

A. The Walkable Locality

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1. Introduction

At 6:00 on a Friday evening in 1972...the renewal of Curitiba began. City workmen began jackhammering up the pavement of the central historic boulevard, the Rua Quinze de Novembro. Working round the clock, they laid cobblestones, installed streetlights and kiosks, and planted tens of thousands of flowers. Forty-eight hours later, their meticulously planned work was complete. Brazil's first pedestrian mall--one of the first in the world--was ready for business. By midday Monday, it was so thronged that the shopkeepers, who had threatened to sue because they feared lost traffic, were petitioning for its expansion. Some people started picking the flowers to take home, but city workers promptly replanted them, day after day, until the pillage stopped. The following weekend, when automobile-club members threatened to retake the street for cars, their caravan was repulsed by an army of children, painting watercolors on mall-length rolls of paper unfurled by city workers. The boulevard, now often called Rua das Flores (Figure 3.1), the Street of Flowers, quickly became the heart of a new kind of urban landscape. The children of those children now join in a commemorative paint-in every Saturday morning. The city is blessed with twenty downtown blocks of pedestrian streets that have regenerated its public realm and reenergized its commerce and its polity.¹

Figure 3.1: Rua XV de Novembro, Curitiba, also known as the Street of Flowers



Picture Credit: Mathieu Bertrand Struck, Wikimedia Commons, <http://commons.wikimedia.org/wiki/File:Rua-XV.jpg> viewed 22 March 2011.

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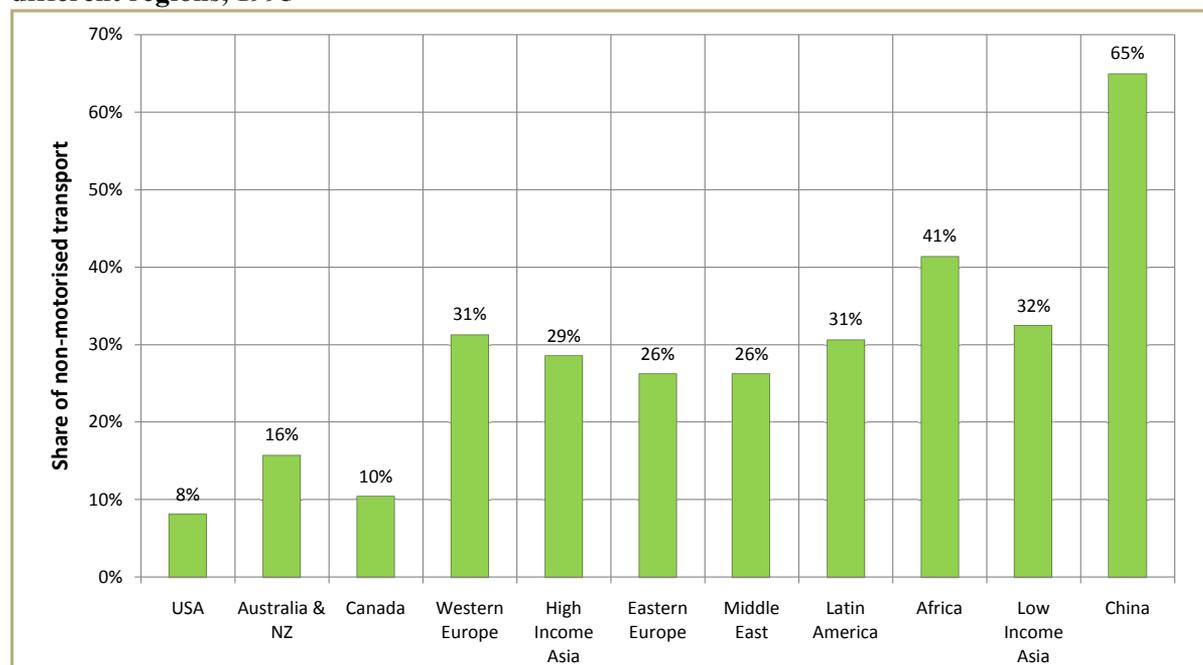
This is just one example of how pedestrian facilities can transform a locality. The **Walkable locality** is a package of practices and technologies that enable cities and towns the world over – in developing and developed countries – to become urban communities of the future: communities that are better functioning, safer, more sustainable, better connected, more inclusive, healthier and more attractive. Walkable localities have networks of well-designed, well-connected walkways that enable people to get to their destinations or to public transit safely, pleasantly and without delay. This section outlines the concept of a walkable locality, and explains how it can be achieved, with attention to:

