(#1) Life At Christ Church: *An Introduction*

I hope things are going well on the other side of the world and apologies for this lengthy (but hopefully) interesting read! Things have been very busy recently, but I have found some time on an overcast Sunday evening to write these lines which is quite a nice change from the course-readings!

Today marks the end of my second week at Oxford in Michaelmas Term ("**MT**"). To be more specific, it is the end of Week 1 following Week 0 (each term has 9 weeks in total including week 0). This week I was fortunate enough to meet up with Haydn, Charles Torlesse, and James Armitage! These were a great couple of days where I heard more about the rich history of The House (Christ Church), the origins of the Wakefield Scholarship, and tried out some of Oxfords finest coffee (courtesy of James)! Haydn made many great suggestions, one of those, that I should document weekly or bi-weekly an update on what has been happening. This would act as a sort of informal diary and would provide the knowledge for the next Wakefield Scholars, while also being a record of my time here for myself!

To begin: The flights from New Zealand to England were very standard. I flew through Auckland-LA-Heathrow. I had organised my UK Visa well in advance and already had an ESTA for the USA from our previous visit to Vancouver/California, so this made for a swift arrival! I made my way through the usual clearance processes and collected my bags. Now what… I'm in the UK! Full of excitement despite the 30-hours of sleep deprived flying, I plugged in my preloaded UK sim (given free as part of my Visa) and looked up directions to the Oxford Bus Company – a 24/7 transport service that picks up passengers from Heathrow and drops them off to Oxford. Even better, one of the stops is for St Aldates i.e., the front door of Christ Church itself: Tom Gate! This fare cost me £27 and included bag space which I paid using the cash I got out from New Zealand – alternatively a (topped up) Wise card (travel card) would be sufficient.

I hopped off the bus with my bags and walked 5 steps to Tom Gate. I was politely greeted by the Porter who was fending off the waves of tourists wanting to view the quad – interestingly, The House tours sell out often and subsidise student costs for items like food. I explained to the Porter that I am a new student and wasn't sure where I needed to go, looking for a reception of sort. The Porter gave me exclusive access inside and directed me into the Porters Lodge ("**Plodge**") connected to Tom Gate. I headed in and was further greeted by more friendly Porters and Staff who asked for my name and gave me a quick introduction to The House, including to the two cats Meadow and Alice.

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I collected my lanyard and access tag and headed across the road to Saint Aldates Quad ("**SAQ**") – this may be different for other students depending on which accommodation they apply for. I would recommend SAQ and this is usually a first option for many students, those that miss out tend to provide financial proof too late, whether this is delays in scholarship logistics or other administrative elements, or those that just waited too long to sort it. This is important as it is a first-in-first-served process. SAQ being across the road means it is a 2-minute walk to The House, for meals, packages (delivered to the Plodge), the College Library, fresher events (hosted mostly at Christ Church or the Meadows) and is centrally located. I left my bags in my room and had a quick 'flat' tour to find the shared kitchen/bathroom and to see whether anyone else had arrived.

The next crucial thing is wanting to sleep and eat, after all it is 30 hours of transit from New Zealand, the problem is the rooms only come semi-furnished. If you were tech-savvy or had a lot of trust in the delivery services you could pre-order bedding and have it delivered to the Plodge. I did not do this, partly because I wasn't certain that my bed would be a single sized bed or a double. It is a single bed unless otherwise arranged for accessibility issues. I headed down to Westgate Mall and searched around for a Briscoes equivalent and ended up at John Lewis – Briscoes but without the sales. Picked up some essential items and headed back to SAQ with a hefty bill, this is when I began to appreciate the value of the GBP…

The next day I headed up to the Post Office and picked up my Biometric Residence Passport, I believe these will become an e-visa so there is no need to go into detail. I then went back through Tom Gate into Tom Quad and asked the Porters for directions to the Academic Office. After uploading copies of my Passport, Visa, and Biometric Residence Passport I was able to sign away in their New Students book and collect my Bodleian Card or Bod-card, my University ID. The access tag I collected from the Plodge gives building access to The House, while the Bod-card gives access to the University buildings and ensures the Porters know who I am when walking around the Quads and don't kick me out for not paying the tour fee. The Bod-card is also your best friend for meals. It can be topped up online and used for paying the meal bills in the hall at a 33 % discount, a much better idea than using Eftpos/Debit cards. I have purchased a season meal pass for dinners and am required to reserve a dinner spot for the Informal/Formal service, where again you use the Bod-card to check-in. This works out to be around £3.67 a dinner (a great deal).

Most of the other little things a student will feel their way through, like finding Tesco's/Sainsburys and coffee stores, or even exploring the College grounds by willingly swiping the access tag on every door to see if it will unlock. What may be important to note

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in the wrapping up of this email is the Freshers week. There are a lot of events on. Time is a very limited resource at Oxford so it should be rationed wisely. You do not need to attend all the events, particularly the ones that are not of interest. But I would recommend attending as many of the social events as possible as it was a great way for me to meet new people and see different parts of The House. It is also useful to know that Freshers week is Week 0 and University ***also*** starts in Week 0. There will be a crossover of timetables, but the essential events should be planned by the University and College to ensure attendance at required events, such as induction events, while the pottery classes and gardens tours are much less likely to be incorporated into the University timetabling. If there is free time, get started on the course early. It is important to get out and explore the city, but this will happen naturally as one attends different events and joins different clubs, so there is not a need to rush exploration as the reading lists do not get smaller… I would also recommend to the next scholar that they find some non-course related reading. I find this is a great way to practice reading while unwinding.

The first week can be a lot so communicating and asking questions with Porters, staff and university staff, as well as with college/university/club friends will make things much less stressful. This is somewhat a long way of saying I am loving it here! I am currently exploring how to find opportunities to stay longer and complete an DPhil if everything goes well. Funding often tends to be the major limitation as there is no shortage of ideas here, so finding how to access it is key. As Haydn suggested, I will continue to stay in touch with these updates to document the process. If there are any questions or interest in anything in particular, please let me know and I can write further! That's all I'll write for now as I better get back to reading *A Very Short Introduction: Quantum Theory* and *Marx* as a break from water-related readings!

p.s., I might try to set up a Water Club or at least brainstorm the idea to create one, so we will need more students to come to Oxford studying Water!

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A great way to head this is that Oxford is a busy place. There is an expectation by the lecturers that you will work throughout the holidays, whether this be your graded elective essay or to catch up on the number of readings you will not have time to complete during the term. Some classes we are given an entire textbook and expected to read or filter through as weekly reading – which is optimistic considering there are 6 separate classes (each with readings). In other words, there will almost certainly be a backlog of readings but it's important not to stress about this because the *holidays* are designed for a student to catchup – it is better viewed as a break from teaching rather than a holiday.

In the four weeks of the course we have already had the opportunity to visit Dorset, driving past the Stonehenge and Windsor Castle on the journey home, and Maidenhead to view the Jubilee River flood protection scheme. The course-organised Dorset trip was a great experience. It occurred **before** the lectures begun and was a great opportunity for us to meet the class in an informal setting whilst learning about UK water challenges. I have volunteered to be one of two class representatives and have been privileged to hear a lot of the class thoughts on this trip – which all share a common theme. The WSPM cohort has become a small family! Much of this I credit to both the people and the field trip. During the trip we were all crammed into a bus and forced to talk with each other, many of us made an effort to mix and mingle with as many of the classmates as we could, and this has been really beneficial for the course – some of my college friends are somewhat envious of how social and connected our class is! This has had a snowball effect and helped with learning, class discussions, group work, and even social events outside of course.

Another mention of The House is the ballot system for dinners. Every few weeks there is likely to be a *Guest Night* dinner which a student must ballot for, if they wish to go. If you unsuccessfully ballot then there is a higher chance you will be successful in later ballots. This may be a strategic element I am yet to fully understand, but some dinner ballots are *better* than others. Again, the Guest Night dinner occurs often, but there are also ballots for college exchanges, black-tie and white-tie dinners, events (Diwali, Halloween, Christmas), and others I am yet to see. While each of these have a representative price tag attached, the entries remain capped. My potential theory is that unless you wish to go to the Guest Night dinner (or try your luck with every ballot), save your ballot success rate for the more significant events. This again has considerations, the black-tie dinner is a very social-college event, while the Christmas dinner is designed for you to invite your supervisor. There are trade-offs, but that is part of the Oxford Life.

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I have also picked up Touch Rugby as I wanted a way to connect with fellow Oceania populations – homesickness (not that I have it yet), I have heard can be difficult to overcome. Touch is one of those sports that can be full-on or social. Unfortunately, I am far too competitive to treat it as a social sport, even though that is why I signed up. As a result Touch has taken up 8 hours of my week and will likely only increase as I was recently picked for one of the two BUCS teams to represent Oxford University. They have not said the teams are ranked by ability, but I am in the team with the best players. We have our first round of the regional tournament this Saturday. If all goes well I will end this academic year with both a half-blue for sports contributions and my academic qualification!

