of which is home to a different aspect of the city's life: Makerere University, or the Royal Place of Buganda (the predominant tribe in the country), or the Anglican Cathedral, or the mercantile sector. In this sense, the city feels wonderfully composite. 'Uptown' and 'downtown' is the main split. Kampala Road divides the city: above it the wealthier neighbourhoods and the government and business districts; below, the markets of 'Old Kampala' and vast, chaotic 'Old Taxi



Park'. The adjacency of these two cityscapes - the the first characterised by modern architecture, towering buildings, green gardens and parks, and empty, wide streets; the second by bustling and cramped streets, sensory overload and synaesthesia - is certainly the most strikingly divided city that I had ever encountered. One result of this variety is that the city felt simultaneously familiar or reminiscent of places I had been before, and also very disorientating at first. I spend a good deal of my first week getting lost, hurtling around on the back of a motorbike - referred to as a *boda* - trying to give directions to a place I'd never been, to a person who hardly understood me. Soon, though, I started to get a sense of the place, and could use the landmarks, such as the towering Gaddafi Mosque, to get about.

Kampala's a great place to go out - lots of live music and places open through the night. It also has a vibrant, though small, arts scene. At the moment, there's not a great deal of money or esteem to be gained from being an artist in Uganda: but things are slowly improving. The museums and

exhibitions I saw in my time there were packed with great art; the only thing needed now is the audience for it.



The food, too, has plenty to offer. Though my staple working lunch was a variation on six or seven carbohydrates - sustaining, if not delicious - the street food, mainly fried meat, and the fresh fruit and vegetables were wonderful. I took a particular liking to the Rolex, a chapati with an omelette, the fast food of choice there. There were fantastic markets, chief among which is Owino. Vast and innavigable without the aid of a local, this market has everything you want and even some stuff you didn't realise you wanted.

Vibrancy was a word I often returned to in trying to explained the enthralling attractions of Kampala. I suppose it refers to the experiences you have of a place, difficult to articulate but not to be neglected, which make it feel in some sense alive. One experience of this kind is a sort of organised chaos and lack of central government or institutional reach which leaves the individual, while undeniably often exposed or unprotected, with nonetheless a great sense of personal liberty. The lack of governmental paternalism - in monitoring and addressing road safety, for example - has obvious and deadly downsides. And yet, from negotiating the price of much of what you buy, to having bars and clubs open almost twenty-four seven, to being able to purchase fizzy drinks with limitless amounts of sugar, or being offered obscure and slightly suspect looking bits of meat, you do in quotidien life get a sense of freedom - of not having you life interfered with by centralised forms of authority. I do not think this way of life - call it autonomy or chaos, depending on your outlook - is seen merely as something which must naturally give way to more rigid and monitored ways of life as we have in the UK. Rather, it is, at least partially, claimed for its own merits. A friend of mine there once said - only half-jokingly it seemed - that the only difference between Ugandans and Brits is that the former are more disorganised. Not that this self-imputed disorganisation should be overly romanticised: another friend I made there identified just this sort of self-attributed unruliness as the toxic legacy of a British colonial rule in the country which has left some Ugandans, mistakenly, thinking of themselves as incapable of proper self-governance.

It is a strange thing, that a country with a single-state, authoritarian government can feel somehow much freer. But this sense of freedom, I'm sure, is a naive luxury contingent largely on my status a British visitor. I don't suppose for a minute that Kampala feels so free if you are living there

as a homosexual, for example. Equally, if you are poor and living in rural Uganda, government intervention or help is just what you need. Not that you expect this intervention to be arriving anytime soon, mind: a colleague said to me that as long as there was peace not war, the government had done all it could be expected to and the rest was up to him. The majority, especially among the youth, who make up about 70% of the population, are less philosophical, and view the government as corrupt and ineffective.

I witnessed this popular discontent first-hand in my last week there, when there were riots in the city. These were in protest of the detention and possible torture of President Museveni's main political opponent, singer and self-proclaimed 'Ghetto President', Bobi Wine. The military and governmental response to the riots, needless to say, was forceful and emphatic.

It is impossible to go as a white Brit to Uganda, I suppose, without thinking about race. Impossible, indeed, when my walking through Kampala - especially in the more rural outskirts - was accompanied very often by cries or whispers of *muzungu*, a term for foreigners. Usually, these were of bemusement and fascination more than anything else - what on earth in a *muzungu* doing here? On the whole, there was little in the form of antipathy in the reactions I received to being there. Indeed, in a work environment, my opinion - wrongly, of course - was often accorded a level of expertise that I didn't merit, or I was treated with a politeness and formality that my presence definitely did not warrant. Politeness and inclusion, though, can be a form of exclusion too.

When working alongside young people at the University, there was a sense that we shared, because of our age, more than what divided us. I oscillated between entertaining a hopeful universalism, and being reminded continually of the sheer difference of the lives we respectively lead.

It was interesting also to notice that America was to go-to for many Ugandans for discussions of race. I went to a festival of plays on the theme of 'black consciousness' at the National Theatre there, and every single play was set in the US. Some of this is due, I'm sure, to the general cultural hegemony of the US, to the import of American movies and music to Uganda; but part of it testifies also, I think, to the idea that these issues of race only really crystallise when you have different groups living together - that America, as the home to white and black people, was the place to look for the development of racial consciousness.

Being a stranger elsewhere made me think about my own culture with a critical distance. I noticed in Uganda the importance of hospitality and welcoming guests - from giving up seats for new people, to buying you drinks in bars, or showing you around the city - which is conspicuously absent from Britain. I learned to value the brief interaction with a new person, an aspect of life I previously had neglected. I noticed a different attitude towards history and heritage: a doublethink with regard to time, whereby a seventy year-old university was considered very old, as if that were an insuperably large distance of time, but where ancient tribal greetings are practiced in daily life. I noticed different attitudes to art: where I would look at a painting and think first 'what does this mean?', often my Ugandans friends would ask 'how is this made?'.

Going to Uganda made me place more value on doing things which make me initially uncomfortable, even it that attitude led me into some awkward situations. One such situation stands out: dancing in a circle with thirty Ugandan church-goers to a musical fusion of gospel hymns and R&B, I had to go into the centre to demonstrate a move which would be copied by everyone else. My trip, of course, was not without hazard or misfortune. In my second week there, a kind soldier offered very persuasively to relieve me of 50,000 Ugandan Shillings (about £10), and, as I was on the way to airport to leave, my taxi driver attempted to scam me out of a few more shillings. Overall, though, I look back on Uganda with very fond memories as a place to which I hope I can soon return.

Anastasia Carver

Last autumn, thanks to an Expanding Horizons scholarship, I spent two months volunteering at Kitezh Children's Community. A cluster of traditional wooden houses in rural Russia, surrounded by miles of birch forest on all sides, Kitezh is a small therapeutic community dedicated both to raising foster children communally and, in their school, providing an alternative education for children from various challenging backgrounds.

It was an incredibly stimulating experience intellectually: this extended encounter with Russian culture was an opportunity to develop my understanding of an area very different from that focused on during my Classics degree. My conversations with the adults and older children about Russian history, their sense of nationhood and their views of the west have been fascinating, at times conforming to certain of my stereotype-based expectations to the point of hilarity, at others seriously surprising me. I have been challenged in my views regarding issues such as the military, Putin's government, and the transition to a post-Soviet state, and made much more aware of the lack of nuance in much western reporting on Russia and the Near East.

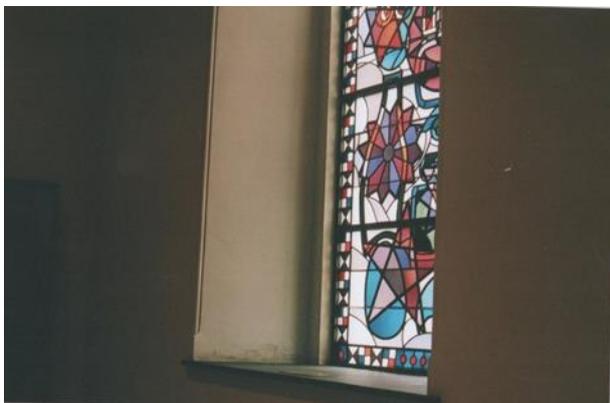
I gained a huge amount at a more practical level. My tasks as a volunteer were incredibly varied: as well as my primary role of teaching English, I helped to run student elections, prepared advertising materials for the school, and ran art sessions with the children. I also learned how to prune gooseberry bushes and how to milk a cow; how to sand and varnish a staircase, and how to work in a canteen despite understanding only a few words of what the Ukrainian cook says to me; how to throw a disco and persuade surly teenagers to dance, and how to crochet a bikini. Throughout, I have constantly been pushed to develop my communication, leadership and teamwork skills, and have found an unexpected love of working with children; I now intend to volunteer with youth-based social projects upon my return to the UK.

I came to the end of my time incredibly inspired, with a much clearer sense of what I want to do next post-Corpus, and more confident in the skills I need to do so - I am very grateful to the College for enabling my trip, and strongly urge any Corpuscles with an interest in Russia and/or therapeutic education for children to consider visiting Kitezh.

Beatrix Grant

Lunch Poems

Lunch around the MoMA; drawing at the Met; an old film at Metrograph; spoken word downtown; Klimt, Schiele, Picasso uptown. Just a few of the ways I spent my time in New York, a city brimming with life from dawn till dusk, and all the hours in between. By day I followed the footsteps of Frank O'Hara, by night I visited poetry projects Eileen Myles had frequented just months before. The rhythms of New York are incessant, it is impossible not to be swept up into the creative scene. I found myself writing poems on the subway, to be performed that afternoon. Thumbing through William Burroughs' cut-outs, and making my own collage all evening. Stumbling across a documentary topic, and shooting it that weekend. It is a city that lives and breathes creativity, and one which was a dream come true to be a part of for one little month. A month is never enough, but the inspiration stays with me. And I can only hope to return one day to become a more solid part of the film scene in New York.



Hannah Johnson

From the 29th of June to the 29th of July 2018, I undertook a writing and editing internship in Kolkata, India through Pave Internships. Originally, my host organisation was intended to be a small magazine publisher in the city, but after complications on their side led them to renege on receiving any interns, Pave placed me with the newspaper T2 instead, the culture and entertainment branch of The Telegraph India. T2 publish a paper every day covering local events, restaurants, celebrity news, films, fiction and sport, and I spent four weeks working with them Monday-Saturday alongside two other UK students, Natasha and Ollie, and a varying number of local students also interning with the paper.

