THE BUILT ENVIRONMENT
Women's Place, Gendered Space

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> Whether the private home is a free-standing house in Frank Lloyd Wright's Broadacre City or a high tower flat in Le Corbusier's Radiant City, domestic work has been treated as a private, sex-stereotyped activity, and most architects continue to design domestic work spaces for isolated female workers. Hayden, *The Grand Domestic Revolution*

In every culture and historical epoch, domestic architecture is uniquely revealing about prevailing social relations and norms of household organization. The design of houses is imbued with values and ideas that both reflect and exert tremendous influence over the patterns and quality of our lives. In this chapter I want to broaden the discussion of household technology to include the house as a technological construct, and the built environment more generally. The built environment is taken to mean '. . . our created surroundings, including homes, their arrangement in relation to one another, to public spaces, transport routes, workplaces and the layout of cities.' (Matrix, 1984, p. 1)

In what follows, I will be arguing that the built environment reflects and reinforces a domestic ideal which emphasizes the importance of the home as a woman's place and a man's haven. Sexual divisions are literally built into houses and indeed the whole structure of the urban system. Architecture and urban planning have orchestrated the separation between women and men, private and public, home and paid employment, consumption and production, reproduction and production, suburb and city. While people do not actually live according to these dichotomies, the widespread belief in them does influence decisions and have an impact on women's lives.

The focus of much feminist literature has been housework and the implications of technological developments within the home. Postwar sociology has chiefly considered housing as an aspect of the distribution and transmission of social wealth and privilege, that is, as an aspect of social stratification. At an economic level, housing is a commodity and central to the generation of capitalist profits. It is only recently that the structure and shape of the house itself has been subjected to feminist analysis.

The physical form of buildings is usually taken to be the inevitable result of technological and engineering advances, for example, concrete and steel gave us the high-rise tower block of modernist architecture. Changes in the interior design of dwellings are likewise explained in terms of mechanical innovations. A classic example can be found in explanations of the changing location of the kitchen, which is often attributed to the invention of the Rumford stove. This combined stove for cooking and heating eliminated odour and pollution and is said to be thus responsible for the movement of the kitchen from the basement or rear of the house to its centre.[1]

Certainly innovations in building materials, engineering methods and domestic technologies are of major importance and make possible the development of new architectural forms. However, as with other technologies, the design of the built environment is stamped with wider social and economic relations. Historians of architecture provide many instances of physical structures and arrangements that incorporate explicit or implicit political purposes. One such example is the wide Parisian boulevard designed by Baron Haussmann to permit the movement of troops and thus prevent any recurrence of street fighting of the kind that took place during the revolution of 1848.

Women, Science, and Technology, ed., Mary Wyer et al
NY: Routledge, 2001.

Michel Foucault's discussion of Bentham's Panopticon, an all-seeing architectural form designed to keep prisoners under constant surveillance, is a vivid illustration of how a building can itself embody techniques of control. Prisons though are not the only buildings that can be designed to institutionalize patterns of power and order. The new IBM headquarters in Sydney is curiously reminiscent of the Panopticon. Its open-plan offices and clear glass internal walls are intended to give the appearance of a 'status-free environment'. Hierarchies seem to be dissolved where even managers' offices have glass walls and are located close to their staff. In fact of course, what these arrangements achieve is the possibility for increased surveillance of staff, who must feel watched even when they are not. In this sense, the glass itself does the looking. Like the Panopticon, then, the structure of the building ensures that control is largely achieved through self-discipline.

Whilst domestic architecture may not provide us with such stark examples of the extent to which buildings incorporate techniques of social control, that women are constrained in particular ways by the form of the family dwelling is certain. The house both symbolizes patriarchal relations, and gives concrete expression to them. In the first part of this chapter I will chart the development of the modern house. In so doing, I will be arguing that architectural changes in the domestic arena are not simply driven by technological advances but are about expectations of women and men, and in particular are about the domestication of women. . . .

THE IDEAL HOME

Housing the Symmetrical Family

If the Second World War posed a challenge to traditional sex roles, this was to leave little trace on the design of houses. In fact the postwar period saw the revitalization of the ideology of separate spheres for women and men. The major housing construction programmes of the 1950s and 1960s coincided with women being pushed back into the home to tend their husbands and children.[2] The housing stock which predominates today dates from or bears the stamp of this period. With the rapid growth of owner-occupation, greater emphasis was placed on a more home-centred lifestyle for men as well as women. The idea of companionate marriage saw the family as increasingly sharing activities and cultivating intimate relationships in the comfort of a private home. Here 'good' communication, intimacy, awareness of the needs of others, shared leisure (often shared consumption) gained a prominence previously accorded to hygiene and nutrition. But for all these apparent changes, the continuity with Victorian middle-class domestic ideals was in many ways more profound than the discontinuities.

This new socio-psychological conception of familial relations found its main expression in the open-plan housing design that characterized the post-war period. The dark divided house gave way to a preference for light and open space, breaking down traditional divisions between formality and informality in behaviour. Architects promoted the idea of multi-function spaces and 'zoned' planning in houses became the norm. Spaces were demarcated for certain functions, but this was achieved without separate rooms. The 'activity area' of the living room, dining area, and kitchen had few walls, providing as much space and togetherness as possible. The lack of walls was thought to promote the modern ideology of marital equality. Famous for its open-plan interiors, Frank Lloyd Wright's domestic architecture was nevertheless faithful to the Victorian iconography of family life by placing a massive hearth at the very centre of his house designs.

