



SUSTAINABILITY MATTERS: PROSPECTS FOR A JUST TRANSITION IN CALGARY, CANADA'S PETRO-CITY

by Noel Keough with Geoff Ghitler

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Where Would You Put 600,000 People?



In *Expansive Discourses: Urban Sprawl in Calgary, 1945–1978*, Max Foran argues that the 1950s saw a perfect storm of conditions for the creation of urban and suburban sprawl in Calgary. While the provincial government and City Hall handed the reins of development over to private developers, the oil boom, the dawn of the automobile age, and the desire to house returning war veterans increased the pace of growth of Calgary as a habitat for cars rather than for people.

In this chapter, we explore the issue of sprawl with specific reference to Calgary—the problems it creates, the strategies to combat it, and the

challenges to implementing these strategies. The essays highlight the social, economic, and ecological costs of sprawl and the benefits accruing to more compact development. Sprawl—low-density, automobile-dependent development based on segregation of land uses—eats up quality agricultural land and demands large per capita consumption of energy resources. It requires enormous expenditures to build and maintain infrastructure. Travel by car becomes almost indispensable while the creation of quality pedestrian environments is neglected, making it difficult to maintain an active lifestyle.

The 2009 Municipal Development Plan (MDP) was designed to curb sixty years of sprawl and create a more sustainable city. In two essays focusing on greenfield, edge-of-city development and inner city community renovation, we assess to what extent the MDP is actually steering development in Calgary. Keystone Hills is one such development now underway on Calgary's northeast fringe. Its approval paved the way for the unprecedented approval of fourteen new suburban communities in the summer of 2019. These new suburban developments are being marketed as sustainable, but are they really any more sustainable than the previous generation of suburban sprawl? And does sustainable urban planning simply mean increasing density? In addressing these questions, this chapter introduces the ideas of Jane Jacobs and Jan Gehl, two well-known champions of sustainable cities and neighbourhood design.

Two essays in this chapter introduce the concept of resilience as a characteristic of a sustainable city. Resilience is explained via the contrast between the responses to disaster in New Orleans following Hurricane Katrina and to an equally powerful hurricane that hit Cuba. Cuba proved to be much more resilient than New Orleans. The discussion of resilience seems prescient given Calgary's experience with catastrophic flooding in 2013. We argue that to prepare for future social, economic, and weather-related storms, Calgary needs to build resilience.

We end the chapter with "Green Urbanism," where we examine some of the best examples of sustainable cities beyond North America: Helsinki, Finland; Växjö, Sweden; Freiburg, Germany; and Curitiba, Brazil. These cities offer lessons for how to build compact, resilient, and sustainable cities.

HEAD FOR THE HILLS: MUNICIPAL DEVELOPMENT PLAN STRESS-TEST FAILURE

Imagine another 1.2 million people arriving in our city from all corners of the world. That is what Calgary's 2009 Municipal Development Plan (MDP) forecasts will happen by 2069. Where will we house these new arrivals? Where will they work, shop, go to school, and get medical care?

The answer for the past twenty years has been almost exclusively in greenfields—farmland and prairie on the edge of our city—with urban development spilling relentlessly out into the foothills. But all of this growth has come at a cost. Every home built in a suburban development has put our city deeper in the red. In 2014 the City of Calgary was forecasting a \$1.9 billion shortfall for transit infrastructure spending alone.¹ According to Mayor Nenshi, under the current arrangement for tax revenue from these suburbs, we will never recoup the costs of building them.

The MDP was supposed to change all of that. In June 2012 City Council held a public hearing to consider a bylaw for the first new development under the new MDP—the Keystone Hills Area Structure Plan (ASP).² When completed, Keystone will cover eleven square kilometres and will house sixty thousand people in three distinct communities. It is located northwest of the junction of Stoney Trail and Deerfoot Trail—that's right, fifteen kilometres from downtown Calgary as the crow flies and a mere two kilometres from CrossIron Mills, the megamall located in the Municipal District of Rockyview.

If you look at this new community plan in isolation, it looks pretty good. The street grid, the bicycle and transit routes, and the design guidelines for the neighbourhood, including community activity and retail centres, will all contribute to a more walkable community. But as soon as you widen the lens to look at the plan's context, things come undone. As they say, "Location, location, location." Calgary's new communities are isolated pockets of habitation in a sea of multi-lane highways and interchanges far from the heart of the city. The further out from the city centre you go, the more these communities are hemmed in by the freeways required to service them. Keystone Hills doesn't change that.

