# How Mid-Sized Cities Can Avoid Strangulation

*Contrary to popular impressions, the urbanizing of the world means a proliferation not only of giant "megacities" but also of a larger, faster-growing class of middle-sized cities. In their struggles to overcome the pervasive problems of traffic, pollution, chaotic development, and psychological stress, two of these mid-sized cities serve as encouraging models.*

**Molly O'Meara**

In the early 1970s, localities around the world were razing old neighborhoods to make way for new highways. But in at least two places—Curitiba, Brazil, and Portland, Oregon—people were resisting. Curitiba was the fastest-growing city in the most rapidly urbanizing country in South America, and it was choking on the fumes of stagnating traffic. The city's new young mayor, Jaime Lerner, who had been schooled as an architect, was loath to solve the problem by ripping apart the fabric of the city to accommodate more cars. In 1972, he took a highly controversial step, halting construction of an overpass that would have obliterated Curitiba's historic main street. On the eve of the demolition date, he organized engineers to block off the street to cars and create a pedestrian mall. Bulldozers showed up the next morning to find the street they were supposed to tear up lined with flowerpots and occupied by children painting murals.

Around the same time, another drama was unfolding in

the northwestern United States. Portland, Oregon, according to the *New York Times,* was "a city in the act of destroying itself." While Curitiba was collapsing under an influx of newcomers, Portland was losing vitality as residents and stores left for the suburbs. Citizen activists, banding together to block highways from knocking down their neighborhoods, found allies in both Portland's new mayor, Neil Goldschmidt, and the state's governor, Tom McCall. Rather than build off-ramps, the new political leadership actually tore down a riverfront freeway in the early 1970s and replaced it with a park for bicyclists and walkers.

The roads not taken in the 1970s have made a difference to Curitiba and Portland. In the following quarter-century, as these officials and their successors have continued to make such decisions, downtown Curitiba and Portland have become vibrant, compact hubs. Public transit ridership has increased faster than population, air pollution has declined, and the amount of green space per person has increased, even as urban populations have swelled. These cities haven't escaped the problems of urbanization altogether, but their innovations in transportation and land use planning have pointed the way to some real solutions.

The stories of Curitiba and Portland have been told before, but they warrant a harder look now because the world is entering its most urbanized century yet. Urban growth is outstripping rural growth three-to-one, so that by 2006 half of the world's people will live in cities, compared with 30 percent in 1950. The metropolitan populations of Curitiba and Portland are only between one and two-and-a-half million each. Cities of such size may seem of minor importance compared with the new class of burgeoning megacities of 10 million plus, such as Lagos, Mexico City, or Tokyo. But in fact, mid-sized cities in the range of 500,000 to five million population are home to a much larger share of humanity (see Figure 1).

## Figure 1. The Overlooked Mid-Sized Cities

| | Megacities (10 million+) | Mid-Sized Cities (500,000–5 million) |
|---|---|---|
| Number of Cities | 14 | 626 |
| Total Population (in millions) | 195 | 798 |
| Percentage of World's Urban Population | 7.6% | 31% |

There are 67 mid-sized urban agglomerations in Africa, 276 in Asia and Oceania, 130 in Europe, 82 in Latin America and the Caribbean, and 71 in North America. Within this category, cities such as Denver, Hanoi, Harare, Johannesburg, Stockholm, Kyoto, Nairobi, Tripoli, Prague, Quito, San Salvador, Cordoba, Lisbon, and San Juan are roughly the same size (depending on where boundaries are drawn) as Curitiba and Portland, the two cities described in this article.

*Source: United Nations,* World Urbanization Prospects: The 1996 Revision (*New York: 1997).*

## Urban Livability

City planners, urban researchers, and journalists flock to Curitiba and Portland from around the globe. Their visits attest to the fact that something about these two cities is not only different but also enviable. While both communities have made progress in such areas of critical concern as the provision of water and collection of wastes, the factors that have really made their reputations are their decisions about land use and transportation. Curitiba and Portland have managed to shape where and how their growth will occur. And in doing so, they have moved toward greater livability—that hard-to-define fusion of economic viability, social cohesiveness, and environmental health.