Domestic servants had finally completely bowed out of the home and consequently the illusion that meals simply arrived in the dining room—as if from nowhere—could

no longer be sustained. There was therefore less reason to have a separate kitchen and dining room and the kitchen was now enlarged and opened up to the rest of the house. This open design gave domestic work a more egalitarian appearance, as other members of the family shared the space, and by implication the tasks, hitherto allocated to women alone. As we know, the domestic division of labour was not transformed by these architectural changes! However, they did obscure the extent to which women continued to bear responsibility for servicing the family. Typically, there was now a table in the kitchen for eating at, again signifying a less formal lifestyle. The open-plan kitchen enabled mothers to supervise children while cooking the meal, as children were now seen as requiring constant attention and companionship. This partially explains the move of the kitchen to the back of the house with a picture window looking out on the garden.

To cater for this increased concern with children's needs, the multipurpose room, which later became known as the 'family room', came into existence. 'Although the family room most often served as a place where children could do as they pleased in the midst of clutter and noise, it was also an architectural expression of family togetherness.' (Wright, 1981, p. 255) Very little privacy is provided for individuals within the house, which becomes primarily a place for shared activities. The bedrooms now provided for the children are generally small, ensuring that they will spend most of their time in the larger family room. Adults in the house are assumed to need even less private space—especially women. Even the parents' bedroom belongs to 'the Master'. Women do not have a room of their own, their spatial needs being subsumed into the family's: if they have a domain it is the kitchen.

The last twenty years have witnessed major shifts in the social position of women and in the way women see themselves. Paradoxically, this period has also been characterized by a renewed rhetoric about women as soft, feminine and housebound which is increasingly at odds with reality. The white plastic, clinical kitchen has given way to a more cosy 'country kitchen' with pine-panelled walls and natural wood finishes. Laura Ashley patterned floral prints recall the cheerful simplicity of rural life. Although most new houses now have central heating, the fireplace remains the focal point of many living rooms, with furniture grouped around it.[3] It is still the place of the most expensive furniture, with faint echoes of the Victorian parlour.

The kitchen meanwhile has become the emotional centre of the home: it is from here that the relaxed, informal, symmetrical family lifestyle radiates. Power relations within the patriarchal family have become submerged by this ideology of togetherness. Thus the prototype for the modern house prescribed the form of household that would inhabit it, namely the white middle-class nuclear family. As such it was not only oppressive to most women, but also a markedly ethnocentric design, denying the existence and needs of other forms of family. The dominant modern housing design does not lend itself to satisfying the housing needs of the majority of households today, which are in fact no longer composed of nuclear families.

Symbolic values about domestic life are perhaps even more clearly expressed in the external appearance of houses. The exterior of houses is the prime indicator of people's social status and extremely important to their self-image. Houses are, after all, the major article of consumption and their exterior is what counts most when they are purchased. Architects' prime concern has always been with the public face of buildings and the current debate on the nature of post-modern architecture is reproducing this concern. The contrast between domestic and commercial architecture is interesting in this regard. While non-residential architecture has gone through massive transformations in style, building materials, and construction technology, the preference for Georgian and Victorian domestic architecture remains. The facades of old houses are

retained while the interior is gutted and modernized. There is even a market for new houses that are replicas of these styles, or in America of colonial-style houses.

While state-of-the-art commercial buildings pride themselves on being energy efficient and maintenance-free, the house still uses traditional materials such as wood and bricks that are both expensive and laborious to maintain. The assumption that women will continue to do much of this domestic work for free no doubt explains the disregard for efficiency in domestic architecture. However, the explanation is clearly more complex: men too are involved in maintaining the exterior of the home, investing much of their spare time and money in do-it-yourself home improvements. Furthermore, the preference for traditional architecture reflects an attachment to traditional values and a desire that the home should be a haven, resembling the workplace as little as possible. High-rise towers have met with little objection as offices but have proved very unpopular as homes.

Semi-Detached in the Suburbs

For all that privacy within the house has diminished, the expectation is that families as a whole remain private from each other. (Matrix, 1984, p. 55) The Victorian ideal of the detached or semi-detached house in a suburban or semi-rural setting remains essentially unchanged. The one-family house with a garden was regarded by the middle class and working class alike as the best place to bring up children, offering a healthy environment away from the dirt, noise and danger of the city. Developers encouraged the massive post-war move to the suburbs, as low-density development meant more profit for the building industry as well as providing a mass market for consumer durables. Although women have paid a heavy price for suburban development, they shared men's dreams of home ownership, their disillusion with the city and hopes for a better life in the suburbs. It took several decades for the aridness and uniformity of modern suburban life, and especially the isolation and boredom it forced on the housewife, to become immortalized in Betty Friedan's account of 'the problem with no name'.

Consonant with this idea of the home as private space, the distinctiveness of the home became enshrined in state zoning policies, which were at the heart of post-war town planning. Cities and towns were to be geographically segregated into their various activities, each with its appropriate location and setting. Zoning '. . . closely approximated stereotypical ideas about *man's* use of the environment' (Matrix, 1984, p. 38). It was assumed that the home and the neighbourhood were the setting for most women's lives and that men would travel to work located elsewhere. The main function of transport would be to get men from home to work and back again.

