Prologue

There is a celestial order
which floats in still cobwebs
above clear water.
It is as timeless as mountaintops,
as splendid as spring flowers.
It weaves in evanescent nets
disappearing with the sun.
Forgotten for another day
the mortality of moments
the infinity of days.

— from "Canal Seasons"

There is no celestial order to this story. The scale often defeated me. How do you connect for the reader the desalinization of the oceans, the temperature of the Gulf of Mexico or rain in January in Ottawa with the mundane tasks of a city councilor? My office gets 3,000 calls a month, and they are rarely about global warming. Yet the reality is that there are many very ordinary connections.

Rain storms in January followed by profound flash freezes require new and expensive equipment to clear city sidewalks, otherwise they remain twisted and frozen like fast flowing creek beds that thaw and freeze, thaw and freeze. Summer heat now requires my city to air condition all of its buildings. We now consume more electricity in the summer than the winter — unheard of as recently as ten years ago, and the damage from ice storms, like hurricanes cannot be stopped, just endured.

Many constituents refuse to believe that torrential rains followed by flash freezes are connected to anything but poor city management. We just can't clear the streets properly anymore. City staff are

incompetent. This is a comforting thought, but it isn't true. To connect the details of a city councilor's life and the broad currents of planetary change, you first need to understand that more than 80 percent of the greenhouse gases that are cooking the planet are created by cities.

The second and only other thing you need to know is that the greatest terror facing the world isn't some demented men willing to kill themselves blowing up buildings, trains and buses. As upsetting as this may be, it is trivial compared to the complex, immensely difficult struggle to stop climate change and ecological decline from overwhelming all governments' ability to govern.

Finally, this book isn't about success. I've been fighting against urban sprawl for 40 years. As a student, I began with the Stop Spadina Movement in Toronto in the 1960s. Then I went to work for the federal Ministry of State for Urban Affairs, the provincial Ministry of Municipal Affairs, citizens groups and now as a city politician.

After forty years of effort, urban sprawl has achieved dimensions that I would never have thought possible when I started. Toronto has been paved all the way to Hamilton. The 1960s strip mall has morphed into "Big Box" power centers with parking lots that you could land a jet on. These warehouse shopping areas are so vast, people drive from one end to the other. Estate lots now cover entire townships. Four cars in a driveway are not unusual.

The main streets of this new suburban landscape have evolved into perfect traffic sewers, totally devoid of any life except the automobile. Unlike a traditional main street like Bank Street in Ottawa, Queen Street in Toronto or Grand Avenue in Des Moines, Iowa, all of which generate millions of dollars in small business taxes, a suburban traffic sewer like its larger freeway cousin generates nothing but immense financial and environmental costs. This is the way Bill Bryson describes Grand Avenue in the 1950s. "In those days, it was adorned from downtown to western suburbs with towering, interlaced elms, the handsomest street-side tree ever.… But more than this, Grand felt the way a street should feel. Its office buildings and apartments were built close to the road, which gave the street a kind of neighborliness and it still had most of its old homes — mansions of exuberant splendor, nearly all with turrets and towers and porches like ship's decks — though these had now mostly found other uses as offices, funeral homes and the like."[1] This description of Grand Avenue in Des Moines could equally apply to Bronson or King Edward Avenues in Ottawa or just about any other city's main street in the

mid part of the last century. They have all been butchered into traffic sewers.

Today, 25 to 50 per cent of every city's budget goes into road construction and reconstruction. The pollutants from this form of development have turned the most precious things human beings have — the planet's atmosphere — into an aerial sewer that is beginning to strangle us, as surely as foul water and urban typhoid did in the 19th century.

The reason for this failure is as complex as each and every one of our busy lives. I haven't been alone on the environmental podium. The chattering classes have been busy. David Suzuki has written and spoken eloquently for decades for less corrosive forms of urban growth. His Institute has written practical descriptions of how to get to a sustainable society — quickly. There's Elizabeth May of the Sierra Club, a powerful voice of eco-sanity. James Kunstler of New York State has described the toxic connection between burning the planet's supply of fossil fuels, climate change and ecological decline in powerful books like *The Long Emergency*.[2]

It's worth reflecting on why so much effort has achieved so little. I've come to believe that it rests on three reasons. The first: despite all the talk, books, UN conferences (Montreal, Kyoto, Rio), newspaper articles, TV programs, the exact nature of the worldwide environmental crisis still remains obscure to most people because it is so diffuse. It's polar bears that can't hunt on the ice anymore. It's the Rideau Canal in my hometown, which melts in the coldest months of the year. It's force five hurricanes in the Gulf of Mexico. It's…it's all too confusing to understand in any collective way. What does polar bears who can't hunt have to do with me? Or the Gulf of Mexico and New Orleans? Hence no common political vision has emerged to attack it.