- the provision of walkways that enable people to walk from one point to another as directly as possible
- town planning measures to maximise the proportion of journeys that are walkable
- the integration of walkway networks with mass transit routes and services
- control of motorised traffic and non-transport land uses, and separation of walkways from motorised traffic, to ensure that pedestrian travel is safe and pleasant
- the enactment and enforcement of laws and regulations to support these measures.

The section focuses on walking facilities in cities and towns, where problems of congestion, blocked pedestrian access, and danger from vehicles are most serious for pedestrians. Walking in villages is not such a problem as long as there is little vehicle traffic and as long as roads and paths are in reasonable condition. Walking long distances in rural areas is not a good transport solution. This is especially the case for women who spend many hours a day collecting water and firewood.

Levels of non-motorised transport (walking and cycling) vary greatly across the world and within both high and low income groups of countries. Figure 3.2 shows these levels for cities in different regions of the world.² Two things in particular are notable: the similarity of levels in cities of low income Asia and high income Asia, and the very different levels in cities of wealthier regions (USA, Australia/New Zealand, Canada, Western Europe and high income Asia). This demonstrates that levels of walking and cycling have little to do with national wealth, and a great deal to do with the direction a country or city chooses to move

Figure 3.2: Levels of non-motorised transport as a percentage of all transport in cities of different regions, 1995



Based on Data from: Jeffrey Kenworthy and Felix Laube, *The Millennium Database*, UITP, 2001.

in. If it has a commitment to promoting walking and cycling and designs its urban areas accordingly, then higher levels of these transport modes can be achieved.

2. Development contribution

Economic

Good walking facilities can save time and money. Most trips – even those in private vehicles – involve some walking. Given that walking is a slower mode of travel, indirect routes resulting from a lack of walkways and crossings, and very slow walking speeds caused by congested walkways, represent a major loss of time and therefore a significant economic cost to individuals and cities of developing countries. This can lead people to choose motorised vehicles instead, but for middle and lower income families, the cost of such vehicle travel can eat up a large proportion of family income or important trips may not be taken because they are too expensive.³

Moreover, the pollution, road accidents and lack of exercise resulting from car and motorbike use lead to sickness and injury and thereby add to a country's health costs and absences from work.⁴

On the other hand, good walking facilities are far cheaper to provide than other transport infrastructure. What's more, such facilities encourage and support mass transit use, and World Bank research shows that countries with higher levels of transit use spend much less on transport as a proportion of their total spending,⁵ and help to reduce developing countries' dependence on increasingly expensive foreign oil.

And safe, attractive, pedestrian-and-transit-friendly cities can be more appealing to outside business and tourism.⁶ Increasingly, people working in the new knowledge economy are attracted to walkable urban environments.

Social

Walking promotes physical and mental health. It reduces or prevents obesity, cardio-vascular disease, diabetes, depression and sleep disorders. As people switch from cars or motorbikes to walking, cycling and mass transit, asthma and other respiratory diseases aggravated by motor vehicle pollution are also reduced.⁷

Walking is a form of transport that everyone can afford and almost everyone can practise (and if users of wheelchairs and walking aids are accommodated in the walkway design, there are few indeed who cannot practise pedestrian travel). Adequate networks of functional walking routes mean that people on all levels of income have better access to employment, education, health care and other services vital to their wellbeing. Thus, good walking facilities promote equality and inclusion.⁸

It is also a very safe form of travel, as long as pedestrians are protected from motorised traffic (and to a lesser extent from the weather). As people move from cars and motor cycles to walking and transit there are fewer vehicles on the roads to pose a threat to others. Road deaths in Bogotá were reduced from 2-3 a day to 1-2 a day largely as a result of major improvements in walking and cycling facilities.⁹

