

(URBAN FARMERS)

A STORY OF MONTREAL BY CHLOÉ POTIER

While I was enjoying my family's company and looking at the narrow streets, bursting with life, I thought about how much my vision of the world had changed over the past 5 years.

November 13th, 2062

"Maria, you have to live your life and do what's best for you. We'll take care of ourselves just fine. Stop being a child and get on that plane!!"

Waiting for my plane to land in Montreal airport, I kept thinking about the speech my mother gave me before I took off from Lima. It had been the hardest moment of my life.

My family comes from a small coastal village in Peru. Until a month ago, we were part of this minority which still resisted the calling of big cities – at least, my parents and little brother were. I just graduated from Lima University after living there for 5 years... But anyway, all that was before the flood.

My parents knew that their simple farmer's life in San Paleso could not last much longer, but what struck our village was way worse than everything we could imagine. We had already faced droughts after the Andes glaciers had all melted down, bad crops because of the lack of water, the departure of our neighbours and friends who wanted a better life in the cities, food shortages, energy restrictions... Of course, we had heard about all these islands and coastal cities being hit by the waves and swallowed by the sea, but we did not think it would ever hit us! All these nightmare scenarios that scientists and climatologists had been waving around for decades had finally been brought into being for us. We had no choice but to go to the nearest big city, Lima, just like everybody else, leaving behind our flooded home, fields and memories. All the incredible moments I had spent there in my 25 years of existence, all the fights we had had to put up to survive in this remote area, all that had just been wiped out in a few minutes.

But that does not explain how I ended up in that plane, flying to Canada.

Of course, we did not have enough money to find a nice apartment in Lima's area. So we had to settle in the refugee camp the U.N. had set up to cope with the arrival of the tens of thousands victims of the recent climatologic catastrophes. I would not say that was a nice place.

On the night of our arrival, my mother and I were checking up the beds we had been attributed in a 50-bed dormitory. As I was complaining about the location of my bed, close to the door, my mom told me:

"Don't bother. You're not going to stay here anyway."

That is when I understood that she had all figured it out for me already. She said:

"Do you remember my Canadian friend, Anna Johnson? She lives in Montreal now, I just called her. I told her about our situation, she says that she would love to help you."

What are you talking about? Help me with what?

Maria, you just graduated from college. You can still have a bright future and a great career! But look around you!

I turned around and took a moment to observe what was around me. What I saw was not very joyful, I'll give her that. My two parents and my 9-year old brother were bearing the marks of the terrible events that had stricken us. Dark rings under their eyes bore witness of the lack of sleep and anxiety which were eating them up. Around us, men, women, children, babies, old people were yelling, crying, fighting, or simply staring into space, waiting for their next daily ration of insipid food and trying not to think about all the things they had just lost. They all looked desperate, exhausted and hungry. The living conditions in this settlement were hard, I won't argue on that.

My mum said:

You see? There is nothing for you here! But I heard life is very nice in Montreal. Anyway, there is no point arguing. Your father and I saved some money, and the plane ticket is already paid for. You're leaving on Tuesday. Anna will welcome you at the airport."

Despite my vehement protest, my anger, my imploration and my tears, my parents remained inflexible. They wanted me to leave, and send them some money once I found a job. I was furious of having someone decide of my life for me, but the plane ticket was not refundable, and I knew that this decision was as hard for them as it was for me. After hours of negotiations, we finally reached an agreement: if I could not find a job in Montreal within three months, I would come back to my home country.

After heart-breaking goodbyes, I left my parents and 9 year-old brother behind and got on a plane to Montreal.

So here I was, Maria, 25 years old, born and raised in Peru, going to an unknown country with no idea what to expect. All I knew was that I needed to find a job quickly, so that I could send money to my family and try to ease the guilt I was feeling for running away from all the misery they were going through. At least I spoke English and I had a degree in biology... But the truth is I was secretly hoping not to find a job, so that I could come back home.

Just as planned, my mother's friend, Anna, was waiting for me in Montreal airport. She was accompanied by her husband, Tom, and her two children, Josh and Charlotte, respectively 7 and 5 years old. Anna and my mum had met 25 years ago, when they were both young and travelling across Chile. Their friendship had grown over time, and Anna's family had come visit us in Peru a few times before Josh and Charlotte were born. Since their births, we had videocalls three or four times a year, so I already knew the family a little.

