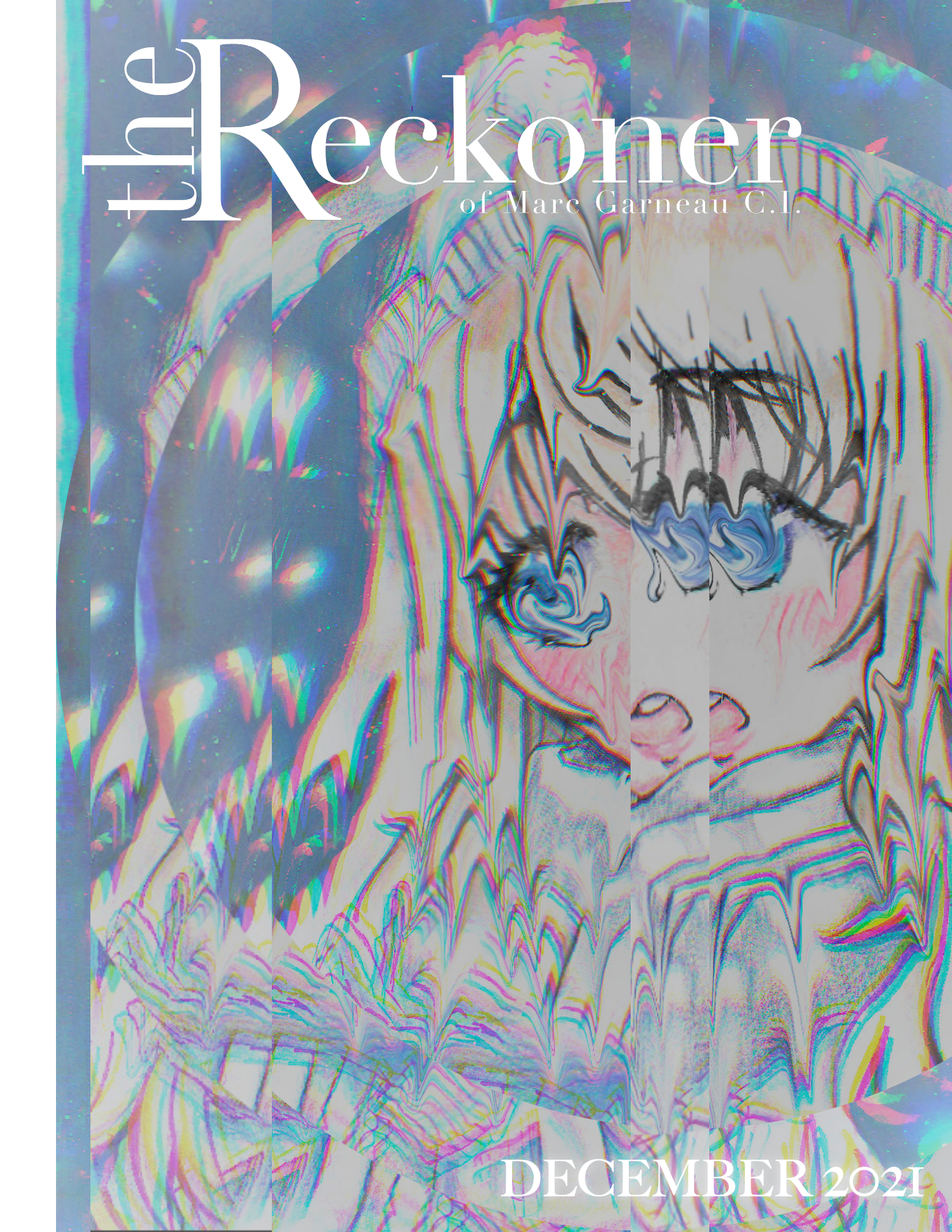




the Reckoner

of Marc Garneau C.I.

DECEMBER 2021

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SAC MIDTERM REPORT

2021-2022

- Accomplished
- Planned for future
- Deferred



LUCY QI

President

- Rebranded the House Colour System with the houses Delmare, Helia, Polaris, Moorfield, and Lavena—delivering a more personalized and fun experience for the student body
- Implemented the MGCI Mentors initiative, that would provide guidance for younger students to help identify and achieve personal and academic goals
- Publicized all SAC meeting notes and event updates to promote transparency, as well as reintroduced monthly newsletters
- Executed Grade 9 Orientation for over 500 virtual and in-person students
- Implement an in-person school dance or semi, similar to Winter Wonderland
- Bring back International Show, or an in-person coffeehouse to display and celebrate the extensive artistic creativity and variety of cultures at MGCI



RANEEM ALTURK

Special Events & Grad Convenor

- Planned and executed Senior Sunrise
- Sell senior sweaters
- Plan an in-person prom, as well as a virtual alternative



SARAH HIRA

Sr. Communications Coordinator

- Implemented a consistent and eye-catching theme for MGCI SAC's social media platforms
- Started the production of the 2021-2022 MGCI Yearbook
- Release hype promotional videos for the House Colour System

The Reckoner has created an infographic tracking whether elected SAC members have fulfilled their campaign promises. This is only a progress report, with a final report to be published in the June print edition. Additionally, the following is not meant to relate to all of SAC's activities; it only reflects elected members' progress. For more information on SAC, see the monthly SAC newsletter and the SAC Instagram account @mgci.sac. All the information below was compiled using elected members' social media campaigns as well as interviews with members of SAC.



BILAL BARTAAI

Vice-President

- Had Project Assist, a new initiative, approved by admin and began planning for Project Assist pilot
- Open Project Assist to all Garneau students
- Rebrand and reintroduce MGCI TV



WASAY AAMIR

Athletic Convenor

- Spearheaded volleyball and dodgeball intramurals
- Organize Athletic Banquet
- Host a Teachers vs. Students basketball game



ZAHRA AHMED

Sr. Spirit Convenor

- Executed Halloween Treat Decorating Contest with over 100 attendees
- Lead Holiday Candy Grams and Bake Sale initiatives, generating over 450 sales
- Held two successful spirit weeks with prizes, increasing engagement with student body
- Plan MGCI Fun Fair for second semester
- Host a Spooky Haunted House Walk-Through and Winter Coffee House to promote the sense of school community and increase school spirit

NEWS BOARD

A board to keep the student body informed about their school and local community.