As well, walking is a very practical mode of travel, especially in urban areas. Over 60% of trips in cities of developing countries are less than 3 kilometres in length and therefore very suitable for walking, and in the most sustainable German cities now, 80% of trips within this range are taken on foot or by bike.¹⁰ With walking, there is no vehicle to be parked, damaged or stolen. And while the climate in developing countries may be cited as a factor that deters walking, average temperatures in these countries are about the same as summer temperatures in Europe, where walking is very popular as a means of transport.¹¹

If walkways are shaded, heat and direct sunlight are much less of a problem. And the difference in travel speed between walking and motorised transport is not as great as might be thought, given the reduced speed of motorised vehicles in cities as a result of either congestion or traffic calming measures.¹²

As well, walking builds community. Studies show that in neighbourhoods where walking is common people know their neighbours much better than in neighbourhoods where most people drive.¹³ Pedestrian environments are great places for people to congregate, and for children to play.¹⁴

Finally, when good walking facilities are combined with good mass transit a large range of destinations are within practical, safe and affordable reach.

Environmental

As stated earlier, walking produces no greenhouse gases and is completely non-polluting. Good walking facilities encourage and enable people to use mass transit, and every person who walks or uses transit instead of using a conventional car or other motorised vehicle reduces the production of pollutants, greenhouse gases and noise, and helps to conserve the world's non-renewable resources.

Cities with more pedestrians, and more public spaces suited to pedestrians, are also more attractive, safe and pleasant environments for people to live in.¹⁵

Furthermore, as a pedestrian occupies just one sixth of the space of a car, walkways occupy much less space than roads and thereby enable higher urban densities to be achieved, and these in turn have many other environmental advantages.

Narrow pedestrian streets can also save energy by shading buildings. The new zero-carbon city of Masdar in the United Arab Emirates has such streets, and they shade both the pedestrians and the buildings, thus creating pleasant walkable areas that reduce motorised travel, and require less energy to cool buildings.

3. Greenhouse gas emissions reduction potential

Once walkways are in place, walking as a mode of transport produces no greenhouse gas emissions at all. A walking trip of 2 kilometres (a very feasible distance) reduces greenhouse gas emissions by 419 grams of CO₂ (equivalent) if it replaces a car trip.¹⁶

4. How a more walkable locality can be achieved

The core of a walkable city is a well-functioning network of walkways. This should allow everyone in urban areas to walk wherever they want to go safely, pleasantly and fairly directly. The following considers in broad terms what this entails and how it can be achieved, but governments and city leaders wanting to improve walkways in particular localities may want to use a walkability auditing tool such as *Is my area walkable?* produced by Anne Matan as an appendix to this guidebook.¹⁷

Location of walkways

Ideally, walkways should be at least as extensive as roads, so that pedestrians can easily walk between any two points. But a locality improving its walkways should give priority to the most popular routes, and to routes most likely to encourage people to use mass transit. There should be safe crossings at reasonable

intervals on all major obstacles, such as main roads, railway lines and canals. Most walkways are located alongside roads (as footpaths or sidewalks) but there can also be separate walkways, which may or may not double as bicycle ways. Town planning changes that make urban locations more accessible on foot are also important, and these are described further on.

Width of walkways

Walkways should be at least two metres wide, and more if there is heavy usage, for example, 3.5 metres wide if 5,000 people pass per hour. Some sources recommend that they be much wider than this,¹⁸ but in established high-density areas this may not be possible. Traffic route construction manuals give further details of width and other design requirements, and are listed in the references.¹⁹

Freedom from obstacles

Walkways need to be free of obstacles, which can force walkers onto dangerous roads, slow them down, or deter them from walking altogether. Such obstacles include parked vehicles, street traders, animals, piles of rubbish, shanty dwellings, poles, signs, and building or road-repair materials. Bollards can be placed along the edges of walkways to prevent cars parking on them. Some of the uses of walkway space just mentioned, such as the street trade and shanty dwellings, may be an important part of street life or meet vital human needs, so they might simply need to be restricted to certain areas that don't block pedestrians.

