

PERSPECTIVES ON AGE, HEALTH AND THE ENVIRONMENT

SOCIO-ECOLOGICAL IMPERATIVES

AND THE

CARE OF THE ELDERLY

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DECLARATION

**I declare that this thesis has been composed entirely by myself
and is wholly my own original work**

Roger Douglas Talbot

ABSTRACT

The study recognises and defines interdependent demographic, ecological and health-equity imperatives which, individually and collectively, threaten to have profoundly adverse, destabilising and inequitable effects on the most marginalised members of populations - in particular the elderly - unless and until a new and unified approach is adopted to the problems of age, health and the environment. The consequences of a failure to respond effectively to the demographic imperative imposed by the ageing of populations is perceived as a further threat to the health and status of the old who are identified as amongst the most disadvantaged members of contemporary societies. The consequences of a failure to respond effectively to the wider health-equity imperative is seen as the continued impoverishment of the hundreds of millions of people worldwide who are without the basic human needs of adequate food, shelter, clothing and health services. The consequence of a failure to respond effectively to the ecological imperative is identified as environmental degradation, loss of essential habitats, loss of biological and genetic diversity, depletion of finite natural resources, acute global-scale poverty, social dislocation, threats to the health of vulnerable groups and the reinforcement of inequities in health status both between and within populations. Overall the threats are perceived as threats to a sustainable future for mankind.

A review of the health of the elderly and of contemporary social and environmental policies in Britain confirms that social policies for the care of the elderly fail adequately to address emerging environmental concerns whilst existing and proposed environmental policies lack a necessary social dimension and fail therefore to account properly for the needs of vulnerable groups such as the old and the poor. Such deficiencies are held to be rooted in the lack of a unified approach to social and environmental policy and to the failure to base policy upon an appropriate model of health. From the position that equitable social policies will help to secure and enhance the health of the planet whilst sound environmental policies will enhance the well-being of populations, a fundamental and radical reshaping of socio-environmental policy, based upon an holistic concept of health, is advocated.

The notion of whole health, as defined, explicitly embraces the ideas of equity, independence and of access to - and individual rights of control over - the resources and the means of care required for the maintenance of whole health. Special significance in this context is attached to the relationship between buildings, energy and health. The case is made for a decentralised, community-based, participatory system of care for the elderly based upon a unified set of principles derived, firstly, from the assumption of interdependent demographic and ecological imperatives and, secondly, from the adoption of a whole health model of care.

The findings of the study are presented as a coherent set of principles for the whole health care of the elderly within the context of defined socio-ecological imperatives. Such a system of community-based care for the elderly is referred to as "eco-care".

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INTRODUCTION

The primary locus of the study is along the interface between three of the most critical issues facing humankind in the last decade of the twentieth century and beyond. The principal stimulus for the research is provided by the belief that a combination of unprecedented social and ecological changes, taking place on a global scale, will have profoundly adverse, destabilising and inequitable effects on the most marginalised members of populations - the old, the poor and the sick - unless and until a new and unified approach is adopted to the problems of **age, health and the environment**.

The research is set within the specific context of community-based care for the elderly population of Britain. The fundamental propositions upon which the research is founded may be stated as follows:

1. Effective policies for the care of the elderly, by and within the community, must recognise not only a demographic imperative but both an ecological and a health-equity imperative.
2. The ecological and health-equity imperatives are interdependent.
3. At the interface, the imperatives demand an integrated approach to policy development, based upon a common, unifying set of socio-environmental principles.
4. Such principles can be derived from a critical study of relevant aspects of age, health and environment, and of the key relationships between them.
5. The demographic imperative is a subset of the more universal health-equity imperative, giving the study of age, health and environment wider significance within the context of global problems of poverty, inequity and environmental degradation.

The central objectives of the research are twofold. First, to abstract, from a study of age, health and environment, a set of unifying principles for the formulation and implementation of integrated socio-environmental policies for an extended concept of care - referred to as **eco-care** - which recognises both ecological and social imperatives. Second, to offer decision-makers a rational basis for choosing between policy options and prescriptions relating both to the physical settings for such care and to its management. The role of eco-care is defined as the promotion of **whole health**.