In all likelihood, if you live in Keystone Hills, you will have little choice but to get in a car to venture beyond your community. If you want

to go to the library or to a swimming pool, you will have to trek across the formidable Stoney Trail. Transit routes have been sketched in, but there is no date for the LRT extension and no commitment to put sufficient buses on those routes.

The United Nations' 2019 *Global Environmental Outlook 6* reports that the planet is becoming increasingly unhealthy due to biodiversity loss and climate change.³ Meanwhile, the City's own sustainability assessment notes that the Keystone ASP does nothing to reduce our ecological footprint and will result "in greater demands on the earth's biosphere than the current citywide baseline."⁴

The City has made commitments to reduce greenhouse gas emissions by 80 percent by 2050, but the sustainability assessment estimates that Keystone Hills will produce greenhouse gas emissions greater than the current Calgary average.⁵ There are lofty pronouncements of how to reduce energy consumption. They are called "guidelines"—friendly suggestions, really, to hardnosed, bottom-line, profit-seeking developers. They carry no legal weight.

A goal of the 2009 MDP is that new developments will not "compromise quality of life for current and future Calgarians."⁶ We think the Keystone Hills ASP may do just that. A major study from Queens University published in 2012 estimates that adults' inactive lifestyles, caused in large part by auto-dependent cities, cost the Canadian health care system almost \$7 billion annually, with Calgary's share being approximately \$212 million.⁷ That's a lot of compromised quality of life.

As is, this ASP will lock its communities into the old, financially unsustainable pattern of development for the next twenty-five years. It does not meet the expectations of Calgarians as expressed through the Plan It and imagineCalgary processes, and it undermines MDP goals and the City's financial stability. Has another battle for sustainability been lost?

Here's how we might improve future ASPs. First, include established communities in the land supply assessment. Currently, the City does not have an analysis of potential population growth in established communities and thus overestimates the need for new greenfield development. Second, if a case can still be made for new developable lands, establish energy intensity targets so that these communities will contribute to the City's resilience strategy.⁸ Third, ask if this ASP makes financial sense.

Ensure that the ASP's acceptance or rejection is based on the real costs of growth, including full lifecycle costs. Fourth, ensure that people could live in the community without a car. Make transit a part of the core infrastructure, and make acceptance of this ASP contingent on the provision (in plans *and* budgets) of high-quality transit service that will make transit a realistic option for Keystone residents within five years of first occupancy. In the community of Arabianranta in Helsinki, for example, public transit is in place from day one.

Keystone Hills will be the suburban development template for decades. It is incumbent upon City Council and developers to get it right. Let's make sure we know where we are growing.

CURBING SPRAWL THROUGH INNER CITY RENOVATION

Charles Dickens' classic *A Tale of Two Cities* starts with the iconic line "It was the best of times, it was the worst of times." Though much less tumultuous than the events that frame Dickens' novel, Calgary has, for decades, been living with the paradox of having access to a resource motherlode that makes it the country's wealthiest city while facing unwelcome development pressures that threaten its sustainability.

The 2009 Municipal Development Plan, the core of Plan It, forecast a doubling of Calgary's population by 2069—that means 1.2 million new Calgarians. The big question is where to put all of these newcomers. Plan It's compromise is to put half of them on the edges of the city in new suburbs (greenfield development) and half of them in established communities.

The edge-of-city development is relatively straightforward. City Council has already approved area structure plans and community plans for hundreds of thousands of newcomers. Greenfield developers are well practiced at building suburbia. Meanwhile, Plan It envisions most of the growth in established communities to occur along transportation corridors. Calgary has a long-standing Transit Oriented Development (TOD) policy that supports that vision, calling for more density, mixed-use development (homes, shops, and offices), and an improved public realm (plazas, wider sidewalks, bicycle infrastructure).⁹ This makes sense, but the devil is in the details. When the plan becomes a reality in a particular

community is when the second-guessing starts. Everybody thinks it's a good idea in somebody else's community.

A good example of how this policy plays out is the community of Hillhurst-Sunnyside. In response to the TOD policy and in anticipation of development intensification, the City spent three years working with residents to remodel the community's Area Redevelopment Plan (ARP) to accommodate higher density.¹⁰

Very soon after the new ARP was accepted by Council in 2009, and faster than almost anybody imagined, Hillhurst-Sunnyside experienced an extreme makeover. Within two years, there were two eight-storey mixed-use condominium towers well under way, with another thirteen major projects at some stage of the development process—from first exploration with the community to actually making their way through City Hall approvals. These projects totalled over one million square feet (half the size of the Bow Tower, Calgary's largest office building) and 843 dwellings (an estimated 1,517 people)—an 18 percent growth in the community's population. By 2020, five such projects were complete and occupied, with another four under construction or awaiting development approval.