If other activities or objects are allowed on walkways, then the total width of the walkway may need to be increased so there is sufficient clear space for pedestrians. More space can be obtained for pedestrians and cyclists by narrowing roads, by creating streets free of motorised traffic, or by having streets that are shared by all modes, with vehicles travelling at pedestrian speeds.

It is also necessary to ensure that the walkway surfaces are even, in good repair and cleaned regularly, and it's best if there are no steps or steep curbs to obstruct pedestrians who have handcarts, wheelchairs or prams.

Ensuring that walkways are sheltered and attractive

Walkways should be sheltered from the sun and the wind by trees and buildings, and pathway materials should not absorb heat, which means they should be lighter colours. Walkways can be one part of a larger network of linked pedestrian areas that enhance a city's liveability, areas that can include parks, squares, car-free streets and children's playgrounds, and feature trees, lawns and other planting, ponds, seats and tables, and public artworks. The new local park network in New York has been linked to an expanding pedestrian system, including the closure to traffic of Times Square and much of Broadway.²⁰ And Indonesia's Kampong Improvement Program has reduced traffic in laneways linking public courtyards and main streets.²¹ In general, cities and nations will have varying budgets for these sorts of improvements, but the more walkways can be sheltered from the elements and made safe and pleasant places to be, the more they will attract pedestrians.

Protecting pedestrians from motorised traffic

A vital part of making walkways safe and pleasant is protecting them from traffic noise, pollution and danger. Means of crossing major roads and other barriers at reasonable intervals can include pedestrian crossings or traffic lights with pedestrian signals or phases. Signals should have tolerable cycle time (e.g. 90 seconds or less) and enough time for pedestrians to reach the other side at a moderate speed (e.g. 1

m/sec). Furthermore, if these signals show pedestrians how long they have to wait before crossing, and how long they have left to get across the road, unsafe crossing of roads can be reduced. However, it is vital that pedestrians can use these crossings safely. If drivers tend not to stop for pedestrians using them, stricter enforcement and heavier penalties are warranted. In some special cases, such as very wide roads and expressways, overpasses and underpasses could be provided to enhance pedestrian connectivity and avoid road safety hazards. However, many people do not use overpasses and underpasses if they are much higher or lower than the walkway level, so it is best to have crossings at the walkway level if this can be achieved safely. In some areas this is not possible, and pedestrian walkways may have to be built over busy traffic (Figure 3.3). To enhance accessibility overpasses or underpasses should have ramps, escalators or elevators.

Car-free areas, especially in city centres and major shopping precincts, are becoming very popular in cities around the world (e.g., Figure 3.4). Streets or localities can be car-free continuously, or for parts of the day or week. Bogotá, like Curitiba, the city cited at the beginning of this section, has made a strong commitment to pedestrianisation. It closes 120 kilometres of roads to motorised traffic each Sunday, allowing about two million people to cycle, rollerblade, jog and walk.²² Making commercial areas car-free can also dramatically improve their profitability, as cities in China, Colombia, Brazil and Europe have seen.²³

Figure 3.3 An elevated walkway in Bangkok, sometimes the only solution to help pedestrians avoid the traffic



Picture Credit: Karl Fjellstrom, itdp-china.org .

Figure 3.4 The Istiklal is a pedestrian-only street in the Beyoglu area of Istanbul, Turkey. The street has restaurants, coffee shops, clubs, shopping, movie theatres and embassies



Picture Credit: John Walker.

There are many ‘traffic calming’ devices that restrict the number and speed of motorised vehicles, and help to ensure that drivers respect pedestrians and cyclists. These devices include very low speed limits, speed humps, ‘rumble strips’ (which make a noise when vehicles go over them), one-way or dead-end streets, and streets that are narrowed and may have curves added to the lanes. Any space freed up by these measures can then be used for trees, gardens and seats. There can be frequent pedestrian crossings, and if they are at the walkway level rather than the slightly lower road level it emphasises that this is ‘pedestrian space’. Different paving materials and the absence of road camber and curbing can suggest a driveway rather than a road and moderate driving behaviour accordingly. In these and other ways the appearance and configuration of streets can be changed to reduce speed and to signal that streets are used by other modes of transport with equal or even greater rights to the space.²⁴

Further ways to encourage pedestrian travel

Many people avoid pedestrian travel because they have to carry luggage, shopping or other goods. But transporting such items is much easier with the use of some simple devices – things like trolleys, handcarts and cases with wheels. If these are not readily available, encouragement can be given to small businesses to manufacture or sell them. Encouraging the delivery of goods can also help.