My first impression of the office culture in India, compared with my experiences working in the UK, was that everything was much more open-ended. For all of my writing- or media-related internships in the UK, it was a given that interns would be in the office between nine and five, and any deviations from this were usually planned in advance. At T2, our hours were extremely varied. For days we spent in the office, we were usually expected to arrive around 1:30-2:00pm, but no one had any clear or set start time and we were met with surprise on the first day when we asked by when exactly we should be at our desks. On days when we had assignments outside, our day could start any time from 10:00am. The day had no designated end either, with our earliest finish at 8:00pm, if we'd finished all our projects, but sometimes we would need to stay back and wait for the designers to finish laying the pages for our articles, as writers had to make the final proofread on anything which was slated for print the next day. This meant staying in the office until 9:30 or 10:00.

I usually had between 2 and 3 outside assignments to cover per week. Sometimes we were expected to meet at the office and travel to the location with the photographer, who always accompanied us, other times to make our own way to the location and correspond with the photographer and the host to meet there. Either way, the times we were given for assignments weren't always stringent either and last-minute changes from the hosts were not uncommon. We learnt that in India, it is expected (and necessary) to call and confirm timings the morning of an event, even if they have already been set and confirmed for a long time, but due to the uncertainty and shifting nature of times, punctuality was usually less strict than in the UK. A lot of people were more prepared to 'go with the flow' and use approximate times, compared with my experience in the UK, but this didn't necessarily mean that all times could be flexible. It took me a while to learn the unwritten rules and myself and the other interns ended up erring on the side of caution and confirming everything constantly. Interns were given complete responsibility for their articles, never accompanied on assignments by another journalist (the exception being nightlife, which I never covered), so it was important to gather all the information necessary and any contact details for the hosts to check facts or ask questions later. The photographer, having more experience, was available to provide some advice or prompting if we needed it, but the majority of the responsibility to represent the paper on the day was down to us. Though this felt like a lot of pressure at first, I did really enjoy being entrusted with so much as it was clear interns were really a valued part of the team, making tangible contributions to the paper rather than just being accessories for odd jobs. From what to include in an article to the final laying of the page, we were guided by the experienced journalists, but largely expected to take charge and produce as much as possible independently. It was definitely the most challenging internship I have done to date, but also the most rewarding, especially when we got to see the final product with our names credited as the authors and when the owners of the restaurants we were reviewing or the hosts of events we were covering messaged us personally to say they had seen and loved the article.

The first assignment I had was to cover the new monsoon season menu at a local restaurant called My Big Fat Belly. Most restaurants or cafes in the city were releasing limited edition menus for the monsoon, which begins in July and runs till September, so I ended up covering a lot of monsoon specials. This assignment was the first and only time I was sent out with another intern, Natasha, so we each tasted the dishes and took notes and then collaborated on compiling the article back at the office. Like most food articles, this assignment involved getting lists of all the ingredients in each dish, ensuring we were printing the names of the dishes exactly as they would appear on often not yet printed menus, shortlisting the most attractive meals for the article whilst still maintaining variety (especially ensuring we included enough meat-free options for Kolkata's large vegetarian population) and corresponding with the restaurant owners after the event to update them on when they could expect the article to go to print. It was a fun assignment to do and resulted in Natasha and I finding a restaurant we could introduce the other interns to and ended up ordering from frequently, but I was nervous to be representing the newspaper for the first time and I definitely found myself growing in confidence as the weeks went on.

LIGHT AND EASY ON YOUR BIG FAT BELLY!

Monsoon calls for some piping hot comfort food and offering just that is the new menu at My Big Fat Belly called Crunch n Comfort. The dishes combine tangy ingredients such as home-made pickles with quinoa, shrimps and mushrooms to produce refreshing results. From appetisers to desserts, the dishes are designed to satisfy both lazy and adventurous eaters. "The monsoon menu is mostly about comfort food, which is not necessarily heavy," said Adarsh Bhargava, co-owner, My Big Fat Belly. He walked in to savour some of these eats and here's bringing you our faves.

What: Crunch n Comfort, the monsoon menu
Where: My Big Fat Belly
Where: 22 Sarat Bose Road
Timings: 12:30pm to 11:30pm
Pocket pinch: Rs 1,000-plus for two

Aqua Man Burger: A delicious twist to an American classic, the Aqua Man Burger replaces beef with a crispy shrimp patty and replaces ketchup with 'lava sauce' — a combination of mustard and mayonnaise. The bun is made with butter rather than margarine, making the bread cashmere soft. A dash of jalapenos adds a kick of spice but does not dominate the flavour. Served with crispy onion rings and coleslaw. Rs 299-plus

BFB Pesto Salad: Fresh, savoury fusilli pasta tossed with rocket leaves, pine nuts, Parmesan cheese and ribbons of handmade white buffalo mozzarella. This dish makes for a tasty but light meal, ideal for those planning to follow it up with a dessert! Rs 259-plus

Mac n Cheese: The Mac n Cheese is a fusion of American and Mexican tastes, innovatively mixing cheese and bacon with shrimp and chipotle. This indulgent dish is very rich and requires an empty stomach or a big fat belly! Rs 299-plus

Chicken Ala Kiev Shob: If meat is more to your taste, then try the Chicken Ala Kiev Shob — tender chicken corni dog-style on a stick is stuffed with garlic butter and served with some fries, accompanied with mustard mayo and creamy coleslaw. Rs 289-plus

Chocolate Cigars with Berry Compote and Citr Creme: It's good to save some room for dessert means indulging in these yummy cigars that have melted chocolate in filo pastry and are served with a tangy berry compote and cream with grated orange zest. Rs 209-plus

Text: Hannah Johnson and Natasha Livingstone
 Pictures: Pabitra Das
 (Hannah and Natasha are students at Oxford University and Durham University respectively, currently interning with 12)

My favourite assignment to do, however, was at the end of the first week, when I was sent out to cover the opening of the fourth Starbucks store in the city, located in City Centre mall, Salt Lake, the only Starbucks location so far in North Kolkata. Pramita, one of my colleagues, discussed the assignment details with me and suggested I personalise it with a touch of comparison between the UK and Indian menus, so we decided on a column spotlighting some of the Indian Starbucks Teavana menu, which comprises more of the menu there than it does in the UK. We also included an introductory column, a little more informal than the main body of information, to add a personal touch. This was a lot of fun to write and made the article feel particularly mine. As with the My Big Fat Belly article, I spent time tasting the menu and taking notes on flavours and ingredients, but as this was a coverage of a new location rather than a menu specifically, I also had to get as many facts and figures on the new store as possible, such as the square footage, the seat count, the inspiration behind the décor and what made this store unique from the existing three, which was the outdoor patio seating pictured. The manager was also kind enough to give me the two Bengali-inspired desserts to try, the chocolate rossomalai mousse and chomchom tiramisu, which are only available in Kolkata Starbucks stores, even though these would not be pictured in the article. I would probably never have had the chance to taste these had it not been for this assignment, and Natasha, Ollie and

I found the same to be true of a lot of our experiences on assignments; even though we only had one day off per week, work allowed us to find a lot of exciting restaurants and bars or have experiences we would never have known about had we not been sent out covering local entertainments.

STARBUCKS COFFEE MAKES A STOP IN SALT LAKE CITY CENTRE

Some places feel like home, no matter where you are in the world. For me, it's Starbucks. To keep my weekly Starbucks Friday habit alive even halfway across the globe, I stopped by the brand-new location in City Centre Salt Lake recently for my caffeine fix.

I sat beneath some of Starbucks' signature coffee-themed wall art to surround myself with the coffee process. But the terrace outside, which sets this store apart from the other three Calcutta outlets, seemed like the perfect spot to catch up with a friend and sip under the shade — it definitely would have been my choice if I'd had my usual Starbucks buddy with me.

But since I was here and she was back in London, I took the opportunity to taste some of the items I could only get in India. Coffee composes most of the UK menu, but here I found a much more expansive Teavana collection of sweetened and unsweetened varieties. Also, in the food section, to my surprise, I spotted Starbucks' Calcutta exclusive specialities — the Chocolate Rossomalai Mousse and the Choinchom Tiramisu. As sweet as any Bengali dessert I've tried, these two were both creamy and delicious, but my heart belongs to the Rossomalai. It was the perfect treat for a chocolate. Here are some favours for tea lovers.

Text: Hannah Johnson
Pictures: Fabina Das



After South City Mall and Aeropolis in the south and Park Street in the heart of the city, Starbucks has travelled east to Salt Lake. The fourth outlet of the American coffee chain in Calcutta has come up next to Afrim Deli in City Centre Salt Lake. Spread over 1,750sq ft, the cafe has indoor and outdoor seating with a capacity of 59 covers. In keeping with the other outlets, this one, too, has easy and clutter-free decor and an array of hot and cold brews on the menu. "We are humbled and delighted by the warm welcome we have received in Calcutta. This is the first city in the country where we launched Starbucks with three stores. We are extremely optimistic about the city, and with the launch of our fourth store in less than six months, we would like to reiterate our commitment to Calcutta. Our aspiration is to delight customers here with the unique 'Starbucks Experience' that is built on three core fundamentals — our coffee, our partners (employees) and our stores. We look forward to deepening coffee passion and enhancing customer experiences in Calcutta," said Veetika Deoras, head — marketing, category and digital at Tata Starbucks Pvt. Ltd.