The impact that this would have on women's mobility was not considered. As Susan Saegert (1980) has observed, the long-standing symbolic dichotomy between 'masculine cities and feminine suburbs' fundamentally shaped the actual organization of the urban environment, tying women more closely to their immediate locality. Residential areas were and still are physically separated from industrial/commercial sites, distancing women from the 'economy'. Zoning thus intensified the privatized nature of many women's lives and their exclusion from the public, socially organized productive life. Suburban zoning restrictions have also operated to separate different sorts of housing development, limiting moderately priced high-density buildings to inner-city sites. As such it has been an important tool in class and race segregation—most infamously in South African urban planning, where black people are expressly confined to certain parts of the city.

Since at least the mid-1970s employers have responded to the separation of the workplace and home by relocating certain kinds of activities to the suburbs in order to

capture the potential labour of married women who reside there. This has required the rezoning of some suburban space, especially in middle-class suburbs because it is white middle-class wives that are wanted for office work. Urban space is once more being restructured as the demand for clerical work expands—work traditionally done by women. Developments in information and communication technologies greatly facilitate large scale shifts in the nature and location of employment, and the decentralization of workplaces. It is not only office work that is now being 'suburbanized'. Industrial zones on the urban periphery have become massive centres of development. And suburban sprawl has stimulated the development of regional retail complexes. Meanwhile, administrative and financial activities—head office functions—remain located in the central city area. Overall this represents at least a partial shift away from mono-functional zoning to a more mixed use of urban space.

There is currently much interest in the contemporary restructuring of cities around 'service' sector work, and the rapid restructuring of manufacturing. Some of these analyses focus on the spatial constitution of power, that is, how the spatial allocation of goods, services, and employment across a city act as hidden mechanisms for the unequal distribution of income among various groups in the urban population. In Los Angeles, for example, it has been pointed out that industrial restructuring has left the largely Chicano/Hispanic and black industrial working class cut off from the new workplaces.

While such studies recognize the spatial construction of class and race differences, they generally ignore the issue of gender relations—aside from the obligatory listing of women with other disadvantaged or oppressed 'minority' groups.[4] There is little attempt to explore the different implications of such developments for women and men, and the ways in which the contemporary restructuring of cities affects the social relations of reproduction as well as the relations of production.

FEMINIST ALTERNATIVES: WOULD WOMEN DO IT DIFFERENTLY?

If the built environment tends to institutionalize patriarchal relations, is this because it has been designed and constructed predominantly by men? Would women, then, produce a different physical environment?

Planning and architecture in Britain, North America and Australia are indeed white, male-dominated professions. This is mirrored through all stages of building; even the production of the physical built structure is done by an almost all-male workforce. As the feminist designers' collective known as Matrix (1984, p. 3) comments, 'women play almost no part in making decisions about or in creating the environment. It is a *man-made* environment.' In their critiques of modern architecture, urban planning and of public/private distinctions, feminists have drawn attention to the sexual politics of space. They have suggested that the inevitable outcome of a profession and an industry inhabited and controlled by men is a male-defined built space.

The domestic architecture often cited as the epitome of a masculinist approach is the multi-storey residential block. This functionalist architecture, which envisaged a vertical garden city with 'streets in the air', has been discredited by feminists amongst others.[5] The fact that housework and childcare might be made more oncrous and isolating for women stranded at dizzy heights, without safe and accessible outdoor space, did not occur to the pioneers of the Modern Movement. Apart from this obvious disregard for the quality of women's lives, these towers have also been seen as products of a specifically male vision. Modernism in architecture was obsessed with technological

progress, adopting technology as both its instrument and symbol. The development of the high-rise form was a monument to technological innovation and a strikingly phallic symbol.

The underlying theme of such analyses is that women experience space differently from men and would therefore create different built environments. Margrit Kennedy, a Berlin-based architect, argues that 'there would be a significant difference between an environment shaped mainly by men and male values and an environment shaped mainly by women and female values' (1981, p. 76). Whereas men design a building from the outside in, women's greater preoccupation with interiors leads them to design buildings from the inside out. Kennedy suggests that there are the following male and female principles in architecture:

The Female Principles		**The Male Principles**
more user oriented	than	designer oriented
more ergonomic	than	large scale/monumental
more functional	than	formal
more flexible	than	fixed
more organically ordered	than	abstractly systematized
more holistic/complex	than	specialized/one-dimensional
more social	than	profit-oriented
more slowly growing	than	quickly constructed.

These ideas are echoed in many feminist critiques of architectural practice, which argue that whereas male subjectivity is expressed in tall phallic towers, female buildings are round, enclosing, curving and low-rise. Such views are not the prerogative of feminists alone.[6] In *The City in History*, Lewis Mumford proposed that in neolithic communities people lived in round dwellings, the house and the village being woman writ large: with the development of the city '[m]ale symbolisms and abstractions now become manifest: they show themselves in the insistent straight line, the rectangle, the firmly bounded geometric plan, the phallic tower and the obelisk . . .' (1961, p. 27).

Despite its initial appeal, there are a number of problems with this radical feminist position. To start with, the emphasis on universalized feminine and masculine traits in design cannot explain how it is that men as well as women have designed round and curving buildings. One need look no further than Gaudi's rippling architecture or the spiral shaped Guggenheim museum of Frank Lloyd Wright. Neither can it explain women's involvement in the design of highrise buildings. As Kennedy herself remarks, in countries such as the USSR that have a high proportion of women architects, the dominant Western models of architecture prevail. Even though there are an increasing number of women practising architecture in Western countries, their professional education and training means that the work of women architects is not qualitatively different from that of male architects. That women architects have traditionally been assumed to be best suited for the design of domestic architecture and interiors reflects their low status in the profession rather than a specifically female attribute. It is to do with the hierarchical relationship between what is considered to be great 'architecture' of the public realm as opposed to the mere 'building' of houses.