After a warm welcome and a few questions about my family's situation, we got in the airtrain to go to her house. The Johnsons had agreed to accommodate me for as long as necessary, which was a true blessing. Without their offer, I would have had no choice but to ask for a bed in the refugee settlement in the suburbs, where the living conditions were known to be harsh, though probably not as much as where I came from.

These refugee settlements had been flourishing all over the world for the past years. Most major cities had now at least one camp to welcome the migrants who had to move because of the frequent hurricanes, floods, droughts, desertification... All around the world, an incredible amount of buildings had been built in the late 2050s to cope with the unprecedented rural exodus happening worldwide, but that was not enough anymore.

At this point, I was just filled with tons of contradictory emotions. First, I was exhausted. I was sad and depressed of being away from my family, which I missed already. I was scared of having to fit in this unfamiliar place. I was afraid of not being able to find a job, since I knew that Montreal was under a very high demographic pressure and

could not provide jobs for everyone. But I have to admit that I was also excited about all the opportunities I would have here. Montreal was famous for being one of the pioneer cities in term of adaptability and sustainability, and the quality of life seemed to be incredible here, compared to what I knew. As the airtrain was floating on its magnetic cushion across the city, I looked through the window. I was amazed by how beautiful and modern the city was. The landscape was very varied: in the area near the airport, I could see tons a high buildings, advertising company logos, and airtrain tracks standing out in the skyline. The buildings all had green rooftops, and were surrounded by small parks and gardens, scattered around the roads and streets. Like all the modern buildings, the facades were probably made of transparent solar panels, although it was impossible to be sure given the distance. The revcars – the driverless electric cars, also covered in transparent solar cells- were the same as those I had seen in Lima – although the traffic monitoring system seemed to be more efficient here, since I could not see any traffic jam.

When we got closer to downtown Montreal, big towers became sparser although still present, cars progressively disappeared, and I could see pedestrians and cyclists wandering around, joggers running along the canals of the Saint-Laurent, zigzagging between the high buildings and going through the parks, people having a drink on the cafés terraces... Here too, the rooftops were covered with vegetation.

We finally arrived at the Johnson's place. They lived in a suburban area, about thirty minutes north of downtown Montreal by airtrain. They explained that if they needed to travel for long distances, they could just book a revcar for a few days. But the transportation system was so efficient in Montreal that almost nobody owned their personal revcar, they said.

Their flat was a big apartment on the nineteenth floor of a 20-story building. They showed me my room, which I immediately loved. I had a small balcony where they seemed to be growing carrots, and from there I had an unobstructed view of the urban landscape of northern Montreal. It looked like the city was a green ocean, from which emerged high towers, just like the late icebergs emerged from the arctic sea 15 years ago. I took a picture with my phone and sent it to my parents, with a few words to tell them that I was safe and missed them.

The Johnsons really wanted me to feel home, and they laid on a first rate meal for diner. We had fresh onions, eggplants, tomatoes, potatoes, leaks, carrots. And even meat – synthetic meat, but still! I had not eaten meat in years!

Back in Peru, fresh vegetables had become a luxury, and we mostly ate cereals like corn or wheat. Not to mention meat, which was reserved for millionaires since the 2047 Climate Revolution. Synthetic meat was cheaper, but it was still reserved for big occasions.

Josh, quite proud, told me all that the onions were coming from their lot on the rooftop's garden. As Anna explained later, each household in Montreal was entitled to request a small garden to grow vegetables or fruits. The rest of the vegetables were coming from one of the 15 vertifarms in Montreal. Anna just so happened to work in one of those farms, and she tried to give me an overview of how they worked and how they managed to provide for 90% of Montreal's food needs.

Montreal was known worldwide for being one of the first cities to implement urban agriculture as one of the major food resources for its citizens. First, the process gained momentum through private individual and collective gardens, where people could grow their own food. Over time, and largely thanks to the support of the Canadian government and Montreal's municipality, all the brownfield sites in the city were depolluted and cultivated, and gardens flourished everywhere, from public or private parks to roundabouts, rooftops and balconies. But, although it was nice for the citizens and it significantly improved the quality of life by decreasing air pollution, reducing the

heat island effects, lowering the albedo of the city and making people more aware of the importance of healthy food, it was not productive enough to feed even one tenth of the city. Which is where the vertifarm came up. The vertifarms, also known as vertical farms, started to truly develop about ten years before the so called Climate Revolution in 2047.