Each of these communities has been in some ways fairly typical of the cities in its region. Like other New World frontier towns, each has reinvented itself in the latter part of this century. Curitiba, originally a settlement on the route of horse caravans across southern Brazil, became the capital of Parana state in the 1850s. In the past two decades, its traditional industries—processing coffee, tea, and other agricultural products—have declined, while automobile manufacturing and service industries have taken root. Portland, which grew from a fur-trading outpost at the confluence of the Columbia and Willamette rivers, also attained city status in the mid-19th century. Since the 1970s, its economy has been shifting from logging to computers, telecommunications, and other high-tech industries.

Today, part of what makes these two cities unique is their solutions to problems of social and economic inequities. Although the southern farm belt of Brazil is a bit wealthier than the rest of the country, Curitiba's average income is no higher than those of comparable state capitals. And as with most cities in the developing world, Curitiba is ringed by the makeshift squatter settlements of poor newcomers. What makes life more bearable for the poor in Curitiba, however, is the level of services offered by the city. For instance, the city offers a uniform fare for all bus trips regardless of length, which benefits the poor, who live on the fringes and have longer commutes.

Portland too has a commitment to equity. For example, municipal regulations protect the "view corridors" to Mount Hood, 50 miles to the east, by requiring the heights of buildings to step down as they approach the Willamette River. The shared view itself is an extraordinary asset. And perhaps in part because the downtown has such desirable vistas, the city also has managed to avert one of the most pervasive inequities of American cities: concentration of the poor in the central core. Portland's downtown is home to middle-class families and thousands of retail stores; affordable housing

can be found near new jobs in the suburbs; and a metropolitan government keeps the region from disintegrating into warring jurisdictions.

Both Curitiba and Portland enjoy a robust street life. Shops, factories, offices, and houses are found on short city blocks, all within walking distance of each other, and tree-lined pedestrian malls draw a mix of people outside. In her classic *The Death and Life of Great American Cities,* Jane Jacobs identified this as the most important question for city planners: "How can cities generate enough mixture among uses, enough diversity throughout enough of their territories, to sustain their own civilization?" Cities deteriorate when their layout stifles social interaction: when trivial errands require isolating car commutes; when the rich wall themselves off from the poor; and when public spaces, no longer shared by different classes of people, are so devalued that the interiors of buildings matter more than the exteriors. Such fragmentation has eroded the social capital of other cities, which have ceased to be more than the sum of their parts. Curitiba and Portland have gone in the other direction, enhancing public space, thereby deterring crime and making city life more enjoyable for rich and poor alike.

These communities also are thriving because they are doing a better job of linking the built environment to the larger ecosystem, even mimicking nature to some extent. While natural ecosystems put waste to good use, most modern urban systems do not. A typical urban "linear metabolism" takes in vast quantities of resources—energy, food, water, processed goods—and spews them out as waste. The energy flow of a city is calculated to be at least 100 times greater per capita than that of a natural ecosystem.

By reducing reliance on the car, concentrating urban growth to guard natural space, and preserving historic buildings, both Curitiba and Portland have cut the in-flows of fossil fuels and building materials, reduced air pollution, and limited the paved surfaces that short-circuit the natural water cycle. While the population of metropolitan Portland has grown by almost 50 percent since 1975, the urbanized area has expanded by only 2 percent.

In contrast, between 1970 and 1990, greater Chicago's population grew by 4 percent but spread over 46 percent more land, and metropolitan Cleveland's population *declined* by 11 percent but still consumed 33 percent more land. As the number of Americans commuting by public transit declined by 17 percent between 1980 and 1990, the share of those who commute this way in Portland actually increased. Curitiba's progress has been similar: compared with Brasilia, which has about the same population, Curitiba has 60 percent more bus passenger-journeys per capita—which means less pollution from vehicle exhaust.

