



Squatter settlements

Their sustainability, architectural contributions, and socio-economic roles

Cedric Pugh

Sheffield Hallam University, School of Urban and Regional Studies, Sheffield, UK

In terms of wide-scale human welfare and sustainability, the conditions of life in urban squatter settlements have enormous significance. They comprise some 30-70% of the housing stock in many cities and towns in developing countries. Their scale is attributed to the inadequacies of housing finance systems and land development, along with the pressing realities of demographic growth and mass poverty. A major aim of international aid agencies and sometimes of governments is to improve the sanitary services and the legitimacy of property and occupancy rights in some squatter settlements. This aim has basic importance in development transitions, and especially in those associated with health, poverty, and brown agenda, urban environments. This raises dilemmas in institutional and organisational approaches to the improvement of squatter settlements, and it changes relationships between residents and their associations to urban politics and economics. More than this, households and communities will sometimes change their attitudes and approaches towards their housing and the environment. The discussions in this article explore these themes, some adding new dimensions to the literature. © 2000 Elsevier Science Ltd. All rights reserved

Keywords: Sustainability, Housing, Emerging nations

Introduction

Many cities and towns in the developing countries have self-help and self-build components of their total housing stock which range from some 30–70%. In general terms, as household incomes increase self-build recedes and self-help with its relational contracting with builders increases (Peattie, 1987). Furthermore under conditions of medium term increases in income, households will tend to improve their houses by replacing inferior with superior materials, adding rooms and workshops, and sometimes personalising their outside space. Accordingly, what is to be envisaged is a makeshift structure of meagre quality being transformed into something more substantial and homely through “progressive” improvement. Improvement is frequently enhanced and accelerated when in situ programmes of environmental upgrading install access roads, potable water, sewer-

age systems, and the regularisation of tenure (ie providing occupancy and/or property ownership rights). In one sense, all of this is a quiet, large process of conservation in terms of economics, urban building, and sometimes in environmental, health-related and other social improvements. In other words squatter settlements beckon for sustainable improvement, and state-assisted regeneration, if well done, expresses sustainability in social, economic, financial and environmental terms. It can be argued that in aggregate terms those sorts of “progressive” improvements add more economic and social value than high-profile heritage projects. They have significance for the everyday living conditions and social opportunities for hundreds of millions. Of course, in principle it is also possible to add in some forms of aesthetic qualities to squatter settlements. The role and status of informal housing and its improvement is wider than what is represented in the built form. For example, de Soto (1989) sees the legitimisation and legal acceptance of the whole informal economy as pro-

*Tel.: + 44-114-225-4811; fax: + 44-114-225-3553.

gressive for economic and social development. And Fernandez and Varley (1998) show that transformations from illegality to tacit acceptance and then to inclusion in mainstream property rights is to be seen as the creation of law in development.

The opening paragraph does not convey all the social, economic, and aesthetic realities of mass land invasion and squatter settlement. Unimproved settlements are often insanitary. Some 1 billion people do not have access to safe water supplies, and 60% of the world's population lacks effective sanitation services. In its world health report for 1998, WHO says:

Poor environmental quality is estimated to be directly responsible for 25% of all preventable ill-health in the world today, with diarrhoeal diseases and acute respiratory infections heading the list (WHO, 1998, p 123).

Some 66% of preventable ill health due to environmental conditions occurs among children, being especially significant in developing countries. Undernutrition continues to be a problem in terms of health, capacity to work, and vulnerability for reduced social opportunities: various studies indicate that stunting and low body mass occur among sections of the population in poverty (ie below US\$370 pa). Health and poverty are, of course, interdependent: disease reduces incomes and poverty raises the risk of ill health. Epidemiological studies in developing countries show that urban health risks are simultaneously prevalent in childhood cluster diseases (ie, diarrhoeal, respiratory, and undernutrition conditions), in toxic effects from air pollution, and in degenerative diseases. Put in another way, as argued by Phillips (1994), health (or epidemiological) transitions are characterised by socio-economic variation and by the environmental qualities of living areas. In new path-breaking statistical research of the health-environment nexus in Belo Horizonte, Brazil, de Sousa (2000) revealed high correlations between socio-economic variables on the one hand, and the spatial distribution of mortality on the other. Squatter settlements presented the higher risks of mortality, especially among children. The improvement of squatter areas can reduce the risks and improve the urban health transitions among the poor. Residential densities in the poorer parts of Calcutta range between 800 and 1000 people per hectare compared with some 70 in most North American cities (World Resources Institute *et al.*, 1996). In some cities, especially where housing markets are tight, squatter settlements house moderate- and middle-income groups, as well as the poor and the poorest of the poor. This partly indicates the inadequate supplies from the formal housing sector, reflecting mass poverty, underdeveloped housing finance systems, and inadequacies in land policy and land delivery systems. Housing sector development represents only some 3–5% of GDP in developing countries, though this is an underestimate because it

omits large amounts of unaccounted self-help housing.

Squatter settlements are varied in their characteristics, and this influences their potentials for conservation and regeneration. Some are massive, with populations over 100,000, and others are small, occupying infill sites. In some cases, the populations have expectations of imminent redevelopment, whereas in others de facto occupancy rights seem secure. Sometimes a settlement generates its own leadership and organisational structures which can be used for negotiating with politicians and bureaucracies for installing infrastructure. Other settlements either have apathy or powerlessness. Housing and environmental improvement can be spontaneous, and this is more likely in those settlements which are well established and where there is an expectation of medium- or long-term security. Also, some settlements may be selected for environmental improvement and the regularisation of tenure rights. This will lead to some positive expectations, but also open the possibilities for using political skills and pressures to influence the selection of improvements and the distribution of costs and benefits among households. State-assisted regeneration will sometimes raise the question of redesigning lay-outs and re-alignments, with implications for reducing housing densities and for rehousing schemes. Examples of such schemes, along with commentaries on their relative merits, are discussed and illustrated graphically by Potter and Lloyd-Evans (1998, p 153–158). In prescriptive principle – but not always in practice – the improvement of squatter settlements should be co-ordinated with new housing development and the macro-spatial planning of urban areas. Regeneration also increases land and property prices, and this may or may not lead to “gentrification”, depending upon the dynamics of submarkets in urban housing.