The result of no common political vision is that national governments not only ignore the climate crisis but actively aid it without the slightest public sanction. Locally I've never seen a wetland win an argument with a road. Voting for a road, coal generation plants in the US and China or a pipeline always takes precedence. So while the weather may be on the front pages of your local newspaper with strange winters, it's never on the front page of your government's agenda.

And the fact that the accumulative effects of all these anti-environmental decisions are impossible to calculate except in the most distant and obtuse ways further confuses the situation. Consider this

hard-to-comprehend factoid: currently greenhouse gases are about 380 parts per million compared with 220 parts per million during the last ice age. Climatologists postulate that 440 parts per million will create a climate tipping point.[3] Most people think "so what? It's all scientific gobbledygook." But 380 is not far from 440 parts per million, and we are on a fast elevator to it right now.

A recent Canadian example of the disconnection between environmental reality and political reality was the Canadian 2006 federal election. Nowhere should have climate change been a hotter topic than Calgary. Calgary rests in a semi-desert and depends on the Bow River glacier to provision the quickly growing city. Climate change is frying this glacier. It will be gone in 10 years; as we say in the political trade that's a done deal. No one can arrest the glacier's demise.

Thus, one would think a national political leader from Calgary who appears to suffer from asthma (an air quality-related disease) and whose home city is headed straight for a major water crisis would have environmental issues front and center. They never registered in the national election debates. Among the first things Canada's new prime minister from Calgary did on being elected was the same thing President Bush did: he cut the environmental budget by 40 percent; and to catch up with President Bush he withdrew from Kyoto.

How could he get away with such an inappropriate response to the great crisis of our times? Well, ten years is a microsecond on the biological calendar, but it's a long time on the human scale. For many, 40 years is a lifetime. When I was a young man climate change didn't exist. I was interested in the community and social consequences of bulldozing freeways through dense city neighborhoods. They seemed unreasonably destructive. The biological environmental consequences were more theoretical than real.

In less than four decades social consequences have been left behind by physical consequences. UV rays now require lotion for our skin and sunglasses for our eyes. Asthma (an unusual condition when I was young) is now the number one reason we admit children to hospital. When I was a boy "smog days" didn't exist in my clean northern city. Our summers now have as many air quality advisory days as clean air days. Someone dies in Ottawa every 36 hours from poor air quality.

In the winter, the City of Ottawa's greatest and most famous festival "Winterlude" — focussing on the longest skating rink in the world, the Rideau Canal — is more like waterlude. In the last five years we've only had one winter when the canal has stayed frozen for

10 weeks. Most recently we had only one skatable weekend during the festival in spite of enormous efforts on the part of the crews who flood the ice at night during the coldest part of the daily cycle.

Climate change is racing down upon us in biological terms but human governments don't react to biological clocks, which is the second reason human governments have been environmentally impotent. Four months is a long time in the life of a government. Four years is a complete mandate. In ten years, children can complete both their secondary and university education, marriages will begin and fail, politicians and governments come and go. In the meantime Calgary, the city of the Canadian Prime Minister, sits on a lake of oil. If you can't drink oil, you sure can sell it for a pile of money. So who cares about the Bow River glacier? It's far up in the mountains, and ten years is a long way off.

The third and final reason governments seem to ignore climate change is that most people are convinced there's a magic bullet that will arrive to solve the problem. We will invent a new kind of snow for our ski hills just as we invented synthetic rubber to replace natural rubber. President Bush clearly thinks the hydrogen fuel cell will save the day; if he does many others do also. The hydrogen cell is not a source of energy and like ethanol made from corn takes as much fuel to create as it produces. One of the reasons the Brazilians are burning down the Amazonian forest is to produce corn for ethanol, which they have embraced. In a nutshell, the replacements for oil commonly mentioned "for the future" won't work to arrest climate change. Nonetheless there is a generalized belief that something will come along to save the day, and it is not an irrational belief. Peace activists preached Armageddon during the Cold War. The Cold War has come and gone. The fear mongers were wrong.

