

This is an article by Lucien Kroll a respected Belgian architect. It is about the city of Curitiba in Brazil which decided against the model of city development currently pursued in Malaysia. It is about a leader who is knowledgeable about cities. It is about a city/state government which did not abandon the city core unlike Kuala Lumpur and now Penang. It is about a leader who cared about people and their environment and took risks to protect them.

Lucien Kroll was invited to present his article by Ken Yeh.

Creative Curitiba by Lucien Kroll

Three quarters of the 150 million inhabitants of Brazil live in towns, under notorious conditions. But one town, Curitiba, is an exception. Situated 700km south of Rio and 100km from the Atlantic coast, it is the capital of the state of Parana and contains 1,600,000 *curitibanos*, descendants of Polish, Italian, German and Ukrainian emigrants, and has an economy (services, trade industry) at the normal level for Brazil. Its natural situation is poor and its climate average. Like other states, Parana was invaded by a mass of peasants expelled by mechanized agriculture (1.5 million poor peasants were thrown out of work).

Nothing would distinguish Curitiba from another town if it were not for the action of its mayor Jaime Lerner, an architect. He has made all the difference. He quickly understood that a town is designed not by an architect but by politics. So he contrived to be elected mayor for three alternate terms in 20 years and is ceaselessly improving the urban ecology of Curitiba.

He realized that grandiose solutions never produce the promised results and that abstract modernism simply does not work. In 1970, when he first became mayor, the new town of Brasilia was shining in all its glory. Today it is a sorry sight, strange and uninhabitable. Lerner realized that all this hardware of glass and steel towers, these underground stations, these dizzy suspension bridges and motorways did not really help anyone in their everyday life.

Masterplans

In the 60's, an attempt was made to impose a 1942 plan by the French Town planner Agache. He proposed widening the road system, demolishing the borders of avenues and radically transforming the city on behalf of the private car. Just like North America towns.

This plan was rejected by architects, engineers and the Development Bank, who requested a new and more realistic proposal. As early as 1966, a new plan was prepared by the Lerner team and was accepted, then frozen in 1971 under the harsh dictatorship. This latter plan closed the main road to private traffic, which annoyed some private interest. The earlier plan was concentric, to go from one district to another, traffic, both public and private, had to pass through the center, which would certainly soon become choked. Therefore the streets had to be widened and the spiral of demolition and bottlenecks began.

The new plan was linear: the town was authorized to spread only along specified lines. This historical center, situated somewhat apart, could then become quietly pedestrianized. A ring road connected the fast north-south and east-west bus routes. Four concentric lines were added with stations at intersections with the earlier lines.

These express radial routes would have needed a width of 60m, which was impossible. The device adopted in the plan was to divide this flow intelligently between three neighbouring parallel streets, the first and the third being one-way for private travel and the center being reserved for the express bus, and later for the tram or surface railway when the means were available. All this was coordinated with very little expropriation. The routes gave a structure to development without allowing it to occur anywhere at random and without impossible traffic conditions.

Parks



The first act of the local administration had been to look after the parks and to plant many trees. The inhabitants had to be persuaded by mobilizing them with a slogan: 'We bring shade, you bring fresh water'(an old Portuguese proverb). Previously the town had planted 5000 trees per year, and this was increased to 60 000 trees per year. In 20 years, Curitiba has increased green space per inhabitant from 0.5m squared to 52m squared. The intention was to plant one and a half million trees in 20 years for, since the 1988 murder of Chico Mendes(the campaigner to save the rainforest), Brazil had been on the defensive in ecological circles.

During a winter night in 1972 the work of pedestrianizing the main street began in great secrecy and was completed in 72hours. In spite of the desire for participation, the preliminary work had been carried out without publicity. The wager succeeded. Participation was not by the inhabitants but rather by urban guerillas. The car addicts had decided to reconquer the territory by brute force, but on Monday morning when lorries arrived to demolish everything, they were faced with a group of children painting paper on the ground. This was the first successful municipal sit-in for protecting pedestrians. Even so, it took two years to set the express buses in operation, an essential accompaniment to the pedestrian.