Pedestrian travel can also be encouraged through public information and education campaigns, perhaps in conjunction with the promotion of mass transit use, because the two modes are so often used in the one trip. Maps of walkways can be sold or handed out in paper form, and they can also be available online and to mobile phone users.

A measure that encourages children to walk is the ‘walking school bus’.²⁵ This is an arrangement whereby groups of children walk to and from school together under the supervision of one or more adults, and it is described in the *Influencing travel choices* section of this chapter.

Town planning to promote walking

High density urban areas encourage pedestrian travel, because destinations – such as shops, workplaces, homes and transit stations - are likely to be closer and therefore easier to walk to.²⁶

‘Transit oriented developments’ – which have shops, businesses, services, schools, health and entertainment facilities, and higher density residential areas close to train and bus stations – encourage both mass transit use and pedestrian travel (Figure 3.5). These are described in the section of this chapter titled *Transit oriented developments*.

Particular building designs can also encourage walking. Pedestrians feel safer if buildings are located closer to the street, and if each street has many homes or businesses with street frontages. In such an environment there is more social contact, and building occupants can have ‘eyes on the street’ and look out for neighbour and stranger alike. Compare this with a street composed of the long blank walls of factories, businesses or residential enclaves, or one in which apartment blocks and other buildings are set back from the road and must be reached by isolated (and often unlit) paths. Unless people feel completely safe, especially at night, they will tend to use other forms of transport if these are available. Urban design to create safe, walking areas is a key element of ‘crime prevention through environmental design’.²⁷

Figure 3.5 Pedestrians feel at home in this Transit Oriented Development in Bogotá



Picture Credit: Karl Fjellstrom, itdp-china.org.

Integrated transport planning to prioritise pedestrian travel

In transport planning the needs of pedestrians are often ignored because there may be quite separate planning processes for different transport modes, and in most cases no one government agency has particular responsibility for pedestrian travel. There is thus a need for transport master plans that integrate all modes of transport, including walking, in planning processes. Bogotá's master plan, for example, stipulates that priority should be given to pedestrians.²⁸ Such planning should include an explicit commitment to the provision of walkways that allow safe and fairly direct walking between any two points in a city.

Many cities are also appointing a coordinator for non-motorised transport, as well as a taskforce representing the many stakeholders in this area of transport, including transport and public works departments, police, city planners, business, travellers' advocacy groups and other community organisations.²⁹ These taskforces should have the power to ensure that transport projects meet the needs of pedestrians and cyclists, and they also have an important role in public education, promotion and safety campaigns for non-motorised transport. In Auckland, a walking coordinator has initiated 150 'walking school buses' (described earlier).

In deciding where to start to improve pedestrian facilities, it is a good idea to select areas of high actual or potential pedestrian traffic as pilot projects. These are likely to be areas containing schools, universities, shopping centres, markets, factories or other large workplaces, mosques, temples or churches, or transit stations. Or they can be areas in which traffic accidents involving pedestrians are common.

Design standards for walkways may need to be changed. Many existing design standards are derived from developed countries and based on very car-dominated transport systems.

As well as changes to physical infrastructure, building better pedestrian facilities may require changes to laws and regulations, increased penalties and better enforcement. Such changes may concern speeds on adjacent roadways, giving way to pedestrians at crossings and intersections, car-free areas, and prevention of car-parking and other obstacles on walkways.

Compared with other transport developments, improvements to pedestrian facilities can be achieved quite quickly.

5. Costs and sources of finance

Improvements to pedestrian facilities can also be achieved at low cost, relative to other transport developments. Costs will vary greatly depending on the length and width of walkways, the extent of upgrading that is necessary, the kinds of road crossings put in place, the surfacing materials used, and a range of other factors. But in general, walkways cost only a small fraction of the cost of roads, and they can even be created with paint on pavement.