Winning Designs: Re-imagining the Overlea Bridge

by ORIANA ZHOU and RENA LIU

The Charles H. Hiscott bridge, also known as the Overlea bridge, is used by the majority of students on their commute to Marc Garneau Collegiate Institute and Valley Park Middle School. First built in 1960, the 427-metre-long and \$13 million bridge designed by Frank Barber has connected communities in Toronto [1]. Students walk to school through the narrow pedestrian lanes on the bridge, which has recently proven to be problematic.

During the pandemic, parents became increasingly worried about their children crossing a cramped bridge in a densely populated neighbourhood [2]. In order to take action, parents signed a petition to “reimagine” the bridge, a story that was covered by CBC News. When MGCI administrators saw the article, they decided to support the students and take action themselves.

The Reckoner has previously published a few articles about the school’s effort to fix the Overlea bridge. One particular article discussed how the school became involved [3]. Students met with

MP Rob Oliphant, MPP Kathleen Wynne, and Councillor Jaye Robinson to discuss how they can push for change [4]. After final discussions, there were several requirements for the bridge: a capacity for 20 000 vehicles per day, a pedestrian and bike lane, and barriers to prevent accidents and suicide [5].

In order to engage students and push for local change, Mr. Langford’s technological design class became involved in November 2020.

A previous article from The Reckoner, “Bridging Towards a Safer Future” contains a more detailed explanation of the contest [6]. Students used Bridge Designer 2016 to design an affordable bridge that could bear the weight of its users. Mr. Langford and Ms. Cordova helped organize the contest, consulting many different teachers, students, politicians, community members, and firms for advice.

“The most rewarding part was getting to know the parents, the students, the community members, and bringing them all to-

gether. It was an experience for them to be able to communicate their frustration in a meaningful way and address it to those policy decision-makers,” said Ms. Cordova. “That was our purpose: to get families and the community members into this discussion and have an impact on the community.”

Judging criteria included stability under a specified load and financial costs. The award selection was difficult, as many creative ideas were presented. There were four division awards—one for each grade—and the top two designs in each category were recognized. Students worked through hundreds of iterations to create an optimal design, with some spending weeks on their projects.

“The most fun was the live leaderboard. It was exciting and nerve-wracking at the same time,” said Selvahini Kamalarajan, the second-place winner in the Grade 10 division. “It made us strive to push ourselves and do better.”

Winners of the design contest were announced at the awards ceremony during the morning of December 3, beginning at 10 am. Ward 16 Councillor and Deputy Mayor Denzil Minnan-Wong, as well as TDSB Superintendent Andrew Howard, arrived to present awards. Deputy Mayor Minnan-Wong presented the Grade 9 and 10 awards, and Superinten-

dent Howard presented the Grade 11 and 12 awards. The results are as follows:

Grade 9

First place: Aruzoo Farhadi and Neda Siddiqi

Second place: Don Tran

Grade 10

First place: Andy Chai

Second place: Selvahini Kamalarajan

Grade 11

First place: Abdulbasit Mohammed

Second place: Muhammad Asif

Grade 12

First place: Abdulrahman Mohammed

Second place: Andy Chai

Congratulations to all participants who submitted their designs, volunteers, and community members for their support and work. A special thanks to Mr. Langford, Ms. Cordova, Ms. Roberge, Ms. Sawh, Ms. Woodley, Ms. Ammar, Ms. Carey, and Mr. Seenath for their role in engaging and organizing the school contest. We would also like to thank MP Rob Oliphant, MPP Kathleen Wynne, Councillor Jay Robinson, Deputy Mayor Minnan-Wong, and Superintendent Andrew Howard for their dedication.

The public consultation meeting regarding changes to the Overlea Bridge will take place early in 2022. ■

Works Cited

- [1] <https://leasidelife.com/leaside-via-duct-enters-its-10th-decade/>
- [2] <https://www.cbc.ca/news/canada/toronto/thorncliffe-park-parents-overlea-boulevard-bridge-reimagine-physical-distancing-children-1.5798638>
- [3] <https://www.thereckoner.ca/the-overlea-bridge-campaign/>
- [4] <https://www.cbc.ca/news/canada/toronto/marc-garneau-collegiate-high-school-students-design-changes-overlea-bridge-1.5904923>
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Photograph: Bala Venkataraman

Winter Brings Opportunities at FHC

by STEPHIE LIU

With the ongoing COVID-19 crisis, teenagers throughout Toronto have been interacting less with each other, experiencing mental health deterioration, and encountering more difficulties with finding volunteer opportunities. Many organizations, such as Flemingdon Health Centre (FHC), are opening programs this winter to help support youth around the community. Four programs will be offered from January 2022 to March 2022: Tutor Me Please, Dialectical Behaviour Therapy (DBT), Flemingdon/Thorncliffe Women's Youth Group (WYG), and Bike to the Future.

"For me, it's all about developing programs that will be able to address needs in the community and fill the gaps," said Cassandra De Freitas, a registered social worker at FHC who requested to be referred to as Cass. She is a community health worker for youth aged 13 to 29.

Tutor Me Please is a free service that will be run virtually. College students will support students Grade 10 and under across all subjects. Bike to the Future, with Gateway Bike Hub, is offering full-service biking lessons. Participants will learn about a wide variety of topics including bike mechanics, environmental impacts, and safety checks. The program targets common issues such as bike theft. Cass stated that they are hoping to do some biking at the end of

the program in March, weather permitting.