## Channeling Growth in Curitiba

The physical structure of a city cannot change overnight, but decisions about transportation and land use will determine how it is shaped over time. By building roads, rail lines, or bike paths, communities decide not only how people will move around but also where the accessible and desirable buildings will be and where new services will be needed. And by mandating where new buildings can be built and what kinds of uses—residential, retail, industrial—will be allowed, land use and zoning laws influence how far people must travel to get to work, buy food, and go about life. Failure to coordinate these kinds of decisions has led to the sprawl that characterizes most U.S. cities. Many South American cities lack any meaningful land use controls, and those that have them seem to be copying the mistakes of U.S. cities.

In the early 1970s, the Lerner administration seized the opportunity to channel Curitiba's growth by linking transportation and land use plans. City officials designated several main roadways radiating from the city center as structural axes for busways. Zoning laws encouraged high-density buildings along these main thoroughfares. Transfer stations allowed commuters on the fringes of town to switch with ease from smaller, local buses to the express buses on the main routes.

With the streets reconfigured, Lerner set to work revamping the bus system, with a series of innovations that are now world-famous. A reporter for London's *Guardian* newspaper, for instance, has marveled at the "efficient, passenger-friendly service that makes London seem antediluvian. Bus jams never happen; vandalism is unknown." Dedicated busways, extra-large buses for high-density routes, and tube-shaped shelters where passengers pay their fare in advance are adaptations from rail systems that add a lot of speed for a little money. The bus system has ended up costing $200,000 per kilometer, less than one-third of 1 percent of what a subway would have cost, at $60 million to $70 million per kilometer. Moreover, the city has paid only for the roads, lighting, and bus stops and for the staff to monitor the bus companies. The rest of the cost has been borne by the private bus companies. Despite Curitiba's high degree of car ownership (one car for every three people), three-quarters of all commuters take the bus. Traffic has declined by 30 percent since 1974, even as population has doubled.

As Curitiba has grown, it has wrestled with a problem common to many cities in developing countries: unplanned settlements on its fringes. Rather than ignore the settlers, however, the city has tried to incorporate them by extending bus, water, and sewer service to the city's edge and by seeking ways to employ these settlers. For instance, on the city's western edge, the local government set up an "industrial city" of 40 square kilometers, where more than 400 companies now have located. Curitiba also has focused on "citizenship streets" in poor neighborhoods, where families can gain access to city services and learn about business loans, training, and job opportunities.

Curitiba not only steered growth to-

ward the areas around transit lines but also steered it away from environmentally sensitive areas. Linear stretches of land along rivers were put off limits to builders and made into parks, a practical option that also eliminated economic loss from flood damage to buildings. These rezonings, together with other efforts to protect natural areas and build parks, increased the area of green space per person 100-fold over 20 years.

Parks are just one of the elements that make Curitiba's streets appealing and convenient for pedestrians and cyclists. Curitiba, like Portland, plants trees along city streets and preserves the old, ornate buildings that provide a visible link to the city's history. What began with the pedestrianization of the historic main street, Rua Quinze de Novembro, on that fateful morning in 1972 (described in our first paragraph) has led to some 50 downtown blocks' being set aside as pedestrian streets. These connect to bus stations and parks that, in turn, connect to a 150-kilometer network of bicycle paths. Safe bikeways that are set apart from traffic in turn set Curitiba apart from other Latin American cities, where, according to urban critic Eduardo Galeano, "to travel by bicycle is a most practical way of committing suicide."

Under Brazil's military dictatorship in the 1970s, foreign capital flowed to large infrastructure projects such as highways, viaducts, and the hasty assembly of Brasilia, a dazzlingly modern new capital of skyscrapers and wide motorways. Curitiba's investment choices in this period—installing a high-quality but relatively cheap bus system and constructing an industrial city—ended up bringing mobility to the poor and jobs to the unemployed.

## Setting Boundaries in Portland

Aerial photography would reveal the defining urban growth patterns of Curitiba and Portland. While Curitiba's structure is determined by radial busways, Portland's key feature is the sharpness of its perimeter. The built-up land area seen from above corresponds precisely to the jurisdiction of Portland's unique metropolitan government.