On closer inspection several of Kennedy's characteristics of 'male' design are features of architecture operating within the constraints set by commercial imperatives. Women architects working under the same market pressures tend to design like men. To see central city office towers solely as the product of masculinist, phallocentric design values is to present a very partial picture which ignores investment calculations, capital flows, global property markets and the private ownership of land. The appearance of high-rise office buildings is explained as much by economic processes which lead to

overaccumulated capital being invested in the central business district. As Margo Huxley (1988, p. 41) points out, these investments depend on 'political actions to retain the primacy of the central city and on the perceptions of (male) corporate directors of the prestige and power that is reflected in taking occupancy of the latest high-rise, high-tech office tower'.

While an account in terms of capitalist investment demonstrates the material basis of high towers, we still need an explanation of the cultural forces at work which give towers an association with power and prestige. I would argue that the cultural association between high-rise towers and male power is not only or primarily about their physical shape but is also because they represent the triumph of advanced technology. Perhaps this is why the radical feminist preference for low-rise 'human scale' development presents a credible if under-articulated alternative.

The risks inherent in the formulation of a specifically feminist architecture lie in the temptation to regard women as a homogeneous group. As Matrix (1984) emphasizes, there is a tendency to simply reflect the approach of white, middle-class women in the profession. Women's experience is very diverse, especially in terms of class. This is one of the interesting issues that is raised in Dolores Hayden's (1982) extensive research on nineteenth-century American feminist plans for utopian communities. Alternative approaches to individualized housework in single-family homes were proposed by an earlier women's movement. This 'lost feminist tradition' identified the economic exploitation of women's labour by men as the most basic cause of women's inequality. The central object of their campaigning was to socialize household labour and childcare. Most significantly, they sought to do this by a complete transformation of the spatial form and material culture of American homes, neighbourhoods and cities. Recognizing that the exploitation of women's labour by men was embodied in the actual design of houses, these 'material feminists' believed that changing the entire physical framework of houses and neighbourhoods was the only way to free women from domestic drudgery. They therefore urged architects and urban planners to explore radically new types of residential building.[7]

Two of the more influential women were Melusina Fay Pierce and Charlotte Perkins Gilman. In 1868 Melusina Fay Pierce, a middle-class Massachusetts woman, outlined plans for cooperative residential neighbourhoods made up of kitchenless houses and a cooperative housekeeping centre. She suggested that women organize to perform their household tasks cooperatively, building communal kitchens, laundries, dining facilities and childcare centres as necessary. Freed from the domestic routine, they would then be able to develop other interests outside the home. Writing in 1898, the economist Charlotte Perkins Gilman recommended kitchenless houses of a similar sort, suggesting that they be linked in urban rows or connected by covered walkways in a suburban block. Like Pierce, Gilman favoured the construction of kitchenless apartments with collective dining facilities for women with families. For Gilman however, the socialization of domestic work, rather than cooperation in its execution, was the means to economic independence for women. She envisaged a completely professionalized system of housekeeping which would free women from the ties of cooking, cleaning and childcare.

Ultimately this domestic reform movement foundered on the difficulty of overcoming both sex and class divisions in their urban and suburban communities. The problem of domestic service versus domestic cooperation could not be resolved. Many cooperative housekeeping societies accepted hierarchical organizational structures which put educated, middle-class managers at the top and paid dishwashers and laundry workers rather poorly. 'Feminists with capital who could afford the new physical environment for collective domestic work never thought of voluntarily sharing that domestic work themselves' (Hayden, 1982, p. 201). Thus, the liberation of professional

middle-class feminists from domestic drudgery involved exploiting women of a lower economic class. The failure of this experiment in architectural solutions to the problem of women's domestic oppression is instructive. It demonstrates the impossibility of divorcing gender from class and other relations of inequality. It also demonstrates that new, egalitarian architectural forms cannot simply be superimposed on a preexisting social order and be transformative in themselves.

AUTOMOBILES: TECHNOLOGY IN MOTION

So far I have discussed the gender dimensions of housing design and urban layout. However, any discussion of the physical built environment is incomplete without discussing the transport technology that binds these spaces together. In particular the automobile is now a preeminent feature of the urban environment.

The invention and mass production of the car has greatly influenced the shape of the modern city. One has only to think of cities like Los Angeles and new planned towns like Milton Keynes, to be reminded of this. From the beginning of the modern movement in architecture, architects like Le Corbusier and Frank Lloyd Wright saw cars as integral to the design of the city. In this section I will argue that the transport system, and in particular the dominance of the car, restricts women's mobility and exacerbates women's confinement to the home and the immediate locality. Women's and men's daily lives trace very different patterns of time, space and movement, and the modern city is predicated on a mode of transport that reflects and is organized around men's interests, activities and desires, to the detriment of women.

The manufacture of automobiles is the largest industry in the world economy. It is dominated by a handful of American, Japanese and European companies that control 80 per cent of global production. In 1987, a record 126,000 cars rolled off assembly lines each working day, and close to 400 million vehicles are currently on the world's streets.[8] The automobile and its infrastructure dominate most North American and Australian cities in the literal sense that vast tracts of land are required to accommodate them. Not only for the motorways, but also for roundabouts, bridges, service stations, and parking spaces—at home, work, the supermarket and everywhere that people are supposed to congregate. Small wonder that in American cities, close to half of all urban space is dedicated to the automobile; in Los Angeles, the figure reaches two-thirds.