The theory

As might be expected, post-1960 self-help housing in squatter settlements has some theoretical justifications. Although advocacy for self help in developing countries has had various housing pioneers (see Pugh, 1980; Harms, 1982; Harvey and Ward, 1984; Harris, 1998), in terms of timely impacts upon policy and widespread influence the best known theorists have been Abrams (1964) and John F. C. Turner (1967, 1972, 1976). Abrams, who led UN missions to developing countries in the 1950s and 1960s wrote about gross housing shortages in rapidly growing cities and the appalling insanitary conditions in widespread squatter settlements. He favoured in situ slum improvement and “instalment construction”. In comparative terms, Turner injected more social idealism into his advocacy of state-assisted sites and services, and related slum improvement schemes. He based his advocacy upon humans' self-fulfilment and their commitment to housing for expressing things of

value in their lives. Turner's phraseology was in terms of "freedom to build" and "housing as a verb", a process of popular, participatory activity. His theoretical values were much influenced by the pioneering town planner Patrick Geddes (1854–1932) who had first-hand experience in India and other developing countries in the 1920s. Turner had on-location experience in Peru in the 1950s and 1960s where he noticed that households improved their housing incrementally, and within affordability from earnings and savings. For Turner, this was a better option for low- and moderate-income people than high-cost, subsidised public housing which was often transferred to higher income groups. His advocacies secured a US\$25 million loan from the Inter-American Development Bank in 1958 for rehousing following a devastating earthquake. And, more significantly, his ideas were accepted and adapted by the World Bank in the early 1970s when it entered loan assistance for urban projects in developing countries (see the discussions below).

In the years 1983–98, low-income housing theory and practice moved on from a focus upon self help to whole sector housing development (World Bank, 1993; Kessides, 1997). Then subsequently, as elaborated below, in 1997–99 the World Bank redirected its strategic approach to both development and urban policies. None the less, Turner's theories have remained relevant within this broader housing context, and they have been extended into the "brown agenda" environmentalism of the 1990s. "Brown agenda" environmentalism was raised in significance at the UN Conference on the Environment and Development (UNCED), Rio de Janeiro, 1992. In Chapter 7 of Agenda 21 a wide-ranging set of guidelines for sustainable urban development was set out. Essentially the UNCED meeting called upon local governments to mobilise their communities for broad-based, participatory environmental improvement in urban areas. In effect, and by consolidation through the UN Centre for Human Settlements (UNCHS) Habitat Agenda from the Istanbul, 1996, Habitat II meeting, a new approach to "environmental planning and management" (EPM) was being proposed. The new EPM envisaged meetings of stakeholders (eg government agencies, business, professionals, and representatives of communities) identifying feasible priorities and transforming them into action plans. In fact, EPM aimed to create new institutions and capacities for urban environmental improvement. In developing countries, squatter settlement upgrading would normally be included in the EPM priorities. Although the progress with the localisation of Agenda 21 has been slow, and with varied understanding of the idea of sustainability, the principles can be associated with Turner's ideas. The main difference is that sustainability is conceived as bringing together the economic, social, and environmental with overall development policies (Barbier, 1988). As with case of advocacies for state-assisted self help in the 1960s, theory, practice and policy were moving forward

together, and with widespread impact. More than this, in some circumstances, as in Goiania, Brazil, squatter residents organised to achieve self-help homeownership transferring from the less preferred rental tenure.

International housing policy

Although international housing policy has been conceived and formulated by various international aid agencies, it has been the World Bank which has been the most influential. This is largely because it provides large loans for urban and housing programmes, usually with conditionalities to influence strategic directions in policy. For example, in the 1983–92 period the Bank made some 87 programme allocations, amounting to US\$8.8 billion. The World Bank has periodically reformed and redirected its low-income housing policies (World Bank, 1983, 1993, 1999a, b). For reasons of logic and convenience, the Bank's policy development can be divided into the 1972–82, the 1983–93, and the post-1993 periods. These will be presented in summary form, with some emphasis to the issues in the upgrading of squatter settlements.

In the 1972–82 period the World Bank adapted Turner's theories. It advocated sites and services and in situ slum upgrading projects. The underlying principles were based upon affordability, cost recovery, and replicability. Affordability meant that land and service costs were to be budget-led rather than from the norms of town planning and engineering design standards. This recognised that the poor spent some 65–85% of their household budgets on food, leaving housing as a residual, lesser priority. Cost recovery fitted the precepts of orthodox economics, applying the user pays principle and reasoned as a way of curbing the growth of rural-to-urban migration. Taken together, affordability and cost recovery also fitted the Bank's financial imperatives, that is in securing loan repayment so that it could repay its borrowed funds in international capital markets and use its grant money from the leading industrial countries in economically and socially responsible ways. Replicability was a prescriptive principle: it meant that in some hypothetical and practical sense, projects could continue and eventually substantially reduce the growth in squatter settlement. In terms of actual experience, cost recovery was achieved only occasionally, especially in the slum upgrading projects; sites for self-help building were sometimes remote from employment opportunities; institutional capability was often weak, with some indications of corruption; and the projects scarcely led to citywide housing reform (Pugh, 1990a; Nientied and van der Linden, 1985; Skinner *et al.*, 1987; Turner, 1980).

By 1983 the World Bank was ready to redirect its housing policies. First, it was acknowledged that institutional reform and support had to be widened from project management to general urban policy and to full ranges of programmes (World Bank, 1983,

1993). Second, and related to the foregoing point, it was recognised that the geographically delineated projects were self-limiting. They lacked any probability of scaling up and deep impact on the economic and social development of the city or town as a whole. Third, the Bank had suitable, alternative means of advancing its housing programmes. One alternative was to channel funds through the conduits of housing finance systems. The funds would be more rapidly disbursed, but this approach could be applied only in those countries where housing finance systems had been developed, and these were mainly high- and middle-income developing countries. However, the Bank did demonstrate success in India, a poor country: its 1988 allocation of a US\$ 250 million loan was innovative, using the well-managed Housing Development Finance Corporation (HDFC). The HDFC extended its credit lower down the distribution of household income and stimulated the regionalisation of new housing finance institutions. By the late 1980s the World Bank gradually reduced its direct sites and services projects, but these continued indirectly where countries on-lent funds into social housing programmes which had some self-help components in new development. For example, Chile used Bank loans for housing vouchers in its low-income social housing (sites and services) schemes. The upgrading of squatter settlements continued, but under a revised approach.

The new approach was accomplished in Brazil's Parana Market Towns Improvement Project, 1983–88 (World Bank, 1994). A set of towns, encouraged by the state-level government, agreed to create a revolving municipal fund. World Bank loan conditionalities required "sustainable finance", represented in cost recovery, and in the skilled management of receipts and expenditures. The local governments and their communities could select their type of sub-projects, place price tags on them, and rationalise community participation in the selection of priorities. Some of the in situ slum upgrading programmes were implemented on the basis that over 85% of the self-help housing units would be retained in the rationalisation of lay-outs and re-alignments. The Bank's roles were more readily satisfied because the projects were pro-poor and a demonstration of financial sustainability. Meanwhile the programme was "owned" by the local governments which had decentralised responsibility for maintenance, cost recovery and social effectiveness. Compared with the superseded 1972–82 ways, the new 1983–93 approach was more "programmatic" with broader and deeper institutional reform and development. The use of municipal development funds was appropriate in developing country contexts where bond and financial securities markets are often undeveloped.

