then forecast population for 2010 of 74 million. Buchanan warned that there was nothing more dangerous than underestimating the demand for personalized transport and the effects it would have on the environment – a warning that is still appropriate today.

Buchanan accepted the motor car as an inevitable fact of life. It was assumed that numbers of cars on the roads would increase and that the use made of them would also increase: 'There are so many advantages in a fairly small, independent, self-powered and highly manoeuvrable means of getting about at ground level, for both people and goods, that it is unlikely we shall ever wish to abandon it.' Buchanan went on to add that the car may change in a number of ways but: '... for all practical purposes it will present most of the problems that are presented by the motor vehicle of today ... given its head the motor vehicle would wreck our towns within a decade ... the public can justifiably demand to be fully informed about the possibilities of adapting towns to motor traffic before there is any question of applying restrictive measures' (Buchanan, 1963a). It is difficult to say with any certainty if Buchanan's unquestioning acceptance of the growth in car ownership was born of a realism later proved in all essentials to be correct, or that the projections he and others in the field made, simply informed the policy agenda and so, in effect, became a self-fulfilling prophecy.

In his case study of Norwich – a city with a fine architectural heritage – Buchanan did point out the basic incompatibility between demand for unrestricted accessibility and the preservation of a good quality environment: '... the main principle is abundantly clear – if the environment is sacrosanct, and if no major reconstruction can be undertaken, then accessibility must be limited. Once this simple truth is recognised ... then planning can be started on a realistic basis. It becomes a matter of deciding what level of accessibility can be provided and how it can be arranged, and then it is a question of public relations to ensure that the position is clearly understood'. In Leeds, his study led him to conclude that: '... there is no possibility whatsoever, in a town of this size and nature, of planning for the level of traffic induced by the unrestricted use of the motorcar for the journey to work in conditions of full car ownership.' It is his study of a part of London, Marylebone, which is sometimes used as the basis for criticism of the findings of the report on Traffic in Towns. The urban motorways, which now devastate many towns, are believed by some critics as originating in the ideas formulated in Buchanan's study. It was for Marylebone that he developed the concept of the environmental area, a district of about 4,500 feet square. The environmental area, while not pedestrianized, was to be a high-quality environment with restrictions placed on the moving vehicle and the pedestrian given priority. It was to be surrounded by high carrying-capacity roads interrupted infrequently by junctions so that traffic moved freely at speed. Buchanan calculated that an environmental area of this size would generate a maximum capacity of 12,200 cars per hour, which could be absorbed by the surrounding network of major roads. It was, however, this particular system that he found to be impractical for Leeds and totally unsuitable for a city such as Norwich. As Houghton-Evans (1975) quite rightly concludes, 'He had proved that, beyond a certain size, it was impossible to design for mainly "private" transport, and that for our

larger cities at least, we had to continue to place considerable reliance upon a public service. In the practice of urban renewal, regrettably little understanding has been shown of the principles he was urging – in spite of much lip-service. Regrettably also, he misleadingly pursued this discovery concerning public transport in terms of still trying to please the motorist.'

OPPOSITION TO ROAD BUILDING

The physical impossibility of meeting the demand for the unrestricted use of the motor car was being strongly argued by a number of scholars and activists in the 1960s and 1970s. The simple thesis being propounded was that the act of building new roads, far from solving the problem, actually generated additional traffic and also diverted the congestion to other parts of the road network, thus exacerbating conditions. Despite the influential book by Jane Jacobs (1965), *The Death and Life of Great American Cities*, the traffic-engineering fraternity continued with expensive origin and destination surveys to feed into basically flawed computer models. Such models were then used to justify the demolition of valuable city infrastructure and more destructively to scatter the communities housed there. Instead of this attrition of the city by the motor car, Jacobs was advocating its strict control by making footpaths wider, slowing the traffic down and discouraging traffic intrusion in areas where it is not required. These suggestions, made forty years before the traffic-calming policies being actively pursued in most cities in this country, are the forerunner of the *voonerf* in Holland and the 'home-zone' where pedestrian interest is paramount (Figures 3.1 and 3.2). The ideas of Jacobs also presaged the projects for major road narrowing schemes in cities such as Oslo (Moughtin *et al*., 2003a).

Figure 3.1 The voonerf, Amsterdam

ROAD TRAFFIC AND POLLUTION

There is a strong case for limiting accessibility of traffic in urban areas, on the grounds that the problem of mobility and

Figure 3.2 Traffic calming, Letchworth