For the individual, the mobility and convenience that the private car bestows are unparalleled by any other means of transportation. However, what appears to be an ideal solution to individual needs is increasingly illusory as more and more people choose, or are forced to make, similar decisions. In terms of individual mobility, the utility of the motor vehicle is diminishing as the number of cars on the road escalates. The prosperous 1950s and early 1960s were characterized by booming car ownership and, at least in the US and Australia, the car was expected to be the future of urban transport. The land use and transport planning procedures which emerged in the mid 1950s tended from the outset to be strongly associated with planning for roads and cars and pioneered the building of elaborate highway and freeway systems. However it transpired that freeways themselves spawned more and more traffic, becoming badly congested very soon after their completion. The obvious response to traffic congestion was to build more roads which were justified on technical grounds in terms of time, fuel and other perceived saving to the community from eliminating the congestion. 'This sets in motion a vicious circle or self-fulfilling prophecy of congestion, road building, sprawl, congestion and more road building.' (Newman, 1988, p. 15)

The net result is that London rush-hour traffic averages about 7 miles per hour; in Tokyo cars average 12 miles and in Paris 17. By comparison the average daily travel speed of 33 miles per hour in Southern California, where there are probably more miles of freeways than anywhere else in the world, may seem impressive. However as a result of a much lower population density than European cities, the advantage of speed is offset by the much longer distances required to travel to work. The irony is that a horse and buggy could cross downtown Los Angeles almost as fast in 1900 as an automobile can make this trip at 5pm today.

Motorway Madness

There is nothing inevitable about this rise and rise of the road. The state has played a major role in decisions about the extent to which transport investment is in roads as opposed to public transport. Again by comparison with Europe, American and Australian cities are characterized by a much heavier dependence on cars. Average Australian cities have four times, and US cities three times, more road supply per person than average European cities (Newman, 1988, p. 6). The politics of transport is dominated by conflict between road and rail lobbies, and technical discussions about efficient transport systems mask huge financial interests involved. The full extent of state subsidies to road transport are rarely exposed or documented. The expensive maintenance of motorways so heavily used by private road haulage companies is a case in point. The hidden subsidy to company car users via tax concessions and road maintenance is another. A Greater London Council study in 1986 found that the effective government contribution to company car users in London alone exceeded the revenue subsidy to London's public transport.

So far the story of the triumph of the car over other forms of transport technology may seem like another version of 'the paths not taken' argument, where people actively chose one type of technology in preference to others. However, in many cities that we now associate with the car, other forms of transport were not so long ago both preferred and extensively used. Contrary to popular impressions, Los Angeles is a sprawling metropolis not because of the automobile, but rather because it was built around the radial spurs of the electric railway system. It is almost forgotten today that in the United States there used to be a network of efficient and well-functioning urban and interurban rail systems in nearly every metropolitan area. By 1917, there were nearly 45,000 miles of trolley tracks which attracted billions of passengers. This transport system was not replaced by the motor car simply because of consumer choice. Rather, commercial interests joined forces at a key moment to close off all other options and ensure that henceforth investment would be channelled into automobile technology.

Beginning in the early 1930s, General Motors and other automobile tyre and oil interests, formed a holding company called National City Lines, whose sole objective was to purchase electric rail systems around the country and convert them to buses, which were manufactured and fuelled by members of the holding company. They acquired more than 100 rail systems in 45 cities, dismantled the electric lines and paved over the tracks. By the late fifties, about 90 per cent of the trolley network had been eliminated. The ultimate objective of this operation was to divert patrons of the earlier rail systems to General Motors cars. According to Snell, the reasons for this were clear: 'one subway car or electric rail car can take the place of from 50 to 100 automobiles'.[9] In 1949 General Motors, Standard Oil of California, and Firestone Tyres were found guilty of anti-trust conspiracy, but the damage had been done. By then, the political and economic power of the road lobby had succeeded in making American cities completely dependent upon the automobile. If there is a single force responsible for preventing the

development of a diversified, balanced and ecologically-sound system of mass transportation, which was well within the bounds of the technologically feasible, it is the automotive and petroleum industries.

Women in the Slow Lane

If certain interests have conspired to make the motor car rule, the interests of certain social groups have been sacrificed to this end. The assumption of car ownership discriminates against the poor and the working class in general, and women constitute a disproportionate number of those affected. Older women and single mothers are among the poorest groups in society and have been literally left stranded in, or outside of, cities designed around the motor car. Although the automobile did not create suburbia, it certainly expanded and accelerated this process. The promotion of mass motor-car ownership has tended to exacerbate a greater dispersal of residential settlement often without any other mode of transport provided to service such areas.

These developments in transport policy have affected women and men differently.[10] Research on automobile use in Britain, North America and Australia indicates that proportionately more men than women have obtained drivers' licences, and that male car owners and drivers far outnumber female. Furthermore, while most women reside in car-owning households, evidence shows that women have considerably less access to the 'family car'. As a consequence of this, women are much more reliant than men on public transport to meet their travel requirements.