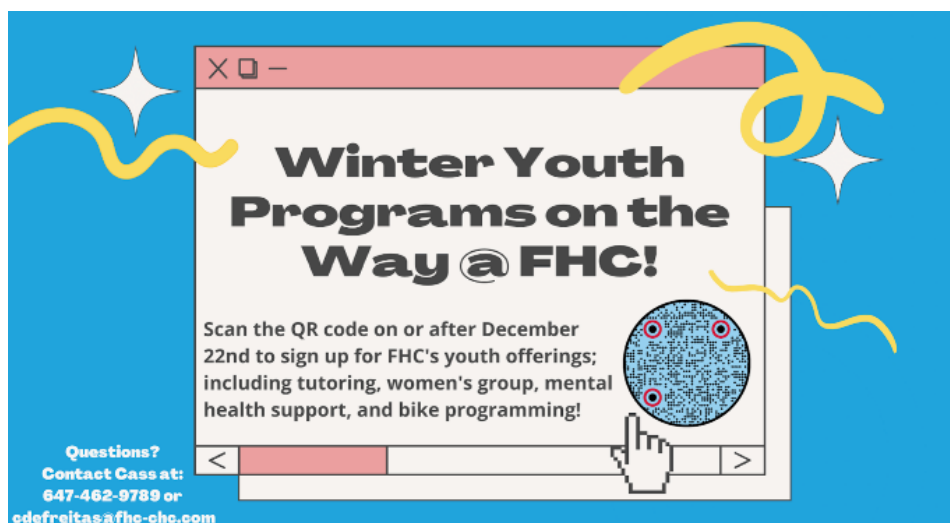
Furthermore, the Flemingdon/Thorncliffe Women's Youth Group, which used to be called Outside the Box, works with youth who identify as female aged 14 to 17, as these transitional years are tough to get through for many people. It will cover different programming that youth have expressed interest in, from art classes to discussions on sexual reproductive health and rights. The program is looking to hire two youth female facilitators, as well, who will be paid \$20 per hour. The job posting will come out the week of January 10, on the FHC website.

"I remember that two—or three—years ago, before COVID, we had 30 girls come in," Cass added about the program. "It was basically a pizza party, and then everyone was just talking about what they wanted to talk about. One week we would talk about nail

art, the next, we were talking about depression."

Dialectical Behaviour Therapy will be offered through SickKids Hospital, which will facilitate the program. A lot of youth in the area need access to mental health services but are unable to acquire them due to cost barriers. Services provided by the Ontario Health Insurance Plan (OHIP) often result in long waiting lists. The DBT program will allow people from ages 16 to 18 to receive proper mental health services, and there will be a maximum of ten participants in a group setting.

Most of the programs have not been significantly affected by COVID-19, besides having been adjusted to run online and to address the needs of the current state of the community. For example, DBT is being offered to teenagers, as it has been found that such services are harder for older youth to access.



To sign up for the winter youth programs at FHC, refer to the infographic above.

People who are interested in attending the FHC winter programs will need to sign up—refer to the below infographics—and will be asked to fill out some basic information, such as email addresses. Weekly reminders with virtual join-links will be sent out to participants' emails before each meeting.

Besides the winter programs, FHC will also be running the Youth Violence Prevention project. Zach, the Youth Violence Prevention Coordinator, said, "I am assisting in creating programs aimed at improving community capacity and creating environments

in which youth can live, learn, work, and play in nurturing and positive environments." There will also be more youth programs offered in March. Students can get involved with FHC by filling out a survey about preferences for future programs and supports.

Finally, concerning the ongoing pandemic, Cass encouraged students of MGCI to ensure they are looking out for themselves and their loved ones. "In the COVID era, it is very easy to see issues and people fall through the cracks. Use your voice to advocate for yourself and one another. En-

sure you are taking advantage of all of the opportunities available to you, and reach out when you need help. It is okay to ask for help!"

To learn more about Flemingdon Health Centre, visit www.fhc-chc.com/.

To learn about exciting volunteer opportunities at FHC, visit www.fhc-chc.com/get-involved/volunteer/. Refer to the infographic below for the volunteer sign-up form. ■



Cass, Community Health Worker at FHC



Zach, Youth Violence Prevention Coordinator at FHC



To fill out the survey regarding future programs and supports, please refer to the infographic below.

YOUTH VOLUNTEERS NEEDED!

Volunteer Hours will be Provided!

Numerous positions available to help create and promote strong, healthy communities.



Sign up with the QR code below:



Bump, Set, Spike!

Volleyball Intramurals at MGCI

by RAY HANG

Volleyball is a sport in which two teams of six work together to make sure that the ball does not touch the ground on their side, with certain other caveats. It is a very popular sport and can be played in many different settings, whether it be competitively or for fun. The rules are easy to learn and remember, and the skills required to play can be quickly developed, making volleyball a well-liked pastime for many students. In the autumn of 2021, the Marc Garneau Collegiate Institute gym department ran a semi-formal volleyball intramural tournament at lunch-time during school days.

In October, sign-ups for volleyball intramurals were posted by the MGCI gym department. Over 50 people signed up and went to the first meeting, where they

divided themselves into teams of six. Exhibition matches ran for several weeks, where the teams would play against each other, practice, and have fun playing volleyball.

“Due to COVID, it has been very hard to play the sport that I love. Having this program during lunch was a great way to rediscover that passion,” said Nishtha Patel, who is part of the mixed-grade girls team. Most of these matches occurred indoors in the gym, but many were also conducted outside on the back field when weather permitted it. Students moving around during lunch-time could spectate these matches, some of which included teachers as players.