My last remark for this addition is Fresher Flu. Oxford is like every other university in that there is no desire to prevent the spread of fresher flu. It's baffling in all honesty. I have been sick twice in four weeks because of it! SO my top tip for the next scholar is to get on top of your vitamins. There are student deals at Holland and Barrett which may be *similar* to Chemist Warehouse? Basically, you can find cheaper vitamins and the staff are super friendly, knowledgeable, and helpful. I picked up some magnesium and fish oil and will likely head back for Vitamin C, D, and anything else that looks *healthy*. Another top tip on nutrition is smoothies. I have grown a small addiction to Tesco/Sainsbury smoothies. These are typically £2-3 / 750 mL and have added nutrients which to me seems like a no brainer for breakfast. Well alternatively, you could eat 6 apples, 1.5 bananas, 44 blackcurrants, 166 blueberries, 40 elderberries, and a dash of goji berry – but I repeat *Time is a very limited resource at Oxford so it should be rationed wisely*.

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(#3) Life at Christ Church: *Water Science, Policy, and Management*

As the year approaches an end, I write a third edition to the Life at Chch series. While my previous writings have focused on the experience of living in Oxford and my time at The House, this edition will highlight the intricacies of the education system here and break down the Water Science, Policy, and Management ("**WSPM**") course so that it can be better understood.

The purpose of this edition is to provide potential *teaching theft* – methods and approaches utilised at Oxford University that other universities or teaching facilities may want to replicate or incorporate. Plagiarism is strictly prohibited throughout academia which somewhat extends to teaching style and methods, however, advertising that the teaching approach has been adapted from the University of Oxford is a selling point in my opinion. I cannot speak for the undergraduate system in depth so my only mention on this is their tutor system. This is the same approach incorporated into New Zealand universities, but instead the focus here is on expert teaching in small groups – rather than to develop and apply concepts in more depth after taught lectures in large homework-like groups. I have heard positive comments about the tutor style here and would encourage that this is incorporated where possible (resourcing is likely a challenge for larger cohorts).

As for my graduate course, I am based at the School of Geography and the Environment ("**SoGE**") with other master's students taking environmental courses. Each student has a college (most are different) and my classes include only those taking the MSc or MPhil in WSPM. The master's courses are not integrated with each other, so we rarely cross paths with the students from other courses beyond the shared common room at SoGE. The same can be said about DPhil students within SoGE, except where they have been asked to present to our class reflecting on their previous studies. The main opportunity to integrate is during elective classes.

We select one elective in Michaelmas Term and another in Hilary Term based on what we are interested in. I chose *Water, Wastewater, and Sludge Treatment in the Urban Context*. The classes are limited to a maximum of 10 students and mine has 8 in total, so this is *like* the tutor system for undergraduates. As you can expect, 7 of the students are from the WSPM course and so there has not been a lot of integration with the other master's courses. For this elective we are each required to produce a 1,500-word formative essay on a topic we choose (the elective leader must confirm) and a 4,000-word summative essay completed during the break between MT and HT. There is supposed to be some consistency in the assessment approach across the electives to ensure it remains fair, but this is experiencing some change as some of

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the elective leaders modify the workload for their elective. The summative essays make up 20 % of the course grade (10 % for each elective), while the dissertation and exams both constitute 40 % of the grade (the breakdown is slightly different for the MPhil: 50 % Dissertation, 25 % Exams, 25 % Electives).

The WSPM course breakdown can be seen below. The main components are the 1) Dissertation, 2) Research Design and Skills, 3) Water Management, and 4) Electives (discussed above). The 1) Dissertation runs through the year where we are expected to develop an idea and find a supervisor over the terms (primarily HT). The bulk of the work is completed during the Summer break, including the research and write-up. Although a student (and I likely will) could start as early as they find a dissertation topic by beginning to draft a literature review and other core elements or by teasing out ideas in their elective essays. Reading some of the dissertations, the markers are impressed by the structure and framing of the research rather than what is actually produced – that I find to be a little interesting.

The 2) RDS module is taught over the year similar to the Dissertation period. This is because it teaches the skills for the Dissertation, i.e., how to use Nvivo, write academically, select a research philosophy and framework. There is not much more to add for RDS, the classes are a little bland but remain important.

That leaves the bulk of the course as 3) Water Management. This is further broken into Water Science and Water and Society. Water Science consists of the scientific elements of WSPM where we have been exploring atmospheric systems in Climate and Catchment Processes and will focus on surface hydrology/processes in HT. Water and Health is focused on pathogens and infections and preventative measures like WASH (Water, Sanitation, and Hygiene). Water and Society has been focused on economics, governance, and law where we have looked at water as an economic good and as a socio-legal object, exploring topics like The Life Framework of Values (Living from, in, with, and as water) and different economic lens to frame how decision makers may think. A lot more has been covered but it is difficult to summarise briefly. Importantly, the exams will consist of three written essays for a) Water Management, b) Water Science, and c) Water and Society. Three 1,500-word essays for each topic (a-c) is expected and the exams will take place over a week on the Monday, Wednesday, and Friday. The final grade for the course will be a combination of the elective essays, exams, and dissertation grade.

As a final note which may be of interest is AI tools. There is a heavy emphasis on the use of AI tools like ChatGPT to aid learning, so much so that lecturers encourage students to use AI

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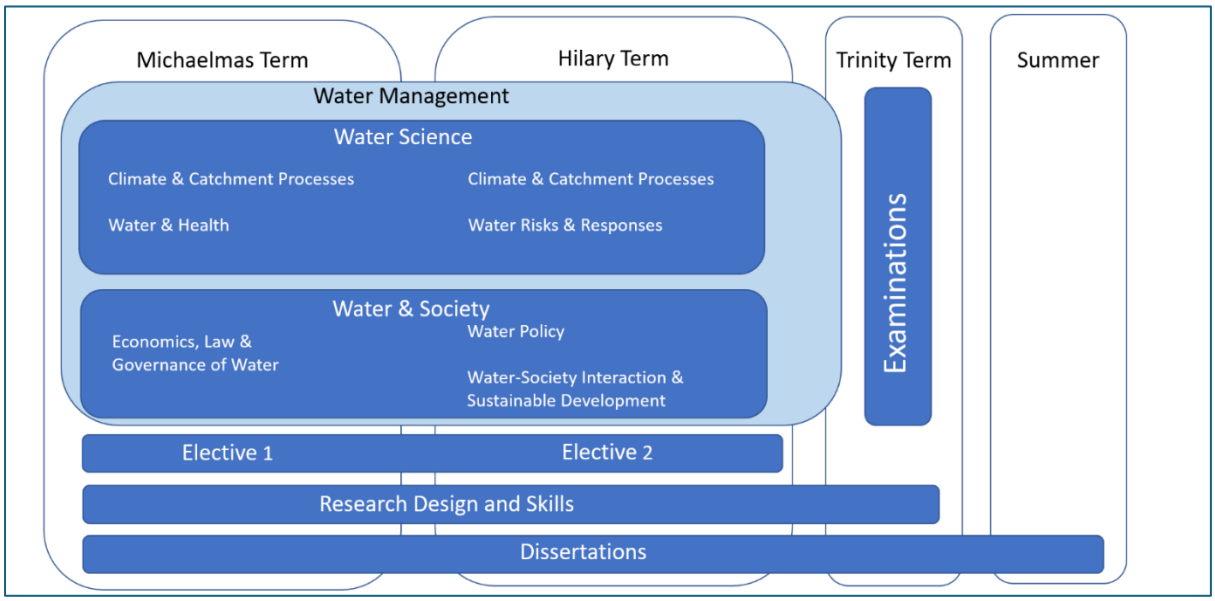
tools to support their learning and warn students will fall behind (in course and academia) if they do not get involved. The ability to use AI to support learning will significantly reduce the amount of content that is required to be filtered through and improve the quality of work that is produced, such as academic writing. Although it has been cautioned that AI cannot yet replace critical thinking, and prompts are important for its use – you should not expect AI to summarise a paper but instead use it to pull out key themes or to help question a paper to identify themes and arguments made by the author. Further, AI can be used to access papers in different languages and opens an otherwise inaccessible database – particularly for papers authored for local use. I guess the point is we should continue to work with AI and learn how to use it for our benefit…



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(#4) Life at Christ Church: *Nearing the End*

Here remains another late edition to the Life at Chch series (I will be writing retrospectively for several more of these today)! In my defence this week has been very busy as we approach the end of the term, and the lecturers try to cram in as many lectures and request as many student-led presentations as they can! I can also note that *Essence – Raimund Prum Riesling* is a great choice of wine at an exceptional price (that includes my student discount)! I recently discovered this at a £12 wine tasting. The weather has turned wet and the winds cold. But luckily for me I came prepared with a suitcase full of t-shirts and shorts, and spare socks… In all seriousness, the college stash order has arrived so I have been living in my ChCh puffer that I had 'CR' stitched onto, for memorabilia. I also purchased a nice cap but as you may have picked up – there's currently no sun so this is just for bad hair-days. Actually this is a great learning point for a future student unaware of what the weather can hold: the weather much like New Zealand can and *will* change between each season in one day. If it is winter, just take a jacket or umbrella even if the sun is out and shining – you will need it I promise.