Despite women's low mobility, their travel needs are expanding as an increasing number of married women are entering the paid labour force and as the location of health care, educational resources and shopping facilities become more dispersed. Changes in patterns of consumption and service provision have increased the importance of transport access for women. For example, with the advent of the car, home-delivery services and corner stores gradually disappeared to be replaced by car-oriented supermarket complexes resulting in a significant increase in the proportion of time women spend on consumption activities. Even women who are not engaged in paid work must make frequent journeys to service the domestic needs of the household.

Although women are its primary users, in many ways public transport is not suitable for their needs and seems tailored to men's convenience. Recent work by geographers has drawn attention to the way the 'time-space maps' of the daily, weekly and overall life paths of individuals in their interactions with one another act as constraints on human activity. It has pointed to the major discrepancies between and within social communities in terms of fetters on mobility and communication. By emphasizing the critical connection between women's domestic roles and considerations of time and space, the time-geographic perspective adds a further dimension to our analysis of women's inequality. It has shown that the travel patterns of the two sexes are quite different and that, in response to domestic responsibilities, women elect to restrict the time spent on the journey to work. Given that family location is traditionally determined by its spatial relationship to the man's employment, women's opportunities are particularly restricted.

This is best illustrated by tracing the day-to-day activities of 'Jane', a single parent. 'Jane cannot leave home for work before a certain hour of the day because of her child's dependence on her for feeding and other needs, and because the sole accessible nursery is not yet open. Jane has no car and hence is faced with severe capability and coupling constraints in reaching the two 'stations' of the nursery and her place of work. Her choice of jobs is restricted by these constraints, and reciprocally the fact that she has little chance of acquiring or holding down a well-paid occupation reinforces the other

constraints she faces in the trajectory of her path through the day. She has to collect her child in mid-afternoon, before the nursery closes, and is thus effectively restricted to part-time employment. Suppose she has a choice of two jobs, one better-paid and offering the chance to run a car, making it possible for her to take her child to a nursery further away from her home. On taking the more remunerative job, she finds that the time expended in driving to the nursery, to and from work and then back home again does not allow her time to do other necessary tasks, such as shopping, cooking and housework. She may therefore feel herself 'forced' to leave the job for a low-paid, part-time alternative nearer to home.[11]

This exposition of a mother's day emphasizes the role played by transport facilities in constraining women's access to employment, services and social life. In particular, whether women are employed part-time, full-time or at all is to a significant extent contingent on these spatial relations. Firstly, an increasing number of women work part-time and therefore travel more in off-peak periods when services are more erratic. Yet public transport is still overwhelmingly designed around the needs of full-time workers commuting to the central business district. Secondly, as Jane's story demonstrates, women's journeys have been shown to be more complex or multi-purpose than men's as a result of their roles as mothers, unpaid domestic workers and paid workers. This means that they do many more journeys of shorter duration than men and these journeys are across the city. Even if the journey can be accomplished by public transport it requires a number of changes and is therefore very time consuming and expensive. This is a major reason why the job market for women is much more geographically restricted than that for men.

Furthermore, more women than men travel with grocery bags, baby carriages and dependants. Waiting at bus stops, climbing up and down bus steps or worse still underground stairs is a nightmare for anyone who isn't young, able bodied and unencumbered. The dominance of the car has also made the city an alienating environment for women and pedestrians. To get under motorways that divide cities requires passing through often dark, dingy underground passages where again there are often many steps to negotiate. 'Urban motorways and rural trunk roads cut through women's lives, driving a noisy, polluting, dangerous wedge between their homes and workplaces, schools and health centres, causing them to walk roundabout routes, through hostile subways or over windy bridges, diverting and lengthening bus journeys, and creating unsafe, no-go areas of blank walls and derelict spaces' (Women and Transport Forum, 1988, p. 121). Women are more vulnerable to sexual harassment and male violence while using or waiting for public transport. The Greater London Council's (1985) survey on women and transport discovered that nearly a third of women in London never go out alone after dark, and for Asian women the figure is 40 per cent. Of those who do travel at night, black and ethnic minority women feel less safe than do white women as they have the additional fear of racist attack. As public transport becomes more automated, there are fewer staff on trains, buses and platforms so women feel even more at risk. Interestingly the most car-dominated cities are the most dangerous. Detroit has one of the highest per capita murder rates of any city in the West. In cities like these cars are used as much for protection as for transportation.

I have been emphasizing the way in which the organization of the transportation system compounds women's inequality, virtually locking them into a world of very limited physical space, and exacerbates the unequal allocation of resources within the city. Perhaps the most revealing illustration of the way reliance on public transport can restrict the access of certain groups to public amenities comes from an article called 'Do Artifacts Have Politics?' by Langdon Winner (1980). Winner tells us that anyone who has travelled the highways of America and has become used to the normal height

of overpasses may well find something a little odd about some of the bridges over the parkways on Long Island, New York. Many of the overpasses are extraordinarily low, having as little as nine feet of clearance at the curb. Even those who notice this would not be inclined to attach any special meaning to it—we seldom give things like roads and bridges any consideration.

In fact, the two hundred low-hanging overpasses on Long Island were deliberately designed to achieve a particular social goal. Robert Moses, the master builder of roads, parks, bridges and other public works from the 1920s to the 1970s in New York, had these overpasses built to specifications that would discourage the presence of buses on his parkways. The reasons reflect Moses's class bias and racial prejudice. Affluent whites would be free to use their cars on the parkways for recreation and commuting. Poor people and blacks, who normally used public transport, were kept off the roads because the twelve-foot high buses could not get through the overpasses. One consequence was to limit access of racial minorities and low-income groups to Jones Beach, Moses's acclaimed public park. Although Winner does not mention women, women's dependence on public transport means that these physical arrangements also have a gender dimension.