In 1993 the World Bank again redirected its strategic housing policy, extending its "programmatic" approach from the 1980s (World Bank, 1993). The "programmatic" approach represented a partial rather

than a fully comprehensive conceptualisation of housing. It did not set housing in a broader context of its contribution to economic and social development. The question of subsidies and poverty was not included, and the contributing elements of land policy were undeveloped. Also experience had shown that some town planning and building regulations were inhibiting the expansion of the housing sector. Accordingly the World Bank's strategic policy reform set out a seven point programme:

- housing finance systems were to be further developed,
- the backlogs and inadequacies in infrastructure had to be given greater significance,
- land management and land policy often required reform, especially when they substantially slowed down development,
- regulatory audits were recommended as a means of accelerating supplies, especially in low-income housing,
- the competitive efficiency of the construction industry was to be monitored,
- targeted subsidies were viewed as appropriate for the poor, and
- further attention was to be given to institutionally-loaded reform.

The strategic review had an underlying political economy. Housing was to be understood as economically productive, especially in its capacity to generate income and employment multipliers. In general terms, for any one peso or rupee spent on housing construction or rehabilitation then national income expands by a factor of 1.5 to 2.0. Housing multipliers tend to be larger than those in most other sectors because in housing the leakages to spending on import content are lower. Hitherto many policy makers had regarded housing simply as a necessary item of social expenditure. Of even more significance was the elaboration of the idea of "enablement". Enablement was about the state creating the legal, institutional, economic, financial, and social frameworks to enhance economic efficiency and social effectiveness in the development of the housing sector.

By the mid 1990s "enablement" had broadened and deepened in significance. It encompassed not only institutionally-loaded reform, but also governance. Governance entered into central positions in virtually all development agendas, with a focus upon state–market–society relations. Its scope covered economic, education, health, environment, housing, urban and other policies. In housing it consolidated the community-based, participatory elements in the upgrading of squatter settlements. An ideal enablement set of principles would bring together technical know-how, a broad participatory approach among residents with wide social inclusion, capability in urban development authorities, and a set of rules whereby each partner would know its responsibilities. An underlying

socio-economic rationale would be present in order to guide the roles of each stakeholder or partner in the multi-institutional and multi-organisational setting. Firms would contribute efficiency and entrepreneurship; community-based organisations would mediate between households and government authorities; government agencies would provide urban management expertise; and households would variously provide finance, self-help resources, and localised relevance in the environmental improvements. Clearly, this represents a complex process with some risks of failure, including institutional incapacity, the political capturing of the process to serve narrow rather than general public interests, corruption and market manipulation by firms. More is said about the prospects for relative success and failure in subsequent discussions.

Enablement frameworks also have relevance to new building in whole housing sector development. Again a facilitative framework to enhance housing supplies would have multi-institutional and multi-organisational characteristics. Builders would be within competitive market conditions, with access to development finance. Land policies would ensure adequate supplies of serviced land, well co-ordinated with the agencies which installed and maintained infrastructure. The legal-administrative system within government would secure property rights to plots of land. Housing finance institutions would be experienced at managing flows of funds, scrutinising loan applications, and managing various risks, including liquidity, credit, and interest rate risks. Beyond functional efficiency, for relevance in social development, the overall policy and enablement framework would have some pro-poor and egalitarian elements. Such has been the case in Chennai, India, in sites and services schemes, in the mass small loans programme in Sri Lanka, in Hong Kong (China), in Singapore, and in Chile (Pugh, 1997a). In the period 1973–95 under various militaristic and democratic regimes, Chile has expanded its housing supply at a rate of increase above that of demographic growth, and ensured that subsidised social housing has been tilted in favour of low-income groups. Of course, most developing countries do not have either the effectiveness or the comprehensiveness of Chile or Singapore in whole housing sector development. The more typical pattern is one of gaps, inadequacies, and institutional incapacities in housing, with the consequence that squatter settlement continues to grow at some 30–70% of the stock in many cities.

A new basis for World Bank thinking on development policy was formulated by Joseph Stiglitz, Chief Economist, and James Wolfensohn, President, in his speeches to the governing boards of the Bank and the IMF (Stiglitz, 1998; Wolfensohn, 1999; World Bank, 1999a). The intention was to break away from the economic orthodoxies of the Washington Consensus of the late 1980s. (The Washington Consensus included the Bank, the IMF, and the US government,

all favouring economic stabilisation, export-led growth, and market liberalisation in Latin American countries.) Although the Washington Consensus had evolved to include the rising significance of poverty alleviation and environmentalism, its roots were very much in the causes for macro-economic stabilisation and market-led development of the 1982–87 period. A strategic redirection of development policy was viewed as necessary because the Washington Consensus lacked a broad basis in the political economy of socio-economic development and the earlier market-led approaches had significant limitations. The limitations were especially conspicuous in the Asian financial crisis of the years 1997–99 when some countries with some sound macro-economic indicators were undermined by international financial speculation and vulnerabilities in their governance of financial markets.

Stiglitz (1998) argued for medium-term strategic development policies, centred upon the alleviation of poverty and socio-economic transformation. The emphasis was switched from the development of individual sectors towards cross-sector, society-wide transformations. That is, the new approach was to be “holistic”. These transformations can be understood in more specific terms as development transitions, for example, in the urban, the environmental, the health dimension, and the changing volumes and characteristics of poverty. In overall perspective, the transitions could be used for “holistic” development policy purposes, and a grounding upon the “pragmatic” realities of economic and social opportunity in people’s lives. With great significance the World Bank (1999a) included the urban centrally in its development policy agenda. Cities were to enhance economic growth and socio-economic modernisation. And, the companion piece Bank review of urban strategies elaborated qualities of living, the reduction of poverty, environmental sustainability, and the enhancement of agglomeration economies (World Bank, 1999b). It is, therefore, not surprising that the improvement of squatter settlements was given some priority in programmatic finance and management. Practical realities may diverge from prescriptive intent in housing because in the late 1990s the Bank re-allocated and dispersed its housing specialists in management restructuring.

Economic perspectives and technical-professional requirements in squatter settlements

The economic and technical-professional requirements of good practice in upgrading squatter settlements are several and varied. First, it should be appreciated that self-help housing produces individual and social assets of collectively large value in the housing stock. Various authors, including Jimenez (1982a, b) and Frankenhoff (1966), have shown the dynamics of the economics in self-help housing.

Unpaid self-help labour increases or decreases as wage rates in the formal sector decrease or increase, respectively, reflecting competitive forces and more highly valued uses of time. Jimenez's case studies also indicate that self-help is valuable and valued at some 190% of annual low-income household income in the Philippines. The self help labour can be regarded as implicit saving and investment which creates an asset of economic value and for social functioning (for elaboration, see below). Even when the house is constructed it has an ongoing rental value. In fact, rooms may be rented and/or a workshop for informal sector production added to the dwelling. For a more general perspective it should be recognised that low-income settlements provide a pool of labour for urban economic development. Second, an appropriately upgraded squatter settlement adds various economic, health, and social benefits. Abelson (1996) has used good methods to reveal the benefits for upgrading in Visakhapatnam, India. The scope of his analysis included technical-economic and social surveys and investment appraisals. The individual and social returns were evident in increased land values, raised incomes, better health, and skills upgrading in training and gender programmes. Some of the increased land values were allocated to households from the regularisation of tenure rights. Average incomes rose 50% in the 1988–91 period, and the value of housing and land rose 82%, reflecting their increased economic efficiency and social effectiveness.