We recently had another great field trip, this time to visit the UK Centre for Ecology and Hydrology ("**CEH**") and to Hydraulics Research Wallingford. The UK CEH was a great trip and exposed us to some cool science! I had a great time taking lots of notes and honestly just geeking out over what they were doing. As a brief side-story, I have been exploring ideas for my dissertation and I am looking to research cyanobacteria and cyanotoxins. This means I have been doing a fair amount of reading into the topic and have found some really interesting conclusions – for example, you can utilise cyanobacteria in wastewater treatment which have a cooperative relationship with algae and improve the efficiency of treatment (slightly simplifying this). The intensity of light (blue vs red) can also have a strong influence on the production of toxins! And it's possible that the macroinvertebrates, the little bugs living in the water which tell a story about how healthy a stream is, might be helping to transport cyanobacteria to different streams because they can't digest it properly when it grows too large!? Back to UK CEH, they have their own facility to conduct algal research – the GroDome. I will certainly get in touch with them as it may be a great facility to research cyanobacteria within and the connections will be great to have. We also heard from the Environment Agency and from another UKCEH researcher looking into storm/flood monitoring with the use of drones and river flow speeds acquired from satellites. Pretty tech savvy stuff!

Speaking of tech savvy, Hydraulics Research Wallingford are also doing some awesome science. They have a large warehouse built to model real-world scenarios. What I really mean is they can construct a small-scale port or water-based infrastructure project within the warehouse and by using a wave generator they can measure the impacts and potential erosion

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or structural issues. They also have two large simulators. The first is a tugboat simulator where they again can simulate a port and modify the conditions based on planned port upgrades or changes, or by weather conditions. Experienced ship captains are invited in to test out these changes and to provide empirical evidence on whether the upgrades would be good or bad. The second simulator I unfortunately didn't see, but it was a larger and fancier cargo simulator which utilised lasers instead of screens. Although, the tugboat top speed was much faster so I don't think I missed out on that much..

As I mentioned earlier, the weather has been pretty miserable. I do enjoy the rain, but unfortunately it is not rain on a tin roof and is rain on Connor as he walks 20minutes to class without an umbrella (although 8 weeks in I finally purchased one). To the next scholar – make sure you get an umbrella, a good one. I would also recommend getting a bicycle as this will make transport a lot quicker and will allow you to visit the sites at a greater distance (this includes Aldi which is very cheap but a far *walk*). Speaking of far distances, we are now in week 7 and have one week left. Unlike New Zealand, it is very affordable to travel and to travel very far. I am currently in the process of deciding where to visit for the Christmas holidays as we get a 6week break, a well-deserved trip to France sounds very enticing.

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(#5) Life at Christ Church: *Flood Management*

Another week goes by and the weather gets no better. Rain, floods, chilling temperatures, and a stark reminder of why we need good water management. I thought I would shortcut my way through the ChCh meadows and cross over the bridge headed to Cowley. I walked, sceptical, through the meadow and couldn't help but question its access. Will the meadow not be flooded? Will the River Cherwell not be breaching its banks? It is dark and there are no lights, but I progressed through the meadow and noticed the farm animals closely sat beside the fences, avoiding the now obviously flooded meadow. I eventually made it to the River Cherwell, which was double its usual size and any sight of the walkway was gone, including the inundated access points to the bridge. Several days later we receive an email advising us that the bridge is inaccessible. This is a warning which should be made much much sooner, if not enforced. The reason for the high river flows is not due to the local rainfall (alone) but the regions rain falling upstream and slowly making its way down the catchment – a delayed hazard. I don't want to think what might happen if someone is caught off guard while the river level progressively increases or is oblivious to the potential risk while glued to their phone, but I would encourage a proactive approach to managing flood hazards like this one. This includes a better warning, barricades, and a signposting of the risk, particularly for such a popular area.

Back to more *positive* water insights, this week has been very interesting! I organised an extra elective for our Water/Wastewater treatment elective to learn more about leakage. Leakage is quite an interesting concept so I'll try break it down a little further. It forms part of our *Non-revenue Water*. Leakage includes the 'Real Losses', or the water (in general terms) that is lost from pipe damage/aging infrastructure. It is water that causes a loss in revenue (e.g., operating and maintenance costs) and can significantly burden a system (increased system pressure). If 50 % of the water is lost before it reaches consumers, then the system needs to be exposed to higher stresses to ensure consumer demands are met. The water will be pumped at an increased pressure to allow consumers a greater volume of water but at the same time the volume of water lost to leakage and the damage to infrastructure will be greater (a greater force on the physical pipe). On this point, we can reduce leakage by fixing pipes and to allow more water to reach consumers (assumes leakage is high and easy to fix), or we can encourage consumers to reduce their water use to lower the demand and thus the pressure on the system.

Another point I want to mention which I find interesting is 'Apparent Losses'. I think this is a significant problem in New Zealand and it is comprised of 1) Unauthorised Consumption and 2) Metering Inaccuracies. The metering inaccuracies are self-explanatory, but I think there needs to be a greater push to encourage household metering (both rural and urban). The unauthorised consumption may require more nuanced thinking. It includes users who illegally

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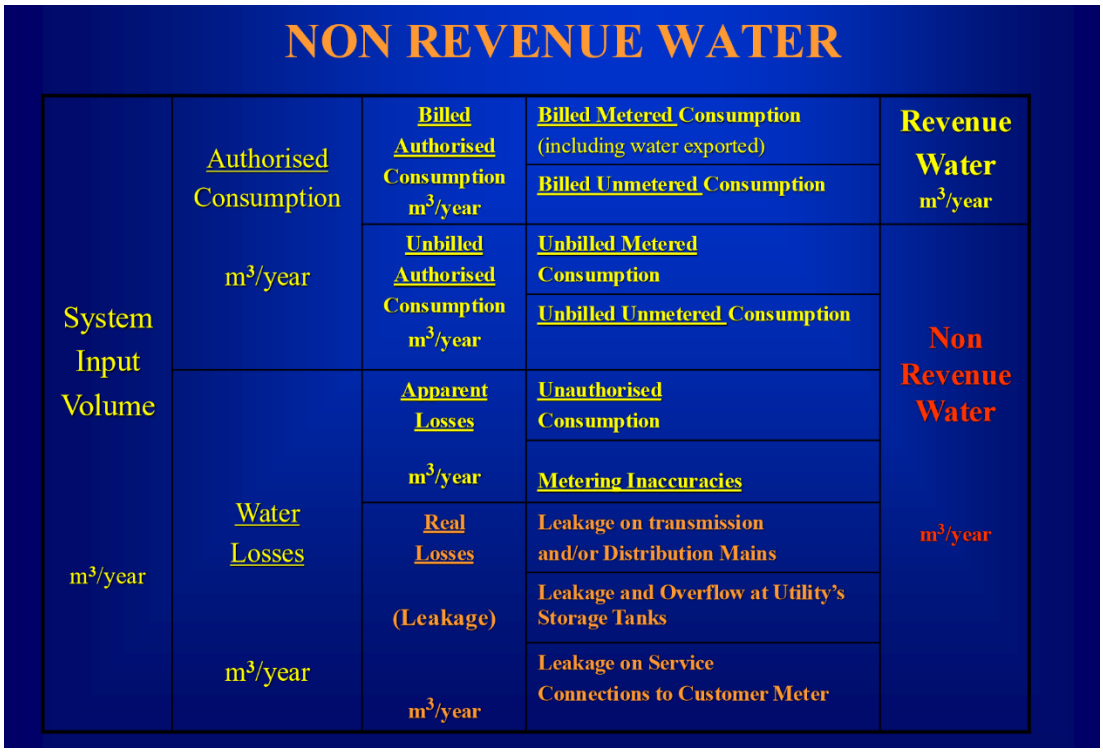
tap into distribution networks and take water without paying, a problem for the electricity sector too. In a sense, I believe users taking water from aquifers and rivers could be considered unauthorised consumers and exacerbating the 'Apparent Losses', even if they comply with regional plans – all water takes should be metered. These unrecorded takes can significantly reduce water stocks once enough people are engaging in abstraction, where the downstream users may suffer from worse quality due to the quantity being reduced (i.e., concentration of nutrients, streams drying). I guess what I mean is the revenue loss is not on public infrastructure (as private abstraction is funded privately) but in the loss of water as a public good (through changes to quantity and quality). There is a need for good quality data to make recommendations and to form suitable policies. Tackling *Non-revenue Water* is a great place to start for valuing water. I have also attached a diagram below which points out these distinctions and may be useful to reproduce. Let me know if you want any more information on this.