At the end of October, playoffs began. Six teams participated in

this tournament. The Grade 11 boys team won 2-0 in the finals match against the Grade 12 team, making them the overall champions. The girls team won the third place playoff, which made the final rankings as follows: first place went to the Grade 11 boys team, second place went to the Grade 12 boys team, and third place went to the mixed-grade girls team. “It was very fun playing against other teams from our school, mainly KG Maffia [one of the teams] and especially the teachers and it feels good to go undefeated for the games that mattered,” said Ulfat Ali, one of the players on the Grade 11 boys team.

The volleyball intramural season is over, but the dodgeball intramural season has now started. Games began on 23 November 2021. A special shout-out to Wasay Aamir, the Athletics Convener on SAC (Student Activities Council), and Mr. Hillman, for organizing and running these activities. ■



Photograph: Wasay Aamir

Exploring Synthetic Biology With BioBuilder Club

by LILLIAN LI

Whether it is used for the environment, manufacturing, or healthcare, groundbreaking research in synthetic biology is popping up more and more in society—pushing the limits of human knowledge and ability. And after making the necessary adjustments due to COVID-19, MGCI is ready to join; this year's newly formed BioBuilder Club is prepared to begin learning and brainstorming topics about synthetic biology that may one day alter the world.

In September 2021, Grade 11 student Bill Yan founded the BioBuilder Club after coming across a number of documentaries explaining how synthetic biology has the potential to lead scientists to world-changing discoveries. “We’re planning on researching synthetic biology to try and solve a real-world problem or come up with something new,” Bill said. “I would like to thank my teacher sponsors Ms. Lee and Ms. Lau for their support.”

As of now, the club is operating fully online through Google Classroom, Discord, and Slack due to pandemic restrictions, so members of BioBuilder will likely not be building together in person. Rather, club executives will lead exciting research on synthetic biology, particularly taking a look at designs and concepts for possible builds.

During the BioBuilder Club’s virtual meetings, members focus on research in health, food, and the environment, as well as planning out a timeline for future progress. When asked about BioBuilder’s goals and visions, club executive Cullen Ye said, “I hope that BioBuilder will help bring together students interested in synthetic biology and further their knowledge and experience.” Future virtual meeting times are still being confirmed based on the availability of the club members.



Photograph: Bill Yan

The first club meeting, which was held at the end of October, involved the executive team explaining their plans for the BioBuilder Club before setting up a brainstorming session on possible topics. Some ideas the club came up with included using mosquitoes as vaccinators and harnessing the opossum’s Lethal Toxin Neutralizing Factor (LTNF) as a snake poison antidote. Under the topic of human health, the club also considered the possibility of using genetically engineered *E. coli* to prevent the unintended, adverse effects that antibiotics have on gut microbiome health. Yolanda Zhou, a member of the club, said, “Cullen recommended this easy-going club. I enjoy learning about building, and seeing that he is an exec, I wasted no time joining. BioBuilder has already impressed me, and I am looking forward to the rest of the year.”

The primary materials that the BioBuilder Club uses as a starting point for their research include the BioBuilder textbook and the BioBuilder website (<https://biobuilder.org>). These resources hold a bulk of information, ranging

from the fundamentals of synthetic biology to an introduction to BioBuilder labs and complex topics like DNA engineering. Under these topics, the book and website explain engineering, biodesign, the synthetic biology toolkit, and more. Furthermore, they cover details about past builds and include information about future opportunities for students to apply what they learned with BioBuilder. “I hope BioBuilder will give participants a deeper understanding into the world of synthetic biology, and that participants will [come up with] something novel, creative, and or interesting,” said club executive Tony Zhang.

The club is still open to new members; all they need to do is join the Google Classroom (the code is “oomxaxy”) and the Discord server (<https://discord.gg/jM6GmtNb>) to find sign-up links, download the textbook, and attend the club’s virtual meetings. As the weeks go on, the BioBuilder Club will continue to research and innovate, gathering the growing population of students who take interest in synthetic biology. ■

Buried in Books with Ms. Brennan

by IRIS MA

After nearly 2 years of struggling with the COVID-19 pandemic, things are slowly shifting back to normal. In school, students are beginning once more to take the Ontario Secondary School Literacy Test (OSSLT). In light of this returning exam, Ms. Patricia Brennan was quick to take initiative in preparing our students.

Q: What are your thoughts on the OSSLT this year? What inspired you to start a club in preparation for it?

A: The OSSLT came all at once this year, like a roll of thunder. I feel for all of the students that have to write and may feel unprepared or under immense pressure. As an English teacher, my primary goal is to strengthen students' literacy skills by helping them find joy in reading and writing. This is the primary reason I started the Literacy Club. I wanted to create a space where students could learn and refresh some of these skills in a safe and fun space. Oh, and of course, the Kahoots. It's always about the Kahoots.

Q: What inspired you to become an English teacher?

A: It's funny that you ask this question, as I was just having a chat with my daughter about why I became an English teacher this past weekend. As a child, I always loved to read. Books were my escape. My dreamworld. My home. My mother tells stories about how I would sneak out of my bed at night into my older

sister's room and take coveted, strictly-off-limits books from her shelves, only to be discovered in the morning with them strewn across my bed. So, books were it. They were EVERYTHING. It seemed only natural that I would figure out a way to make them a part of my always life. Combine that with being able to be around the best people in the world— young people—and I knew I had won the lottery.

Q: What struggles did you face on your journey?

A: I began my career SO many years ago. I was young, impressionable and teaching in a way that I felt instinctively was wrong for students. I knew things had to change, but could not figure out how to change them. And so, after years of having doors close before me, I left teaching. Discouraged. I knew almost immediately I had made a huge mistake. But sometimes it takes leaving a thing you love to discover how much you actually love it. When I returned to teaching the second time around, I promised myself that it would be different. This time I knew how to use my voice to advocate for students. This time I knew that students would always be first. This time I would stick it out. It was the best decision that I have ever made.

Q: What are some of your hobbies and favourite pastimes?