The literature on the economics of redevelopment and rehabilitation (ie housing improvement) suggests the widespread merits of rehabilitation. Originally the investment appraisal criterion charged the value of a demolished property as a cost of an urban renewal project (Needleman, 1965; Mao, 1966). However, subsequently further sophistication was incorporated into the criterion for comparing the costs and benefits. For example, Needleman adapted the appraisal formula to take account of the variable needs of public policy, including area rather than single property analysis, variable densities, and different forms of redevelopment. It was Schaaf (1969) who developed the basic criterion to its most useful form, specifying it as:

Rehabilitate if:

$$C > R + M \left(\frac{1 - (1 + i)^{-n}}{i} \right) + \frac{C(1 + nr)}{(1 + i)^n} + D \left(\frac{1 - (1 - i)^{-n}}{i} \right)$$

where: C is the cost of constructing a new dwelling; R is the cost of rehabilitation of the old house; M is the annual savings in maintenance costs with a new dwelling rather than a rehabilitated one; n is the life of existing dwelling following rehabilitation; i is the (interest) discount rate; D is the difference in the

annual rental value of a new dwelling and the rehabilitated dwelling; and r is the annual rate of obsolescence of the new dwelling.

Of course, in general terms the investment appraisal would have to be adapted to the particular situational circumstances of the squatter settlement and its comparative redevelopment and rehabilitation possibilities. The econometric simulations indicate that the logic of the criterion establishes the following principles. Rehabilitation is preferred when its standards provide for an extended life, say over 20 years, where the existing structure has real value, when the differences between rentals on old and new buildings are narrow, where the rate of interest is comparatively high, and when the cost of redevelopment is high. In computer simulations applied to a project in an inner suburb of Adelaide, Australia, Pugh (1976) found that rehabilitation was the preferred alternative, especially when rehabilitation offers a substantial improvement. This is exactly what happens under many cases of "progressive" (incremental) improvement over a period of 10–20 years in developing countries.

Self help housing has its own characteristic issues of financing and resourcing. The labour values of self build, the management of the process, and participatory environmental improvement can be inputted and regarded as saving (Pugh, 1994). In effect, the incremental building and improvement distributes the affordable consumption and saving over time. By comparison, formal long-term finance enables otherwise future, higher housing standards to be brought to the present. But as noted by Smets (1999), the formal finance systems are not really designed for the demands for survival and flexibility needed within the low and intermittent income patterns of the poor. Also, the private sector formal sector financiers often make tight and infeasible demands for collateral, and their costs and profit structures favour economies of scale and low credit risks. Often social sector housing – eg as in India – has difficulties in securing cost recovery from low-income households and its distributional performance is regressive (Pugh, 1990a; Smets, 1999). The informal money lenders are more flexible, concentrating upon small loans and tough control of repayments. These fit the needs for flexibility and economising in the shorter planning horizons of the poor, dictated by small budgets and survival strategies. In some contexts, organised community self help in micro finance has been successful in stimulating savings and investment, with social co-operation and social control securing financial sustainability. These are the characteristics of the Grameen Bank (Younis, 1998).

During the 1990s McGranahan *et al.* (1997) expanded the scope and depth of socio-economic appraisals in squatter settlements. They have developed a mixed set of technical-professional evaluations to assess the possibilities for regeneration in squatter settlements. First, a "broad spectrum survey" is undertaken to establish basic socio-economic

and demographic information among households, along with statements about neighbourhood health and environmental problems. Second, a “participatory rapid assessment” establishes residents and stakeholders’ perceptions of how the targets for improvement should be selected and planned. This will often involve a partnership approach among government authorities, experts, and organised residents’ groups. Finally, contingent valuation analyses can be used to reveal the separated values the residents place upon such improvements as piped water, drainage, sewerage systems, access roads, upgraded pathways, and social facilities. The contingent valuations attempt to simulate resident’s economic demands (ie their willingness to pay). They are more or less reliable, depending upon the skills of the analyst and the levels of informed perception of the residents (Whittington *et al.*, 1990). Other techniques such as hedonic indices also “unbundle” residents’ values on the characteristics of housing and its environment: this technique was used by Struyk *et al.* (1990) in the massive Kampung Improvement Programme in Indonesia. Residents will, as might be expected, value various elements in environmental improvement differently, according to social group, age, gender, and sometimes self interest. As was mentioned earlier, in developing city wide data systems and macro-spatial planning it is appropriate to bring squatter settlements and other forms of low-income housing into account. This can be done by combining remote sensing, geographical information systems (GIS) and the development of data bases relevant to socio-economic factors and the built form. The purposes, procedures and major issues have been recently reported in the urban literature, with case studies of experience in Bangkok during the 1990s (Bishop *et al.*, 2000; Thomson and Hardin, 2000). This synthesis of technical and professional work requires trained capability, strong political and administrative commitments, and time consuming step-by-step procedures. It can create varietal maps for planning, a broad spatial data base, and extend programmatic activities in housing and urban policies. Remote sensing requires the purchase and experienced interpretation of satellite images, linking this to the creation of data systems and mapping. Some of the outcomes in Bangkok included a mapping of low-income housing areas, specifications of land availability, and applications to garbage disposal and educational planning for schools. In another perspective, the techniques bring coherence and utility in localised knowledge. As reasoned in the next section, residents’ motivations and activities dynamically change the shape, the aesthetics, and the meaning of built form in squatter settlements.

Sustainability and improving amenities and aesthetics in squatter settlements

Although much has been written in the literature on the resourcing and organisation of improving infra-

structure and adding investments to housing in squatter settlements (Choguill and Choguill, 1996), little has been discussed on aesthetics and cultural amenities. What follows relies upon new developments in the literature, my own on-location experience in India, Kenya, South Africa, and Mexico, along with some selected interviews and discussions in February 1999. Discussions were held with John F. C. Turner, Prateep Ungsongtham Hata, Secretary of the Duang Prateep Foundation in Bangkok, Thailand, Sandy Halliday of Gaia, Edinburgh, Scotland, and Neil Pritchard a landscape architect and colleague. It is appropriate to place improvements in aesthetics and amenities in a wider context of residents’ feelings for their home and its location, and sometimes perceiving the improvements as a part of wider resident activities in localised sustainability. Marcus (1995) has written elaborately on the personal meaning of home. Having dissatisfaction with the functional dominance of the subject housing studies she conducted two-hour discussions with residents exploring the “meaning” of home, including the unconscious. It was the “meaning” residents attached to their feelings that led them to improve design, make plantings, and express these meanings in the interior and external areas. More is said about the sustainability roles of home and households in the concluding section.