As a final signoff, this week has been super busy! I completed my first formative essay this week on the use of cyanobacteria for wastewater treatment, exploring its potential to treat a variety of pollutants and as a biofuel to turn wastewater into a resource. It was a great experience and I have really enjoyed being able to read and read and read! My next essay will take a slightly different course, focusing on the long-term impacts of antimicrobial resistance in wastewater treatment. This diary entry was slightly more focused on learnings and content but I think that's the benefit of it being a diary in that there is no specific structure! Although, my next entry will reflect on the first term!



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(#6) Life at Christ Church: *And – That's a wrap!*

Here marks the end of Michaelmas Term – the first eight weeks (nine weeks if you include week 0)! Everyone said this year would be over before you know it and this has never felt truer. It's shocking that Christmas is two weeks away because I feel like it was only yesterday that I was sleep deprived and making my way down St Aldates off the tube from Heathrow! I don't even know where to buy Christmas presents from!? This will be my first *White Christmas*, although I think snowfall in Oxford is unlikely so my travel plans may need to include a slightly colder and snow-covered destination! Maybe a hot chocolate too. I thought this diary entry would be a great chance to wrap up with some of my highlights from the term and a photo showcasing my big-building-lifting-ability!

The holidays are in full swing now and I just got back from London. Me and a friend headed in for a day trip and braved the weather. It was great! We got to see a bunch of the popular tourist attractions, which included lifting Big Ben of course! We even spent a few hours making our way around The Tower of London to learn some of its rich history before making our way to a waterfront restaurant for a much-needed meal and coffee! There is so much more to see and do, but after clocking 30,000 steps and fearing the train cancellations we headed back to Oxford. This time by the tube, because our worries were reasonable, and Storm Darragh cancelled all the trains! I have been enjoying a couple days off to unwind after a busy term and have just about finished reading *A Very Short Introduction: Water*. Surprised? Me neither. It makes up part of my latest collection of books to read. An MSc student at ChCh is eligible to apply for a book grant up to £145 for course related books! I spent mine on 11 different books covering various rivers, pathogens, and most importantly, water!

As I have said before, the holidays aren't holidays, but a break from teaching. So make the most of a couple days, unwind, drink some coffee, get ready to cook (the hall closes..), and go to the gym. But remember that you have work to do! I will start writing up my assignments due next term and preparing the literature for my dissertation if time allows – the proactive effort means I will take some time off to leave the UK for Christmas! This leads into one of my highlights. I have thoroughly enjoyed being immersed in content and learning about so many different aspects related to water. There are so many resources available and it's impossible to get through them all, but it's worth making a valiant effort for! The study at Oxford is more than a hobby, it's a full-time commitment. At least that's how I have been treating it. Even in my free time I end up in conversations about water, whether it's with my classmates, readings, videos, or rambling to an unfortunate disinterested but polite person at dinner! Theres so much to learn and the more you read the less you seem to know. Sounds like quantum mechanics!

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Another highlight is just being in Oxford. It is such a cool city and here alone there is so much to explore. I have been expanding my journeys to make my way outside of the city centre. This has seen me in Jericho and Cowley, both have a very different atmosphere to the city centre. I also want to try out more restaurants and eateries, as I spend most of my time dining at The House as part of the season meal pass. The architecture varies so much and I still find myself admiring the historic nature of it all, even just walking through Tom Quad! But more than the buildings, the people. The people here are great and I have already made friends with people that will become lifelong connections! They each bring with them such unique backgrounds and have so many stories to share. It is actually a little bit sad to think that once this year is over we might all scatter back home. It's a good reminder to make the most of the time you have here, not just for the study, but for the people and for your friends that you make. As Andre Le Dressay said – life is nothing but a collection of people and memories. This needs no explanation.

I think the last thing I want to end on is: **have fun**! While Oxford is a busy time, and place, make the most of it! Dedicate time to study and sport, make friends, drink coffee, go to pubs, walk around meadows, visit markets, try new foods and drinks, explore colleges and libraries, explore corner stores, visit landmarks, travel, watch British television (maybe even with a cup of tea), people watch, catch a train or the tube, look at nature, go wild swimming (check the water quality first – please), do it all! Life here is more than just working hard. That's important. Make time for yourself because you need to. Even the *best of the best* make time.

In case you do not hear from me until the new year, Meri Kirihimete! Have a great Christmas and a happy new year!

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(#7) Life at Christ Church: *Holiday Edition!*

Merry Christmas and Happy New Year! Michaelmas Term has come to an end and it's time for the holidays! It's a chance to get out of Oxford and explore the wider surrounds. I took the opportunity to fly the surprisingly short distance to Paris! It was a Thursday night. We had the grand idea at our last formal dinner of the year to - go to Paris? We booked the flights, the bus, the accommodation, and packed a bag ready to leave the following morning. Yes, we booked an entire trip to Paris 12 hours in advance. This is not something that I would *recommend*, but it is something that's possible in Europe. So, while I should stress you look forward to the holidays and plan your travels early, if you get too busy with studies there is still the chance to get away last minute – and you should! We spent a total of four days in Paris, and it was a great experience! We maximised Duolingo on the plane and saw all the go-to attractions. I even went up the Eiffel tower, twice! If I can pass on any tips for a trip to Paris, I would say make sure you book tickets to attractions in advance to avoid large queues. Oh, and buy espressos, as many as you can – they're great!

Other than that, I spent the rest of my time at Oxford. It becomes a very normal-feeling city when all the students have left. It's a nice kind of quiet. It makes for a great chance to explore too! You can walk around and just enjoy the streets which would usually be shoulder to shoulder with people. I didn't expect so many people to visit Oxford, but I can certainly see why! I would also recommend getting out and visiting the greenspaces. I spent (spend) a lot of time walking around the Christ Church meadow. I enjoy the routine of a morning walk and it's a great way to start the day, even if it is covered in a layer of ice and -5 degrees. I would suggest breaking the ice puddles though, it's oddly satisfying. This may be a little bit niche but take the time to think about the water. The River Cherwell flows along the meadow and links up with the River Thames. Particularly if you walk the meadow often, think about how the river changes throughout the day, the week, the month even! What colours do you notice, is the water clear, does it breach the riverbanks, is anyone interacting with river? How does the vegetation change and what impact does it have on the river – what might this do during a flood or a low flow? Is the river healthy? How did that yellow football end up on from beside the entrance to the top of the tree on the other side of the meadow in only three days? These are some of the questions I think about as I make my way around the meadow loop, but I challenge anyone to do the same, whether it is for the River Cherwell or a closer river.

Jumping back to academics. The teaching break was the chance for our class to complete our first graded assignment. We had to write an elective essay, for my wastewater elective I chose to focus on antimicrobial resistance. I probably shouldn't go into the details on my essay, but AMR is a very interesting global challenge that we face. The essay took up most of my break

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and I spent a lot of time in the local café working on this, as the libraries close for the break and reopen during term time. I also had to read through *Where the Water Goes: Life and Death Along the Colorado River* by David Owen for an ungraded book review. Academic practice in other words. I found this quite an interesting read and think it highlights particularly nicely the complex relationships we have developed with rivers. A good example is the misconception we have with water use and even re-use. Sometimes our perception of *Where the Water Goes* is inaccurate. The book discussed how optimising our use of water for irrigation can impact the ecosystems and wetlands that exist due to the inefficient use – so by eliminating these inefficiencies, we also eliminate the supply of water flows for important habitats. Food for thought.

There is not too much else to share for this holiday edition. I hope everything is going well in Aotearoa New Zealand – or wherever anyone else is who might be reading this!

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(#8) Life at Christ Church: *Are We Expecting Too Much Water?*

I feel like I only just stopped writing these for the term, but we're back already – Hilary Term! Unlike last term, things have started immediately… We have been straight into readings, lectures, discussions, seminars, and assignments. It certainly feels like the Oxford-training wheels have come off. Although I wouldn't say I'm complaining – this is why people want to study at Oxford! It really pushes you to work hard! And we get to go to Spain for a class field trip later this term – so I really shouldn't complain about that…

This term while still being about Water Science, Policy, and Management has swapped out a few classes. We are continuing with Climate and Catchment Processes but taking a closer look at surface hydrology. We previously learnt about the processes which lead to the formation of precipitation and now we are diving into *what happens when it rains*! I think that would make for a good flash card title. We are also continuing with our Research Design and Skills module in preparation for our dissertations. This remains focused on academic skills and is a good refresher for some dust covered undergraduate lectures.