The community is feeling the heat. One of the promises of the ARP-TOD was that redevelopment would come with aggressive public space enhancement—a key feature of the TOD policy. Within months, that promise hit a glitch. Just as development was heating up, City Hall lawyers deemed the development levy envisioned to pay for public realm improvements to be unenforceable under the Municipal Government Act. Developers balked at paying it, and the City was left scrambling to introduce an enforceable alternative. At the same time, the old adage “Give them an inch and they will take a mile” is evident in the development process. Most new development proposals start by maximizing the allowable square feet of space and height on a given parcel of land. From there, almost invariably, developers make an argument for why they should get more.

Meanwhile, as development plans roll in, very little uptake is evident on all of the coulds, shoulds, and if-you-feel-like-its of the ARP. Things like green building design, car-sharing programs to reduce auto density, and affordable units are conspicuously absent.

Plan It, and imagine Calgary before it, made an unassailable case for why we need to intensify development in existing communities, and

Calgarians support this vision. If done well, intensification will make for better communities, but it could go sideways fast if the pace of development overwhelms City Hall’s finite planning resources. Nobody wants that. With 600,000 new people coming to existing communities by 2069, these first makeovers in places like Hillhurst-Sunnyside have to get it right or the Plan It strategy will be dead in the water.

One solution is for the city to assign and locate city planners in the community long term, not unlike the idea of a beat cop, to get to know the community, its residents, and the development realities in intimate detail. Another solution is allocating more power to the people. In Hillhurst-Sunnyside, the innovative and wildly successful Bow to Bluff initiative, which is tackling a new public realm plan along the LRT route, has demonstrated the capacity of citizens to engage the community in the planning process.¹¹ So why not give communities a bigger role? They deserve to be at the table with the City and the developers every step of the way.

There is a lesser-known phrase in that opening sentence of *A Tale of Two Cities*: “it was the age of wisdom, it was the age of foolishness.” The City made a wise decision when it adopted Plan It. To not back up the decision with diligence, adequate resources, and attention to detail would indeed be foolish.

DENSITY: DESIGNING AT A HUMAN SCALE

In early May each year, hundreds of Calgarians participate in dozens of Jane’s Walks—neighbourhood tours led by citizens. The annual event honours the legacy of urban planning legend Jane Jacobs, whose 1961 book *The Death and Life of Great American Cities* challenged the conventional wisdom that had, for at least a decade, been remaking North American cities for the benefit of cars. Jane and other community activists took on Robert Moses, then the most powerful urban planner in North America, and saved what is today one of the most celebrated urban neighbourhoods in the world—Greenwich Village, New York. Jane went on to bring her community action approach to Toronto, where she inspired Torontonians to similarly reclaim their city’s most precious neighbourhoods. Density was one of the key ingredients in Jane’s recipe for success.

In 2010 another New Yorker was even more emphatic about density. In his controversial bestseller *Green Metropolis*, *New York Times* journalist David Owen argues passionately that density is the key ingredient to sustainability. Owen points out that in Manhattan, the nation's densest residential district, residents drive, consume, and pollute less than most Americans, resulting in a 30 percent smaller ecological footprint.¹²

Not only is high-density living greener; it's also healthier. Public health research shows that denser urban environments are safer and encourage healthy living. People can walk to the grocery store and kids can bicycle safely to school. Even during the 2020 pandemic, this is holding true. Singapore, the hyper-dense, quintessential modern city-state, with almost six million inhabitants, suffered only twenty-seven deaths in the first six months of the pandemic.¹³

Here at home, Calgary policy makers have embraced density for another reason: expansive, auto-oriented cities are expensive. Becoming denser would improve transit service, reduce car ownership costs, and create a more walkable city, all for half the cost to the City of suburbs-as-usual development. According to a 2009 study, *The Implications of Alternative Growth Patterns on Infrastructure Costs*, commissioned by the City of Calgary, this would, over sixty years, save taxpayers about \$11 billion in capital costs and another \$130 million annually in maintenance.¹⁴ In 2009 taxes paid to subsidize urban sprawl added about \$115 to the average property tax assessment.