The mayor organized well constructed and popular parks: the Iron Wire Opera, a round structure of completely glazed tubes, and a new Botanical Garden in which the greenhouses were also of steel tubes and domes. They were very popular.

Run-down quarters

Rehabilitation of the run-down areas started by adding the public services which they lacked, paving the streets and in particular parking with the communities adjoining the *favelas* or shantytowns; their opinion was requested on all the projects. It was found that in shaky economies, shanty towns are a possible response to the immense influx of people without resources. It is surely better to improve rather than to ignore or demolish them. Often, furthermore, new constructions proposed in place of slums are violently rejected by the inhabitants. We must admit that our distaste for this approach is not economic but cultural. Town planning based on rational considerations alone is completely unsympathetic, in contrast to planning which originates in popular instincts regarding space and the urban image. This is a fundamental criticism, based on experience, of the alienation of Modernism. Which is the more reasonable approach ?

Since lorries on the road system cannot reach the paths in the *favelas* the slum dwellers are 'paid' for their rubbish, i.e. they sort the rubbish from the town and are repaid with vegetables, fruit, bus tickets and so on (green exchange). This is much less expensive than hunting for inaccessible clandestine waste dumps in the *favelas*. None of this, of course, is very visible.

Most Brazilian politicians begin their career as fabulous celebrities and end up barricaded behind the doors of their mansions, in fear of violence, the press or their rivals. Lerner walks peacefully in his town and says the only people who ask him to stop are autograph-hunters.

Take the bus



Towns with roaring traffic but no budget, Lerner advises, should quickly forget luxury underground stations. He prefers to bring back the tram, which had been discontinued almost everywhere, and refurbish the bus. 'If properly laid out, a bus system can be almost as efficient as an underground railway' he says. It is also much less expensive: about a million dollars a kilometre for buses, 10 million dollars a kilometre for trams, and 100 million for an underground. Integrated transport is the crowning success of Curitiba, which any other town could imitate immediately – i.e. harmonizing the various routes and the various mass transport vehicles. For about 20 US cents, a passenger can change to any bus (express or local) and reach practically any place in the town. 'The trick in changeover is to integrate the various forms of transport, from buses to boats, to the underground and the bicycle' says Lerner.

On their own ground, buses are regular and fast, with express routes and a good network of ring-roads in the suburbs. Things are going so well that when I was there, taxis were complaining of having no work (why spend so much if the bus is so efficient ?) Stations in the form of tubular shelters have been set up at the bus stops. Travelers have already punched their tickets when they pour into the bus

through wide sliding doors, and at the same time others leave on a level with the street, as in an underground railway. This speeds up the process (30 seconds instead of a few minutes). The widened bus doors are exactly adjusted to the doors of the stop.

It was necessary to design an original Brazilian bus, i.e. the suspension, the width of the entry and exit doors and above all the low platform, etc. Existing buses were never anything other than disguised lorries (though Brazil is a large manufacturer of buses). The average speed of the express buses in Curitiba is 20km/h, compared with 7km/h for buses in other Brazilian towns. The integrated network measures 500km by 50km on its own ground and carries 1,200,000 passengers.

At present, the pioneer line is overburdened; at peak hours it needs convoys of articulated buses (or bi-articulated, three buses in one, in accordance with the 'Curitiba' design – 370 passengers at once). The express buses and their metro-type stations allow travel at an average speed of 30km/h, which must be a world record. Soon there must be a changeover to the tram. In the past, 27 towns in South America were equipped with trams (Rio had 400km of lines), but they have all disappeared, as in most of Europe.

Initially Curitiba had half a million private cars, but they are no longer to be seen. There are still as many private car owners, but the cars remain in the garage. Bicycles however remain very important for walkers and workers. There is a 150km network of bicycle paths.