Urban growth is so neatly contained in the Portland area because of a landmark 1973 state law. Richard Moe and Carter Wilkie, in their book *Changing Places,* relate how Oregon state legislator Hector McPherson drove into Portland one day in the early 1970s and encountered bulldozers plowing up land on the outskirts of town. As a former dairy farmer, McPherson was curious and asked, "What are you going to grow here?" The reply: "Houses."

Outrage that fertile farmland was being wasted on subdivisions eventually brought about a law that required Oregon cities to demarcate a boundary that would allow for 20 years of anticipated future growth without encroaching too far into agricultural or forest land. Twenty-five years later, that passion has not dimmed in Mike Burton, a member of the governor's staff in the 1970s and the current chief of Portland's metropolitan governing body, Metro. "We've got $500 million worth of agricultural sales in the area annually," says Burton. "The soil is so rich, you can eat it with a spoon. . . . It would be incredibly stupid of us as human beings to say this is not important to protect."

The resulting urban growth boundary, finally decided on in 1980, encompassed the city of Portland and 23 neighboring towns in three counties. During the process of drawing the border, people in the greater Portland area began to develop a regional outlook. Burton explains, "We discovered there was a common market area, common labor pool, common transportation catchment." Subsequent laws further united the region by giving more power to its governing body, Metro, the only government in the United States that is elected to look out for the interests of an entire metropolitan area.

State law also requires the Metro council to review the boundary periodi-

cally in light of anticipated population growth. In 1997, the U.S. media were captivated by the debate spurred by this review. Yet largely overlooked in coverage of the conflict was the fact that the largest expansion proposed was only 4,000 hectares. By way of comparison, Denver's regional council of governments set aside an additional 43,000 hectares for a population increase of similar size. Oft quoted in news stories was an assertion by the National Association of Home Builders that Portland's growth boundary was the sole reason that housing prices were rising. The argument did not hold up, however. Prices were found to be rising even faster in places without restrictions, such as Salt Lake City. In the end, the Metro Council opted for a minimal expansion of about 1,800 hectares. Opinion polls before the vote showed that 78 percent of the public favored keeping the boundary or expanding it slightly, accommodating future growth with smaller housing-lot sizes.

Inside its boundaries, Portland, like Curitiba, has aimed to promote car-free travel, particularly in the downtown. One of the most symbolic changes was the transformation of a large downtown parking lot into a pedestrian-only plaza, Pioneer Courthouse Square, in the heart of the shopping district. Terraces of brick seating, amphitheater-style, make it a site for rallies and concerts. To avoid large expanses of alienating blank walls, the city required that new buildings have ground-floor windows and that 1 percent of the budget for new public buildings be dedicated to public art. There now are 240 kilometers of bikeways; trains have been designed for easy bicycle access; and the city council has adopted minimum requirements for bicycle parking.

For instance, commercial parking garages must have at least one bicycle space for every 20 car spaces. When the Mount Hood Expressway was proposed in the 1970s as a link to the suburbs, Portland opted instead for a light-rail system called MAX (Metropolitan Area Express), which would extend mobility to children and the elderly, not just those with the ability or the funds to drive. To further encourage public transport, the city made transit fares free within a 12-block area downtown. Between 1970 and 1990, downtown workers riding transit rose to more than 40 percent, and car traffic stabilized, even as the number of jobs downtown increased by half.

Although the city has paid for its transit innovations from public funds such as municipal bonds, there are signs that the type of public/private partnership that built Curitiba's bus system (and U.S. railways a century ago) now is surfacing in Portland. A private company is interested in constructing a light-rail track to the airport in exchange for a lease on airport commercial land.

In recent years, Portland planners have turned their attention to transportation and land use decisions outside the downtown, to ease car reliance in the suburbs; although each suburban jurisdiction is required to match up jobs with affordable housing, travel between home, work, and store in these areas is still mainly by car. The region's "2040 Growth Concept," adopted by Metro in 1994, envisions the city of Portland linked by transit to compact regional centers in the suburbs—"places with a sense of place," in the words of Burton. New rules require 85 percent of growth to be within a five-minute walk of a transit stop. Revised codes allow for mixed-use development of apartments above stores and forbid "snob zoning" that prohibits the denser type of housing (multifamily units, apartment buildings, or subsidized units) that can support transit.