John F. C. Turner suggests that such activities as outside decoration of housing, plantings and pot flowers, and various aesthetic features signify important things about the state of mind of residents. It represents a commitment to place and home, and such activities tend to occur more frequently where occupancy rights and/or tenure are secure or there are expectations that regularisation of tenure will occur in the near future. Some squatter settlements in Latin America, including Colombia, Venezuela, and Brazil have colourful external decorations on the walls of houses. In general squatter settlements will vary widely in terms of the amount of aesthetic and expressive art activity. A further perspective on aesthetic and design activities emerges when the focus is given to the progressive improvement of a self-help property over a period of some 30 years, 1960–90. Carmen Gomez lives in the San Rafael, *colonias populares*, district of San Miguel in the Spanish colonial heartland of Mexico. In the early 1960s her parents purchased a 30 m plot, building a kitchen and two rooms. Subsequently, in 1969 a neighbourhood group negotiated with local authorities to provide electricity, water, and sewerage system connections. Carmen Gomez saved from her small earnings, contracting with builders who, over a period of some 25 years added an upper storey, designed and constructed a courtyard with terrazzo and arches. The home now has four rooms, a reconstructed kitchen, and an apartment annexe for her mother. The ground floor walls are attractive local stone and the upper storey is in brick. The home has the hand of aesthetic design,

plantings of bougainvillea and other shrubs, and a sense of security and home. In terms of a "living architecture", local builders are more than functional in their qualities: they have absorbed a sense of historically- and locally-based merit in design and operations, inventively creating long-term contexts for people to live their choices of value in life. As John F. C. Turner suggests, the personal expressiveness is deeply human and associated with long-term commitments.

Prateep Ungsongtham Hata grew up in the massive Klong Toey squatter settlement which has had a varying population ranging from 40,000 to 70,000 families in Bangkok's Port Authority land, 1960–2000. As a young girl Prateep scoured rust from ships and used the savings from her intermittent income to finance her secondary school and teacher training education. She then set up a school in Klong Toey and emerged as the leader of the community, being called upon by other residents to negotiate with infrastructure and other authorities. The Klong Toey slum originated as clusters of shacks built on dirty, flood-prone land, without services, and with precarious wooden slats as walkways. Over time housing and infrastructure improvements have occurred, and more significantly Prateep's social development work expanded to kindergartens, children's art classes, aged persons' centres, self-help credit unions, garbage recycling, job creation, and drug counselling. By the 1990s all this activity was set within principles of sustainable community and economic development. Residents personalise their outside areas with plantings and organise themselves to improve cleanliness and amenities in the "streets" and the children's play areas. Klong Toey extended self help from individualised efforts in family housing to collective community self help in environmental improvements. Alongside this, residents have become more expressive in plantings and adding environmental amenities for aesthetic and functional relevance.

It is possible to make some general statements giving an overall perspective on the foregoing. One way of doing this is to draw upon elemental principles in architecture and design. Unwin (1997) provides the sorts of principles and attitudes which are useful for a discourse on squatter settlements. For Unwin, architecture is about human drive, vision, and interest, and it is mostly about the identification of place. A makeshift hutment is just as much "architectural" as a professionally-designed civic building. The hutment, and especially the improved one, can be viewed as organising parts into wholes. Identification relates to use, occupancy, and means of living: in other words the building and its environment "incorporates life". Architecture is also political, revealing beliefs, aspirations, and a view of the world. Peattie (1992) is conscious of the simultaneous impacts of the political, the visual, and the cultural. According to perceptual and visual images squatter settlements can be "seen" as aesthetic accomplishment by some or as eyesores

fit for the bulldozer blades by others. These perceptions have influenced housing policy and actions, including the destruction of housing and communities in some places and times. However, as we have seen, international policies now favour improvement and regeneration. Peattie shows that the human (vernacular) in the form of self help, and the modern in terms 20th century technology can stand adjacent to each other with reasoned acceptance of both in cultural-aesthetic form. In Japan this is the norm in the design and use of housing, with the vernacular for tea ceremonies and adjoining rooms for modern convenient living.

Rapoport (1988) has been a strong advocate for spontaneous settlements as vernacular design. He draws attention to their specific and varied creations of living environments. Often the settlements are localised in relationships to culture, to environmental change, and to the sharing of knowledge about design and construction. This often gives a settlement characteristics of colour, adaptability, and space for rituals and festivals. The terminology used by Rapoport expresses his viewpoint in every sense. He sees spontaneous settlements as open-ended for added elements, as multi sensory, as semi fixed, and an expression from which designers and planners can learn. Kellett and Napier (1995) focus upon the necessity of spontaneous settlements, arguing that product, process and use has importance in built form as well as in socio-economic evaluation. The people who live in the settlements are set in specific institutional conditions and processes. As argued by Kellett and Napier (1995) these conditions and processes influence their housing and societal status. They provide contrasting examples. The Santa Marta settlement in Colombia is in gradual transformation and consolidation for recognition and acceptance into the formal housing sector. By contrast, in Durban, South Africa, some spontaneous settlements are juxtaposed near formal settlements, being impermanent and temporarily linking kith and kin.

From the foregoing, it is clear that squatter settlement and built form are simultaneously societal, cultural, economic, political, and architectural. Intricacy, variety, accomplishment, and resource efficiency are evident. Some individual houses, such as Carmen Gomez's in San Rafael, San Miguel expresses identity, colour, texture, architectural features and ongoing modification. In wider whole settlement scale, Klong Toey, Bangkok, has been community led and improved within the precepts of sustainable development. Cultural heritages and sustainability have expression in the living conditions of the world's poor, sometimes even amidst squalor and disease. Squatter housing will remain a dominant form of dwelling on a world scale for many decades. It is the locales for the life's drama and human contributions of millions in enormous urban and socio-economic transformations.

Concluding perspectives and evaluation

Assisted self-help housing is an important part of overall housing policy in developing countries, but most self-help housing is spontaneous, and not assisted by the state. As argued in this article, self-help housing has many characteristics, including the theoretical, the economic, the professional–technical, and the roles in overall housing, urban, and environmental policy. Although it had to win its recognition for policy relevance in developing countries it has a long and interesting history. This includes self-help construction in ancient civilisations such as in Sri Lanka, in Roman towns, in medieval towns in Europe, and in earlier periods in the developed countries (Lawrence, 1997; Ling, 1997; Salmon, circa 1963; Dyer, 1994; Harvey and Ward, 1984; Herlihy, 1980). In some contexts self-help housing has become part of the folklore of housing history, for example in the mural wall decorations in Pompeii (Wallace-Hadrill, 1994) and in the Swedish “magic houses” in Bromma and other suburbs in Stockholm in the 1920s (Pugh, 1980). The “magic houses” were built by households at weekends and in the evenings, on land supplied by local government which also provided materials and technical advice. In ancient societies such as Sri Lanka, self-help housing was the norm in urban settlements such as Anuradhapura which was founded in 483 BC (de Silva, 1992; Chandreschara, 1986). Houses were of varied, traditional design and built for function and economy with packed clay, wattle, and straw or coconut frond roofs. They did not survive as did the stone built Buddhist monasteries, temples, and royal palaces. For modern developing countries, although there had been earlier assisted self-help in the rehousing programmes in Chennai in the 1950s and in Kenyan towns in the 1960s, it was the timeliness of the advocacies from Turner and Abrams which were crucial. The advocacies were adapted by the World Bank and converted into international loan-supported programmes. In the context of “learning by doing” the Bank changed its method of provision from geographically delineated projects, first to programmatic approaches mediated through housing finance systems and municipal funds, and subsequently to new directions in development policies in 1999.