What: Tata Starbucks
Where: City Centre Salt Lake
Timings: 10am-11pm, daily
Pocket pinch: Rs 600-plus for two

POP PICKS



For the tea totaller, the Chai Latte is here. Compared to the one served in the UK, this one is richer in taste, a little sweeter and more complex with a spice blend. We hear the touch of cinnamon on top.
Rs 195-plus (tall)



The Iced Shaken Hibiscus Tea with Pomegranate Pearls is unlike any other iced tea. It is a sweet, refreshing treat with bubbles made of real fruit juice, which gives an almost citrus-y pop to the beverage.
Rs 310-plus (tall)



If you want to enjoy the monsoon, nothing beats a cup of flavourful Younberry TM white tea, served hot and without milk or sugar. This includes hibiscus, acai, rose petals, and candied mango and pineapple, which was the dominant flavour.
Rs 190-plus (tall)

If we didn't have outside assignments, we wrote a lot of research-based articles on celebrities, book reviews or compilation-style articles of recommendations, such as a page on the best reads for the monsoon season, which all three interns collaborated on. Natasha, Ollie and I were also invited to each meeting of the Campus section, which is created by students for students, giving us the opportunity to meet and work with the local interns who were also working at the paper temporarily. I really enjoyed contributing to this section as a lot of what we did was lighthearted takes on current events, such as a look-back to the first *Mamma Mia!* film in anticipation of the second, or a series of emoji-themed lists and quizzes in celebration of World Emoji Day, including a section on emojis we wish existed and one where the reader had to guess which popular song or film title was symbolised by a line of emojis. The UK interns could volunteer whether or not they wanted to contribute to the Campus section, but for all articles, T2 matched us with our interests as much as possible. This meant that as well as being able to report on the opening of my favourite coffee chain and the current affairs of pop culture, I got to cover the new Mexican menu for the monsoon season at Hard Rock Café, which, being half Mexican, I had a lot of fun doing. All the UK interns ended up contributing to pieces on British actors such as Benedict Cumberbatch and Daniel Radcliffe; the collaboration was a nice change from work which could be largely solitary and led to us building good relationships with our colleagues and each other.

Our time outside work was spent exploring as much of the city as possible. Spending a month in the city allowed us to really get comfortable in it, orientate ourselves, and by the time I left it felt almost like a second home. Though I left with the urge to see a lot more of India, it was a great experience to get to know one place so well. Kolkata was the capital of India under the British Raj, then named Calcutta, between 1773 and 1911, until it was moved to Delhi. Today, it is the capital of the state of

West Bengal, one of the six major metropolises in India, and a city known for its cultural scene, from history to art to food. It is nicknamed the “City of Joy” and is anecdotally one of the friendliest cities in India, which, though I have little to compare it to, certainly matched my experience there. As a woman travelling to India alone, you are warned frequently of the dangers you may encounter, but even travelling around the city at night with only Natasha, both of us clearly foreigners, our experience was nothing but safe and positive. A lot of our Uber drivers would point out the famous landmarks to us as we went to and from work, even if we could say little else to each other, and even bargaining in the markets was an amicable experience. In the evenings, we tried to experience some of the nightlife and made friends easily in bars and clubs with locals around our age who approached us to introduce themselves and let us know about events and offers we wouldn’t have known about otherwise.

Visually, Kolkata bears a lot of its colonial history in the architecture, but it is a diverse place, which I see as divided into four main architectural sections. In the north are the older looking buildings, crammed close together across narrow streets and very residential. Old bricks, wooden shutters and ornate balconies are common. The centre of the city is where the newest lights and skyscrapers can be found, as well as huge hotels and an overpass which, driving along it at night, could be cutting through any major city in the world. Most of the landmarks of Kolkata are in the south – the Victoria Memorial (for the empress who never visited the country), the Indian Museum, St Paul’s Cathedral and Fort William, all the architecture reflecting the north but more spaced out; its age would be labelled “antique”. Finally, the newer sector of Salt Lake, in the east of the city, was, unlike the rest, all pre-planned, giving rise to almost eerily parallel and perpendicular roads, blocks labelled with letters instead of names, and bright pastel houses which have not yet had time to fade, giving the area a Dr Seussian feel totally unlike the older city.

In the old north can be found a colony called Kumartuli, the potters’ quarter. Here the sculptors prepare idols for the Hindu festival of Durga Puja in October, particularly celebrated in Bengal and other eastern states. The ten-day festival marks her victory over the demon king Mahishasura and ends with the clay idols being placed on bamboo pandals for procession throughout the city, before they are submerged in the river Hooghly, a distributary of the Ganges, signifying the goddess’s return to the Himalayas and her husband Shiva. These idols not only feature heavily in the city’s own celebrations but are also exported across the country. Even as early as July, fully sculpted figures dominated the workshops alongside the straw skeletons still in preparation, but the painting stage had not yet begun. There is a network of alleyways composed entirely of these open workshops:





Kolkata decorated for Durga Puja 2017 (photos courtesy of Kunal Mathela):



Pandals (photos courtesy of Kunal Mathela):



This was my favourite experience as it was truly unique to the city, something Kolkata is known for but not among the central touristical hotspots, and a place to learn about not only the history but the living culture of Kolkata.



Another highlight was visiting Dakshineswar Kali temple, one of the major Hindu temples, dedicated to the goddess Kali. The temple is located just outside the outskirts of the city in the village of Dakshineswar and is known for its twelve shrines dedicated to Shiva, Kali's companion. Visitors and worshippers must remove their shoes before entering the temple complex and photography is not permitted once inside, but from the outside the temple's famous spires can be seen:

The last thing I was really looking forward to doing on this trip was shopping in the markets. I didn't consider myself someone who was particularly good at bargaining, so this was something I was keen to learn. I went with a local friend, Kunal, whose advice was to show vague interest in a lot of items at the same stand, asking the price of all and trying not to seem too attached to any of them, before trying to bargain for what was really interesting. Having heard other travellers' stories about being asked for outlandish amounts, I rarely felt like the asking prices were wildly unfair and a few times the offer was so generous (such as six terracotta teacups for Rs 400, around £4.30) that I didn't even try to bargain, although these lucky

experiences were probably more to do with having a local along than any skills of mine. Surprisingly, the most difficult thing I found about the markets was not haggling for a lower price on an item but learning to browse without being intimidated by sellers yelling for your attention. I almost missed a few of the things I had been looking for because I was trying to avoid eye contact with the most aggressive hawkers. New Market, the largest indoor market in the city, was by far the most intimidating and the one with the highest prices – our colleagues told us the story of an intern a few months before us being locked in to a shop until he bought something – but the shops there had the most variety by far and it was easy to find high quality silver jewellery and wooden handicrafts which I didn't come across at the outdoor markets. Still, I'm glad I left this to the end of my trip and had some practice first!

This internship taught me a number of new skills. Some of these were concrete, such as learning how to use an unfamiliar program, Atex, to lay a page so the article would be ready for the designers with all the basic, unchanging conventions already inserted. Atex was complex and could be temperamental, so it was a challenge to learn at first, particularly as I am not someone who is naturally tech savvy, but it was good to be pushed out of my comfort zone. There were also more transferrable people skills, such as how to represent the company confidently and professionally on assignments, or how to make yourself understood across a bit of a language barrier, as it was often difficult to communicate arrangements to the drivers who spoke mostly Bengali. Learning to navigate an unfamiliar city, for the times we had to make our own way to assignments, was a skill in itself, especially as we learnt Uber drivers could not always be relied on to take you exactly where you wanted to go – one tried to drop me off a ten minute walk away from the entrance of New Market, on the opposite side of a major road with no pedestrian crossing. Most of all, what I will be taking away from the experience is a new feeling of capability. Not knowing what each day would bring and having to run with last-minute plan changes, language barriers and unfamiliar terrain has shown me these things do not have to be feared or even avoided, because they can always be faced and overcome. I am so glad to have gone out of my comfort zone for this experience and so grateful for the opportunity. It has changed the way I will approach the world after graduation, both in business and in leisure.

Clarice Lee

Introduction

Over the summer of 2018 I was fortunate enough to be granted the Expanding Horizons Scholarship by Corpus Christi College, Oxford, to intern at Vanderbilt University, Nashville, Tennessee in the United States for two months. It was an experience like none other and will be further detailed in the report below. The review of my experience will be divided into three segments: 'The Internship experience' which comprises of everything I took away from the internship itself, with emphasis on the insights I gained about Scientific Research as a career, 'Culture and Travels', which recounts details of the cultural learnings and other takebacks from sightseeing, and lastly 'Afterword' which includes a summary of the entire trip, as well as my intended plans for the future.

The Work

I interned at the Marija Zanic lab, a biophysics lab, particularly invested in researching the structural properties of bio-filaments, such as microtubules.

A short summary of the topic and my project can be found below:

Microtubules are major components of the cellular cytoskeleton. They are found in all eukaryotic cells, and they are involved in many important cell functions such as mitosis, cell motility, intracellular transport and maintenance of cell shape. Therefore, microtubule research can be very applicable to many fields, one example being in the study of Alzheimer's disease.

However, despite it having been discovered for a good 30 years, very little is yet known about microtubules. Hence to say it simply, microtubules are a very intriguing, yet enigmatic entity.

My project aim was to find out the factors that might affect the stiffness of microtubules, a property that is characterised by a measurement called the persistence length. This was done using an image analysis software called ImageJ and a yet unpublished program that could accept the data that was output by the image analysis software as input, and generate a persistence length value.

My results could be summed as follows: Firstly, we found that different type of bio-filaments had different persistence length. This was not ground-breaking, but it was a positive result for the software in question. Secondly, we found that Microtubule Associated Proteins (MAPs) appeared to affect the persistence length of microtubules, more specifically, they appeared to stiffen them. There have been various, but contradictory studies done on this subject, and hence our results were quite exciting. Lastly, our data appears to suggest that the bundling of microtubules stiffens them.

Naturally, there is a whole lot more of data that went into these conclusions, but there will be left unmentioned in this report.

Prior to this internship, I had never actually done any form of scientific research, barring weekly lab lessons (which did help ease my transition, but were vastly different experience, of which I'd soon elaborate). Adding to that, it did not help that as a physics student, my knowledge of microtubules were measly crumbs of information about its general history and functions gleaned from biology websites, and my knowledge about biology lab work, was close to nothing. Hence, to say that I learned a lot from this internship would be a gross understatement.

Considering my complete lack of experience, I had a great multitude of questions regarding scientific research. And something that had consistently bothered me was that I haven't had the faintest idea about the constantly emphasised 'scientific method'. Of course, I knew the theory, but the truth was that I did not know how to start, did not know how to form a hypothesis.

As a student, my interaction with science has always involved receiving information, learning the answers to questions that already had been solved by past scientists.

This led to my naïve misconception that scientific research was going to be a fruitless, if not difficult endeavour, considering that so many questions have been answered, so many theorems discovered, what else was there left to ask? What was left for discovery? It was not the kind of question that could be satisfactorily answered by a teacher or a professor but had to be answered by experiencing it first-hand.