A: Reading. Hello? Besides that I have come to accept that my love of fashion is an acceptable hobby. Years ago, I interned



Photograph: Stephanie Chan

at Fashion Magazine and came to understand that while I do not want to write about fashion every day, I do want to immerse myself in it on occasion. Oh, and I love to cook. No baking (all of that science!). Cooking. Pastas, shakshukas, curries, falafels, soups, salads, noodles. All of it.

Q: The pandemic has brought a lot of changes in everyone's lives. What would you like to say to students during this challenging period?

A: If I could say anything to my wonderful students during this most challenging time, it would be to please go easy on yourselves. We have never experienced a world like this. Everything is topsy-turvy, so it is perfectly okay for you to feel topsy-turvy, too. So, ask for what you need. A break. An extension. A helping hand. We will get through this—together. ■



LIFE BOARD

A board for imaginative self-expression through
written and visual content.



Lonely Traveller

by ANNIE XIONG

Illustration: Sonia Ravindran

i've worn holes in my shoes
trying to walk this path
to embark on an odyssey
with no ships or wine
could be bravery
or a lack of foresight

whimsical personality
to cope with tragedy
walking a tightrope
with no net below
do you falter?
do you fall?

is there compensation
some sort of consolation prize
second place or third
to stand on a podium
yet feel like an onlooker
to have it good
yet yearn for more

standing underneath a lamplight
where my path diverges into two
i am at a crossroads
desolate earth
lonely traveller

A Sunlit Memory

by ANDREW CHEN

Long ago, in the hazily framed fields of grass,
Sunshine fell upon our faces.
Our old friends and our old class,
Laughing and playing.

With innocence and youth,
And the sky, oh so blue!
And the giant glowing sun,
Hanging in the sky.
It lit up our world...
A sunlit memory.

Oh, what a short-lived time,
With such lovely peace.
Where shadows had no place,
Where tragedies and suffering could

not be traced.

Up, up and away...

The grey paved schoolyard,
The grassy green fields,
Splattered with yellow,
And dotted by the outlines of children.

The beige-tinted sandpit.
The brightly illuminated playscape.
The blue, blue sky.
A vast realm we call home.
A gem hidden
In the dark unknown.

Nothing but a
sunlit memory.



Illustration: Ivy Liu

a moment that lasts forever

by VIVIEN XIANG

She keeps a sprig of lavender in a jar of water on her windowsill. It's been like this for as long as he can remember. He never sees her take care of it, or even change the water, but the lavender stays, undying, unchanging.

He never asks. She never answers.

There are rumours, stories of a girl that ran away into the woods and never returned. She says it's all exaggerations and rumours and lies.

She should know, anyway.

She knows about loathing, and she knows about the ways that words twist themselves between and through ears until nothing of what came before remains.

He doesn't like candles in the apartment. Whenever she lights them, he waits until she's left the room before blowing them out.

She keeps lighting them, looking out the window.

She never minds that he blows them out.

He doesn't know anything, not about her. Not about what happened here.

She doesn't know if she likes it. She doesn't know how, even though it's a big city and it was a small school, everything is still so connected all the time.

Not that she could ever cut those ties.

"Merry Christmas."

She looks up at him through half-lidded eyes, her hands freezing so much they burn in his. She's not wearing a coat, just an oversized purple cardigan and white shorts.

"It's Christmas, huh? I'm sorry, I forgot."

"It's Christmas Eve. You haven't been watching the news lately?"

"I forgot," she says simply.

She still has a present, under the sink of her bathroom. A delicate



Illustration: Ajita Kanthathan

silver chain, wound and wound and wound like a coil of rope, strung with a blue gem like an eyeball.

She can't look at the eye on the necklace. She regrets nothing.

She presses her palm into his, and his eyes stare more deeply than the necklace's ever will.

It's Christmas when he asks about the lavender. About her.

She's drinking a glass of iced water, more ice than water, and that's the only reason she doesn't choke when he does.

She'd known it was coming.

She places the jar on the table between them, like the world's worst candle.

"They were right about me. I've lost far too much. I thought I was making a concession when I

received this, but now? I think it really is a boon. I won't ever let go."

It's wrong to think of him as a blank slate, as someone who she can project thoughts and feelings onto, because he's not. He must have had a life back home. He should at least get a chance to return to it.

"You can leave, if you like."

"If I like."

"Please." It's a request, and a promise, and a desperate plea. "Go. Or stay, and don't talk of this ever again."

This is the rest of his life, suspended above the ground with a girl that can never let go.

"Please," she says again, and he says nothing.

The water in the jar freezes as it falls out the window, and it shatters.

Away

by SAMAYA SADIQ

Grey clouds crowd the sky
But it stays blue underneath
The rain crashes down
Onto the webbed gravestones
They stand high
For those who lay beneath

An open ground
Filled with flowers
From those who couldn't stay
To those who wouldn't leave

A rush of remorse
A feeling too foreign
For those you don't know
For those you won't forget

Sorrow eyes,
Dripping,
Not for long
As they dry themselves
Too exhausted to feel
Too exhausted to rain