And while walking and cycling facilities have often failed to receive the attention they deserve, the tables are now turning. Many developed cities have recently accepted that they are not competing for global and local investment because they are not walkable enough in their major centres. Jan Gehl cites examples from London, New York and Melbourne as well as the most documented example of Copenhagen.³⁰ Similar trends in transport priority can be seen in Singapore and Hong Kong and now well-designed emerging cities like Curitiba, Guayaquil and Bogotá are gaining multilateral funds and international reputations as cities of the future, while their mayors have gained great popularity for the positive changes they have made to millions of lives. The likelihood that countries around the world will put a price on carbon means that this trend will become stronger, and localities with good non-motorised transport facilities and public transit will be the winners. Multilateral funding sources are described in Chapter 4.

6 Conclusion

Walking, then, is an inexpensive, efficient and healthy way to travel short distances, and to link up with mass transit in order to travel longer distances. In the right environment, walking can also be a very pleasant mode of transport, and cities that have good pedestrian facilities and high levels of walking are usually very pleasant places to live. In addition, walking produces no greenhouse gases and no local pollution, and it is not a danger to anyone else in the way that motorised transport can be. However, in order for walking to be a pleasant and practical transport option, and in order to encourage more people to walk, certain requirements have to be met. Well-designed, safe and well-connected walkways and pedestrian crossings need to be planned and provided. In particular, walkways should be connected to transit stations and to major residential areas and sites of human activity. And if urban areas are fairly dense and have mixed land uses, walking becomes a reasonable transport mode for many of the trips people make as they go about their daily lives.

Endnotes

1. 'Brazilian best clean city in the world: Curitiba', Ecological System Engineering, <http://ecosyseng.wetpaint.com/page/Brazilian++best+clean+city+of+the+world+%3ACuritiba>, viewed 23 Feb 2011.
2. Data drawn from Jeffrey Kenworthy and Felix Laube, *The Millennium Database for Sustainable Transport*, 2001.
3. Eduardo Alcantara Vasconcellos, *Urban Transport Environment and Equity: The Case for Developing Countries*, Earthscan Publications Ltd, 2001.
4. James Woodcock et al., 'Public Health Benefits of Strategies to Reduce Greenhouse-gas Emissions: Urban Land Transport', *Health and Climate Change 2*, 2009.
5. Bill McKibben, *Deep Economy: The Wealth of Community and the Durable Future*, Holt, New York, 2007.
6. Jan Gehl's *Cities for People* (Island Press, Washington, 2010) provides a wonderful exposition of the pedestrian city, complete with delightful photographs.
7. Walter Hook, 'Preserving and Expanding the Role of Non-Motorised Transport', 2003, in *Sustainable Transport: A Sourcebook for Policy-makers in Developing Countries*, GlZ, www.sutp.org, viewed 23 Feb 2011.
8. Vasconcellos.
9. Hook.
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12. *Traffic Calming*, Great Britain Department of Transport, The Stationary Office, 2007.
13. McKibben.
14. Jan Gehl and Walter Hook 'Our Cities Ourselves: 10 Principles for Transport in Urban Life', Institute for Transport and Development Policy, 2010, http://www.itdp.org/index.php/news/detail/10_principles/, viewed 23 Feb 2011.
15. Gehl and Hook.
16. See Ch 3, Table 3.2.
17. See Appendix III, Anne Matan, *Is my area walkable?* [This Appendix has been prepared as a walkability auditing tool for this section.
18. Anne Matan, personal communication.
19. These design considerations and further reference manuals are discussed in Hook.
20. Gehl.
21. P Newman & J Kenworthy, *Sustainability and Cities: Overcoming Automobile Dependence*, Island Press, Washington, 1999.
22. Hook.
23. Hook.
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25. Starting a Walking School Bus, <http://www.walkingschoolbus.org/>.
26. R Cervero, & K Kockelman, 'Travel Demand and the 3Ds: Density, Diversity and Design', *Transportation Research*, Part D, vol 2, issue 3, 1997, pp 199-219.
27. See www.cpted.net, also Gehl.
28. Hook.
29. Hook.
30. Gehl.