One of greater epiphanies I had on this internship was a profound realisation that despite the vast amount of knowledge I think has been discovered, there are still yet more questions left unanswered. A shortage of questions was and would never be an issue, rather, the converse is true.

I discovered this fact as I begun the internship and as my supervisor was explaining to me how a certain protein affects the dynamics of microtubules (ie: increasing the growth rates), the logical next question was 'how does it do that?' and imagine my astonishment when her answer was 'we don't really know'. This was quite a revelation, as I have never really encountered a question with no answers in the syllabus before. This fact revealed itself increasingly over the course of the internship.

As many of my seemingly simple questions were met with similar answers. I was yet pleasantly surprised when I found that the solution to ‘we don’t know why’ was not some sort of complex, mystical theorem or ground-breaking not-yet-invented method, which is what I had always envisioned the answers to unanswered science questions to be, but rather a method that was simple yet made a great deal of sense.

For example, we know that CLASP (a protein) affects the dynamics of microtubules, but we don’t know how it does that. To find the answer to this question, it is proposed that we investigate the effect of CLASP on the mechanical properties of microtubules, in the hope that it might shed some light to the mechanics of its effect on microtubules, which in turn could provide us with clue on the exact mechanism of the protein.

Research has always seemed intimidating to me, something complex and out of reach for a mere layperson like I am. I now know that it is not true. Perhaps, more concisely, this internship has made science so much more accessible to me.

This internship also gave me a chance to apply skills I have learned through years of science curriculum. For years, the concepts of scientific bias and rigour have been indoctrinated, and for years, they have been simply theories, abstract notions, at its best, a bland, mildly irritating set of rules, and at its worst, seemingly senseless. But doing research first hand made me realize that these ‘mildly irritating set of unimportant rules’ were the very basis of scientific research and the scientific method.

Lacking scientific objectivity could lead to a complete set of biased results, which rendered it completely useless. The lack of consistency in experimental methods led to catastrophic effects. Lacking scientific rigour made for a very unprofessional and shoddy looking piece of work, which contained results that could not be compared laterally, results that were not admissible and would probably be rejected from scientific journals.

Some of these criticisms I witnessed first-hand in ‘Journal Club’, a weekly session where the lab would gather together to critic a research paper. Remarks ranged from ‘What on earth is going on with that graph?’ to ‘They missed a scale bar’ to ‘What are they even trying to conclude?’. It was harsh, but a real eye opener. I am now grateful for the indoctrination of these rules, as it made transition from student to researcher a great deal easier.

Perhaps arguably, the greatest takeaway from this internship was finding out how much that I actually liked the life as a researcher. I had only experienced a snippet of it, yet it left me wanting more. There were many memorable aspects that I enjoyed, but of course, some aspects were still better than others. If I had to choose one thing I enjoyed most from this whole experience and research in science as a whole, it is the anticipation. As aforementioned, as a student, the answers to questions can usually be found in textbooks, but being in research made for a completely different dynamic. Now there were no answers, and it was up to us to find the answer. Hence the moments I always enjoyed were the frisson of excitement, the anticipation before viewing microtubules under microscope, the thrill from not knowing if they would be stiff or curly, the moment before the software churns out a value, not knowing if it might prove or disprove our hypothesis, or maybe just end up being a fluke. These were wonderful moments that made all the tedious preparation and data collection beforehand worth it.

In conclusion, I think this internship has been an extremely valuable experience. More concretely, I have acquired skills that I felt made me a better scientist (in addition to knowing more than I ever thought I’d know about microtubules) and more holistically, it has been the perfect insight into the life as a scientist, one which I insofar has found quite enjoyable. Research is truly a diverse and collaborative field, as I had the opportunity to meet and work with people from all walks of life, of a

smattering of nationalities, brilliant people who appeared truly passionate about the work they do, like-minded people who did not consider 'microscope' and 'exciting' being in the same sentence to be an entirely ludicrous idea.

It was an experience like none other.

Culture and Travelling

I experience quite a large culture shock upon my arrival in the United States. One might make the mistake of assuming that all of American culture can be described through exported entertainment like television shows or Hollywood movies. The truth was that the US is extremely culturally diverse. While some stereotypes were true; they were definitely friendlier and warmer than people I had met in Britain or Singapore, something that many do not know is that there is a whole culture unique only to the South.

If I were being honest, I would say that I was initially somewhat disappointed that I'd be going to a university in Tennessee, rather than one somewhere more Cosmopolitan, perhaps New York, California or Massachusetts. I knew next to nothing about Nashville, except that it was a place famous for country music, of which I was not really a fan. I did not know it then, but I will come to grow very fond of Nashville, Tennessee, with it all its Southern charms, and in hindsight, I am certain that I had experience so much more culture being in a small city like Nashville, rather than a sprawling Cosmopolitan city like Los Angeles or New York. Globalisation has made large cities these days homogenous, but a little city like Nashville and its surrounding areas had retained much of its little cultural quirks, if you knew where to look.

The first and immediately apparent thing I noticed after my arrival in Nashville was their accents. Not just any generic, American accent one might commonly hear on the television, but the unique Southern accent. There is no experience more immersive than being surrounded by people who speak in a certain accent. I heard it everywhere, from service staff, to Uber drivers. I revelled in the lovely lilt and valley of the tones, I was absolutely delighted to hear the famous 'y'all's and contracted g's at the end of words. It was quite whimsical, like watching a book character come to life. I have often read, and perhaps even heard of the infamous Southern lilt, but to hear it around you, and all at once, was quite the experience. It was then that I finally realised, that after 22 hours of flying and brutal transits that I was truly in the wonderful land that was America.

I marvelled at everything, perhaps embarrassingly so, like a tourist who simply could not get enough of everything. I stared wide eyed at the interstates, at Walmart and Target and even at their beautifully decorated car plates with those tiny words that said 'Tennessee'.

The next aspect of the culture I experienced was their true southern hospitality, in addition to their generally warm and friendly demeanour. The first person I really met upon arrival to the U.S, was my landlady, a born and bred Tennessean that lived in Mufreesboro. She and her husband (also a born and bred Tennessean) brought the art of hospitality as I knew it to a whole different level. As a landlady, her duty to me was just to rent me an apartment, however, over the course of the first week, she ended up and her husband bringing me on a tour around Tennessee, to places that I could never had gone to myself, due to the lack of public transport and not having a car. Also, another thing learnt: a car is a necessity in the U.S, a fact that took me quite a while to absorb, coming from a place like Singapore, a small city wherein every nook and cranny is accessible by public transport, and in Oxford, a place tiny enough to be traversed by foot or bicycle.

We travelled to Chattanooga, where I explored 'Ruby Falls' an underground cave with a waterfall at the very end of it, and coincidentally, fulfilling an item on my bucket list: to explore a cave. I also got to learn more about the history of the civil war at the 'Battles for Chattanooga Museums' on Lookout Mountain. Having always had a fondness for history, especially war history, this was

immensely satisfying. We next went to Etowah, a tiny (is it what they'd call a 'one-horse' town?) town south of Tennessee, where we visited the Tennessee Valley Railroad Museum, and took a train along the Hiwassee river, where we passed ghost towns along the way. As one who was born in a city-state and had never actually left the city in my whole life, these experiences were firsts for me, and I could not help the amazement I felt, from the fact that a town could only have a population of 3490 people (the high school I studied in had a population of only slightly less!), to the greenery that went on seemingly endlessly, with mountains in the backdrop. These were all incredibly new and exciting. I ended my week of travelling with a visit to their home in Mufreesboro, where I couldn't help but envy the rows and rows of beautiful suburban houses, and the giant, picturesque lake they sat in front of.



Naturally, one cannot talk about culture in Nashville, the 'Music City' without mentioning country music. I attended the Grand Ole Opry, the longest running country music radio show. I was initially sceptical of the huge fanfare that surrounded country music, and the show in general, having never really been fond of it, but the show turned out to be quite spectacular. Country music truly had a way of inducing nostalgia, what with their common themes of home, family, and life in general. The crowd was generally rowdy and spontaneous, another stark contrast between the more stoic/ stony faced nature of Singaporean crowds, and the music was great, less so for the music itself, but more for the whimsical lyrics that told many a stories. There was also some Christian rock mixed in, not surprising, given that Tennessee is within the 'Bible Belt'.

In conclusion, this experience has been one of the most culturally divergent experience I have ever encountered in my life, and I enjoyed it much more than I had expected myself to. I really enjoying spotting and connecting aspects of the culture I had encountered in books or movie, it was fun watching a place come to life as I did so. I also found identifying the cultural differences between Singapore, U.K and the U.S to be quite an entertaining past time. I think I was also incredible fortunate to have met such lovely hosts, both the people at the lab and my landlady, who offered an insider's view into American culture, little things such as the way taxes worked, the tipping culture and even fun facts about gun ownership, insights I would not have gained as a tourist.

Afterword

To me, this internship everything I had hoped it to be, and so much more. It will definitely leave a lasting memory. It was the first time I had gone to the US, the first time I had worked in a lab, the first time I had taken a train...it was the advent of beginnings. It gave me a much clearer idea of what I wanted to do in the future and reminded me of how much I loved Science. If I ever do end up in scientific research, I know without a doubt that this experience would have played a huge role. Moving forward, I plan to (hopefully) secure a few more scientific internships in the summers to come, and should everything go well, I hope to find myself in a PhD program sometime in the future. I did not get to complete some of my outlined volunteer work due to strict J1 visa guidelines and

immunisation requirements, but I think I had gotten more than I could bargained for. I truly did not expect to love it as much as I did.

Acknowledgements

Again, I cannot reiterate what an amazing time I had, and how incredible, incredibly grateful I am. I must thank many people for giving me this opportunity. First, I'd like to thank Professor Michael Johnston, for the letter of recommendation that won me the scholarship; Corpus Christi's College, the alumni and the group of people that awarded me the scholarship; Marija Zanic, for her incredible guidance and orchestration of my internship and last but not least, Corpus Christi Alumni, Beth Lawrence, of whom mentored me every step of the way, and from whom I learned the most. This experience would not have been possible without any of them.