As you know, the Climate Revolution happened after a series of deadly floods, sandstorms and hurricanes struck the five continents between 2042 and 2046. These unprecedented climatic cataclysms, which resulted in millions of victims, finally raised awareness worldwide, about the necessity to take drastic measures to slow down climate change - hoping it was not too late yet. After years of shy environmental measures and agreements which no government really respected, too busy fighting unemployment or terrorism within their borders, an unbelievable breach finally happened. In just a few months, all the coal, oil and gas exploitations were closed down, which of course involved energy restrictions which are still enforced today. Renewable energy was implemented everywhere. All the cars using fossil fuels were replaced by revcars, driverless cars functioning with electricity, mainly produced with high-performance solar energy systems. Smart networks were developed to optimize energy consumption in cities and buildings. Colossal investments were made to mitigate the effects of climate change and fight climatic catastrophes. Rainforests, or what was left of them, were replanted. Intensive breeding of cattle completely stopped, to either replant the grazing areas, or to replace them with cultivations of cereals and vegetables to feed people instead of animals...

All this was only made possible because of the incredible rush of solidarity between countries which surged after these dramatic events. A perfect illustration of this rush is the U.N. climatic fund, which was created in 2047. Thanks to this fund, the poorest countries, or those which were struck the hardest by climate change, could truly benefit from the financial help of the wealthiest countries. As we see it now, the Climate Revolution symbolizes everything which makes humanity so beautiful: generosity, brotherhood, responsibility, respect, hope...

But of course, it happened way too late, and the world kept becoming an ever more hostile place. Scientists say that it could take 100 years before the benefits of the Revolution become apparent.

But let's get back to vertifarms. After the Revolution, one thing had not changed: producing enough food for everyone on earth was a real challenge, especially given the exponential growth of global population. Since it was almost impossible to expand the land dedicated to agriculture, scientists and entrepreneurs gathered to make Dickson Despommiers' concept of vertical farm real. The technological improvements in the energy department made it possible to build these tall buildings dedicated to agriculture and to turn them into economically viable operations. In the vertifarms, tons of vegetables and fruits are produced every day, year round, using the most advanced technologies: aeroponic or hydroponic culture, addition of nutrients, light provided by low power consumption LEDs, precise monitoring of all the environmental parameters to increase productivity... Thanks to the vertifarms, the cost of transport had been extremely reduced, since the "food mile" is of 3km in average. The extremely carefully monitored environments inside the farms made it possible to give up pesticides and fungicides, and to replace them by insects like ladybugs. It is also a great improvement regarding water consumption, compared to traditional land based agriculture. When the vertifarms started to erect in Montreal's landscape, tens of new varieties of vegetables and fruits appeared on the market. Since transport was not an issue anymore, the cultivated species could indeed be selected according to their taste and not their ability to resist long distance transportation. Without the vertifarms, the citizens of Montreal would probably have food restrictions, Anna said. Not to mention the fact that vertifarms also protected them from bad crop years.

As she was telling me about the vertifarms, I could see the twinkle in her eyes. She truly loved her job.

I was astonished. I had heard of these vertifarms before, of course, but so far they were reserved for the wealthiest countries so I didn't know much about them. But a painful statement kept buzzing in my head: if we had vertifarms in Peru, people would not be starving in Lima nor in the countryside. My parents and brother would be able to eat fresh vegetables and fruits all year round, instead of the usual tasteless wheat and corn mush provided in the refugee camp. I asked:

"If these farms are so fabulous, why don't we build them all around the world?"

-Just like everything else, the main problem is money. It is very expensive to build, you need advanced monitoring equipment, a complicated plumbing system, you need to be able to provide enough energy to light the LEDs, you need the greenhouses to be airtight, well insulated... And of course, these are urban farms, so you have to pay a lot to buy the land in an urban area. Even with today's technology, it is very expensive and it takes several years to make profits. And there is a huge competition when it comes to urban lots. Tons of companies are willing to pay incredible prices to get their share."

-But why was it possible to build these vertifarms in Montreal, then? And why not in Peru? , I wondered.

-Well, urban agriculture has always been part of Montreal culture. For more than 200 years, people have managed to keep areas to cultivate their own food. The city of Montreal became aware of the benefits of urban agriculture way before the Climate Revolution. The first Lufa farm was built in Montreal in the 2010s, and though it was just an experiment and it was not efficient enough to make real profits, it started a trend. Ever since, Montreal has tried to be friendly and supportive to those who wanted to do new experiments about intensive urban agriculture. And, one thing leading to the other, new farms appeared, more modern, more productive, more sustainable... On the other hand, Peru is still new to intensive urban agriculture, and with the droughts and the floods that your country is facing at the moment, it is hard to find money to invest in this kind of projects."