But how dense is dense enough? In cities around the world, there are huge variations and cultural norms. A new immigrant from Manila, for example, might find the lack of people on the streets of Calgary kind of scary. Mumbai, India, is the densest city in the world at thirty thousand people per square kilometre. Those numbers are not the average Calgarian's cup of tea. So what about some of the most liveable cities in the world? Calgary's density is 2,473 people per square kilometre. Compare that to Helsinki at 2,883; Paris at 21,370; Stockholm at 4,219; and Amsterdam at 4,952.¹⁵

On a cautionary note, Danish sustainability expert Jan Gehl reminded us on a visit to Calgary that density alone does not make a city liveable, safe, sustainable, or healthy. If density is not paired with better transit, quality public space, and judicious approval of high-rise development,

there is little to gain except lower taxes. Gehl implored the packed house at the Central Library theatre to focus on the human scale by creating quality social spaces that encourage people to gather and linger.¹⁶

In his 2010 book *Cities for People*, Gehl is emphatic that tall buildings and poor public spaces are not a recipe for lively cities.¹⁷ He points out that, unlike David Owen's hyper-dense Manhattan, Jane Jacob's Greenwich Village and the old urban quarters of Paris, Barcelona, and Copenhagen are great examples of quality, compact urban neighbourhoods of four- to six-storey residential blocks.

In the end, it comes down to whether we choose to build our cities for cars or for people. Our roads, shopping malls, suburban homes, schools, and hospitals are all super-sized for the automobile. Fringe suburbs, no matter how many units per hectare, will never achieve one of the most attractive density benefits—reduced dependence on the automobile and a decrease in its attendant pollution, noise, and congestion.

In *Expansive Discourses*, local historian Max Foran identifies the early 1950s as the period when land developers arrived on the scene and City administration abdicated its responsibility to shape the city, to the benefit of developers.¹⁸ They arrived just in time to ride the wave of a perfect storm of postwar economic expansion, the baby boom, Alberta's oil bonanza, easy mortgage credit, and the ascendancy of automobile-dependent residential urban sprawl across North America. The business model became entrenched and, to this day, has proven very profitable for a handful of land developers.

Looking out from McHugh Bluff above Sunnyside on a cool spring day, Jane's Walks enthusiasts had a bird's eye view of just about every era of Calgary's growth—from downtown to suburbia on Signal Hill—but the edge of the city was beyond view. Density—what is it good for? Tax savings, more walkable communities, more amenities in your neighbourhood, a new school perhaps (or your existing school saved from the chopping block), more kids in the playground around the corner, more coffee shops, restaurants, and health clinics—all within walking distance. We say, bring it on!

RESILIENCE: A CAUTIONARY TALE FROM NEW ORLEANS TO CUBA

The concept of “resilience” has two simple and related meanings. First, resilience is a system’s capacity to withstand shock without permanent damage: resilient systems are pliable, like old Gumby toys or young hockey players. Second, resilience is the ability to recover from, or adjust easily to, misfortune or change: resilient systems are more adaptable, so they rebound faster and further after a calamity. But what happens when we apply these straightforward ideas to cities—to our city? Simple-sounding concepts can quickly become complex when discussing real places and real people in real time.

On one level, it means taking an informed peek into the future to see what kinds of disruptions we may have to contend with but have no control over. On another level, it means honestly assessing our ability to withstand short- and long-term shocks and to deal with adversity. On a third level, it means taking proactive action to enhance our strengths and address our shortcomings.

But resilience isn’t just one thing. It is the accumulated benefit of many processes—small and large, material and social—that together provide alternatives for people to meet their needs when things change. Some elements of resilience concern physical infrastructure such as transit, energy distribution, and waste management. Others are related to the social sphere and the economy. A strong local business community is part of a resilient landscape. Institutions that encourage amenities such as community gardens, public art, public toilets, quality parks, and green space solidify community networks. The day-in and day-out collective activities of place-making build a sense of community and the social capital that resilient cities rely on in times of crisis.

A very instructive modern example illustrating the difference between rigid and resilient systems is the comparison of New Orleans after Hurricane Katrina in 2005 and Cuba after Hurricane Ivan in 2004. The more recent effects of Hurricane Maria on Puerto Rico in 2017 and Hurricane Dorian on the Bahamas two years later reinforce the point.