We have started Water Society Interactions and Water Policy. I would describe these two as being similar in nature but different in teaching. Both have a very strong focus on the socio-political interactions with water. Water Policy feels more framework, theoretical, and historical, while Water Society Interactions feels more case-study focused or on the ground. We have also begun Water Risks and Responses. This leads on from Water and Health but focuses more on the risk and decision analysis. I must say I am looking forward to this the most! I find it interesting to explore the tolerated risk of different water related issues. For example, how much pollution would you tolerate into a river? Natural amounts? Enough to make it wadable or unsafe for swimming? Does it depend on what the water is used for? What about water re-use, would you use polluted water for gardens or toilets – does it depend on what is in the water? Even stepping back, how much water (quantity) can you tolerate? Enough to flush the toilet, have a shower, and wash the dishes, or enough to flow whenever and for however long you decide throughout an entire year?

I recently found out there is a pub in London named after John Snow! Surprisingly, I have yet to visit. Now for those who do not know of John Snow, he is not the *John Snow* from Game of Thrones (which I have also not seen), but rather a founder of modern epidemiology and early germ theory. Snow is credited with discovering that cholera is transmitted through polluted (with sewage) water. He drew the reported cases of cholera to identify the source of the outbreak as being from a public water pump – hence the pub located nearby the

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decommissioned pump is named after him! Nowadays we would do a similar thing but by conducting water sampling and mapping it all out through a program like ArcGIS. Quite an impressive feat for the 1850s. I can also add to what hopefully hasn't been forgotten already – my readings of *A Very Short Introduction*. This time I have started one on *Rivers*. I will update in a later edition with some cool facts about rivers! Many of my college friends have started reading various books from the series too. I don't usually claim to be a trend-setter, but I think I've started something…

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(#9) Life at Christ Church: Christ Church – 500 Years On

I think it is a nice introduction to say again, this term has immediately kicked off! Things feel a lot busier than last term. But also important to note, and my signature is a bit of a giveaway, this year marks the 500th year of Christ Church! We began celebrations this week with a Tudor-inspired banquet dinner. This was a very cool experience and my first time being involved with this part of history! The dinner was equally great – we were treated with Tudor devilled stuffed eggs, a lamb, prune, and stout mincemeat pie, and cheesecake with rose water and orange! I should also note the music and company was exceptional!

If you have seen any of the photos from the banquet, it is likely you will be able to spot me! The photographer had a comfortable setup by the fire, similarly we had the same idea since it was quite a chilly night. This led to a running joke on the night when the camera was pointed at us. We would appear to have a thought provoking and meaningful conversation as a 'pose' for the photos (some but not all of our conversations matched this description of course). Anyone would think it was a candid photoshoot had I not said otherwise…! There are a series of other events that will take place throughout this year. Everyone is excited for the big ball in particular!

In other news – we had our second round of BUCS! It was previously postponed due to poor weather (classic UK…). While we didn't play as well as we did last time, we all had fun and learnt a lot. We still placed reasonably but we were matched up with some very talented teams. Next up are the national rounds in Nottingham. It will be a good chance to head outside of Oxford. We also have the Cambridge vs. Oxford match coming up on 1 March! This is the big game… but I am feeling confident. I have been curbing my homesickness by watching NZ touch rugby highlights. Oddly too, well actually I think it's normal, I have been dreaming about touch rugby and hitting some ruthless steps to score highlight-worthy tries. Back-to-reality, I did score my first BUCS try at the last round so maybe it's not just a dream…

Coursework is the busiest part of my life at the moment. Again, the training wheels have come off and we are getting stuck in. There are a lot of readings and assignments that require work. A notable advance is the work towards dissertations. I have made some further progress on mine. There are two potential topics that I think would be very interesting to explore. The first is the role of cyanobacteria and infectious diseases. The general question I have is how do harmful blooms of cyanobacteria increase the risks associated with infectious diseases – does a bloom create a favourable environment for other pathogens to proliferate? Further, what role do agricultural activities and sewage treatment discharges have in this? Can the

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implementation of effective policy help protect public health and improve freshwater quality? A second topic is related to the bioavailability of nutrients. Cyanobacteria (and algae) require nutrients to proliferate and thus cause a harmful bloom. However, the phosphorous released or leached from a sewage treatment plant is different to that from an agricultural source. Same with nitrogen. In a sense, you could quantify the impact each has on influencing a harmful bloom. The thinking behind this comes from comparing New Zealand with the UK, where NZ experiences a lot of harmful blooms. The UK as I understand is more or less okay even though it has an abundance of phosphorous from sewage treatment plants. Cyanobacteria are often limited by phosphorous – in my head, the UK should be much worse off for this reason. Therefore, there is an important difference which I think is due largely to the bioavailability of the nutrients (a *plausible* theory may be that agricultural activities are worse for rivers). Until next time!

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(#10) The Return of 'Life at Christ Church'

It has been a while since I last wrote about my experience at Christ Church. I will admit that this is in part due to laziness, or I should also say, prioritising school and socialising over writing. However, I must also add that the previous version of my word document was corrupt and not saving properly. I thought I had addressed this, but I in fact had not. Which leads me to another Oxford hack – use their cloud servers to store your work!! The university pays for OneDrive which I would highly recommend you utilise. There are other free programmes which you can download too, like a VPN client if you need access to country specific Netflix series and EndNote if you are not a fan of Zotero. As you can also imagine I am writing these entries retrospectively, however, I will do my best to take you back over the last couple months! Enjoy!

This week marked the beginning of my next elective – *Decolonising Conservation* which would later become known as *Conservation after Colonisation* due to an administrative error about what the course was intended to be called. We met at the botanical gardens and made our way to the Magdalen deer park. Yes – a college has an exclusive park with deer! We discussed the historical role of deer in power and class systems and how this was linked with the idea and practice of conservation. This was a good reminder that the past shapes the present, much like how the present shapes the future. I'm a big believer of incrementalism and collectivism and this is some of the reason why. I am looking forward to this elective and think we might touch on some interesting topics for a discussion.

We also visited the Farmoor Reservoir. This is a huge, well, reservoir. It stores water for the neighbouring residents which includes Oxford. It was nothing special and most people will value it for its aesthetic or recreational value. A large blue-space that enables activities. A Sunday stroll, a walking route with the dog, or a large waterbody for small sailing boats and swimmers. What is appreciated lesser so is the volume of water that is stored and the security this gives the water supplier. While I could talk more about the positives, I want to jump directly into a critique, foreshadowing for a later diary entry.

The large reservoir is sourced from the nearby Thames River or River Thames. The only requirement for the abstracted water is that it meets a turbidity requirement. As you can guess, this means pollutants freely enter the reservoir, including nutrients. To put it simply, algae blooms present a problem during the summer months. The actual problem is more complex but again, I want to focus on foreshadowing for later. Acknowledging that algae presents a problem I was intrigued. What would happen if a bloom occurred, and worse, what if the bloom produced toxins? What would happen to the water supply and what would the water

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supplier do? I asked the operator of the reservoir: 'Is Algae a problem? – Yes it can be'. 'What happens when an algae bloom occurs, what do you do?' …. Well let's save what they said for later.

The last thing I want to get into this entry is Knoops. Great! What else do I need to say? It is a café which specialises in hot chocolate through a variety of chocolate types. You want a dark chocolate-hot chocolate. They have it. You want a white chocolate-hot chocolate (don't contest the classification of white chocolate as a real chocolate because I am pro white chocolate). They have it! You want to add a coffee shot to make it a mocha. You can!! See what I mean, it's great. BUT here's the problem. If you are like me you probably thought it was pronounced 'noops'. It makes sense, think *knew* and *snoop*, plus its catchy. Knoops Knoops Knoops. Well, I hate to be the one to tell you, but I must, that it is actually 'Ka-noops'. Need I say less my café rating went from a 4.3 to a 3.7/5. And there is no good study space, 3.5/5.

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(#11) Life at Christ Church: Busiest Week Yet.