The progress with upgrading squatter settlements has been variable, but with some influential “good practice” examples. In the 1970s and 1980s in Chennai, India, internal project cross-subsidisation in land pricing and plot allocation enabled sites and services and squatter improvement programmes to reach down the income distribution to the poor households. Housing investment and housing wealth increased for all income groups, and the relational contracting between the World Bank, the Tamil Nadu government, and the implementing urban authorities blended state, market, and household self-help roles (Pugh, 1990a, 1997a). In the Kampung Improvement Programme (KIP),

Indonesia, the World Bank provided four phased project loans amounting to US\$439 million. The KIP contributed towards improved living conditions, spontaneous housing investment (ie improvement), increased incomes, and improved health. Some of the “learning by doing” in the KIP led to wider community participation and deeper institutional reforms (World Bank, 1995). Beyond all of this, as reasoned earlier, in settled squatter areas economic value is added to urban assets and residents add aesthetic and personal expression to their houses and neighbourhoods.

The roles of individuals and households can be elaborated further in the context of thinking about self help, household economics, and a sense of home. Housing theory in this has been developed by Stretton (1976) and Pugh (1990b, 1997b). The theory proceeds from the basis that economists have largely and very restrictively confined their studies in housing economics to market exchange value, to the design and impact of subsidies, and to social questions of poverty and inequality. In the different approach, housing is viewed as the central social and economic asset in the “domestic sector”, which is defined as the part of the economy in which capital, resources, time and energy are used for such things as housework, cooking, recreation, childrearing, and housing and environmental improvement. This perspective raises the significance of household economics, that is the generation of income, domestic sector work, human capital formation in children and other members of the household, and use of time in personal and community activities. The value of the product and human capital formation in the domestic sector can be measured in more or less satisfactory ways. These include the value of time, the value of equivalent market products, and attribution of childrearing in human capital formation. All of this, of course, has gender and child significance in domestic work and in the intra-household distributions of income.

The foregoing is not all that merits attention. A theory of the domestic sector is closely bound up with sustainable development. The domestic sector draws resources from the commercial sector for producing home-based goods and services. Also, the educational and personal development of individuals depends upon access to state services and the security of a safe and healthy environment. In effect, the domestic, commercial (private), and the public sectors are interdependent and co-ordinate in economic and social development. This makes household economics basic in sustainable development both in general terms and in housing and environmental improvement. In one perspective, the domestic sector subsidises the other sectors in its roles in the formation of human capital and labour potential. (The childrearing time and cost is not fully paid and compensated by the private sector.) Clearly sustainability is not fully accounted and understood unless it includes domestic sector roles. Self help means more than the construction and

management of housing and the local environment. It is central in socio-economic, political, environmental and developmental sustainability.

The upgrading of squatter settlements is not always a straightforward and highly co-operative social process. In essence the neighbourhood improvements can be viewed as “community rights”, but consensus is not always possible in the professional and participatory processes. For example, in reviewing programmes in Jordan in the 1985–98 period, Raed (1998) found that in some cases social groups strongly contended priorities and access to political and economic power. Unified purposes are more likely to occur where there is social homogeneity, good leadership in the community, and some prior experience of social co-operation. Socio-political contexts vary: in Sao Paulo in Brazil some settlements are subject to the power of Mafia-like gangs. All of this is a reminder that social, ethical, and aesthetic expressions run the full range of human living and human response.

It finally is appropriate to take an overall view of squatter settlement in terms of the theory and practice of sustainable development for low-income households, written as operational guidelines:

First, sustainable development should be seen simultaneously as environmental, social, economic, political, and for encouraging people to choose lives which they value.

Second, environmental and housing improvement is more probable when various policies together achieve: (a) broadspread stable growth of incomes, (b) acceptance of occupancy rights, and expansion of in situ improvement, (c) the development of social capital among the poor, this being reflected in leadership, organisation, networking, and civic association which leads to mutual trust and political experience.

Third, policies for regenerating and conserving squatter settlement are likely to have greater general urban success when they are set within whole housing sector development and related to the “holistic” development of cities and towns. Land policy and the development of housing finance systems are especially significant, including extending access down the distribution of household income. Often this will need innovatory schemes and leadership in housing finance owing to blocked access to formal financial institutions. The Grameen Bank has developed credit and technical advice for women’s enterprise, for housing, and for transforming social development among the poor. The World Bank and other organisations are supporting these initiatives on a wider scale (Younis, 1998).

Fourth, it should be understood that environmental improvement has socio-political risks of fragmentation and contest: collective purposes are more likely where there are provisions for conflict resolution, some experience in social co-operation and the development of positive social capital, and relational contracting which sets out responsibilities among partners

in a formal or informal scheme of neighbourhood improvement.

Fifth, following the Parana Market Towns Improvement Project, environmental improvement projects are expanded and achieve some success when they are set in a context of intergovernmental decentralisation of resources and organisation, along with financial sustainability and choices of costed options.

Sixth, the process of improvement requires some technical “know how”. This ranges from social development, relational contracting among partners, and the use of socio-economic surveys, contingent valuations, cost–benefit appraisals, the installation of remote sensing and geographic data bases, and hedonic indices. All of these improve the prospects for informed socio-political choice on the form and substance of selection among alternatives. Techniques can be adjusted to incorporate various aspects of gender, age, and minority group preferences.

Seventh, both spontaneous and formally organised improvement can be enhanced in social, personal, and aesthetic dimensions by encouraging expressiveness of life, art, design, and such humanly meaningful commitments around the house and in the neighbourhood.

All of the foregoing is, of course, adaptable to localised contexts. It relates to contexts of varied social characteristics in squatter areas, sometimes within realities of disease, death, poverty, and the full range of human characteristics. The theoretical guidelines are dependent for their effectiveness on good performances in national and local economies, in progressive social development, in conducive state–market–society relationships, and in leadership and institutional capability.

Finally it is appropriate to indicate that the foregoing theory, written as “operational guidelines”, also has deeper intellectual authority. The intellectual authority could be stated in various ways. For relevance and impact, it is possible to draw upon the prize citations in the Royal Swedish Academy of Sciences’ Nobel laureate awards in economics. It is clear that in the “operating guidelines” some important elements include mixed state–market–household roles for the improvement of squatter settlements. Also, in a context of partnerships and possible community contentions on how general environmental improvements should be converted into action plans, then there is a need for agreements. These would be more effective if the assignment of responsibilities, the attribution of costs and self help, and ongoing management could be clearly agreed. In essence, the process and the project need principles of governance, organisation, management, and policy. As argued in the themes of the article, the overall aims are for sustainability expressed in economic, social, political, environmental and cultural terms.