The results in New Orleans are well known. A lack of preparation, including the delay of expensive yet critical maintenance to the city’s

infrastructure—combined with ad hoc evacuation plans (“get in your car, if you have one”) and a bumbling response from federal, state, and municipal agencies—turned a simple disaster into a monumental catastrophe played out on CNN for all the world to see. According to the US National Hurricane Center, the official estimate is 1,577 deaths in Louisiana due to Katrina.¹⁹ Puerto Rican casualties are harder to confirm but the governor’s office estimated almost 3,000.²⁰ According to research published by Dr. Adam Vinconne and colleagues in the journal *Medical Anthropology* in May 2011, we can expect almost half of the victims of such disasters to be seniors.²¹

Cuba’s response to Ivan, a Category 5 hurricane that hit the Caribbean nation a year before Katrina, is less well known. According to United Nations emergency relief coordinator Jan Egeland, authorities in Cuba implemented a well-rehearsed disaster response plan. To ease concerns and encourage at-risk people to abandon their homes, tough anti-looting strategies were implemented. As a result, 1.5 million Cubans were evacuated to designated shelters prior to the hurricane’s landfall, leading to minimal casualties despite the loss of twenty thousand homes.²²

In New Orleans, it took weeks after the storm passed to organize a coordinated response: according to PBS Frontline, after nine days, five to ten thousand people were still stranded in the city.²³ In Cuba, electricity was mostly restored and the cleanup begun within days. Although damage to personal property and civic infrastructure was extensive, local communities weathered the storm because of foresight and advanced planning.²⁴ In Cuba, everyone knew what to do. In New Orleans, no one did. That was the difference.

Cuba is not an affluent society, but it is one that takes care of its citizens in an equitable manner. There is no great divide between the rich and the poor. It is a cohesive society. According to Bloomberg News, New Orleans is the most inequitable city in the US, with both racial and economic fault lines defining the city and, as it turns out, defining who is protected from natural disasters and who is not.²⁵ Because they had a plan in Cuba, community organizations and family life spontaneously regenerated and the essential characteristics of their communities were sustained in the crisis. In New Orleans, where social resilience was lacking, many

communities simply disappeared. A photo essay by Ellyn Kail exposed one such neighbourhood.²⁶

The threats facing Calgary are less tangible. There are no hurricanes here, but the flood of 2013 and the summer hailstorm in 2020 did demonstrate that nature can deliver nasty surprises, even in Calgary. The comparative lessons of Cuba and New Orleans are readily adaptable as we contemplate the city of our future. Unfortunately, a pragmatic look at Calgary's urban growth pattern forebodes trouble. Much as in New Orleans, a lack of willingness to make the required investment in social, physical, and community infrastructure will leave us vulnerable when one or more of the looming global threats emerges.

While socioeconomic disparities in Calgary are not what they are in New Orleans, we are moving in the wrong direction. Resilience is what allowed the Cubans to cope, and its lack resulted in the devastation in New Orleans.

TO WEATHER FUTURE STORMS, CALGARY NEEDS RESILIENCE

When it comes to Calgary's future, are you buying in or just passing through? This doesn't mean, Do you own a house? It means, Are you here for the long haul? It's an important question. When planning a city, there's a huge difference in the psychology of long-term versus short-term thinking.

Short-term thinking prioritizes fast profits and superficial solutions, and it elevates "I" over "us." Long-term thinking, on the other hand, results in equitably distributing wealth over time; seeking solutions that address causes, not symptoms; and honouring individuals and communities equally. It is not a crime to be a short-term thinker. If you are a speculator or property flipper or if you plan to make a pile of money in the oilpatch before skedaddling with bulging pockets—fine. The problem is that a city with this mindset is brittle and ill-prepared to cope with the massive social and environmental challenges we will all soon confront. While the short-term profiteers are caressing cocktails in the Caymans—assuming the islands are not under water—the rest of us will be left to deal with the aftermath.

Cities with a short-term mindset, like Calgary, are built for the here and now—streamlined and shaped to extract the maximum profit in the shortest time. In the short term, city problems (such as traffic congestion) are “solved” using bandaids solutions (such as building more roads). In contrast, a long-term city takes patience. Over time, benefits accumulate because solutions to urban problems are engineered into the city’s internal logic. More roads to combat congestion are unnecessary because the long-term city does not create as much auto traffic. The demand for more police diminishes because, as Kate Pickett and Richard Wilkinson show in their 2011 book *The Spirit Level: Why Greater Equality Makes Societies Stronger*, a more equitable distribution of economic and political resources, combined with universal access to high-quality social spaces, produces fewer criminals.²⁷ More herbicides to control dandelions won’t be needed because natural means of weed management, such as letting native grasses grow on boulevards and along transportation corridors, will do the job for free.