Thankfully this week is over! What a mile (or roughly 1.6 kilometres) it has been. A lot of classes which were missed throughout the term were rescheduled to this week making it a very course heavy week. I also attended the termly class representative meeting which added a small amount of administrative work. I collected class feedback about the course and presented this to the course staff. Touch training has also picked up and taken a lot of my time. We have three big weekends coming up. The first is the next round of BUCS – the national touch tournament. We placed well in our last round so this will be an important set of games to get us into the upper half division. We will get matched against some strong university teams from around the country so it will certainly be tough. Following this round we have the Varsity match. This is arguably the clubs most important match of the year. We will face off against Cambridge and you can imagine the tension between the two clubs, so I won't spoil anything until after the game!

Aside from that this week has been socially slow. Due to the heavy course focus, I have been locked in classrooms for most of the week. My spare time has consisted of dissertation planning. Next week we are expected to present on our dissertation proposals. It is fair to say I have really enjoyed learning about cyanobacteria and the potential for harmful blooms to create favourable environments that allow pathogens to proliferate. However, this is also a very big project and my supervisor has cautioned me that it might sit better as a DPhil project. I will keep planning and see where this lands. It feels a little bit too late to change my idea considering the presentation is next week. Technically I can change later, and I probably will, but for the purpose of the presentation it might be wise to keep the topic for now.

Given the lack of content for this week's diary entry, and my obsession with writing long entries, I wanted to briefly talk about efficiency. I don't know if it's the Oxford environment that encourages thinking or the people and their creative minds that it attracts, but I often spend a lot of time thinking either by choice or by nature of discussion. Recently the idea of efficiency and optimisation has attracted my attention. Right here is an example of optimisation, delaying the completion of diary entries to complete course work because I know I can rely on my calendar to remind me of memories later. But I question, how can you optimise efficiency?

It is interesting I think to explore perceptions of the terms. The way people term efficiency and optimisation can feel loose or overlapping at times. Efficiency is about maximum completion with minimal resource use (often time and energy), while optimisation is about perfection; or

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improving efficiency. I raise this point in the context of Oxford because as a student you cannot always be efficient or optimal in your work. At times you will, and you should, need to take a break and unwind. But there will be a feeling of guilt that you should be doing some work. It is here that I remind you to think about efficiency and optimisation. To work efficiently you need breaks. But you also need to optimise your breaks. The best way I can explain this is don't take the day off before something is due (unless you need to), instead, take two days off after. But also focus on ways to improve your efficiency such as setting good habitats, eating regularly and properly, and taking advantage of physical activity, vitamins, and minerals. These are all essential. Don't feel bad for not always working to your full potential!

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(#12) Life at Christ Church: Busiest Week Yet. *So you thought*.

Turns out this week was even busier than the last! This is mostly because the proposal presentation for our dissertations was due. But also because of the BUCS round which saw my weekend being consumed with travel to and from Nottingham and recovery after an intense day of games!

The presentation went well. I felt very organised and did not get any questions that I felt unprepared for. It was a cool experience to discuss afterwards with some of my classmates about what it is I am interested in. As I have said before, the course is structured to be broad so that a range of students can engage in the content. This means that for some of my classmates, they have a very limited knowledge on what cyanobacteria is and what my research was designed to investigate. It was also a great opportunity to do the reverse. I learnt about what my classmates were doing and got to, for lack of a better word, interrogate their projects after! I am looking forward to reading up on what everyone finds over the summer period and to hopefully even help with a few projects if time permits.

We wrapped up our first round of the national BUCS tournament with mixed emotions! We played well in some of our games and not so great in others. We even had a couple games feature on the livestream, where I secured two dive tries to go down in the YouTube archives. Maybe it was the camera pressure that caused our performance to be better here, I'm not sure, but I sent the videos to my family back home to give them a snapshot of what my life has been like recently! They were impressed! Two of the games were honestly really rewarding. I have spent some extra time after touch trainings practising dives by myself and I recreated a textbook one-handed dive in the game right at a defender's feet! It just goes to show that practice really does make perfect! I think I will try to find a touch rugby club for when I move to London and hopefully join back up with the Oxford club if I go on to do a DPhil.

Another highlight of The House is the dinners – the special or guest dinners to be specific. This week there was a ballot for a T-Bone steak dinner. If I am brutally honest, The House does not have the best reputation for its meals. This is because there are a lot of students to feed and the meals are the most affordable amongst all the colleges. You can't expect perfection in every meal AND also guarantee an affordable price (maybe you can)! But the special dinners really do step it up. I haven't had a T-Bone steak before, so this was amazing! It also had the added benefit of making me feel at home – one thing I have missed is a good steak! Be sure to ballot for some special dinners. It does cost a little bit extra but it is worth it for the food and experience!

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I also caught up with a colleague from back home which was really cool! I heard about what everyone got up to for the Christmas holidays in a morning-coffee-debrief fashion. Due to the time differences our call was during the morning in New Zealand and late at night in Oxford. So I would actually be having a tea, if I was a tea drinker! You really start to appreciate the importance of technology at times like this. I cannot imagine writing a letter and sending it, waiting a week for it to arrive, another for a response to be drafted, and another again for it to be delivered. Although the idea of a candle lit room, a crisp piece of paper, a calligraphy pen, and a bottle of ink does sound quite peaceful.

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(#13) Life at Christ Church: Varsity Match

The Varsity match. Oxford vs. Cambridge. It doesn't matter what sport you play, this is a very important feud. One game of the year where all your training gets put on display and you compete, in this case, for the Touch Rugby shield. You play with the pressure of knowing the result will be etched onto the shield forever. I have been showing up and practising for the last 12-term weeks awaiting this moment, which I add was never guaranteed!

My hard work was made evident when I found out that I had been selected to compete. Selected to represent Oxford in this match. I was already excited for this opportunity and quickly told my friends and family. The excitement grew when I found out we would be competing at Cambridge – the added pressure of an away game in a location I have not yet had the chance to visit. The game was fierce and felt try-for-try. We played extraordinarily. I don't know if I can describe the words to express how I felt after the game. Instead, I've added a photo below. I love a dramatic cliffhanger!

I hoped this week may be less busy than the last, but due to presentation proposal last week it was not the case. I have spent a lot of time playing catchup. This has meant late nights in the library working my way through readings and a book review of *Empire and Environmental Anxiety* by James Beattie. This book was set as part of my Conservation after Colonisation elective which I found quite enjoyable. Speaking very generally, it is about environmental transformation and imperialism, and how the intentions for change have developed with environmental anxieties. It still holds lessons for today particularly around environmental change and the translation of acquired knowledge. It's worth reading.

I made some progress on my dissertation too. My previous idea, while I loved it and found it very interesting, was going to be too difficult to complete at only a master's level. An essential part required an algal bloom to occur which is not guaranteed. I have now shifted my thinking to focus on water and sewerage companies! As I attempted to foreshadow earlier, what I want to investigate is how these companies perceive and respond to algae blooms. What are they doing to prevent blooms from occurring and what do they do once a bloom occurs. What I found interesting about my visit to Farmoor reservoir is the response to algae blooms was somewhat minimal. The answer to the illusive quote I left unfinished, is that the blooms are left to do their thing. The wind will blow the bloom from one side of the reservoir to the other. It is only when the bloom poses a serious threat (this assumes seriousness is related to bloom size) or becomes a persistent issue that interventions will be employed to disturb and control the bloom. My research will therefore aim to interview several of these companies to

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understand the perspectives they have surrounding algae. I would also like to investigate the communication between the drinking water and wastewater treatment arms to see if it can be improved for the benefit of improved water quality!

P.S. We won! (Found two other kiwis!)

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(#14) Life at Christ Church: Life of a Water Scientist

One thing I forgot to mention last week is the water quality days. This makes up part of our course content and is in a new format this year. Previously there was an entire module dedicated to water quality, which I personally would have loved! This year they have broken it down into three dedicated days and replaced the module with another. The first day was last week. We learnt about water quality and tried microbiological sampling. Specifically, we practised three different ways to sample for *E. coli*. I loved the interactive nature of sampling and learning about the different kits. It's essential for a water scientist to understand how to test water and the limitations behind different tests. Often you will take a water sample and send it to a laboratory to complete the testing, in this case, we simulated the laboratory by growing colonies of bacteria! It is also difficult to gain hands on experience with testing kits as they tend to be expensive, or you require a reason to use one if someone else is paying.

The second water quality day was this week. This felt more lecture based and less interactive, but it was still very interesting. The highlight was our time in the laboratory. The teacher went out and collected some kick samples from waterbodies and brought them to the laboratory. We got to filter through the samples and practiced identifying macroinvertebrates. These are basically the little critters that float around the water living in the substrate. They each have differing sensitivities to pollution and so sampling them presents an idea of the water quality. I have done some of this in the past, so it was familiar experience. Nevertheless, it is a skill which requires practice, practice, practice, so I am not opposed to engaging in opportunities like this! It is quite a fun exercise – although it would have been even more enjoyable if we got to head out and collect the kick samples ourselves! Also, if we got to use microscopes instead of handheld lenses.