In 1990 Curitiba won the United Nations prize for environmental planning. Its bus system had received an award from the International Energy Conservation Institute at Washington. Its system consumes nearly 25 per cent less fuel than other towns. During the crisis, buses used fuel from sugar cane.

Lerner's success has certainly put him under an obligation to advise other towns throughout the world in order to improve their public transport.

Save the children

Children are the wretched victims of Brazilian town development. They are abandoned without protection and thrown into the streets. When very young they form gangs, become dangerous and are massacred by the police. The object of the *Pia* (street-urchin) programme is to collect these children, who are in a critical situation. At Curitiba a count was made of 500 children who had lost every link with their family and slept in the streets or in the parks. They are admitted (voluntarily or otherwise) into children's homes, and are given work, food, education (below age 14); 8000 children have been admitted. There will soon be 11 000 in 40 establishments.

Curitiba has also constructed creches which it 'sells' to businesses. The children there are of pre-school age. Owing to lack of space, schools often operate in two four- or five-hour shifts, but are now being increased in order to provide a complete day. Before then, children were accommodated in disused buses.

Lerner is also trying to attack the problem by requiring businesses to adopt small groups of 10 to 15 children, feed them and give them work and teach them a simple trade or enable them to earn a little money in exchange for small, easy services such as errands, gardening, caretaking or minor office duties. Brazilian law forbids child labour but Lerner points out that, as in numerous situations where survival is difficult, the law turns a blind eye. 'In this country, if you are over-protective nothing will work.

According to law a child must not work, but the law looks aside when the child is hungry, homeless or is working for a drug trafficker'. We visited the first of these homes. Curitiba is now considered the safest town in Brazil.

Relations between groups

In any metropolis, particularly in the Third World, businesses and officials find it difficult to associate with the informal network – illicit street vendors and homeworkers. Often there are collisions. Lerner recommends close connection between the two. His town has decided to invite the ragged band of vendors who clutter the streets into open-air markets which travel from one district to another. For residents who cannot pay the high prices in shopping centres, hardware stores or supermarkets, these markets will become pleasant bazaars which sell cheap clothing, building materials and bargains ranging from typewriters to tubas.

The rivers

The Iguaçu river and its tributaries have the habit of violently flooding stretches of land (the main bed) which were carefully avoided by builders until the modern period. More recently, unlicensed buildings invaded the banks and the valleys. Every downpour in summer was followed by fatal floods, in spite of considerable investments in engineering work (underground galleries, trenches, dredging etc).

A solution was found by setting up easily-floodable reserve areas near the rivers (after some expropriations) and small barrages which slowed down and soaked up premature floods. The rivers will gradually be freed from pollution (only 45 per cent of the inhabitants are connected to sewers at present). For the moment, filtering barrages stop solid waste, and upstream basins reduce sewage pollution by biological means, until the fish can return and carry out their scavenging work. In this way, all rivers are given a reserved area and natural protection. Relief from taxation has been promised for all areas which still contain portions of the primitive forest. Many such areas have been declared.

Density

High-rise buildings have been authorized only along two perpendicular routes, at a short distance from the bus stops. The result is strange; from a distance the town has an extraordinary appearance, because all the rest of the town is very low, but in fact it works very smoothly.

Refuse



Twenty years ago it was suddenly discovered that waste-disposal sites were full. Since new sites were anti-ecological and an incinerator would be polluting and too expensive, it was necessary to invent a slogan: 'Waste which is not waste'. Immediately the waste was recycled in exemplary fashion. After a few appearances on television, Lerner succeeded in persuading everyone to sort their waste by hand for selective collection; 40 per cent of the waste can be recycled (50kg of recycled paper avoids the need to cut down a tree, and Curitiba saves a thousand trees per day). Organic waste is put to one side and used as manure. This is a way of earning money. Three-quarters of the population are truly interested.

The waste is carried to a factory outside the town and is sorted for sale. The people working the sorting conveyors or bringing waste in are often very poor, alcoholics or homeless.