Calgary experienced a moment of vulnerability when gasoline prices spiked to \$1.40 in 2008. Even with that relatively minor fluctuation, many who felt financially secure were suddenly in trouble. Why? Because there was (and still is) no plan B. Calgary’s sprawling geography only works well within a narrow range of constraints. As we saw with the fuel-price spike, when a critical threshold was exceeded, the urban system had difficulty coping. If a sudden change were to become permanent, the system could collapse. In fits of collective amnesia, short-term thinkers routinely accuse advocates of long-term thinking of “social engineering,” of being against the “free market.” Or such advocates are drowned in a mean-spirited discourse with the sole aim of keeping property and business taxes as low as possible.

Resilience is the key—it’s the quality that allows systems to persist and flourish even in the face of adverse changes to the economic, social, or environmental relations that power them. Peter Newman and his colleagues, in their seminal 2009 book *Resilient Cities: Responding to Peak Oil and Climate Change*, demonstrate that resilient cities are better able to cope with reductions in the resources that are used to make cities work.²⁸ Ten years later, this sentiment was echoed passionately in Douglas Kelbaugh’s

*The Urban Fix: Resilient Cities in the War Against Climate Change, Heat Islands and Overpopulation.*²⁹

Calgary is vulnerable when it comes to our transportation system. Consider a case cited by Newman and colleagues. In Atlanta, 2,960 litres of gasoline per person is needed every year to make the urban system work, while in Barcelona, individuals use only 242 litres per year.³⁰ Which city would cope better with rising energy prices? No contest. Calgary is more like Atlanta.³¹

In 2015 car ownership rates per one thousand people in Germany, Norway, and Sweden were 593, 611, and 540, respectively. Canada, on the other hand, had an ownership rate of 646 per one thousand people. The US rate was 821.³² In the European countries, the public transportation system provides choice. You can live, work, and play in these countries without a car. In Calgary, where the ownership rate in 2019 was 740 per thousand people and transit accounted for only 14 percent of all work trips, it is hard to make that claim.³³ In 2011, 93 percent of Calgary households owned a car, according to City of Calgary research.³⁴ In comparison, according to Euromonitor International, in 2015 only 53 percent of Berlin households had at least one car. In Copenhagen and Tokyo, the rates were 62 percent and 60 percent, respectively.³⁵ In each of these three cities, the public transportation system provides choice. In Calgary, using public transportation takes a determined effort. With options comes resilience.

We cannot predict with precision the conditions that will confront us in the future, which reinforces the need to remain nimble. What matters are the values we instill and the ethic we embed in the bricks and mortar of our city. Calgary's Resilience Strategy is a move in the right direction.³⁶ As with so many city policies, its success or failure will rest on whether it is backed up with budgets and the day-to-day decisions of City Council. Are you here for the duration? Are you buying into Calgary's future or are you just kicking the tires?

GREEN URBANISM: A NECESSARY EVOLUTION OF CITIES

Modern urban life—at least, the technology that makes it all possible—has made a stranger of nature. Occasionally, nature intrudes into our lives through weather or natural calamity. While some urbanites like venturing

into the wild to play or relax, for most of us, it's back to the urban silo when the weekend ends.

In the magical world of the city, needs are invisibly met. Flick a switch and presto! Night becomes day. Twist a faucet and clean, drinkable water gushes out, seemingly without limit. Flush a toilet and stinky sewage disappears out of sight and mind. At the store, shelves teem with fresh and preserved foods that appear, manna-like, each new day. The sheer ease with which all this happens makes it easy to forget that outside the silo lies a vast network of utilities and infrastructures that continuously extract raw materials from nature and transform them into useful products to be delivered to our homes, creating garbage and pollution in the process.

The problem is that our flick-and-flush existence conceals many of the destructive effects that our consumption patterns create, as well as the fragile state of the ecological systems that underpin them. Being physically removed from nature fosters psychological detachment—so much so that when confronted with alarming claims that could conflict with our daily safe, healthy, and abundant personal existence, we often ignore them—or worse, deny them.

This city-nature rift may explain why we continue to build as we do. A city of far-flung suburbs and drive-to malls is unsustainable, and everybody knows it—planners, politicians, ordinary citizens, and even developers (although they don't typically admit it publicly). But things are changing out there, and to adapt, we're going to have to change as well.