Next up is BUCS. Again, we knew this was going to be a tough day. Overall, the team was happy with our performance as we won some important games, but also slightly disappointed as we let some 50/50 games slip. We could have performed to a higher standard at some points. We challenged the best teams in the competition and did not let them win for free. Since we won the important matches, we remain in the top division for the next and final round of BUCS. This time we will not be matched up against the same teams, so we have an opportunity to place better. I unfortunately won't be able to make it to the last round as I will be in Spain. Although, that isn't exactly the worst of excuses! Next up for my touch schedule is summer touch! I have heard great things about this and I am really looking forward to it. The colleges have a cuppers tournament so I will be pulling together a team for The House – watch this space!

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I have mentioned it before but engage in the dinner ballots! This week we had the second part of our New College exchange at The House. It was a great opportunity to catch up with 'New' friends from the previous swap. We hosted with some nice college wines and great foods and overall, it was an enjoyable night! Some people make it a challenge to see as many colleges as they can. Personally, I think this is a great way to tick off a few. I believe you can access any college with your Bodleian card, but don't quote me!

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(#15) Life at Christ Church: Wrapping Up Hilary Term

That's it! Two terms down. It has flown by and once again feels like I have only just arrived. I am starting to be convinced that maybe the DPhil is just another way to keep students at university because they aren't ready to leave! This week has been somewhat chill, wrapping up our various modules and finishing off any formative assignments. We had to write a research proposal for our Climate Catchment Processes module and develop a risk case for our Water Risks and Responses module. These aren't worth any marks, but they provided an opportunity to collaborate with classmates and to work on practical research skills. They are worth putting the effort in, others disagree. We also had some alumni of the course come in and share insights on the exams and, for the older alumni, what they are doing now following their completion of the course.

This week has also seen social events picking up again. There was a college BOP (a Big Organised Party) to celebrate the end of the term. Touch also had a social to wrap up the term. And just generally speaking I have been catching up with mates at the pub to say goodbyes before they head away for the next 6 weeks. It's a little bittersweet. It is nice that the term has come to an end and there is a chance to unwind, but also it's sad to see everyone leave. I also can't get too comfortable. I have to complete an elective essay, study for exams, and work on my dissertation over the coming weeks. So, really, it's going to be very busy despite being a 'vacation'. A teaching break as I like to call it.

But! Before I 'lock-in' I get the chance to head to Spain! We have a class fieldtrip where we explore the Ebro Basin. We will fly out to Barcelona and catch a coach up to Murillo de Gallego. We then make our way down to Zaragoza, Tortosa, and finish up back in Barcelona. I am excited for the trip as I have never been to Spain! We also get to experience some more authentic parts too. If I was planning the trip myself, I wouldn't have the connections required or confidence in the language for a lot of the trip so I would stick to the touristy regions, like Barcelona and Madrid. So, I am grateful that through the course we get this experience! We also get to go rafting in the rapids of the Gallego River while we are at Murillo de Gallego – again, not something that I have done before so I am excited!

Me and a couple of my classmates are also planning to do some extra travelling after we finish up with the class portion of the trip. The current plan is to spend a few extra days in Barcelona before heading to Granada for a night, and then to Madrid and Toledo. I will probably write a short Spain edition for this Life at ChCh series so stay tuned for that! This extra trip is to unwind properly. As much as the class portion of the trip is a holiday in Spain, it is still going to involve

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class discussions, presentations, activities, and will not provide the best chance to rest. So, I think a few glasses of wine on a nice terrace in Barcelona will compensate for this!

Aside from all that, this week has seen me planning my dissertation further and discussing with my supervisor some aspects in more detail. I am aiming for a distinction, so I need a project with the capacity for this. In my case, this will involve interviewing some of the water and sewerage companies and conducting some in-person collaborative events. I previously mentioned wanting to connect the drinking water and wastewater treatment teams together. To do this I intend to host in-person events and run through some interactive sessions to develop ideas around nuisance blooms. Broadly speaking, if a wastewater treatment plant removes more nutrients from the influent, then the drinking water team may be less susceptible to algae blooms because of high nutrient concentrations in effluent. This is not the case for every waterbody and is not necessarily this simple, but it is the sort of mechanism I want to highlight and encourage collaboration on. Ultimately, this should help with the public's perceptions on water and sewerage companies too as better water quality is good for everyone!

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(#16) Life at Christ Church: Special Spain Slot

Hola! I would highly recommend Spain. That's all.

Well, that is the takeaway point from this entry, but for those of you that want to know *why*, well let me explain! Let's start off with the airport. You have just hoped on a plane leaving an airport in London, three layers of woolly clothes, a jacket, and an umbrella sheltering you from the frivolous UK weather. You arrive in Spain only to be disappointed by the looming grey clouds over the city (it actually snowed a few weeks before we arrived). Expecting your Spanish summer dreams to be crushed, you leave the airport doors carrying your luggage for two weeks and remain layered up, only to be hit by heatwave. Hot air?

What else did you expect, it's Spain! Let me briefly jump forward, the weather, despite its cloudy grey appearance may have actually left me tanned! I have been complimented twice about looking tanner since returning to Oxford, and while I think it is sarcasm, maybe there is some truth to it! That was a long way to say the weather was really nice. We had rain, but we also had sun, and a lot of it. We hoped onto the coach and made our way up to Murillo de Gallego. I tried the British version of motion sickness-prevention pills, and I have to admit they were great. I don't know what they were I just listened to the pharmacist, took one, and nearly passed out on the bus (in a good way). Would recommend if you are susceptible to travel sickness!

Murillo de Gallego was a really cool and small town in the upper region of Spain. We did a few day trips to different places in the region and learnt some interesting things. For example, a big issue in the region is the construction of dams for hydropower and downstream water security. I won't go into the complexities of the dam, as there are many, but one of our day trips involved a visit to an abandoned village. The village was abandoned because the construction of a dam caused agricultural lands to be flooded, this was the livelihood for some of the residents. Residents refused to leave but had no choice. The lack of remaining residents forced others to leave as they could no longer operate their shops or restaurants leading to the ultimate abandonment of the village. This village was not alone in this experience and there are other examples where this has occurred. The people were displaced to downstream locations and now benefit from the hydropower scheme – as a reliable source of water for irrigation. But it makes us question the cost of the scheme, does the move to downstream locations provide compensation for the nonmonetary costs associated with the move? Who benefits and who losses from a scheme like this? What happens when developers want to expand the hydropower scheme? I'll let you ponder, we spent 5-days doing the same.

We also drifted down the catchment to Zaragoza and Tortosa, visiting a number of other sites and hearing from a range of stakeholders in the catchment along the way. It is interesting to hear from the different perspectives and how they frame issues. One student asked about

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conflict amongst interested groups. One speaker immediately reacted and expressed a clear 'Yes there is conflict'. While another answered very politically and explained there are no conflicts as the legislation in place sets out an approach to deal with any issues. Note these responses were in Spanish so we received the translated version too. Another interesting perspective to hear from I think would be from one of these parties who expresses a differing opinion (a nice way to say, a conflicting perspective). Well, technically we did, and they weren't happy with the construction of a dam we stood beside. We listened as they expressed how it has allowed industries in the region to expand. They then talked us through the different stages of pollution that followed as a result of different industries. So, as much as the Water Law exists, it makes you question its authenticity (this might seem a strange word to describe it). You really have to go back and decipher why the Water Law was formed and whether it is still relevant today. Also, what it encourages. Is it something that promotes the quality of waterways or is it merely a means for industry to capture water for fiscal rewards. I often sit in the middle of this conflict. We need industry and the goods it provides, but we also need to protect waterways. Yes, these objectives clash, but there is a middle ground that can be achieved (this also does not mean middle as in half production-half protection, but somewhere in which both parties agree preferably in favour of the environment).