Remember the 1970s oil scare? The end of cheap oil had arrived! What happened? The OPEC cartel crumbled. The oil price crisis of 1971 was just a blip; that's what people think will happen today with climate change. When the chips are down, people's intelligence and innate sense of survival will win out.

This is where I differ from my colleagues at City Hall. I believe we are embarked on daily local and global disasters that will not be fixable at the last minute because by the time the gravity of the situation is understood by enough people, it will be too late. Just as we cannot stop the Bow River glacier melting, there is nothing we can now do to stop the oceans warming at the rate they are now. At the moment, the Antarctic ice cap has shrunk to its smallest area ever

recorded and is suffering a net loss of 36 cubic miles per year. This measurement is accurate to one micron.[4] The magnitude of this freshwater loss is impossible to comprehend. The largest cities on the planet only consume about one-fifth of a cubic mile annually.

Some of the long or short term consequences of climate change are ocean temperatures changed sufficiently to flip the Gulf Stream and cause annual force five hurricanes along the Gulf coast of the United States. But as grave as these environmental catastrophes will be, they are nothing compared to the earth's atmosphere turning sour. With carbon, oxygen and hydrogen shifts occurring at the rate and order of magnitude they are today, a souring or thinning of our planetary envelope could be triggered in any number of ways.

For example, if the planet as a whole ever begins to suffer a net loss in water vapor, i.e. more water vapor escapes or is lost from the earth's atmosphere than is replaced, the end of human life has arrived. This could occur if hydrogen cells (the building blocks of water) arrive at a new steady state that precludes bonding with oxygen as they do now. If this occurs, the great blue and white marble we call home will dry up into a version of our companion planet Mars.

Unfortunately, there is no Newtonian or Einsteinian law written in the science of a physicist's lab that says Earth must have a livable atmosphere for the human species. In fact the probabilities are against it. No other planet in the sun's solar system has the earth's atmospheric balance. The other atmospheres are either too thin like Mars or too chaotic like Venus to support life beyond bacteria. Only on earth do we find that curious situation where there is a balance between the vaporous state and the frozen one called water.

In the night sky, Earth is bracketed by Mars and Venus. They are similar to our planet in size and situation in the solar system. Venus is a little closer to the sun and Mars a little further away. Venus has a chaotic poisonous atmosphere and uninhabitable surface. Mars has a thin atmosphere and a waterless stone surface. The surface scarring on Mars that resemble the marks of watercourses has given rise to speculation among scientists that this neighbor once had running water.

Climate changes being created by mega-cities which depend entirely on a constant, carnivorous, planetary energy burn are moving the earth's atmosphere towards a different hydrogen/oxygen configuration with different consequences for the planet's surface, a configuration that is simultaneously creating a dryer, hotter planet and global dimming.

There are many speculations about the possible end points of climate change. But the general global picture is crystal clear. Climate change is "slow cooking" the earth like beans being baked in a ceramic pot. Carbon dioxide traps the sun's radiant energy on the earth's surface, but the carbon particulates block the sun's incoming rays with the net effect that there is less sunlight but hotter conditions on the surface. It's a slow, dim cook.

As dangerous to human life as this is, it shouldn't surprise anyone that governments have not been able to do much about the conditions which are driving climate change: human society has been built using the planet as an endless debit account. This is the way industrialized societies (which are now the principal society in every nation of the planet) work. They depend on more land, more minerals, more oil, more water somewhere — under the ground in great aquifers, in rivers that can be diverted and dammed, in great lakes. Why worry? The Atlantic cod fishery disappears, but the Arctic one opens. There are deserts like the Sahara, but aquifers to be discovered to pipe water to the surface.

It was devastating for the fishermen around the Aral Sea when it evaporated into a desert. It's been crushing for the peoples of West and East Africa as the Sahara has grown southwards — but globally it has never mattered. As long as there have been enough places like the Amazon River valley to counterbalance the H_2O deficit created in the planet's dry regions, the total global water bank balance remained positive.