Building cities as we have in the past is not an option for deep thinkers like Timothy Beatley, professor of sustainable communities at the University of Virginia and author of more than fifteen books, including *Green Urbanism: Learning from European Cities* and *Green Urbanism Down Under*. He believes the future of our species is intimately tied with our ability to coexist with the natural world. For Beatley, a world expert on city-nature relations, this means reorganizing cities to satisfy our needs for clean, healthy, safe places to live while balancing the environmental impacts created in the process with the planet's capacity for renewal.³⁷ The solution, or part of it, lies in what Beatley calls "green urbanism"—meshing urban development with environmental and social goals in a manner that unites rather than divides communities.

Green urbanism is a necessary evolution of cities, says Beatley. First, he points out that humans have become an urban species. Globally, more than 50 percent of us now live in cities, and that proportion is quickly growing. By 2050, according to the United Nations Department of Economic and Social Affairs, the number is expected to reach 68 percent.³⁸ In Canada, we have already blown past this figure, with more than a third of all Canadians living in the three cities of Montreal, Vancouver, and Toronto.³⁹ Forecasts show that by 2050, seven billion people, about the same as the global population today, will be living in cities.

This leads to Beatley's second point. He fears that if we continue to plan and build our cities as we are today, the environmental systems that support us will be fatally compromised. Historical problem-solving techniques won't be able to fix them. That's what makes green urbanism different. It takes a longer view and creates cities that don't outpace nature's ability to sustain them.

Green urbanism is based on a number of design principles and goals—some practical, some inspirational. One goal is to reduce the ecological footprint—a measurement of the amount of resources we consume and the rate at which we consume them. Reducing consumption and being more efficient with resources helps reduce our ecological footprint. Footprint analysis is used to compare the consequences of certain choices, such as commuting by car or rail.

Another goal is to live within the limits of local resources. For example, in Calgary the availability of water will eventually limit our ability to develop. By 2036 the daily licence capacity will not be able to supply projected summertime daily peak usage.⁴⁰ At current flow rates, our rivers can support annual withdrawals for up to three million people, a population the city is expected to reach by 2076. What then? If the predictions of global warming (hotter, dryer weather) are fulfilled, we may breach those limits much sooner.

Green urbanism recognizes that cities, though human-made, function like living organisms and play an important role in the global ecology. City planners who practice green urbanism look to nature for inspiration in developing ways to manage our impacts. For example, nothing in nature is wasted. One organism's waste is another's breakfast: when the mountain ash sheds its leaves, it provides a feast for hundreds of micro-organisms

whose own waste, in turn, provides food for plants. Green cities use this principle to find creative ways of organizing urban living while reducing environmental impacts.

These principles and goals point to a strong ethical component in green urbanism. Acknowledging our connections with the natural world, including other people, forces us to shed our urban cocoon—to stand up and take shared responsibility for a greater common good.

Green urbanism takes different forms in different places. Every place has its own challenges, and each one is shaped by a unique blend of geographic, cultural, political, and economic factors influencing the development of local institutions and processes. No one place is doing everything right, but Timothy Beatley affirms “the primacy of place in any program of green urbanism.”⁴¹ He maintains that if we focused on what is being done right in other places, North American cities, which are much less advanced in many ways, would probably move closer to green urbanism.

One place to see how these things can come together is Freiburg, Germany, a mid-sized city of 220,000 nestled along the western flank of the Black Forest. Under the leadership of world-renowned urban planner Wulf Daseking, Freiburg has become a model for twenty-first-century green urban development.

In an interview we conducted with Daseking in 2013, he began not with the expected overview of Freiburg’s impressive environmental and social accomplishments but with a world tour of favelas, barrios, and slums—from Rio to Manila to Mumbai. “We are all connected to each other and to the environment,” he began, affirming the principles of green urbanism.⁴²

Freiburg’s accomplishments are impressive. Long before the term *ecological footprint* was invented, the Academy of Urbanism’s *Freiburg Charter* was already being used to develop a long-term plan to reduce the city’s crippling fossil-fuel dependence.⁴³ Freiburg followed two related strategies. The first encouraged the development of solar power, both as an alternative energy source and as the focus of a new industry. Governments of all levels provided incentives to help the new industry along, from guaranteeing minimum prices for green energy to developing programs that helped businesses and homeowners convert. A solar research institute opened in 1981, which in turn attracted to Freiburg a cluster of private corporations,

government agencies, and national and international sustainability organizations, all focused on solar power. Today, the city is festooned with solar panels—on homes, government facilities, and businesses.