Arthur Morris

With the funding I received from the Expanding Horizons Scholarship I was able to travel to Ithaca, New York, to spend a month working at the Cornell Laboratory for Accelerator ScienceS and Education (CLASSE). I joined a group of about 20 U.S. students on the CLASSE Research Experience for Undergraduates (REU). Specifically, I worked in the Wilson Synchrotron Laboratory on CBETA, the Cornell and Brookhaven National Laboratory (BNL) Energy Recovery Linac (linear accelerator) (ERL) Test Accelerator. CBETA is a new experimental accelerator which will be used to test a number of new technologies. I was incredibly excited to be given the opportunity to attend, especially given the programme is usually only open to students from the US who have completed their second year at university.



Particle accelerators

Before I can explain the project I worked on at Cornell, I need to explain some of the basics of accelerator physics.

In a particle accelerator tiny particles such as protons and electrons are accelerated by magnets to form a beam of high energy radiation. The uses of accelerators are very wide ranging, from investigating the fundamental properties of the universe, to new ways of treating different forms of cancer. This is just part of what makes them so exciting.

Although one might imagine a particle beam to be of the order of the size of the particles which it is made up of, the mutual repulsions of the particles in the beam make it a macroscopic size. To give an idea of the scale, the 'radius' of an electron is approximately two billion-trillionths of a meter, whereas an electron beam might have a diameter of anywhere between two and twenty millimetres – a huge difference in magnitude.

After acknowledging that the beam has a non-negligible size, it is natural to ask what shape it is. A particle beam is composed of a great number of 'packets', each with billions of particles, circulating at a great fraction of the speed of light. It would be entirely impractical to pinpoint the position of each individual particle, so instead it is characterised by a 'distribution', specifying the density of particles in a given region. As the particles travel at such high speeds, it is very difficult to

determine a shape in the direction of their motion. For this reason the shape is described by a cross section perpendicular to the particles' motion.

A simple model for this would be to describe it as a normal distribution, where the likelihood that a particle is a certain distance from some mean position decreases the further away from the centre it is. Unfortunately for accelerator physicists, in reality the shape of the beam isn't nearly this simple. Whilst it is true that the beam generally consists of a highly concentrated central region surrounded by a low intensity outer portion, the actual density of the beam does not fit a Gaussian distribution, nor any other standard model such as this – it isn't even radially symmetric. The internal dynamics of the beam are so complex and chaotic that an accurate picture of the profile of any given beam can only be determined through experimental means.

There is no widely accepted definition of the halo of a particle beam in an accelerator, but it is generally taken to be the very low intensity distribution of particles surrounding the main 'core' of the beam. The great difference in intensity between the core of the beam and the halo makes it very difficult to measure the halo distribution. The core usually dominates any measurements, making the halo negligible.

An everyday example of this is attempting to take a photo of a dark object against a bright background with a digital camera: the high intensity light from the background quickly saturates the CCD (charge coupled device) pixels in the camera sensor, giving an image where the object is silhouetted, and no fine detail can be discerned in it. Continuing to collect light in a pixel after it is saturated causes the charge collected in it to overflow to neighbouring pixels, creating defects in the image. The CCDs cannot be exposed for long enough to pick up on fine details of the dark object without greatly overexposing the background and decreasing the image quality.

The halo of a particle beam can cause big problems if no precautions are taken to minimise the number of particles in it. Particles outside of the central region of the beam are less accurately controlled by the magnets in the accelerator as they lie outside the region where the magnetic field has been specially designed to focus particles, so they can easily be scattered into the components surrounding the beam. Despite their size, the sheer number of particles in the beam, coupled with their high energies means that stray particles can cause considerable damage to these components when they collide with them. It is possible to use radiation resistant devices in place of regular ones, but these are far more expensive and generally don't last particularly long when exposed to the high radiation environment of a particle accelerator.

My research

This is the problem the CBETA team was looking for a solution to – they wished to minimise any damage to beamline components from the outer stray particles, but had no means of detecting and characterising the profile of the beam to enable them to do so. I was given the task of looking into published research in the area to produce a report evaluating several different possible means of imaging the low intensity halo.

Initial research indicated to me that the issue in the measurement of a beam halo is dynamic range. Defined as the ratio of the highest to lowest possible intensity measurements a given device is capable of recording, dynamic range gives an idea of how well a device is able to measure the variation in a given quantity. In the above analogy, the dynamic range of the camera is the ratio of the amount of light absorbed in the most exposed region of the photo, the brightest area, to the least exposed, the darkest. The dynamic range of a typical digital camera is usually of the order 10^4 .

After searching through a multitude of papers on topics related to the detection of electron beam halos, I settled on three in particular: wire scanner, laser wire scanner and halo masking monitors. I will now outline the ideas, the principles of their operation, and their advantages and disadvantages.

Wire scanners

A thin metallic or carbon wire in an electron beam captures particles. The most basic method of detecting a beam and its halo is to run such a wire through the beam and measure the current through it at each position. An ammeter with high time and current resolution measures the low currents in the beam as the wire is moved across it. The signal from the wire is small due to the low intensity of the electrons from the beam, so requires amplification with a gain of 10 or 100.

As the wire passes through the central region of the beam, the intensity it measures is not just that of the core, but also the halo. As I previously mentioned, the distribution of particles in the beam is not a perfect Gaussian, and in fact varies significantly from beam to beam. It is therefore impossible to determine the intensity of the outer halo compared to just the central region of the beam, as in order to decipher the data from the device, you must first know the distribution of the beam – which is exactly the information required in the first place. The dynamic range achieved with this setup ($\sim 10^4$) is not high enough to measure the fine details of the outer halo.

Laser wire scanners

When a photon (a particle of light) hits a stationary electron, the particles scatter elastically in a manner similar to that of two colliding snooker balls. This is known as Compton scattering, and is the driving principle of the operation of a laser wire beam halo monitor.

In a laser wire beam halo monitor, a laser is shone perpendicular to the beam. Light from the laser scatters off the electrons in the beam, and the number and energy of scattered photons at a particular angle is measured. The number of photons that are scattered varies with the density of electrons at the region where the beam is shone. Therefore, by moving the laser across the beam and measuring the intensity of scattered light with a scintillator (a device used for measuring very low intensity bursts of light), the distribution of the particles in the beam can, in theory, be determined.

Despite being quite a neat idea, laser wire beam halo monitors suffer from the same issue as regular laser wire monitors – the device simply doesn't provide enough information to allow the profile of the beam to be determined. In the paper detailing the method, the authors assumed that the shape was Gaussian - an entirely invalid assumption which showed me that in practice, using a laser wire to measure beam halo is very impractical and not at all useful.

Halo masking monitor

A well established and highly effective technique for imaging and measuring the transverse profile of a beam is to place a phosphor screen in the beam line at 90° to the direction of the particles, and use a high resolution CCD camera to image the light emitted. The light produced by the phosphor at any given point is proportional to the number of incident particles. This allows a 2D, rather than just 1D, plot of the beam intensity to be produced.

However, this method is limited by the saturation point of the CCDs in the camera sensor - the point at which one of the pixels is 'full' of charge and can no longer hold any more. The maximum dynamic range achievable is only that of the camera used. Typical CCD cameras do not have a high enough dynamic range to be able to image both the core and the halo simultaneously: the very high intensity core of the beam washes out the images taken by the camera, making it impossible to view the halo.

The method of beam masking can be used to solve this problem. A digital micro-mirror device (DMD) consists of an array of microscopic square mirrors, each with two electrodes, one at each of two diagonally opposed corners, which allows the mirror to be angled to $\pm 12^\circ$. The configuration of each individual mirror can be controlled with a computer. The idea is to 'mask' the high intensity light from the centre of the beam by using a DMD to direct it away from the camera sensor. This allows the camera to take a longer exposure photo and capture more fine detail. In a series of passes the

light intensity incident on the sensor is incrementally stepped down, allowing the full image of the beam profile to be built up, with a much higher dynamic range than would otherwise be possible. The algorithm for producing a full image is: firstly, take a photo of the phosphor screen; secondly, use a computer to determine all the pixels which have an intensity above a threshold value and switch all the corresponding DMD mirrors to direct the light away from these pixels; finally, repeat this until no higher dynamic range image is achieved by successive images i.e. until noise dominates. Finally, the images are laid on top of one another to produce a single composite image. In the paper that I suggested the method, the authors claimed to achieve a dynamic range of 10^7 – much higher than any of the other methods.

One disadvantage of the DMD method is its insensitivity to time variations in the beam halo. The time required to saturate the CCDs to form an image increases exponentially with each stage, with the longest exposure images taking ~ 50s to capture the very low intensity radiation. The effect of this is a 'motion blur', identical to the blur seen in any normal long-exposure photo. At such low intensities this is virtually unavoidable - if the measurement were only taken over a short periods of time then it would be very difficult to distinguish the signal from random noise. The method also has the disadvantage that it is destructive - placing a large object in the beam obviously obstructs it. The authors didn't consider the possibility that light is scattered in the screen when the beam passes through. This effect could substantially alter the outcome of the measurements, especially considering the extremely low intensities that are measured in the halo. In my report I proposed that the issue could be solved by simply creating a series of phosphor screens with holes to substitute for the regular screen: after measuring the halo of a beam with the normal screen, it could be replaced with one with a hole, and the hole positioned where the centre of the beam was measured to be; when measuring the beam again, the core would pass through the hole and would certainly not be scattered off the screen. However, this method assumes that the position of the beam is constant across multiple measurements, which may not be the case.

My conclusions

In my report I recommended that the halo masking method be used as it is the only one which allows the full transverse profile of the beam to be imaged rather than simply a one dimensional trace across it, and that it also gives the highest dynamic range measurements of any of the methods.

Previous methods of minimising beam halo at CBETA relied somewhat on trial and error: through finely adjusting the parameters of the accelerator the radiation detected was sought to be minimised. With the inclusion of a beam halo monitor at several points around the ring the effect of these adjustments could be quantitatively characterised, perhaps giving an insight into why the changes help with reducing the radiation. The installation of one or more such monitors along the beam line would certainly help reduce the time required to diagnose issues with the beam, and would therefore help prevent damage to the accelerator.

The report was eventually published internally as a 'CBETA technical note' and circulated to all the members of the experiment. Whilst not an original research paper, it was still very exciting to be able to say that I had actually meaningfully contributed to the work at CBETA. When I arrived I was expecting to be given a task that would be almost completely irrelevant, but it became clear to me that the project was actually very important. This made the work all the more interesting.