Amartya Sen obtained the Nobel prize in economics in 1998, largely by reason of his work in welfare economics, poverty, and development studies (eg see

Drèze and Sen, 1995; Sen, 1999; Sen and Wolfensohn, 1999). Sen argues that poverty is about the deprivation of capability, that development requires the expansion of social opportunity in markets, in state policy, and in households, and that all of this centres upon the freedom of individuals to choose values and lives of worth to them. These principles are true of life in low-income living areas and for social co-operation in improving housing and environmental conditions. The reduction of income, housing, health, and urban poverties can follow from personal commitments and appropriate social co-operation. The intellectual worth of all of this is also advocated by the joint prize-winner in 1993, Robert Fogel. He won the Nobel prize in economics for his new dimensions in the study of economic history. These new dimensions were in combining statistical measurement, selected theory, hypothesis testing, and economic history. For relevance, to housing and health, Fogel (1994) argues that it is improved nutrition, the advancement of medical knowledge, and the qualities of housing which increase body mass, health, and economic productivity over long-term development transitions. As discussed in the article, these aims (and the desired results) are the priorities in the upgrading of squatter settlements.

The matters of governance, institutional reform and relational contracting have also been theoretically elaborated by Nobel prize winners in economics in the 1980s and 1990s. The 1986 award winner, James Buchanan, argued that government expenditure would be better controlled within constitutional or other agreed limits (see Buchanan and Tullock, 1962). In other words, though government spending is justified on grounds of some specific market failures, it can run out of control from the political activities of contesting vested or sectional interests. The importance of relational contracting was given other theoretical dimensions by Ronald Coase, the 1991 Nobel laureate in economics. Coase (1960) argued that the transaction costs of designing and enforcing agreements and property rights were additional to production and transport costs, and they had great significance in the political economy of institutional-organisational choice. Accordingly in upgrading squatter settlement some socio-economic effectiveness could be achieved by designing "joint venture" in a proper formal agreement, achieving better results than reliance upon any one participant acting alone.

The work on relational contracting and the limitations on budgets was developed in other ways by Douglass North, the joint award winner (with Robert Fogel) in 1993. As in Fogel's work, North (1990) introduced new theoretical and sociological elements into economic history. His focus was upon the way institutional quality influenced comparative performance in long-term growth and development among nations. Institutions were defined as norms, property rights, compliance procedures, and the ethical elements in economic activity. Accordingly, insti-

tutional conditions, in squatter settlements and their improvement (as with general developmental processes), are explanatory in success-failure perspectives. More than this, institutional reform lies at the heart of modern policy interest in governance. Together with the work of Sen, Buchanan, Fogel and Coase, North has been re-writing the relative roles of the state, the market, and households. All of markets, states and households are necessary in socio-economic terms, and the state's welfare roles extend beyond tax-transfer systems to institutional reform, to social and private property rights, and to qualities of governance. These are central priorities in modern developmental and urban policy agendas, as recognised in the World Bank's new post 19976 reforms (World Bank, 1999a, b; Sen and Wolfensohn, 1999)

Acknowledgements

This work has been improved by guidance from two anonymous referees, especially on the architectural issues. I remain responsible for any errors or omissions. The work has been something of a personal commitment: I spent my early childhood in a home which was later inappropriately designated as a London slum and accordingly destroyed. Earthscan has kindly granted permission to use elements from the book: *Sustainable Cities in Developing Countries*. This article is more extensive on the topic.

References

- Abelson, P (1996) Evaluation of slum improvements: case study in Visakhapatnam, India. *Cities* 13(2), 97-108.
- Abrams, C (1964) *Housing in the Modern World*. Faber & Faber, London.
- Barbier, E (1988) *The Economics of Environment and Development*. Elgar, Cheltenham.
- Bishop, I, Escobar, F, Karappannan, S, Williamson, I and Yates, P (2000) Spatial data infrastructure for cities, in developing countries. *Cities* 17(2), 85-96.
- Buchanan, J and Tullock, G (1962) *The Calculus of Consent*. University of Michigan Press, Ann Arbor.
- Coase, R (1960) The problem of social cost. *Journal of Law and Economics* 3(1), 1-44.
- Chandreschara, D (1986) An analytical study of the Kandyan religious building forms with reference to their determinant functions. *University of Moratuwa Papers Sri Lankan Architects Journal* 100(7), 55-59.
- Choguill, C and Choguill, M (1996) Towards sustainable infrastructure for low-income communities. In *Sustainability, the Environment and Urbanization*, ed. C. Pugh. Earthscan, London.
- de Silva, N (1992) The Sri Lankan tradition for shelter. *Sri Lankan Institute of Architects Journal* 2-11.
- de Soto, H (1989) *The Other Path: The Invisible Revolution in the Third World*. Harper & Row, New York.
- de Sousa, R (2000) Socio-economic and environmental differentials and mortality in a developing urban area (Belo Horizonte, Brazil). Ph.D. thesis, London School of Hygiene and Tropical Medicine, Faculty of Medicine, University of London.
- Drèze, J and Sen, A (1995) *India's Economic Development and Social Opportunity*. Clarendon, Oxford.