The second strategy was to radically reformulate the goals of town planning. Instead of building more car-dependent suburbs, the city invested heavily to create a high-quality transportation network consisting of trams, buses, bikes, and foot traffic. New residential development, both in suburbs and the inner city, was designed so that residents could get along without cars if they so desired. Trams linking new neighbourhoods were up and running even as the first residents were moving in.

Daseking admits the new system isn't cheap. "We pay high taxes but we don't mind," he said. "We get good value for our money and at the same time we take responsibility to help preserve the environment." But Freiburg's success wasn't simply based on technology. Crucially, local government, in its role as master planner, facilitated collaboration between developers and residents in the creation of new neighbourhoods. This process transformed development goals from focusing on maximizing profit, based on the ideology of competition, to maximizing the well-being of residents.

At every stage of the process—beginning with the initial design and not ending until the final nail was pounded in—citizens were consulted, progress was assessed, and sustainability goals were scrutinized. From the largest vision to the smallest detail, ordinary people discarded their indifference and claimed responsibility for planning their city. Herein lies the secret and the hope of green urbanism.

The Freiburg model is not without its problems—affordability is an issue and suburban growth in Freiburg suffers from some of the same issues as we find in other cities. But the city is certainly an early adopter in the quest for more sustainable cities.

Many other places are equally innovative. For example, in the early 1970s, Curitiba, Brazil, a city similar in size to Calgary, was on the same auto-dependent track as we are. Inspired by a visionary group of architects, planners, and engineers, the city made a radical shift and created one of the most successful examples of green urbanism.⁴⁴ Since the 1970s, Curitiba has re-established natural drainage systems in parks to manage

flooding. Some 1.5 million trees have been planted, and quality green space has increased fivefold. A large flock of sheep maintains city grasslands.

In the social realm, Curitiba has a comprehensive recycling program that involves citizens in poor neighbourhoods who can exchange what they call “trash-that-is-not-trash” for bus vouchers, theatre tickets, food, and school supplies. Downtown, the main car corridor was transformed into a thriving pedestrian street with many shops and services, similar to Calgary’s Stephen Avenue mall. Curitiba’s flagship achievement is its low-cost transit system that carries over two million passengers a day. From 1974 to 2000, Curitiba’s population doubled, yet car usage declined 30 percent. Since 2000, the system seems to have deteriorated to some extent, resulting in a return to cars for some Curitibaans, but commentators still rank Curitiba as an eco-city success story and as having set the bar for other cities, such as Bogotá, to aspire to.⁴⁵

Another example of green urbanism is Växjö, a city of ninety-four thousand in southern Sweden that began a trek toward carbon neutrality in the late 1990s. Their idea was to use waste from the local timber industry to power a high-efficiency incinerator to generate electricity and create enough heat to meet most of the city’s needs—all with no new carbon emissions. Following nature’s example of using waste from one process to power another, Växjö’s experience shows how major environmental milestones can be achieved without sacrificing quality of life.⁴⁶

In Helsinki, Finland, a winter city, what was once Europe’s biggest glass and ceramics manufacturing complex has been transformed into a green community called Arabianranta. Home to ten thousand residents, the new urban village contains a cluster of small- and medium-sized creative arts businesses employing around five thousand people, as well as a university campus for six thousand students. Following the city’s master plan, a diverse group of interests including city social housing, not-for-profit groups representing seniors and the disabled, students, and private firms developed their own properties. Architectural competitions were held for every individual land parcel. High-quality green spaces and community gardens are around every corner, and 10 percent of the building budget has been ear-marked for public art. Arabianranta is serviced by an innovative high-speed communications network and owns and operates a high-efficiency district heating network that distributes heat to homes

and businesses, negating their need to install a furnace. The community borders a protected wetland and is connected to central Helsinki by a dedicated cycle route. As well, two tramlines service the community.⁴⁷

What about back home in Calgary? Although we hear about climate change, biodiversity loss, peak oil, threatened fisheries, looming water shortages, and so on, most of us have little personal sense of the enormity of their effects. It's even harder here because our prosperity has bank-rolled an especially comfortable refuge to nestle in. Although innovative and creative schemes are blooming in Calgary—such as East Village, The Bridges, and Currie Barracks—most have been isolated initiatives rather than the result of coordinated action.

But with a supportive mayor and council, a Municipal Development Plan that points in the right direction, and citizen groups such as Sustainable Calgary, Calgary Climate Hub, and Calgary Alliance for the Common Good that have already made the commitment to reconnect with nature and people, perhaps things are turning around.

In the end, Calgary may do the right thing. The question is, Will nature force us to change or will we find a way to come together and change ourselves before it does?

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