Illustration: Colleen Chang



Illustration: Akshaya Varakunan

Let Your Imagination Grow

by ZAHRA SUHAIL

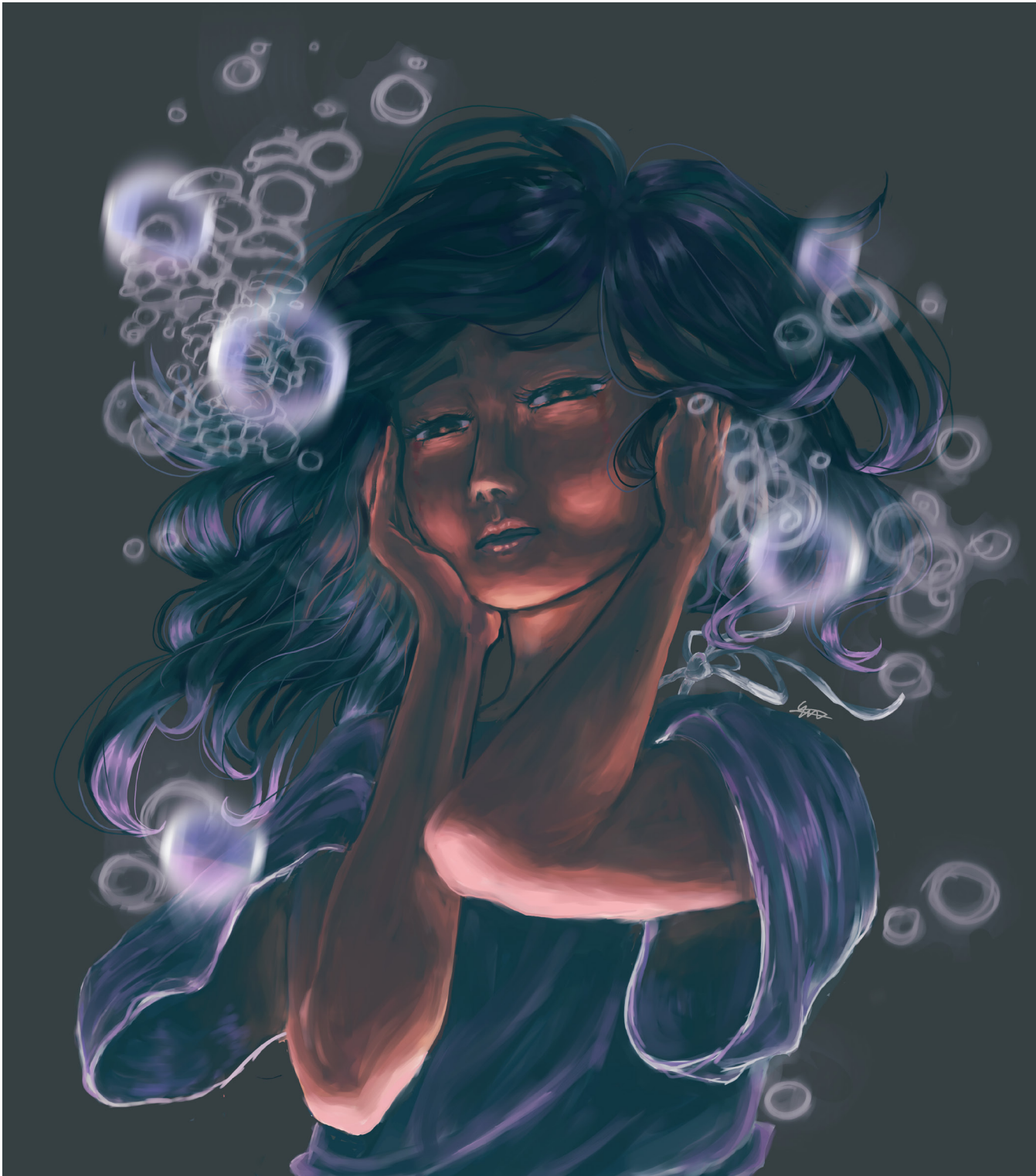
What if you can't go out?
Let your imagination grow free
Sail merrily with the clouds
Keep aside all your negative doubts

What if you can't go out?
Maybe you daydream a bit
Give yourself a treat
Let no negativity hit

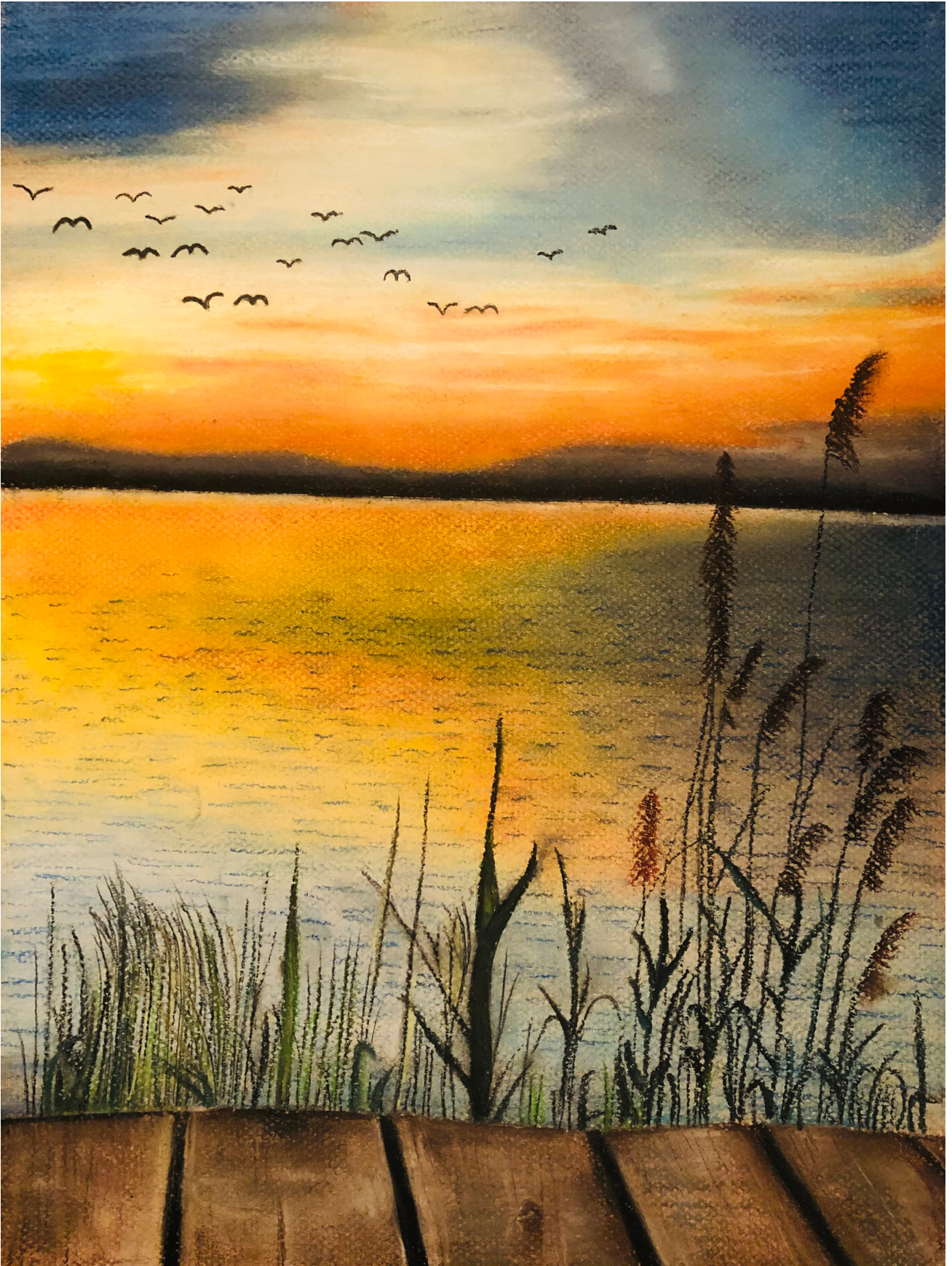
What if you can't go out?
Let your creativity grow
Move your hands to and fro
Sing a song you know
Don't allow your spirits to be shallow