This story illustrates that, far from being neutral, even seemingly innocuous technological forms such as roads and bridges embody and reinforce power relations. What is so significant about these vast technological projects is that they endure, such that for generations after Moses has gone, the highways and bridges he built to favour the use of the automobile over the development of mass transit continue to give New York much of its present form. 'Many of his monumental structures of concrete and steel embody a systematic social inequality, a way of engineering relationships among people that, after a time, becomes just another part of the landscape' (Winner, 1980, p. 124).

The Car Culture

Just as bridges may not be as innocent of political qualities as they may appear, so too cars have been shaped by a plethora of social and economic factors. Above I stressed that the dominance of the car was not simply about the efficient movement of people around cities but was ensured by economic forces. Means of travelling—whether by car, motorcycle or bicycle—are also consumer products charged with symbolic as well as economic and pragmatic meaning. The car is one of the central cultural commodities of the twentieth century: precisely because it is such a mass, commonplace technology, we often fail to appreciate its ideological significance. It is not simply technical efficiency that determines the design of cars but cultural forces that shape them.

Car manufacturers consciously design and style the appearance of their products to express consumer dreams, desires and aspirations. In turn, consumers purchase, along with their car, an image and a social identity. Cars are infused with powerful visual messages about the age, sex, race, social class and lifestyle of the user. Cars are a major feature of conspicuous consumption for men and have a central place in male culture. The masculine fantasies they represent take different forms, as can be seen by the contrasting designs of smooth, aerodynamic-style sports cars and the rugged, four-wheel-drive 'range rovers'. These have in common their symbolization of individual freedom and self-realization. Countless novels, films, popular songs and advertisements romanticize flight in a car and link cruising along the road with liberation. For men, cars afford a means of escape from domestic responsibilities, from family commitment, into a realm of private fantasy, autonomy and control.

Even more markedly than the car, the motorcycle is a symbolic object that represents physical toughness, virility, excitement, speed, danger and skill. Their conspicuous bodywork and mechanics resonate with their original military use, and speak of aggression and virility. Along with leather jackets, riders wear grease-stained jeans to express their technical competence. The experience of riding a bike encapsulates the outdoor, roving life of the wanderer with no ties. It also symbolizes a form of man's mastery of the machine; a powerful monster between his legs which he must tame. Trucks similarly are the giant iron horses of independent men who refer to themselves as 'cowboys' and boast of sexual encounters on the road. It is no accident that cars, trucks and motorcycles are usually personified as female and given women's names. They are after all the place where men feel most sexual, the vehicle for men's pursuit of sexual adventures, including their use of street prostitutes. In advertising their products, manufacturers associate these products with women's bodies and wild animals. Nubile women are draped over cars in advertisements. Men are the possessors and women the possessed. 'Manufacturers encourage the male user to perceive his machine as a temperamental woman who needs to be regularly maintained and pampered for high performance.' (Chambers, 1983, p. 308). Cars have long been a metaphor for sex and something wild in the already tamed urban environment. In recent years this imagery has become overlaid with new associations of the latest high tech computerization, bringing to the fore men's fascination with the power of technology—a theme further explored in the next chapter.

For all that I have been stressing that the car is a fetishized object for men, this is not the whole story nor the full extent of the gender relations embodied in the car. The design of the 'family car' reflects assumptions about the typical size of unit in which people wish to travel around. Furthermore, many cars are specifically designed with female drivers in mind. This is particularly explicit in the small hatchback car for 'running around town' and shopping. This is assumed to be the family's second car for the wife and mother to meet household needs. The powerful large car is destined for the male head of the household, although increasingly professional women are being targeted by manufacturers and advertisers as purchasers in their own right. Given the opportunity, women too enjoy driving fast and glamorous cars. However, for most women cars are a practical necessity to which they aspire for relief from drudgery and a release from home. They are also a relatively safe means of travel, given the violence and harassment to which women are subjected on public transport. And despite the prevalence of jokes about women drivers, in fact they are if anything more competent than men and much less likely to cause car accidents. Indeed the particular advantages that the car offers women sets up a tension for eco-feminism. While the car constitutes a major environmental hazard, for women, at least in the short term, demanding 'equal access' to the car is an important assertion of their right to independence, mobility and physical safety.

In this essay I have been concerned to establish the connections between the built environment and patriarchy. The development of the modern house and the organization of domestic space within it reflects cultural assumptions about family relationships, the home as women's place and women's place being in the home. Sexual divisions are not only physically built into houses, but into the whole urban structure. The modern city is, furthermore, constructed around a mode of transport that reflects and is organized in men's interests to the detriment of women. Once we recognize the gendered nature of the design and production of the built environment, once it is no longer seen as fixed, we can begin to make space for women.