But what happens to the global water account if the total withdrawals start to exceed the total deposits? This is not an unreasonable supposition. The planet's greatest reservoirs of fresh water (the Arctic, Greenland and Antarctic glaciers) are melting, increasing the volumes of the oceans. But once the glaciers have drained away into the oceans, the next step is for the oceans to begin shrinking themselves because the same climate change trends which have evaporated the glaciers will begin to work on the oceans. A coup de grâce would occur very quickly if an atmospheric chemical change resulting from carbon densities and atmosphere thinning ever compromised the H_2O bond.

This is only one of the possibilities of the end point of global warming and climate change. The disappearance of the world's oceans may seem absurd to contemplate, but the oceans of the planet, as magnificent as they appear to us, are nothing more than a thimble of water in the cosmic calculation. If every H_2O molecule

disappeared on the earth's surface tomorrow, nothing would change in the solar scheme of things. The earth's oceans and all the life systems associated with them would just disappear as they appear to have disappeared from Mars. The great rhythms of the solar system would go on. Earth's mammalian communities would just not be part of it.

Fortunately this is all speculation. Scientists have tried to mimic the earth's atmosphere under vast, transparent domes stocked with water, fish, plants, bacterial, insect and mammal life (a kind of 20th-century Noah's Ark) and not been able to duplicate what happens in the course of every earth day. The atmosphere under the dome became poisonous. The scientists were not sure why it did, but the only way to preserve life inside was to cut windows in the dome, let the "normal" air in and let the poisonous air escape. In short, no one will have the faintest idea what a terminal ecological crisis might be until it happens; that is the nature of a non-analogue state or a biological phase transition. The only thing scientists are sure about is that the way we are presently living is changing the fundamentals of earth's biosphere more quickly than has happened in at least 650,000 years.

We lead exceptional lives in an exceptional place. Earth with its great forests, grand oceans and horizons of prairie grass are not the norm. Nowhere else in the universe have we been able to find a planet like ours with an atmosphere which gathers and retains the basic molecules necessary for water-based life under the thin protective shield of an atmosphere no more substantial than the rain which falls.

This is what is at stake: life itself.

Changes to the earth's atmosphere and ecology have been created mostly by our greatest achievement: cities. The only way they can be arrested is in the place they were created: cities. That means changing first how we govern ourselves and second how we live. Our present democratic electoral systems require governments to create public policies that advantage short term profits and disadvantage all public decisions for the longer term social and physical health of the commonwealth. Air quality is the most vital but is just one of them.

The problem is that there is no easy or quick way to change this in spite of the grave danger humanity is facing. Human governance has evolved over centuries in an erratic and eccentric fashion and changes very slowly. Chinese government has always been by central command and remains this way to this day. There is little difference between the emperor and his imperial bureaucracy and the Commu-

nist chair and his Beijing bureaucrats. The political labels and technology have changed but the fundamental imperial Chinese government paradigm remains the same. The European feudal system took more than a thousand years to be replaced by representative democracy, and democracy is still new and poorly understood in many countries.

National governments' principal preoccupation has always been defending their borders against the economic and military aggressions of other nations. In the First Great War which started the 20th century, every nation involved perceived itself fighting a "defensive" war against the aggressions of others. In much the same way as President Bush sold his invasion of Iraq as a defensive war against a hostile nation's weapons of mass destruction, the European governments in 1914 thought themselves to be honoring treaties and defending their authentic national interests, not aggressively attacking anyone. This is still the principal reason for national military actions. The irony is that President Bush governs a nation so powerful that he can't find any nation powerful enough to threaten his, so he has had to make do with a stateless enemy.

In terms of governance, nothing much has changed for cities either. Cities are about wealth generation and have been since the days of Troy, Athens, Rome and Renaissance Florence. In 2006 from Shanghai to London, from New York to Los Angeles cities remain as successful at creating wealth as their civic ancestors. City councils have always been there to ensure commerce is successful within their city walls and this is what they do today. City councils don't last long who begin passing local legislation that is perceived not to be in the immediate interests of their business communities — from the small shopkeepers to the great land developers.

Change comes very slowly for human governance. Unfortunately climate change has rewritten both the stakes and the time available to adapt to our changing circumstances. We no longer have centuries. We may not even have decades. Urban Meltdown is about this fundamental environmental change, the life of one city councilor and how he came to think that knowledge wasn't the problem, politics was.