What if you can't go out?
Let your imagination flow.
Set your mind to blow.
Don't ever let your hope go

A Jellyfish
Elizabeth Wei



Sunset Bay
Hannah Xu





Anesthesia

Amy Long

EDITORIAL BOARD

A board that amplifies student voices through supported opinions.

Energy Crisis and the Future of Coal

by ANDREW XU

In the early stages of the COVID-19 pandemic, the world economy was on the brink of collapse. Energy demand declined rapidly and the prices of fossil fuels such as oil, gas and coal went down hard. Back then, few people could imagine that there would be a complete reversal in the near future. But this was exactly how things turned out. With the pandemic fading and economic recovery quickly picking up pace, the demand for energy has shot up fast and the supply is struggling to catch up. An energy shortage and dramatic spikes in energy prices are causing a worldwide crisis.

As of October 2021, oil prices have been hovering around USD80 per barrel, an increase of over 60% since the beginning of the year. Meanwhile, the price of natural gas, which provides more than 30% of all U.S. electricity, has more than doubled this year to \$5 per million Btu (British thermal units). Even coal is exploding—the price of U.S. coal is up 400% this year, to \$270 per metric ton. The situation is even worse in Europe, as electricity and natural gas prices have more than tripled [1]. Soaring gas prices and low wind power output forced the U.K. to restart an old coal power plant to meet its electricity needs [2]. Asia is no exception. China has had rolling blackouts and factories had to suspend production in turn.

India had a similar power crunch.

The crisis reinvigorates calls for a fresh look into coal, which has a worse reputation than oil and gas as far as environmental impact is concerned, but provides essential fuel for power generation in many regions. The prevalent narrative before the crisis has all but regarded coal as outdated although it still makes up a big chunk of the world energy consumption. It has almost been a foregone conclusion that coal does not have a future and as the dirtiest fossil fuel type, it should be phased out as soon as possible. From 2009 to 2019, America saw a 40% decline in coal-generated electricity [3]. Peabody Energy, America's largest coal company, lost 99.85% of its market valuation from 2011 to 2016, from 20 billion to 30 million dollars [4].

Just when everybody has written off coal as a type of fuel slowly dying away, it seems to be having a revival in terms of its importance thanks to the worldwide energy shortage. As a result, coal prices start to take off. In China, coal-fired power plants are trying to get any fuel they can put their hands on, trying to satisfy the energy needs for the factories busy working to meet the increased demand from the economic recovery. A majority of Chinese electricity still comes from coal and the extreme

price spike of coal poses a serious threat to the economy. Coal may not be as important to the U.S. and Canada as it is to China, but it still accounts for 30% of electricity generation in the U.S.

It's no wonder people are starting to doubt if coal is destined to be phased out in the foreseeable future. Advocates in favour of the coal industry argue that renewables are mostly intermittent in nature and there should be plenty of reliable coal to drive the stable base power generation. They also point out the fact that renewable energy still takes a small share of electricity produced even after years of government policy support and huge investments from private sectors. In the U.S., nowadays renewable energy sources (excluding hydro) provide just under 10% of total electricity generation (gas is 42%) [5]. They conclude that coal will still be an indispensable part of the fuel mix for many years to come, and therefore, governments should not actively discourage coal investments.

Despite all the doubts mentioned above, it is imperative that coal should be phased out in the foreseeable future. Granted, coal is a major type of fuel providing a significant share of energy to the world, and it will be very hard to replace it and smoothly transition to a

coal-less state, as the energy crisis can tell us. But the urgency of the climate crisis does not give us much breathing room unless coal retirement is involved. Luckily, it is practically doable as well, although the transitioning process may not be as ideal as we would like.

First, mankind needs to have the urgency to act on greenhouse gas emissions control because not much leeway is left with the dire situation of the climate crisis. Coal combustion still accounts for 40% of global CO₂ emissions from energy use. And for the same amount of greenhouse gas emissions, you can create twice as much electricity with natural gas [6]. Obviously, cutting coal will be the most effective way to alleviate greenhouse gas emissions. The power sector must stop using coal without carbon capture and storage by approximately 2050 if the Paris Agreement climate goals are to be achieved [7]. In addition, some harmful by-products of coal-burning, such as ashes and air pollution, are very harmful to people's health [8]. There is simply no reason not to retire coal over time.