Notes

1. According to W. and D. Andrews (1974, p. 316) the Rumford stove 'made possible the literal centralization of the woman to the activity of the house; technology, in short, placed the woman in the midst of things and not removed from them'.
2. Wright (1981, p. 256) notes that in the USA only 9 per cent of suburban women worked in 1950 compared with 27 per cent of the whole population.
3. To all intents and purposes of course the television is now the focal point of most living rooms, but it has not displaced the hearth, often being installed adjacent to the fireplace.
4. See D. Harvey (1989) and E. Soja (1989). One of the few articles that does attempt to draw out the implications of these changes for women is E. Harman (1983).
5. See A. Coleman (1985). For the classic critique, which is particularly interesting for its discussion of the consequences for bringing up children, see J. Jacobs (1962).
6. Indeed, some of these architectural principles have even gained royal approval! See The Prince of Wales (1989).
7. In England too there was much enthusiasm for cooperative housekeeping among the more socialist-inclined members of the Garden City Movement. Ebenezer Howard organized extensive experiments in cooperative housekeeping, building quadrangles of kitchenless units in the Garden Cities of Letchworth and Welwyn. According to Ravetz, however, the demise of domestic service was an important factor. 'It was perhaps this strong male interest in getting the housework done with minimum inconvenience to themselves that, more than any feminist inspiration, explains the interest of certain men or the garden city movement in collective housekeeping' (Ravetz, 1989, p. 192).
8. The source of information for this paragraph is M. Renner (1988) and the *New Internationalist* No. 195, May 1989, issue on 'Car Chaos'.
9. The elimination of the interurban rail systems is documented in detail by B. Snell, 'Report on American Ground Transport', Subcommittee on Antitrust and Monopoly, Senate Judiciary Committee, 26 February 1974.
10. The study of women and transportation is quite new and some interesting themes are emerging. See M. Cichocki (1980) and S. Fava (1980); L. Pickup (1988); Women and Transport Forum (1988) and V. Scharff (1988).
11. This summary of R. Palm and A. Pred (1978) is taken from A. Giddens (1984, pp. 114–15). In the original article, the authors make the important point that the daily prisms of women in various stages of the lifecycle and in various social classes are different.

References

Andrews, W. and D. 1974: 'Technology and the housewife in nineteenth-century America.' *Women's Studies*, 2, pp. 309–28.

Chambers, D. 1983: 'Symbolic equipment and the objects of leisure images.' *Leisure Studies*, 2, pp. 301–15.

Cichocki, M. 1980: 'Women's Travel Patterns in a Suburban Development' in G. Wekerle, R. Peterson, and D. Morley (eds): *New Space for Women*. Boulder, Colorado: Westview Press.

Coleman, A. 1985: *Utopia on Trial: Vision and Reality in Planned Housing*. London: Hilary Shipman.

Fava, S. 1980: 'Women's Place in the New Suburbia' in G. Wekerle, R. Peterson, and D. Morley (eds): *New Space for Women*. Boulder, Colorado: Westview Press.

Giddens, A. 1984: *The Constitution of Society*. Berkeley, California: University of California Press.

Harman, E. 1983: 'Capitalism patriarchy and the city' in C. Baldock and B. Cass (eds), *Women, Social Welfare and the State in Australia*. Sydney: Allen and Unwin.

Harvey, D. 1989: *The Condition of Postmodernity*. Oxford: Basil Blackwell.

Hayden, D. 1982: *The Grand Domestic Revolution: A History of Feminist Designs for American Homes, Neighborhoods, and Cities*. Cambridge, Massachusetts: MIT Press.

Huxley, M. 1988: 'Feminist Urban Theory: Gender, Class and the Built Environment'. *Transition*, 25, pp. 39–43.

Jacobs, J. 1962: *The Death and Life of Great American Cities.* London: Jonathan Cape.
Kennedy, M. 1981: 'Toward a Rediscovery of "Feminine" Principles In Architecture and Planning'. Women's Studies International Quarterly, 4, 1, pp. 75–81.
Kramarae, C. (ed.) 1988: *Technology and Women's Voices.* New York: Routledge & Kegan Paul.
Matrix (eds) 1984: *Making Space: Women and the Man-Made Environment.* London: Pluto Press.
Mumford, L. 1961: *The City in History.* New York: Harcourt, Brace and World..
Newman, P. 1988: 'Australian Cities at the Crossroads'. *Current Affairs Bulletin,* 65, 7, pp.4–15.
Palm, R. and Pred, A. 1978: 'The Status of American Women: A Time-Geographic View' in D. Lanegran and R. Palm (eds): *An Invitation to Geography.* New York: McGraw Hill.
Pickup, L. 1988: 'Hard to Get Around: A Study of Women's Travel Mobility' in J. Little, L. Peake, and P. Richardson (eds): *Women in Cities: Gender and the Urban Environment.* London: Macmillan.
The Prince of Wales 1989: *A Vision of Britain: A Personal View of Architecture.* London: Doubleday.
Ravetz, A. 1989: 'A View from the Interior' in Attfield, A. & Kirkham, P. (eds): *A View from the Interior: Feminism, Women and Design.* London: The Women's Press.
Renner, M. 1988: *Rethinking the Role of the Automobile.* Worldwatch Paper 84, Washington, June 1988.
Saegert, S. 1980: 'Masculine Cities and Feminine Suburbs: Polarized Ideas, Contradictory Realities'. *Signs,* 5, 3, pp. 96–111.
Scharff, V. 1988: 'Putting wheels on women's sphere' in Kramarae, C (ed.), 1988.
Soja, E. 1989: *Postmodern Geographies.* London: Verso.
Winner, L. 1980: 'Do Artifacts Have Politics?' *Daedalus,* 109, pp. 121–36.
Women and Transport Forum 1988: 'Women on the move: How public is public transport?' in Kramarae, C. (ed.) 1988.
Wright, G. 1981: *Building the Dream: A Social History of Housing in America.* New York: Pantheon.