The rest of the trip

When I wasn't working on my project, I made as full a use of my time in New York as I could. It was really great to get to know the other students working on projects at Cornell at the same time. I arrived a couple of weeks later than everyone else as UK university summer terms finish later than US universities', but I very soon settled in. The number of people was pretty amazing, and it definitely highlighted to me just how lacking UK undergraduate research programs are. I made some really good friends at Cornell, and I will definitely try to keep in touch with them.



Ithaca is an incredibly beautiful place – Cornell is situated on the top of a hill, surrounded by beautiful gorges and waterfalls. I spent a lot of time exploring, and one day went to the nearby Taughannock Falls, the tallest waterfall east of the rocky mountains with a drop of something like 70m!

There were also a couple of day trips organised for all the summer research students. On one trip I visited Niagara Falls, which was quite simply stunning, and obviously put all the waterfalls in Ithaca to shame (although the surrounding area isn't nearly as pretty).

On the other I travelled to New York City. It's completely impossible to visit all the tourist attractions in one day, but I gave it my best shot. With a few friends, we went on a route where we ended up walking over 13 miles in one day! I thought the city was absolutely amazing and would definitely love to visit again.



My trip to Cornell would have been impossible without the funding provided to me by college. The month I spent there was fantastic, and certainly has had lasting impact on me – I am now even more sure that I would like to go in to academic research. Steve Peggs, the Alumnus who I communicated with to arrange the trip, told me that he would be delighted if a student from Corpus was able to return next year, to further solidify a relationship between Corpus physics and the Cornell accelerator lab. I hope that I can encourage a current fresher to get involved so that they can have as brilliant a trip as I did.

Alice Rubbra

Having never travelled outside of Europe, I hoped to use the Expanding Horizons scholarship to gain an increased cultural and political understanding of the United States. I visited New York, Boston, Philadelphia and Washington, so all my observations come from my experience of the North East coast. I have broken this report into different areas of observation, starting with the voluntary work I undertook in New York.

Overview

I left London Heathrow for New York JFK on Friday afternoon 31st August. On arrival in New York, I stayed with a friend for the weekend before moving to an Airbnb close to my workplace in Washington Heights. Spending two and a half weeks in New York, I took a weekend in the middle to travel to Boston. After this it was two days in Philadelphia and three days in Washington D.C. before flying out from Baltimore BWI on Monday 24th September and arriving back in London on Tuesday 25th.

The work

The primary goal of my trip was to gain experience of some of the difficulties the education sector faces in the US. Having worked on many access and outreach programmes in Oxford, I wanted to see how the higher education sector functioned in America. Through a friend I was put in touch with the Armory Foundation in New York, which hopes to support disadvantaged students with their college applications. It was agreed with the programme coordinator that I would be primarily helping students with their personal statements. I arrived on the first day thinking that the personal statement process would not be so different from UCAS forms in the UK. After glancing over some example statements, I realised that this was an entirely different process altogether. In the UK, the personal statement is treated as an opportunity for students to showcase why they want to study what they want to study. With all universities in the UK requiring the same fees and with the centralised UCAS application system, students should only be using their personal statement to focus on their desired course. At the charity it quickly became apparent that, because the students were looking to be fully or partially funded throughout their time at college, the personal statement was best used to illustrate their hardships and why they deserved to be supported. The personal statement was therefore not a tool to indicate subject interest, but almost a performance piece. The coordinator encouraged students to think about extreme difficulties that they faced and overcame, and to channel that into their writing. This tactic often left me with an odd feeling, as it was clear that some of the students did not wish to explore these experiences, let alone publish them to faceless university administrators. Yet this was one of the only channels they had to articulate why they needed funding. Without it, many faced the possibility of not being able to attend college at all.



Figure 1: New York skyline from the Rockefeller

Despite my reservations with the application process, I enjoyed meeting and discussing with students their areas of interest and what they hoped to study. I quickly learned about the differences between private and public colleges and what terms like SUNY and CUNY meant. The sheer amount of

paperwork students has to complete for colleges on top of all the financial aid applications seemed overwhelming, and this was after having to trawl through the thousands of college websites to see whether their grades fitted entry requirements. It's easy to imagine that without guidance students can quickly become lost in the process. Although UCAS is not a perfect system, it appears to allow for more meritocracy than the jumble of the American Common Application.



Figure 2: Manhattan from Roosevelt Island

Because I was spending over two weeks working in New York, I wanted a better understanding of how the city is run. I visited an education analyst at the Independent Budget Office (IBO) for New York. This office is, uniquely for the US, independent of the Mayor. The analyst discussed what I already suspected: policy and planning in the area of education was very jumbled. Much of the conversation has been occupied by the policy of free K2 education but has not been followed up with a wider discussion on improving the school system as a whole.

At the IBO, I was handed many reports on New York City's budget and was connected to another educational charity called CLARA, which also aimed to help disadvantaged students with college applications. Arriving at a CLARA volunteer training event, it was clear that this was a well-established charity with a far reach across the city. The charity asks schools to pick former students (now at college) to be trained to teach about college applications to seniors at their former schools. The charity makes a point of giving all their volunteers the living wage for their work. This last point revealed to me how wealthy the third sector in New York appeared to be. Although the Armory Foundation was smaller than CLARA, it too had very up to date resources in comparison to what I have seen at similar institutions in the UK. Although it is great that charities such as CLARA were able to pay students for their work, so that the programme did not become dominated by middle-class do-gooders such as myself, the finances of such charities indicated, worryingly, that they are heavily relied upon to help disadvantaged students. It was interesting to see first-hand evidence for the commonly-held opinion that, although the US leads in many policy fields, public education is not one of them.

Overall, the work I undertook in New York was incredibly interesting, but left me preoccupied with the multitude of issues in the education sector rather than over-excited by what I had experienced. Although it was satisfying to hear from the charity about the successful applications students have made, its work should not and cannot be a sustainable solution.

The landscape

New York's skyline has been rapidly shifting for several decades. Buildings constantly sprout up and others are torn down. This rapid movement of space appears at odds with the city below it—which is grimy. The subway is outdated. Although the city is built on a grid, many important municipalities appear illogical. The concourse at Penn Station is just one example of a lack of coherent planning. It is hard to see where the wealth found in the skyline is going. So, despite this rapid growth of buildings, the city does not appear to be progressing towards any one style or ideal. In fact, the rapid growth contrasted against the dirt suggests that the city is stuck. In many ways, the lack of investment in public services and spaces creates the sense of temporality. Having never visited before, I imagined

New York to be transforming at a more rapid pace than London. Instead I got the impression that the city was in many ways outdated. Whatever changed in the skyline of downtown Manhattan was not leading to improvements elsewhere.



Figure 3: Boston harbour

Travelling on the Amtrak to Boston, this sense of the temporary did not disappear. Along the track I saw detached houses, each with their own lawns and driveways, each with the same design of painted wooden slats. Yet still they were mismatched against each other. It appeared as though they were built wherever the owners' pleased, with no eye to the landscape around them. The impression I was left with was not of quaint suburbia, but of a cluster of houses that could so easily be packed up. In fact, sitting on the train I imagined the entire urban sprawl from New York to Boston being rolled up into one box

with the remaining landscape quickly recapturing the space. Irrespective of the number of flags presented outside of houses, it did not feel like the cities and towns had any permanency. Unlike in Europe, the landscape had not been moulded by architecture and vice versa. Though extreme care appeared to go into these homes, they did not sit comfortably in their surroundings.

Of course, most of these observations reveal a bias for Europe. Having always holidayed in France, Spain, Italy or Greece I am used to old and historic cities—ideally with ancient walls or ports. It is perhaps unfair of me to therefore judge America's northeast negatively for its seeming lack of long history. Because of this bias for history, my favourite city to walk around and explore was Philadelphia. It helped that the walls of buildings were often illustrated with beautiful murals and, being one of the oldest cities in the US, its streets were not designed for cars, making it easier and more pleasant to walk around. The presence or lack of large roads definitely made a difference to how much I liked an area. For example, in Boston I disliked Brookline where the houses seemed to sprawl off a large road, but enjoyed walking through Little Italy where I could stumble across old, picturesque homes. Walking alone through these cities you really understand how the car has completely dominated and shaped the American landscape.



Figure 4: Philadelphia's Magic Gardens

Washington D.C. was by far the strangest city I visited because, arriving on a weekend, it was a ghost town. Having relied on Airbnbs up to Washington, I found that those available in the city were not reliable and often the owners did not live in the homes themselves. For my final night I gave up on Airbnb and booked a hotel. This problem seemed to mirror the city itself, as it didn't appear to have 'a heart' or centre. It was as if Moorgate in the City of London on a weekend was the entire capital. However, what was lost on heart was made up for in free museum admissions. My tip for staying in Washington as a tourist would be to just go for one weekend and stay in a hotel by the Mall. Outside of this there was not much else going on.

The food

I was not disappointed by the food. Whilst it took me a week to orientate myself around a New York deli, I did eventually work out what made a good sandwich. Travelling alone, eating out is always difficult but thankfully New York offers many southeast Asian restaurants, which are ideal for lone travellers as you are often sat at a bar (top tip). Momofuku was a great place to get dinner (another tip). Eataly by Madison Square Gardens was also magical as you could walk around the market-style hall sampling different foods. Of course, I also ate at diners and had the classic pancakes, bacon and syrup alongside lots of bagels.



Figure 5: Birthplace of the Philly cheese steak



Figure 6: Philly Cheese Steak

Throughout my travels I tried to eat the ‘speciality’ of each city I visited. So in Boston, this involved sampling a lobster roll—great but very meaty. In Philadelphia, I walked to the origin of the Philly cheesesteak at Pats King of Steaks. I was very apprehensive about American food being too meaty, cheesy and generally served in too big portions. The Philly cheesesteak was all these things, but I’m glad I tried it out. Pats King of Steaks did offer good quality steak at least. Again my European bias often left me craving *good* cheese. I was also shocked at the price of fruit and veg at New York supermarkets and have not yet managed to work out why it costs so much for grapes (if you know why, please tell me!)