This leaves us in Barcelona. A popular city full of elegant, historic water fountains and displays. Let me rephrase, elegant, historic *structures* and displays. There was no water. Due to droughts and water shortages the fountains are left to run dry. Maybe that's a good thing – not the problem of water scarcity but saving the water. Yes, you can argue that fountains and displays are great for distributing water into the local environment and provide a means of natural cooling. You might argue they have an important role in transporting water for various uses, flood protection, storage, or aesthetic purposes. Maybe, even, you might argue that water plays an important cultural role such as at Alhambra. I won't disagree with you. But I will ask you to question why. Why is the water being used? Do we *need* to use it for this, or do we *want* to. In one example, I walked up several flights of stairs to the top of a hill to see a lovely, picturesque fountain looking over Barcelona. Several tourists beside me caught the escalator. I can appreciate the fountain for what it would look like flowing with water. A grand display of art filled with light and hidden electronics. The 'escalator-tourists' turned in disappointed after seeing signs of "*Fountains turned off as water saving measure amid drought*". If you continue to walk up the hill you will find another fountain. Coincidentally, there were no tourists – I think because the escalators didn't go this far up the hill. I peacefully watched two green parrots having a bath in a small puddle of water that remained in the fountain likely from a recent storm. In the moment I thought it was wholesome. It wasn't until later, I think like many other tourists who investigated this further, that I found out the parrots are invasive! They were introduced as pets, released, and now are seen as an invasive nuisance by locals. An unfortunate stage of beauty performed by two unknowing parrots. Jumping back, the main fountain I discussed is the Magic Fountain of Montjuic and it was constructed for the purpose of being 'something special' or a grand feature. It is designed to spray water and to be enjoyed. This fountain and the bathing parrots, I then ask, can they be appreciated. What was their

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purpose (for glory and as pets), is it necessary still? My intention isn't to provide answers but instead to provoke a critical perspective. We often perform conservation for things we find beautiful or by images that invoke a sense of beauty. We should again question why, is it to protect a piece of history, an art, a species for the sake of preservation, or is it because we want to enjoy it. To pose a simple way of thinking about this, do you think, for example, conservation land should be accessible or left alone for nature to enjoy?

Wine is cheap! Tapas are great! And Spain is just relaxing in general. There is so much history to see and so many places to explore: Alhambra, the Sagrada Familia, cathedrals, monasteries, parks, and so much more. Once you get tired of walking you can sit down and enjoy the wine and food at a number of great locations. What I'm saying is, if you really want to unwind then you can! Like my last edition, I thought I would include a few pictures from Spain! I tried to highlight various elements of Spain without sharing the 1,000 photos I took! As a final Oxford-note: remember to relax, it goes back to efficiency and optimisation after all! Till next time!

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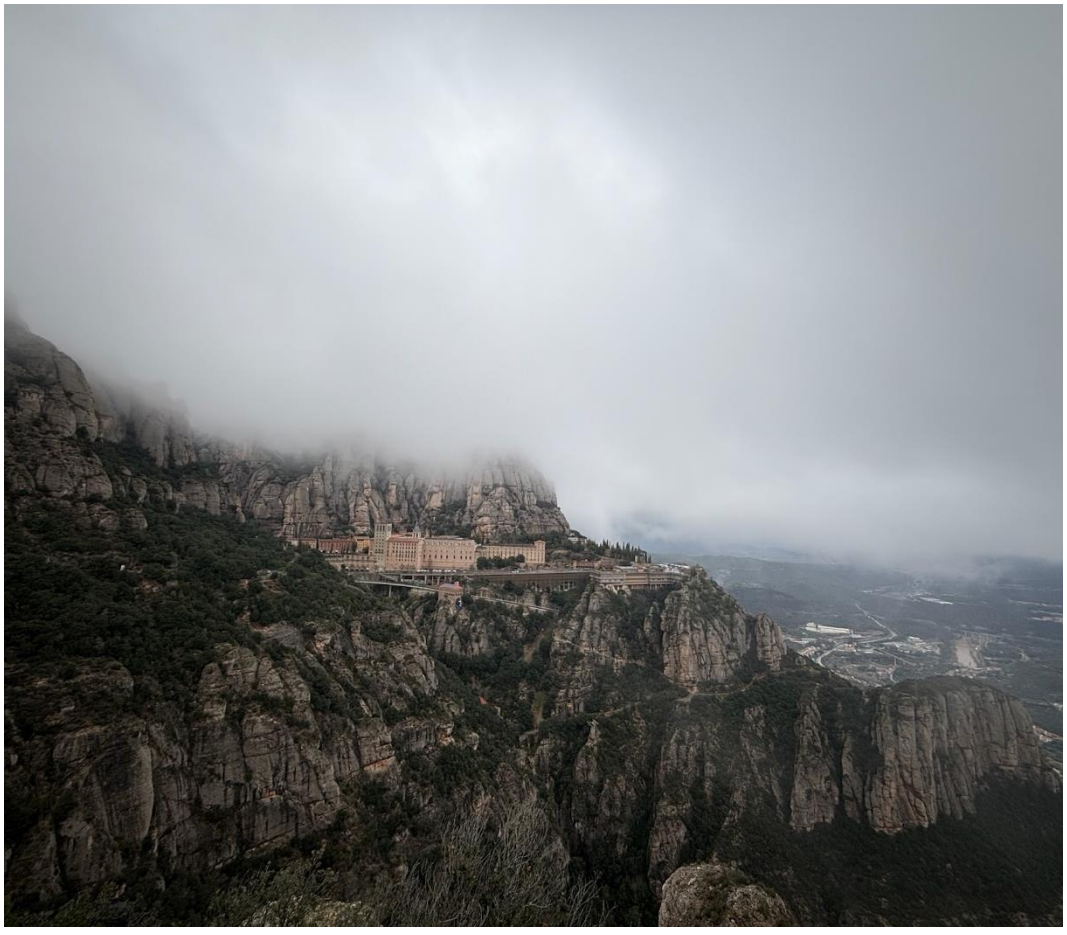

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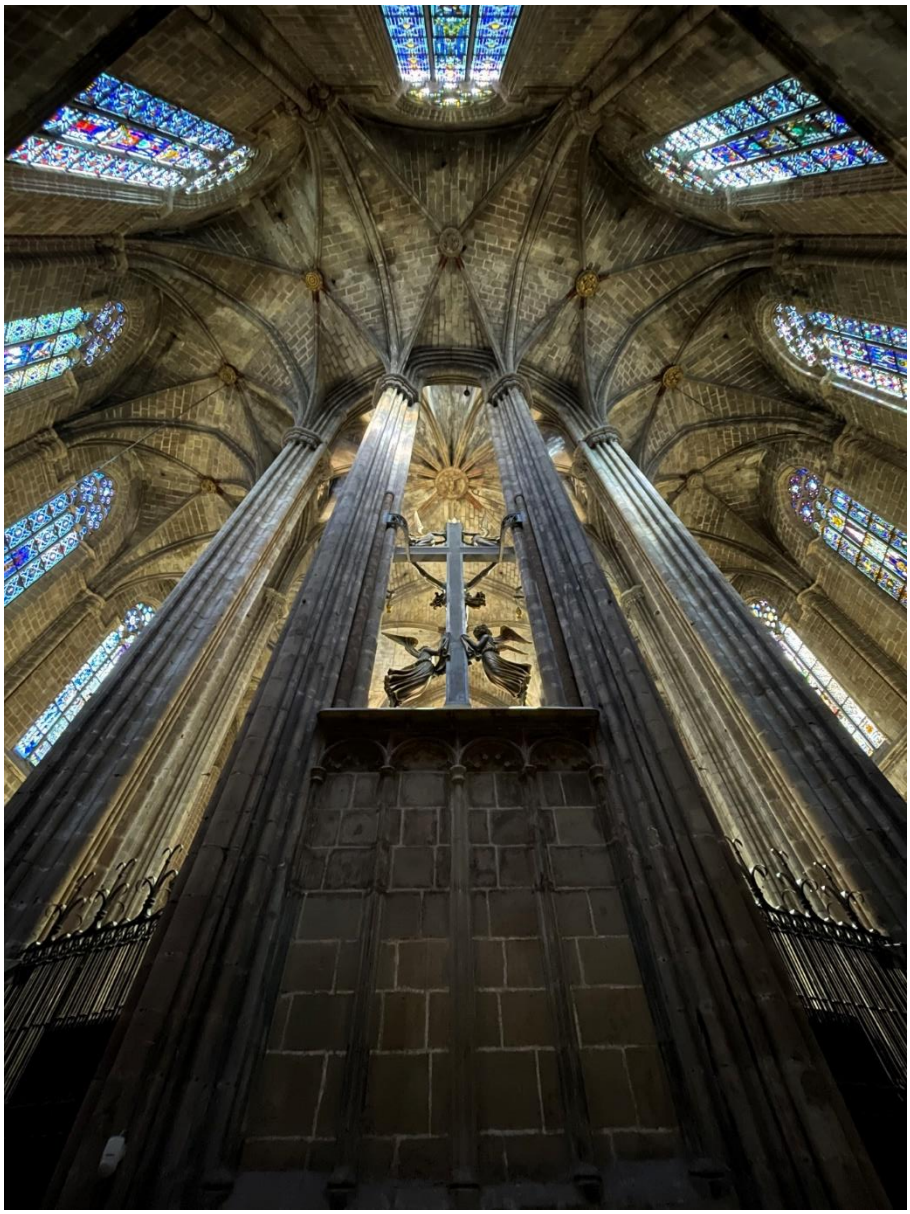

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