adopted in the allied disciplines of planning and architecture are analysed. From this discussion, a broad method is outlined for urban design which aims at sustainable development. Technology is defined as: 'The terminology of a particular art or subject',[6] or 'the application of science, especially to industrial or commercial objectives ... the entire body of methods and materials used to achieve such objectives'.[7] At one level the menu of techniques outlined in this text could be described as the technology of urban design. Here, a more limited view of urban design technology is advocated. Howard's idea for the 'Garden City' is taken as an example of urban technology.[8] For the purposes of this book urban technology comprises major instruments or concepts advocated for the solution of problems associated with urban development. Urban design technology therefore would include, in addition to the Garden City, such ideas as the Urban Village or the Urban Transport Corridor. Urban design technology using this definition appears in Chapter 5, 'Generating Alternatives'.

GOALS OF URBAN DESIGN

There are three main goals of urban design: they are to design and build urban developments which are both structurally and functionally sound while at the same time giving pleasure to those who see the development. Sir Henry Wotton, like many writers since, defined architecture as consisting of 'commoditie, firmness and delight'.[9] Urban design shares with its sister art, architecture, these three qualities of utility, durability and the ability to bring to the user a sense of well-being and emotional satisfaction. The general method of urban design and the techniques used within that method have been developed to achieve these interconnected ends. This book, however, does not present the full range of techniques used in urban design. For example, it does not discuss in any depth the structural requirements of urban design nor does it deal with the engineering requirements of urban infrastructure. This book does not deal with the legal requirements of urban development so important for implementation. These large topics of urban design deserve comprehensive treatment and, no doubt, will form the contents of further works in this field. This book, however, builds on the ideas in the first two volumes in this series, *Urban Design: Street and Square* and *Urban Design: Ornament and Decoration*, it will illustrate a design technology based upon the design concepts discussed in those two volumes as they are used to achieve urban development which is in keeping with a unique city context.[10] *Urban Design: Green Dimensions*, the third volume in this series, is the basis of the other main area covered in this book.[11] Techniques will be discussed which measure the effects of urban developments on city sustainability. The issue of sustainable development is the social foundation of urban design today. The social imperative is an environmental crisis of global proportions; it is in coming to terms with the effect of this crisis on cities which gives purpose and meaning to urban design.

Sustainability, that is, development which is non-damaging to the physical environment and which contributes to the city's ability to sustain its social and economic structures, is one important aspect of 'commoditie'. The pursuit of sustainable city structures is predicated on the development of a built environment of quality. The two goals, sustainable development and a built environment of quality, are mutually supportive. This book, therefore, aims to explore the method and techniques which will deliver both sustainable development and city environment of great quality. At the turn of the century, at the start of a new millennium, quality in urban design must be seen against a backcloth of current concerns for the global environment and in a context of sustainable development where the environment is of paramount importance and is given priority in design decisions.

There seems to be widespread agreement that solving global problems will mean the adoption of

policies and programmes which lead to sustainable development. The pursuit of a sustainable future in an environment of quality will require the design of appropriate policies and programmes which address directly the related problems of unsustainable growth and environmental degradation. Part of this total agenda for sustainable development is the pursuit of non-polluting, energy efficient urban forms of quality. This book explores ways in which urban design method can be adapted to achieve this end and also examines the techniques available for measuring and evaluating large-scale urban projects in terms of the contribution made to sustainable development.

A generally accepted definition of sustainable development is: '... development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs'.[12] This definition has three key ideas: development, needs and future generations. Development should not be confused with growth.[13] Growth is a physical or quantitative expansion of the economic system while development is a qualitative concept: it is concerned with improvement or progress including cultural, social and economic dimensions. The term 'needs' introduces the idea of resource distribution: 'meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations of a better life'.[14] These are fine sentiments but in reality the poor of the Third World are unable to achieve their basic needs of life while the more affluent effectively pursue their aspirations; many luxuries being defined by the wealthy as needs. There will naturally be environmental costs if the standards of the wealthy in the developed world are maintained while at the same time the aspirations of people in underdeveloped and developing countries are fulfilled. A choice may be inevitable: meeting needs and aspirations is a political, moral and ethical issue. Sustainable development means a movement towards greater social equity both for moral and practical reasons. Techniques for assessing the distribution of costs and benefits within and between groups are basic tools for assessing the effects of development and form the basis for evaluating the degree to which development can be described as sustainable.

The definition of sustainable development extends the concept of equity to future generations, it introduces the idea of inter-generational equity: 'We have a moral duty to look after our planet and hand it on in good order to future generations'.[15] This idea of stewardship was fostered by the United Nations Conference on the Human Environment in 1972.[16] Stewardship implies that mankind's role on this planet is one of caring for the earth and steering a path which as far as possible benefits the human and natural systems of the world. Mankind is viewed as the custodian of the earth for future generations. The aim therefore of development policy is not simply to maintain the *status quo* but for each generation to hand on a better environment particularly where it is degraded or socially deprived: it requires of any particular generation the wisdom to: avoid irreversible damage; restrict the degrading of environmental assets; protect important habitats, high quality landscapes, forests and non-renewable resources.

The application of this principle which places great premium on environmental protection means that all development proposals should include the real environmental costs. The true cost of all activities, whether they take place in the market or not, should be paid by the particular development through regulation and/or market-based incentives. Conserving the environment for future generations introduces the notion of maintaining a minimum of environmental capital, including the major environmental support systems of the planet such as the great river estuaries, together with the more conventional renewable resources such as the tropical rain forests. While it is difficult to identify the minimum environmental stock necessary to fulfil this requirement it is clear that 'current rates of environmental degradation and resource depletion are likely to carry us beyond that level'.[17] Sustainability