Economics

Such improvements have to be paid for, without agriculture or agro-industries. The municipality decided to set up an industrial city, not in the form of a specialized area but as an extension of the town, inside a natural park. Some old industries were still polluting the centre of town. They have sold their premises and have set up other installations, this time non-polluting, in new areas especially designed for them. These are not all reserved for industry, but contain a mixture of accommodation, enclosures, services, and recreational areas, and are equipped with a good system of internal and external transport. It is a '60s dream which has rarely been realized. Time for traveling to work is minimal, either because people live in green town development or because they have a special line connecting them to the main working area remaining in the city. To start the economic mechanism, it was necessary to provide financial incentives to foreign industries to set up there, since local firms had refused to take the risk.

The Industrial City at present provides 50 000 direct jobs and 150 000 indirect jobs. Workers benefit from the quality of the surroundings, the excellent transport system, and the health, education and food services. On average, they spend three hours a day less in travel than the same workers in Sao Paulo.

Social conditions and culture

Curitiba was swollen by refugees from the country. The supply of accommodation had difficulty in keeping up. There is still a short-age of 80 000 homes and 7.5 per cent of inhabitants are in temporary accommodation and nearly 5000 homes are being built per year. Although the mayor insists on high quality accommodation, he encourages do-it-yourself; it is often much cheaper than hastily-built barracks and is more suitable.

The quality of opportunity is greater than elsewhere in Brazil. For example the illiteracy rate is 7 per cent compared with 26 per cent in the country. Failure at school is also less. Vocational training, which is very difficult to finance, is given in disused buses. They travel from one district to another and teach all trades requested.

Beyond the immediate, functional prospects of people, numbers and needs, Curitiba regards culture mainly in relation to the inhabitants of a district or town, and saving travel time to work so as to provide longer periods at home or in other pursuits. Improvement of everyday life proceeds by a system of neighbourhood relations, on the scale of a village rather than a large town. This attachment to a locality provides Curitiba with an identity and multiplies the effects of one action on another.

The memory of the efforts of 20 years ago to construct a town of make-do and ecology is the stuff of today's personal history of the inhabitants and continues across the generations. The inhabitants have the feeling of participating in a novel ecological operation and of giving an example to the world.

Keeping the balance

Restoration of the town is the concern at all levels but is mainly discussed at the top. Lerner thinks that the town authorities should know how to balance the two vital elements – necessity and possibility. A part of his day is devoted to dealing with particular requests, from maintenance of public lighting to ensuring that buses are punctual.

The other part of his time is spent in reflecting on what will happen in the town of the future after he retires. How many inhabitants will there be in 20 years? Where and how will they live? How will they go to work? Where will they throw their rubbish? Lerner says that 'The mayor who limits himself to current problems fails the city of tomorrow, whereas a mere visionary stumbles in all the ruts of today'.

Encouraging town spirit

Lerner maintains that town spirit is immaterial but a great incitement to action. 'We must escape the syndrome of tragedy' he says. The bomb promised by Malthus has not yet exploded. Poverty is widespread but does not overwhelm us. 'A tendency is not a destiny' says Lerner, echoing the philosopher Rene Dubos. 'The idea', he says, 'is that the citizens know that solutions exist'. The only way is to involve the citizens in improving their own environment. Recycling of rubbish and planting of trees are successes because they are organized in association between the official town and the private sphere.'

'The dream of a better town lives firstly in the heads of people' is another of his sayings. All the mayor has to do is to draw strength from these dreams. What he can do is limited by his electors. Strangely, Lerner has invented nothing; no action of his is a critical discovery. His genius was to undertake everything at once and co-ordinate activity over a long, continuous period. It is a truly architectural work.

Curitiba created and set up Unilivre, the Open University for the Environment, which trains professionals and citizens, teachers, educationalists, administrators and official managers of property, concierges and police. It was instituted in an old quarry in a park. Curitiba is today regarded as the world ecological capital, but is strangely little known in the rest of the world, particularly among those whose ecology is somewhat literary.