Debate that began in 1988 over a proposed bypass to cut through productive farmland to the west of Portland resulted in a new tool for transportation planners. The bypass was supposed to alleviate traffic congestion from population growth in booming Washington County. However, two citizens' groups, 1,000 Friends of Oregon and Sensible Transportation Options for People, pointed out that computer models of traffic prediction did not take into account the benefits of walkable and bikeable neighborhoods. Updating the software, these advocates showed that over 20 years, development geared toward transit, pedestrians, and cyclists would result in 18 percent less highway congestion than building a new bypass. That software now is used throughout the region.

Directing growth in a way that minimizes private car use and maximizes pedestrian welfare reduces a city's energy intake and resulting pollutants, protects local natural resources, increases social contact, and ultimately saves money. According to the Urban Land Institute, when development sprawls at low densities, the cost to government is higher because roads, sewers, water lines, and city services must be delivered over a larger area. For instance, a Rutgers University study found that in New Jersey, compact Portland- or Curitiba-style growth instead of sprawl as usual would save state taxpayers $1.3 billion in infrastructure costs over 20 years. This number does not even take into account other savings from reducing car dependence, such as avoided health care costs from less air pollution and fewer traffic accidents.

## How Did They Do It?

Good planning has helped shape Curitiba and Portland into the livable cities they are today. What they have done is instructive, but perhaps even more instructive is why they have done it when other mid-sized cities have not. After all, well-intentioned planners in Curitiba and Portland confront many of the same obstacles that exist in other communities. Among the elements of success are a supportive political structure, practical policy choices, and active public involvement.

Portland's political system has been a key to its planning triumphs. Its government is more akin to those found in Europe than to those in other U.S. cities. Elected city councillors also serve as commissioners of city agencies, so they are able to push through the agenda the

items that got them elected. Most important, the state has required the entire region—the city of Portland and outlying areas—to attain an extraordinarily high level of metropolitan cooperation.

Comparing the metropolitan area of Portland with that of Denver, another western city where environmental concern and population growth are high, scholar Paul Lewis cites Denver's highly fragmented political system as responsible for the city's spread-out urban development, greater mismatches between job and housing locations, and longer commuting times. A mayor in one Denver suburb will compete with counterparts in other suburbs for ever-larger malls and arenas, to bring in sales tax dollars. In contrast, not only is there a single regional government in the Portland area, but also there is no sales tax in Oregon (property, income, and excise taxes, along with user fees at the zoo and other regional facilities, make up the revenue stream). When mayors in suburban Portland look at plans for outlying arenas or malls, what they see is additional infrastructure expenses. Researchers at the Seattle-based organization Northwest Environment Watch argue that shifting existing property taxes from buildings onto land would further help Portland promote compact development.

In addition, Portland's regional government has developed an expertise in transportation planning that has moved the discussion of future options beyond the simple question posed by most state highway agencies: where do we build the next highway? Among the strongest centrifugal forces puffing cities outward in the United States are the federal highway system and the state highway departments. In fact, in the 1990s federal laws in the United States, such as the Intermodal Surface Transportation Efficiency Act (ISTEA), have just begun to give support to nonhighway alternatives.

In Canada, where the highway lobbies are weaker, a country with even more wide-open space than the United States has managed to produce cities that look more like compact European

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ones, with only one-quarter as much highway mileage per capita as their U.S. neighbors seem to require. Canadian cities, note Peter Hall and Jeff Kenworthy in their landmark publication *Cities and Automobile Dependence,* have a greater orientation toward public transport, higher population, and greater job densities in their central cities and also enjoy better-developed public spaces.

Surprisingly, given its planning successes, Curitiba suffers from the same lack of regional cooperation that is typical of other cities in both the United States and Brazil. Local governments in Brazil, while politically autonomous, are at the mercy of state and federal funding decisions. One of Curitiba's nagging problems has been the lack of coordination with the 13 municipalities around it. Urban analysts Jonas Rabinovitch and Josef Leitmann note that ongoing problems—with sanitation service, for instance—generally stem from the fact that cities cannot be managed in isola-

tion from state and national governments, concluding, "Curitiba is not an island within Brazil."