Other highlights included my first ice-cream sandwich (just ice-cream between two cookies) and a slice of ‘crack pie’ from a Milk Bar in New York (if you do not know what this is, watch *Chef’s Table* on Netflix). The food market in Philadelphia was incredible and I would definitely recommend a trip to the city just for this. The market offers a mix of different foods but a particular draw are the Pennsylvania Dutch stalls. I spent at least two hours wandering around sampling different dishes.

Cultural highlights

I cannot give a report on my trip to the US without also discussing the cultural activities I experienced. Having some free time in the morning before volunteering at the Armory in New York, over two and a half weeks I manage to complete most of the tourist highlights. Below is a detailed list of everything I did in each city. In bold are my favourite places.

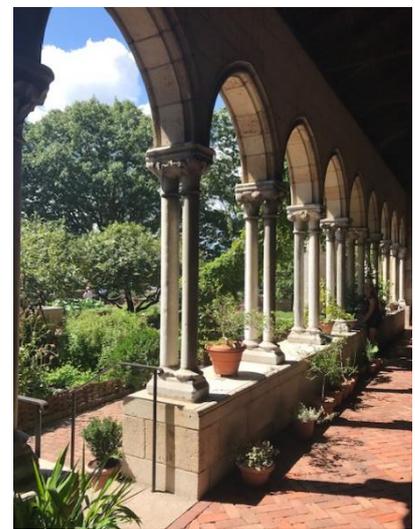


Figure 7: The MET Cloisters

Saturday 1st: The Strand Bookshop, Isamu Noguchi Gallery

Sunday 2nd: The High Line, The Whitney Museum of Art, **Brooklyn Museum**

Monday 3rd: **Roosevelt Island**, Grand Central Station, Eataly

Tuesday 4th: **The MET Cloisters**

Wednesday 5th: The MET and 9/11 memorial

Thursday 6th: Staten Island Ferry, Cinema to watch Crazy Rich Asians

Friday 7th: Film festival and a bar in Williamsburg

Saturday 8th: Caribbean food in Harlem and The Guggenheim Museum

Sunday 9th: Brooklyn flea market, **Brooklyn Bridge Park**

Monday 10th: The United Nations Head Quarters

Tuesday 11th: **Café Wha at West 4th Street**

Wednesday 12th: The Book of Mormon on Broadway

Thursday 13th: Milk Bar, meeting with Liza Papas

Friday 14th: Arrival in Boston

Saturday 15th: Harvard University, Museum of Fine Art, Freedom Trail ending with Bunkers Monument, the harbour and Boston tea party ships

Sunday 16th: **Isabella Stewart Gardner Museum** and back to New York

Monday 17th: Natural History Museum (NY)

Tuesday 18th: MoMA, Rockefeller Centre at night

Wednesday 19th: Travel to Philadelphia, **Philadelphia's Magic Gardens**, Washington Square Garden

Thursday 20th: Liberty Bell, **Food Market**, The Barnes Foundation, Rodin Museum, National Constitution Centre

Friday 21st: Travel to Washington D.C.

Saturday 22nd: Supreme Court, National Mall, **National Museum of Women in the Arts**

Sunday 23rd: National Archives, **Tango-Jazz trio in the National Gallery of Art**

Monday 24th: Air and Space Museum, travel to BWI airport

Figure 8: Collection of memorabilia



Having visited pretty much every art museum possible on the northeast coast, I found it interesting that alongside the Sargents, all the museums seemed to have a vast collection of works from French artists. I have never seen so many Renoirs, Cezannes, Manets, Monets, and Matisse. I would be interested to know whether this is just a coincidence or whether historical ties to France betray an active interest in French artwork. The two museums I favoured best did not heavily rely on French work: the Brooklyn Museum and the Isabella Stewart Gardner Museum. The former I liked for its floor on feminist art (with the famous *Dinner Party*) and for its whole installations of old settler houses from New York state. The Isabella Stewart Gardner Museum was just an incredible space influenced mainly by the Italian Renaissance (so not France).

Regarding regeneration projects, the High Line and Brooklyn Bridge Park in New York were impressive projects of recapturing formerly industrial or disused spaces. I would love to see more innovative design here in London. This new urban regeneration contrasted against places such as the MET cloisters, but the latter fascinated me equally for its bizarre nature— they just shipped a French monastery across the Atlantic and set it up way uptown in Manhattan. Whilst in New York, I also visited Café Wha in the East Village for their Tuesday funk night. The historical haunt of figures such as Jimi Hendrix, the bar was definitely a highlight of visiting the city.



In Philadelphia, I visited the Magic Gardens which consisted of a garden entirely made of mosaics. It was designed by the artist Isaiah Zagar who still lives just down the street and continues to work on the project. In Washington, I managed to get a free entry into the National Museum of Women in the Arts which housed a great collection of mixed styles and mediums. By far the best event I attended in the capital was a free jazz concert in the Museum of Fine Art. It was held in one of the museum's atrium and was a perfectly relaxing way to end a very hectic trip!

Figure 9: Collection of memorabilia

Travelling solo



Figure 10: The National Mall

I began 2018 promising myself that the year would be solely focused on my development, whether that meant in completing finals, starting in the Civil Service or travelling alone. Although my Expanding Horizons trip was focused on US culture, I also wanted to test myself in moving and working alone. Barring New York, I had very few connections in the States, so had to be very proactive in searching for things to do. My summer was filled visiting friends, so it was not until I crossed the ocean that I realised the full repercussions of travelling alone as a woman. Ironically, I felt safest in New York where the city always felt busy and watchful. The hardest parts of my journey were actually Washington D.C. and Boston where I had a few negative incidents with over-interested men and opportunistic petty thieves. As I have many female friends who've studied alone abroad, I did not think I would face many issues. However, studying and travelling are two very different things and the trip certainly wizened me to how difficult it can be for a woman to explore the world independently. I chose to travel to the

northeast because I thought that would be the easiest place to first experience solo travel. English is the primary language and I was told that it was basically a distorted mirror of the UK. Travelling alone really challenged this view. Moving alone in a new environment, all I noticed were the differences between home and the US. Although difficult at times, I cannot think of a better way of understanding a country and a place than moving through it independently. Because I was alone, I imagined myself to be not a tourist, but a fly on the wall, quietly observing the northeast coast.

Rima Shah

In August 2018, I was lucky enough to be sponsored by the Expanding Horizons programme, to travel to the Maldives to volunteer for 2 weeks. This trip was truly life changing and really opened my eyes. It frequently pushed me out of my comfort zone and forced me to think in a different way. Learning about a culture and lifestyle, so different to our own, was fascinating and really made me question some of my own lifestyle choices and priorities.

The first challenge was actually getting to the island, Hoadedhdhoo, where I would be based for the 2 weeks. Traveling to and within the Maldives, a group of 2000 islands, is not the easiest task. I left home at 5am on Friday 17th August and departed from Heathrow at around 11am. Due to the great distance, direct flights to the Maldives were infrequent and very expensive so I have to take a flight to Moscow airport, where I had a layover for 7 hours. My plan was to sleep at the airport but I managed to get very little sleep due to the high noise levels, particularly from the constant announcements about gate changes and flight delays. After a sleepless night, I arrived at Venela International airport, situated on the island of Malé, on Saturday morning at around 9am (local time which was 4 hours ahead of the UK). I was greeted by one of the locals holding a PMGY sign (the company I was volunteering with). The first thing I did was exchange some money to the local currency, the Rufiya. Usually when I travel I prefer to convert some currency before arriving but this was the first time I could not do this. This was because the Rufiya is a closed currency which means that it is not freely available outside the Maldives so must be exchanged on arrival. I was then introduced to four (of five) other girls I would be spending the next couple of weeks with. For me this was very much outside of my comfort zone, because I am quite shy and nobody seemed to have much energy to talk (unsurprising after the long journeys to get here!). We sat at a café for a few hours and were then joined, at around 1pm, by our sixth companion, who was from the US. Our internal flight, to Kaadedhdhoo, was scheduled for 2:30pm, so we went through security (which was incredibly basic compared to the UK) and then waited for our flight. Unfortunately for us, the wait was not over because, due to bad weather conditions, the flight was severely delayed, with no indication as to when it would arrive. We sat waiting, hungry and exhausted, until finally at around 5:30pm, our flight arrived! Our flight to Kaadedhdhoo took approximately 1 hour, as we flew over hundreds of islands dotted across the sea. The views from the plane were stunning! I had never seen such clear water, with such bright shades of blue and turquoise and clean, white sand. We were greeted at the airport by a couple of volunteers who seemed quite shy, although we later discovered this was more of a cultural difference since girls and boys were separated a lot more in their culture. Just when we thought we had finally reached our destination, we were told that we had to take a journey by boat in order to reach the actual island we would be staying on! We walked down to the shore, lined with tall coconut trees and boarded the boat. I would be lying if I said I wasn't slightly scared that we would drown, especially because the boat was quite small and had all our luggage as well as 10 people, and it moved a lot faster than I was expecting since it was a motor boat, but luckily we all made it to the island in one piece! I discovered that the boats were a lot safer than I anticipated and that the drivers actually needed a boat license so knew what they were doing. After a long and tiring journey, we were thankful to be greeted with a coconut each (which was incredibly refreshing), and finally our rooms! I was pleased to discover that the rooms, although basic, were relatively clean and, to my surprise, had air conditioning, which was definitely needed with daytime temperatures averaging above 30 degrees Celsius! I had to share room with two of the other girls, which initially I found difficult since I had to trust people who I had practically just met, but over the next few days, we got to know each other and this became a lot easier. On the night we arrived, I couldn't help but feel



homesick, and being very tired and sleep deprived didn't help but after a good night's sleep I felt a lot better and ready to explore the island!