- Dyer, C (1994) *Everyday Life in Medieval England*. Hambledon Press, London.
- Fernandez, E and Varley, A (1998) Law, the city and citizenship in developing countries: an introduction. In *Illegal Cities: Law and Urban Change in Developing Countries*, ed. E. Fernandez and A. Varley, pp 3–17. Zed Books, London.
- Fogel, R (1994), Economic growth, population theory, and physiology: the bearing of long-term processes on the making of public policy. *American Economic Review* June, 369–395.
- Frankenhoff, C (1966) The economic role of housing in a developing economy. Housing Policy Seminar, University of Puerto Rico, Rio Vendras.
- Harms, H (1982) Historical perspectives on the practice and politics of self-help housing. In *Self-Help Housing: A Critique*, ed. P. Ward, pp 17–53. Mansell, London.
- Harris, R (1998) A crank's fate and the fêting of a visionary: reflections on the history of aided self-help housing. *Third World Planning Review* 29(3), iii–viii.
- Harvey, D and Ward, C (1984) *Arcadia for All: The Legacy of the Makeshift Landscape*. Mansell, London.
- Herlihy, D (1980) *Cities and Society in Medieval Italy*. Valurium, Reprints, London.
- Jimenez, E (1982a) The economics of self-help housing: theory and some evidence from a developing country. *Journal of Urban Economics* 11, 205–228.
- Jimenez, E (1982b) The value of squatter dwellings in developing countries. *Economic Development and Cultural Change* 31, 739–752.
- Kellett, P and Napier, M (1995) Squatter architecture? A critical examination of vernacular theory and spontaneous settlement with reference to South America and South Africa. *Traditional Dwellings and Settlements Review* 6(2), 7–24.
- Kessides, C (1997) World Bank experience with the provision of infrastructure services for the urban poor: preliminary identification and review of best practices. World Bank, TWU-OR8, Washington, DC.
- Lawrence, R (1997) Space and text. In *Domestic Space in the Roman World: Pompeii and Beyond*, ed. R. Lawrence and A. Wallace-Hadrill, *Journal of Roman Archaeology*, Supplementary Series No. 22, 7–14.
- Ling, R (1997) *The Insula of the Meander at Pompeii, Vol. 1. The Structure*. Clarendon, Oxford.
- Mao, J (1966) Efficiency in urban renewal expenditures through cost-benefit analysis. *Journal of the American Institute of Planners* March, 95–107.
- Marcus, S (1995) *House as a Mirror of Self: Explaining the Deeper Meanings of Home*. Conari Press, Berkeley, CA.
- McGranahan, G, Leitmann, J and Sumjadi, C (1997) Understanding environmental problems in disadvantaged neighbourhoods: broad spectrum surveys, participatory appraisal and contingent valuation. UMP Working Paper 16, World Bank, UNCHS, Stockholm Environment Institute, Washington, DC.
- Needleman, L (1965) *The Economics of Housing*. Staples, London.
- Nientied, P and van der Linden, J (1985) Approaches to low-income housing in the Third World: some comments. *International Journal of Urban and Regional Research* 9, 311–329.
- Peattie, L (1987) Shelter development and the poor. In *Shelter, Settlement and Development*, ed. L. Rodwin, pp 263–280. Allen & Unwin, Boston.
- Peattie, L (1992) Aesthetic politics: shanty town or new vernacular? *Traditional Dwellings and Settlements Review* 3(2), 23–32.
- Phillips, D (1994) Does epidemiological transition have utility for health planners? *Social Science and Medicine* 38(10), vii–x.
- Potter, R and Lloyd-Evans, S (1998) *The City in the Developing World*. Longman, Harlow.
- Pugh, C (1976), Older residential areas and the development of economic analysis. In *Australian Urban Economics*, ed. J. McMaster and G. Webb. Australia and New Zealand Book Company, Sydney.
- Pugh, C (1980) *Housing in Capitalist Societies*. Gower, Farnborough.
- Pugh, C (1990a) *Housing and Urbanization: A Study of India*. Sage, New Delhi.
- Pugh, C (1990b) A new approach to housing theory: sex, gender and the domestic economy. *Housing Studies* 5(2), 112–129.
- Pugh, C (1994) The development of housing finance and the global strategy for shelter. *Cities* 11, 384–392.
- Pugh, C (1997a) Poverty and progress? Reflections on housing and urban policies in developing countries, 1976–96. *Urban Studies* 34(10), 1547–1596.
- Pugh, C (1997b) The household, household economics and housing. *Housing Studies* 12(3), 383–391.
- Raed, H (1998) Public participation and community organisation in the low-income housing production: the Jordanian experience. Ph.D. thesis, University College London, Development Planning Unit.
- Rapoport, A (1988) Spontaneous settlements as vernacular design. In *Spontaneous Shelter: International Perspectives and Prospects*, ed. C. Patton, pp 51–57. Temple University Press, Philadelphia.
- Salmon, H (circa 1963) *Medieval Cities*. Studio Vista, London.
- Schaaf, A (1969) Economic feasibility analysis for urban renewal housing rehabilitation. *Journal of the American Institute of Planners* November, 399–404.
- Sen, A (1999) *Development as Freedom*. Oxford University Press, Oxford.
- Sen, A and Wolfensohn, J (1999) Development: a coin with two sides. World Bank, Washington DC, [http://wbln1023.worldbank.org/EXC/C ... llbobfe31716149a852677600731cOd?](http://wbln1023.worldbank.org/EXC/C...llbobfe31716149a852677600731cOd?)
- Skinner, R, Taylor, J and Wegelin, E (eds) (1987) *Shelter Upgrading for the Urban Poor: Evaluation of Third World Experience*. Island Publishing House, Manila.
- Smets, P (1999) Housing finance trapped in a dilemma of perceptions: affordability criteria for the urban poor in India question. *Housing Studies* 14, 821–838.
- Stiglitz, J (1998) Towards a new paradigm for development: strategies, policies and processes. 9th Raul Prebisch Lecture, UN Conference on Trade and Development, Geneva.
- Stretton, H (1976) *Capitalism, Socialism and the Environment*. Cambridge University Press, London.
- Struyk, R, Hoffman, M and Katsura, H (1990) *The Market for Urban Shelter in Indonesian Cities*. Urban Institute, Washington, DC.
- Thomson, C and Hardin, P (2000) Remote sensing/GIS integration to identify potential low-income housing sites. *Cities* 17(2), 97–109.
- Turner, A (1980) *The Cities of the Poor*. Croom Helm, London.
- Turner, J (1967) Barriers and channels for housing development in modernising countries. *Journal of the American Institute of Planners* 33(3), 167–181.
- Turner, J (1972) The re-education of a professional (pp 122–147), and Housing as a verb. In *Freedom to Build*, ed. J. Turner and R. Fichter. Macmillan, New York.
- Turner, J (1976) *Housing By People: Towards Autonomy in Building Environments*. Byers, London.
- Unwin, S (1997) *Analysing Architecture*. Routledge, London.
- Wallace-Hadrill, A (1994) *Houses and Society in Pompeii and Herculaneum*. Princeton University Press, Princeton, NJ.
- Whittingdon, D, Briscoe, J, Mu, X and Barron, W (1990) Estimating the willingness to pay for water in developing countries: a case study of the use of contingent valuation surveys in southern Haiti. *Economic Development and Social Change* 38, 293–311.
- Wolfensohn, J (1999) A proposal for a comprehensive development framework. Speech to the Board, Management and Staff of the World Bank Group, World Bank, Washington, DC.
- World Bank (1983) *Learning By Doing*. World Bank, Washington, DC.
- World Bank (1993) *Housing: Enabling Markets to Work*. World Bank, Washington, DC.
- World Bank (1994) Twenty years of lending for urban development, 1972–92. World Bank, Operations Evaluation Department, Report No. 13117, Washington, DC.
- World Bank (1995) Indonesia impact evaluation report. Enhancing the quality of life in urban Indonesia: the legacy of the Kampung improvement program. Operations Evaluation

Squatter settlements : C Pugh

Department, Report No. 14747-IND, World Bank, Washington, DC.
World Bank (1999a) *Entering the 21st Century: World Development Report 1999/2000*. World Bank, Washington, DC.
World Bank (1999b) *A Strategic View of Urban and Local Government Issues: Implications for the Bank*. World Bank, Washington, DC.

WHO (1998) *The World Health Report 1998: Life in the Twenty-First Century: A Vision for All*. WHO, Geneva.
World Resources Institute, UNEP, UNDP, and World Bank (1996) *World Resources: A Guide to the Global Environment*. Oxford University Press, Oxford.
Younis, M (1998) *Banker to the Poor*. Arum, London.