My first night at the Johnsons' place was quite agitated. I kept thinking about these vertifarms. I could picture my parents and brother, eating their daily ration of cereals in their refugee settlement, knowing that it would fill their stomachs for about 2 hours and that they would then have to wait 22 more hours before eating their new daily ration. I could remember how my parents struggled to harvest as much crops as possible after droughts or storms, and how the government did not even allow us to take part of our culture for our own consumption, because of the food restrictions. I could not help but think that it was another example of how the previous generations had completely mismanaged the resources, focusing on the short term profit and deliberately ignoring the consequences that their decisions would have in the future. I mean, scientists, climatologists, politicians, businessmen, they all knew what was coming. It is possible to find very accurate estimations of climate change consequences dated from 2015, as I studied at school. By that time, people already knew that even in the best case scenario, global temperature would increase, sea level would rise, violent climatic episodes would become more and more frequent, clean water resources would become a hot button issue, demographic growth would make it extremely challenging to provide food for everyone... And yet, when it would have been possible to anticipate and find solutions, for example preventing food shortages by funding vertical farms, nothing has been planned, and now, in some areas, people do not have enough food to survive.

The next morning, Josh and Charlotte insisted on taking me to the rooftop garden, saying that they wanted to show me something. Quite curious, I followed them, promising their parents that I would look after them. Once we arrived at the top of the building, Josh pointed at the left hand corner:

"Look Maria, here is our lot! And dad said that today, we could pick up the strawberries!"

Charlotte and he looked so excited that they kept jumping, bouncing and giggling, and I could not help but laugh with them.

As we were picking up the strawberries, I heard the voice of an old man behind my back:

“Hi Charlotte, hi Josh! Oh and you must be Maria! Tom told me about you. I’m Bernard, I live on the 8th floor. Nice to meet you!”.

I immediately loved Bernard, he was really nice, and quite funny.

While he was telling me how well he knew my home country, considering the fact that he had spent 3 weeks in Argentina 50 years ago, people kept showing up on the rooftop to water their gardens and pick up their vegetables. They were all really friendly. Jacqueline, 76, from the 2nd floor, Pablo and Rachel, 26, from the 15th floor, Jake and Alex, 34, from the 10th floor... They all joined our conversation, which became more of a joyful cacophony, and pretty soon I felt like I had made 10 or 15 new friends. All that thanks to a few strawberries!

During the conversation, I explained to Pete, who was probably my age, that I was looking for a job as soon as possible.

As unlikely as it sounds, he told me that he was working in the same vertifarm as Anna, and that one of his colleagues had just resigned. It turns out that I had the perfect background for the position. The job was to monitor all the parameters in the greenhouses – moisture, temperature, nutrients concentration, and water, insects...- to optimize the production. I was suddenly very excited – and scared to get the job, since it meant I would have to stay in Canada. But for some reason, my recent discovery of the existence of vertifarms had had a profound impact on me. The fact that buildings could be entirely dedicated to growing vegetables and fruits fascinated me, who had always known traditional land based agriculture in my parents’ farm. And I felt like this kind of projects could really make a difference, help people and reduce food shortages.

We exchanged phone numbers and Pete promised to call me to set up a job interview.

When we went back to the apartment, it was around 9 a.m. As it just so happened, it was the 15th anniversary of the Climate Revolution, and Anna offered to give me a tour of the vertifarm, since all the infrastructures and facilities working towards sustainability were opened to public today. I accepted with great enthusiasm.

After half an hour of airtrain, we arrived in front of the entrance of a 30-story building. Josh and Charlotte were there too, they had visited the farm last year and had loved it because they were given free blueberries at the end of the tour.

The motto of the company was displayed on a huge sign on the building façade: “DUFA Farm®. Urban food, that’s so good”. I remember hoping that the quality of that motto would not reflect the quality of the company, in which I was placing great hopes.

We entered the building, and took the giant elevator. I will not describe the whole visit, it would be too long, but let’s just say it blew my mind. Salads, carrots, tomatoes, bananas, mangos, leaks, potatoes, onions, artichokes, cabbages, radishes, pineapples, pears, peaches... I think I saw more different kinds of fruits and vegetables than I had seen in my whole life. I even discovered new varieties of tomatoes, and tasted delicious fruits I had never heard of before.