The next morning we had a slow start and after a long wait for breakfast we had a wander around the island. Our two guides were still very shy and didn't say much, but I was keen to learn so tried starting conversations and asking questions, which they responded very well and were happy to answer. I was shocked to discover just how much their lifestyle differed from our own. Some of the key things that stood out to me were:

- **Size:** the island is tiny with less than 1000 inhabitants and everywhere being commutable by foot. This has its advantages and disadvantages because it meant everybody knew everyone so there was a real sense of community, however gossip would also spread very quickly! Because the Maldives consists of so many islands, many of them are uninhabited and I was lucky enough to have the opportunity to visit one of the uninhabited islands and even have a barbeque there. After living in a city all my life, it felt so nice and peaceful, going somewhere uninfluenced by humans. It was stunning and I was lucky enough to see the most stunning sunset I have ever seen!
- **Transport:** There were only a few cars on the island, which I learnt was more of a status thing, and the "roads" (made of mud, not tarmac) were practically empty with the exception of a few motorcycles. In contrast to the UK, the main form of transport was by boat. Most of the boats ran on petrol (although this was refilled by hand from large containers, as opposed to having petrol stations!)
- **Electricity:** There was 1 power plant (i.e. one small, noisy building), which ran on diesel, and provided electricity for the whole island! This meant that whenever there were any issues with the generator, there was no back-up so the whole island would lose power! Every night at midnight, the generator was reset so the power would go out for a few minutes, but other than that, during the daytime the electricity ran surprisingly well and only went out a couple of times during the two weeks, causing little inconvenience (except the lack of AC in the blazing heat) and was repaired quickly.
- **Shops & amenities:** Given the size of the island, there were only a couple of small shops which sold a few basic food items. Both shops were tiny, and fitting more than 3 people at a time was a squeeze! Surprisingly they sold a lot of packaged food (e.g. Toblerone and Cadbury) which was imported from nearby countries such as India and Sri Lanka. In contrast to the UK, the shops would be closed at prayer times so would open and close multiple times a day.
- **Water:** We were told not to drink tap water so instead were given bottled water but to my surprise, the locals all also drank bottled water. I found this shocking because in any of the other countries I had travelled to in the past, where I had to drink bottled water, the locals were usually fine with drinking tap water as they had built up immunity over the years, but because most of the locals, particularly the younger generation, were brought up drinking bottled water, they hadn't developed this immunity. This saddened me because it seemed like an incredible waste of resources; firstly the water had to be packaged and shipped by



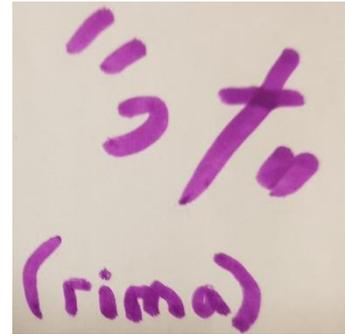
boat the island and then the countless plastic bottles weren't recycled since there were no recycling facilities in the Maldives.

- **Food:** The two primary sources of income in the Maldives come from tourism and fishing. This means that the staple diet in the Maldives is fish. The locals would eat fish/ dishes made from fish, for breakfast, lunch and dinner. Being a vegan, finding food I could eat was even more difficult than I was anticipating. The concept of being vegan, or even vegetarian, was unheard of by the locals but I must admire the effort they made to accommodate for my dietary requirements once I did explain them. This really highlighted how caring the culture was and definitely helped in making me feel less homesick.
- **Religion:** Unlike anywhere I had visited before, to my surprise, the Maldives is 100% Muslim! When I first discovered this I found it hard to believe, but then I discovered that this was due to the fact that it was the law that everybody had to be Muslim. After talking more to the locals, particularly the younger generation, I discovered that in fact, although everybody was officially Muslim and it was frowned upon a lot if you didn't obey the rules set out in the religion, a lot of them felt quite oppressed and didn't actually follow the religion strictly. For example, drinking is prohibited in Islam and alcohol is not readily available, however foreigners are allowed so it is widely available in the resorts so many of the younger guys would exploit this opportunity to drink, whilst away from their family, despite knowing that they would be arrested if caught. Another thing, which took a while to get used to was the call to prayer 5 times a day. The prayers would be read out from the top of a tall tower from a large speaker, so that the whole island could hear. Initially this did make me feel slightly uncomfortable as it felt like the religion was being imposed on everyone, however within no time whatsoever, I got used to it because it happened so frequently and didn't even notice.
- **Family:** The average family size is a lot larger than it is in the UK and having more than 5 children was the norm (and in some families even more than 10!). As well as that, living with your extended family is also common, although some couples would move out after marriage and this is also acceptable. Due to the population of the island being so small, I discovered that almost everybody was related, in some way or the other, to every other person on the island and that there were only in fact 2 very large families predominantly living on the island.
- **Gender:** Gender inequality was evident, and seemed to be due to a mixture of religious and cultural factors. Some of the main difference were that the men of the family were the breadwinners whereas the women had the role of looking after and raising the children. Also, something I found shocking was that women were obliged to wear full-sleeves in public (i.e. keep their arms and legs covered). To my relief, tourists were exempt from this law, but I couldn't help feel sorry for the women, being fully covered in the blazing heat and even whilst playing sports whereas the men were free to go around in shorts and shorts-sleeves.
- **Smoking:** To my surprise, despite smoking being no cheaper than it was in the UK, approximately 80-90% of the men smoked (but none of the women)! It was particularly prevalent amongst the younger generation and seemed to be the culture/norm.
- **Crime:** Compared to the UK, crime levels were extremely low. Again this is probably due to religious/ cultural factors. Also, with the island being so small, and everyone knowing everyone, it would be hard to get away with crime and very much frowned upon. I genuinely felt much safer walking in the dark/ alone there than I do in the UK, which really made me question the kind of society we live in. Also to my surprise, the school building was left unlocked at all times so anybody could enter/leave at any time but despite this, nothing would ever go missing and there was no vandalism. This showed how much of a sense of

trust there was amongst the inhabitants. I did enquire about if there were any prisons and, unsurprisingly, there were none on the island, however there was one on one of the larger islands, although it was rare for anybody from the island to need to be sent there.

➤ **Land:** One of the most shocking things I found out was that you couldn't buy or sell land! The land was owned by the government, but it was distributed to all the inhabitants of the Maldives. This was great because it means there is no homelessness, although it makes it very difficult for non-Maldivian people to come and settle in the Maldives. There were of course lots of rules regarding the running of businesses, particularly resorts which were far too complex for me to understand, but the whole concept of nobody owning land was foreign to me.

➤ **Language:** The primary language spoken in the Maldives is Dhivehi. This language is only spoken in the Maldives, and like Arabic, is read from right to left. We had a cultural exchange class where we learnt a few key phrases such as, "kihineh" (how are you?) & "ran'galhu, shukuriyya" (fine, thank you). I found it fascinating to learn about their alphabet and, despite being completely different, it had many parallels with my mother tongue (Gujarati) in terms of how different vowel sounds are written. With the assistance of a handout of the alphabet, I was able to write my name in Dhivehi and even, very slowly, read some words



(although I didn't have a clue what they meant!). Alongside Dhivehi, all the younger generation were fluent in English. Many of the young children surprised me with how good their English was, better than a lot of children in the UK of the same age! The children were very keen to talk to us and practice their English, and sometimes talked so fast that I struggled to follow! I was truly impressed by their education system, especially seeing the contrast between the older generations (who knew little/no English) and the younger generation who were all fluent! Additionally, I discovered that, because the Qur'an (holy book in Islam) is in Arabic, many of the residents knew how to read/ were learning how to read Arabic. I also found it quite amusing that many of the locals listened to Bollywood music and watched Bollywood movies, with varying degrees of understanding of Hindi, so often they would sing songs they didn't understand the meaning of or would have to watch with subtitles!

➤ **Politics:** Since the election was soon approaching (end of September) there was a lot of political campaigns going on.

There were posters and flags of the two main opposing parties up all around the island and even in the sea! Unlike the UK, where there are a lot more



boundaries on how far parties can go to express their views, in the Maldives it was a lot more open and hard to avoid. For example, party members would sometimes even drive around the island talking out of a microphone. Unfortunately, since they were talking in Dhivehi, I couldn't understand what they were saying but it was clear that a lot of people held strong opinions and weren't afraid to express them.



By far, the most memorable part of my trip was the Eid celebrations since I got to spend time with all the locals and experience their culture first-hand. For Eid, the island had a number of local traditions, where locals of all ages take part. I really felt the sense of community and was made to feel part of the culture. We spent 2 days celebrating Eid, one where the men dressed up and the other where the women did. The outfits were all made from plants. I remember, at the time, struggling to create these outfits in the scorching afternoon heat (over 30 degrees

Celsius), but it was definitely worth it and I enjoyed spending time with the locals. The idea of the tradition was about overcoming evil spirits (us representing the evil spirits). I am not normally a fan of getting mucky or dancing, but I really pushed myself out of my comfort zone and took part in all the traditions, which involved putting coloured paints and powders on each other and parading through the island, ending with jumping into the sea! Although I was terrified, since I am not a strong swimmer and the water was very deep, I managed to summon up the courage to jump into the sea fully clothed because I really wanted to embrace their culture and I am very pleased I did!

Seen as poverty wasn't a problem, one of the major problems was waste management. Unfortunately, littering was very common, in fact the norm, as there was no refuse collection system or recycling facilities. One of the most fulfilling things I did whilst in the Maldives was litter picking. This seemed like one of the main ways in which I could actually make a difference, so I went out of my way and often spent the free time in the evening picking litter alone, rather than relaxing as this genuinely made me feel better. Unfortunately there was far too much litter for me to pick it all, particularly on the beaches, but I did manage to fill a lot of blackbags!



Another activity I found very fulfilling was coral planting. I have always been passionate about environmental conservation and sustainability, for example I was Environment & Ethics officer for Corpus Christi College. I have often watched programs about some of the major problems and felt quite helpless in not being able to do too much to help apart from conserve energy and raise money for environmental organisations. This was the first time I had the opportunity to actually help first hand. It involved chopping off small pieces of coral (which weren't dead) and attaching

them to a structure which we placed in the sea, with the idea being that they would grow over time, creating more coral.

To conclude, this summer was the first time I ever travelled without any familiar faces and with very little contact with home so it was a real challenge. Being half way across the world, on a small island in the “middle of nowhere” really was frightening. However overcoming the initial feelings of being stranded and the homesickness really helped increase my resilience and independence. I really enjoyed learning about a very different culture and am glad that I was able to contribute in a number of ways such as trash picking, coral planting, building renovation (by painting walls), mangrove planting, coconut tree planting and most of all, by endorsing the local culture and getting to know the people. I made loads of amazing memories and met some incredible people. I feel extremely lucky to have been given this opportunity and cannot thank Corpus Christi College and the benefactors of this scheme enough. I have learnt a great deal, both about the country and culture as well as about myself. These lessons will stay with me forever so thank you very much.