However, there are signs that this has been changing since Jaime Lerner, the former Curitiba mayor, was elected mayor of the state of Parana four years ago. For the first time, a regional bus system is up and running. In addition, Parana now is making efforts toward comprehensive planning by building rural villages. The goal is to stem the flow of migrants to the cities for at least a generation by making land tenure and microcredit available to landless farmers. The state expects that 50,000 families, representing a quarter of Parana's landless farmers, will be settled in these villages by 1999.

While Curitiba has lacked a regional support system, its leaders have achieved a great deal simply by pursuing practical policy choices, such as a surface transportation network built on the existing bus system and prohibitions against new building in floodplains. In contrast, planners in richer countries would likely insist that a city of over a million could not be livable without a subway and massive viaducts. Author Bill McKibben, who studied Curitiba for his book *Hope: Human and Wild,* concludes that local government planners will do well to follow the rule "Simple is brother to cheap."

Visionary politicians and citizens have been important in both cities. Even before Portland became touted as a well-planned city, western Oregon's lush greenery and woodlands attracted nature lovers. The 1950s and 1960s brought to Portland the same type of suburbanization that was occurring around the country. The planning process that began in the 1970s, as activists geared up to prevent the city's decay, has directly involved the public. Most recently, participation took the form of a regional visioning process in which residents were asked what they wanted their neighborhoods to look like in 2040.

In Curitiba, a far-thinking mayor set the original agenda for change, but a public that has come to value a humane city has moved the agenda forward in recent years. While Portland already had a well-educated, environmentally literate public, Curitiba has created one. Environmental education is incorporated into the schools' curricula, but it also reaches children on the streets, involving them in planting urban gardens and maintaining parks. Perhaps most famous is the city's Free University for the Environment, sited in an abandoned quarry and built out of recycled tires. Courses are designed to teach the environmental implications of everyday jobs and are a prerequisite for taxi licensees.

A century ago, the smog and filth of in-

dustrial-country cities such as London and New York prompted mass movements of urban reform as visionaries demanded a cleaner, more humane urban future. Today, cities in developing countries face similar conditions but on a much larger scale. Yet the solutions of yesterday have generated problems of their own.

For instance, while streetcars, and eventually autos, were seen as the answers to the sanitation problems of horse-drawn transport, today many cities are looking to escape the woes of auto-oriented development.

But cities also offer a wealth of opportunities. For millennia, they have been the cultural centers that advance civilization. Today, ideas first developed in Curitiba about segregated bus lanes, pedestrian streets, land use legislation, and waste management programs are spreading to other Brazilian cities. The World Bank is now championing Curitiba's combination of private financing for transit with public sector responsibility for planning.

John Fregonese, a former Metro officer currently involved in redevelopment efforts in Portland, often is invited to other cities to share his advice. He has seen a marked increase in the number of communities around the United States spontaneously adopting growth management measures that would have been considered radical 10 years ago. For instance, 11 cities in California have adopted growth boundaries since January 1997. Maryland and New Jersey have begun to enact growth control measures. And in Minnesota, state legislator Myron Orfield has made a graphic case for regional reform with a new political tool: maps that show the decline of central Minneapolis and St. Paul and their inner suburbs and the rise of affluent outer suburbs. Between 1993 and 1996, the coalition led by Orfield expanded the power of the Twin Cities' metropolitan council, coming within one vote of turning it into an elected government like Portland's Metro.

The problems of localities, like politics, often are perceived as merely local. But the resources they use and the pollution they create extend beyond their borders, and the benefits of healthy localities are regional, national, and global. Curitiba's (and now Parana's) Lerner warns, "There is a kind of syndrome of tragedy that poisons our thinking about the city. The problems are so great, people say no solution is possible. That's the mentality of defeat, and an excuse for doing nothing. The fundamental thing is to begin." PM

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*This article is reprinted with permission from the September/October 1998 issue of* World Watch *magazine, published by the Worldwatch Institute, Washington, D.C.*