I definitely wanted to work there! The greenhouses were at the cutting edge of technology, meticulously monitored, and the food which was grown there was absolutely fabulous.

Once the visit was over, Anna asked me if I could go back home with the kids, since she had to stay at the farm and give tours to the many curious visitors. I took the airtrain back home with Josh and Charlotte, who cheerfully shared their blueberries with me. Suddenly, my phone rang. It was Pete.

“Hi, Maria, how are you? I talked to my boss, he would love to meet you to talk about that job, if you’re still interested. Today is a quite busy day, but how about a meeting tomorrow?”

YES. Of course, I was still interested in the job! We agreed on a meeting at 9 the following day. I was starting to think that I could actually enjoy saying in Montreal for a while.

When we got back home, I ran to my room and tried to call my parents. I was not sure if they had any signal in the camp, but my mum picked up her phone pretty quick.

I had only left them for a few days, but I missed them so much!

As I told them about my new life here, my potential new job, the awesome vertifarm I had visited, the friendly neighbours I had met in the rooftop garden, they told me that they had good news too. The two of them had found a job in a farm nearby. It was tough work, but the salary was not too bad. My brother was attending the classes given in the camp by NGOs, so my parents did not need to bring him to work with them. My mum also told me that the food rations had been increased since the UN had sent food aid in the country. However, new refugees were still arriving at the camp every day, although it was already overcrowded. She said that they wanted to move back to the coast as soon as they had enough money.

When I went to bed that night, I was both relieved and anxious about my parents’ situation. But, except getting that job in the vertifarm and sending them money, there was not much I could do to help them. Once again, I did not get much sleep that night. But when my alarm went off the next morning, I was ready for the job interview.

5 years later

I cleared my throat. About 70 people were standing in Anna and Tom’s living room, waiting for my farewell speech.

“Thank you very much for coming, I’m really moved to see that many people. I’m not great at speeches, but first, I would like to thank the Johnsons. They welcomed me when I arrived, completely lost, 5 years ago, they gave me a roof for two months, they let me become part of their family over time.

One the one hand, I am very excited to go back to my home country. But, be sure of this, I am also sad and deeply moved at the thought of going away from all of you...”

My speech went on for 15 minutes. I had so many people to thank, so much to say about how I had grown fond of Montreal, so many contradictory feelings to share...

After working for Dufa Farms® for five years, I had climbed the ladder unexpectedly fast. Within 2 years, I had become team manager, and was responsible for 50 people and 5 entire floors of production. Leeks, cabbages and tomatoes cultivation had no more secrets for me. And seeing people buying our products in the supermarket made me proud every day.

A month ago, I was offered this incredible opportunity. The company was expanding worldwide, and they needed experienced people to go work in a brand new vertifarm in ... Lima. You may think that I would jump on the chance, but I actually really struggled with this decision. I had started a life, here. I loved Montreal, its parks, its people, its buildings, its culture. I did not want to leave all that behind, and I was not sure I would still be able to readapt to the lower living standards in my home country.

But on the other hand, I only visited my family once a year, and I really missed them. They were now living in a small village in the mountains, high enough to be protected from floods. My parents had just finished building a new farm, thanks to the money I sent them, and my brother was in high school.

My parents welcomed me at Lima airport, and then we went for a drink in a small café downtown. While I was enjoying my family's company and looking at the narrow streets, bursting with life, I thought about how much my vision of the world had changed over the past 5 years. I had arrived in Canada depressed, with little expectations and no wish to stay there. I was now coming back to Peru, maybe for a few years, maybe forever. But Montreal had become my second home. I had made so many good friends, especially thanks to the rooftop garden in the Johnsons' building. Some of them had already decided to come and visit me soon. I had found a job which I was passionate about, and which I felt was useful to people. This job in Lima's vertifarm would finally allow me to play my part, fight food shortages in Peru, work towards food security, and free people from the worrying thought, every day that they may not be able to feed their children today.

My parents had farmed land all their lives. I liked the thought that I was going to somehow take over and ensure the continuity of their work. A new era was coming, or at least I hoped so. An era in which food shortages were only bad memories, and where traditional land-based agriculture worked together with urban agriculture in vertical farms and community gardens, bringing people together and filling everyone's stomach with healthy and tasty food.