Second, it is practically doable to phase out coal. Some people are too optimistic and expect that renewable energy will directly and completely replace coal during the process, which is not viable. During the transition, renewable energy can only replace part of coal-fired power generation, given the physical and economic constraints. A more pragmatic solution is to have natural gas, a much cleaner and much less carbon dioxide intensive fuel type, take the place of many coal-fired facilities. In fact, the recoverable natural gas reserve in the U.S. is huge and can provide many years of gas supply even if all coal-fired power plants are replaced



Illustration: Zoe Cheng

by gas-fired ones. This will leave more time for renewable energy to develop and eventually renewable energy will provide most of the energy needs. If people miscalculate the pace and scale of the shift to renewables, they will pay a hefty price. The current ongoing energy crisis vividly illustrates the importance of an orderly and pragmatic transition.

Last but not the least, we need to understand that key stakeholders in the process should be treated fairly. Real families and people will be affected during the transition. Globally, the coal mining industry alone employs about 8 million people and creates revenues of more than \$900 billion USD a year. Coal use is unlikely to be eliminated entirely in the medium term. Rather, it is very important that the process of phasing out coal is perceived to be fair and corresponds to political realities. Policymakers should be keenly aware of who will be negatively impacted and how these groups can be compensated accordingly.

To sum up, the world should stick

to its target of retiring coal as soon as possible. But we should understand that the transition will not be easy, and we need to plan and execute effectively to realize the energy future we all deserve. ■

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It's Time to Curb Slip Lanes

by AARON ZHANG



Illustration: Samara Rahman

You probably don't pay much attention to the ramps when you enter or exit a highway. The process is almost second nature to you—indicate (hopefully), watch out for other cars (hopefully), change lanes, turn, crank up or down the speed, and go. These mundane elements of traffic design, seen at every highway interchange from Windsor to Ottawa, are one of many scars left on the landscape by a

deeply flawed design. This purportedly natural design neglects to take into consideration the safety of pedestrians, who are becoming increasingly important and numerous as populations grow.

A basic need of every resident is the ability to get around their community, so every road of a community must be safe for everyone to travel on. However, the slip lane, a stray lane intended for turning, stands in direct

opposition to the idea of inclusive roads. Their selling point of enabling drivers to maintain speed while turning is dangerous as it runs the risk of cars coming close to pedestrians at high speeds. Familiar examples to the average Toronto commuter might include the off-ramps at the DVP/Lawrence Ave interchange or any on-ramp onto any 400-series highway with few exceptions.

It is long past due for them

to be removed from city planning as they present a real danger to pedestrians and cyclists. Making Ontarian communities more walkable is imperative as the population of Ontario is projected to increase to 22 million within the next 25 years [1]. Having all these people drive every day will inevitably create more traffic on the road, which will exacerbate already ridiculously long travel times.

However, nearly four out of every five Canadians use a car to get to work [2], thanks in part to slip lanes turning highways into invisible curtains that cannot be crossed safely without a car. If Ontario wants to stay well-connected in 2046, it will need to start contemplating ways to encourage the people who can walk or bike to start doing so. Studies by the CDC have shown that people are more likely to walk or bike to get somewhere if the streets are safe enough to do so [3], but slip lanes are an active barrier to that, as they make the streets more dangerous to walk and bike on.

The biggest issue with slip lanes is that they create a separate conflict point between lateral traffic, turning traffic, and pedestrians. The separate lane creates a new flow of traffic onto the lateral road, turning one conflict point into two. Furthermore, the sharp angle of intersection between the turning lane and the lateral road creates a blind spot for the driver, which makes crossing the lane dangerous. A study of 195 traffic-pedestrian collisions found that 79% of cars involved in collisions at slip lanes collided with a pedestrian coming from the driver's left [4].

To remedy this, the Federal Highway Administration has proposed reforms to the slip

lane in an attempt to salvage a misguided design—this includes painting crosswalk indicators over the road [5] or making it subject to a traffic light [6]. They say the shallower angle will give drivers a clearer field of view and the traffic light will control pedestrian-traffic interactions. But at that point, wouldn't the resources spent adjusting the slip lane be better used to create an actual intersection? An unseparated turning lane would satisfy their safety requirements much more than a slip lane at a shallower angle, since the unseparated turning lane intersects the lateral road at a right angle, which is the shallowest angle possible.

In fact, the entire concept of using a slip lane to allow traffic to turn faster is flawed. Any driver that has read the Transportation Ministry's driver's handbook should know that the faster a vehicle is moving, the longer its stopping distance is. If any consideration is to be given to pedestrians in this equation, then the goal should be to encourage turning vehicles to turn as slowly as possible. Slip lanes, by their very nature, make crossing the road more dangerous as drivers need to take longer to stop, which is the difference between avoiding and colliding with a pedestrian in a 3 000-pound wheeled metal machine of death at 40 kilometers an hour.

Even at a highway on-ramp, where the intent is for the car to speed up as it merges onto the high-speed road, the slip lane has no place in a safe and inclusive transportation ecosystem. Having vehicles stop and turn onto the on-ramp as they would onto any other road instead of bearing onto them will allow for safer pedestrian

crossing of highways while still allowing cars to accelerate to highway speeds in the merge lane at grade with the highway.

Thankfully, the City of Toronto is already planning to get rid of slip lanes in intersections with high foot traffic [7], but this is simply not enough. Other cities need to follow suit and put more measures in place to make streets a safe place for everyone, not just those who have the opportunity and capital to buy a car. While electric and self-driving cars may seem like a stopgap solution, those who travel on foot or by bike spend astronomically less on transportation expenses when compared to motorists.

As the world lumbers on in its state of perpetual inactive inertia, change must start simple. It must not only be simple, but effective as well. The elimination of slip lanes is the perfect first step to get the government's foot in the door when it comes to sustainable and inclusive transportation and city planning. It is simple, effective, and will reduce costs and emissions. It simply involves the rejection of a flawed and dangerous design. ■

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