The research is directed principally towards present and future decision-makers in the field of care provision for the elderly; to policy makers, care-managers, service-deliverers, housing providers and managers and building design professionals. In particular, it is hoped that the study may serve as a stimulus to, and a work of reference for, other researchers similarly working across interdisciplinary boundaries in this field.

The Hypotheses Underlying the Research

The specific context and impetus for the research is illustrated by the following series of commentaries on the health, status and condition of the elderly in contemporary British society:

From Alfred Sauvy:

The least debatable of all phenomena of our day, the surest in its progress ... and perhaps the most pregnant with consequences is the ageing of the population [1].

From Sir John Brotherston, Professor Emeritus in the Department of Community Medicine at the University of Edinburgh, in 1981:

The ageing of the populations of our western communities is a development with profound political, economic and social significance [2].

From the Foreword by Leo Kaprio to The Provision of Care for the Elderly, published in 1981:

One prime need of the elderly ... is that of equity. Our old are disadvantaged, and are often the poorest, most neglected members of contemporary society ... Such gross inequality in the states of health of people within countries is now no longer politically, socially and economically acceptable. Another prime need is for the integration of the elderly into normal community life [3].

From David Griffiths, Politics of Health , 1991:

The elderly make larger demands on our health and social services than the adult population as a whole ... One of the major challenges facing our society in the 1990s and beyond is to construct and implement policies which shift health and welfare resources in favour of our ageing population. If our politicians fail to recognise this need, the resulting social stress will ... force this upon them [4].

From Professor Michael Hall and Sir Ronald Gibson, quoted in the British Medical Journal, 1984:

[In Britain] the general treatment of the frail elderly by the state is a scandal ... The system which so ill serves the most vulnerable members of our community is a disgrace. Lack of money and bureaucratic confusion has left a legacy ... with the state looking backwards ... and patching up a system of [health] care which is fragmentary, pitifully inadequate, and increasingly inappropriate to the elderly age group [5].

From Raymond Illsley, Professor of Medical Sociology and Director of the Institute of Medical Sociology at the University of Aberdeen in 1981:

The problem of the elderly is ... a socially-generated rather than an age-generated problem. Correspondingly, solutions should not be sought from the elderly but from the economy and the general socio-economic and political system [6].

From Walter Cunningham and John Brookbank, in Gerontology: The Psychology, Biology and Sociology of Aging, published in 1988:

One of the major assumptions ... is that the aged and aging processes cannot be adequately understood within the confines of any single, traditional academic discipline or area of professional knowledge. An interdisciplinary approach, drawing on many disciplines and academic specialization is not only desirable it is also a necessity [7].

This latter assumption should be judged alongside the view of Donnison and Chapman - expressed in the more general context of the evolving role of social policy and social administration - when they wrote, in 1965:

[Our concern is with] an ill-defined but recognisable territory: the development of collective action for the advancement of social welfare. Our job is to identify and clarify problems within this territory, to throw light upon them - drawing light from any discipline that appears to be relevant - and to contribute when we can to the solution of these problems [8].

Finally, from Helen Evers, in Innovations in the Care of the Elderly, in 1984:

[There continues a] preoccupation with the implications of the ageing population ... Today's provisions for care of elderly people have evolved in a piecemeal fashion. This has resulted from initiatives arising at all levels, from the state to the individual, in response to changing definitions of sociopolitical and demographic imperatives [9].

The focus of the present research study has been set by reference to the following suppositions which have been derived from, or were inspired by, the above commentary:

1. Improvements in social and economic conditions within developed societies have led to major demographic shifts within their populations. The resultant ageing of populations appears as a consequence of social rather than biological processes, without immediate or obvious evolutionary benefit to the population as a whole.
2. Whatever the origins and explanation of population ageing, the rate of demographic change has been such as to stress the fabric of industrial societies, which have found themselves unable if not unwilling to cope effectively and humanely with the growing numbers of elderly people and with the demands they make on the social and health services. In particular, societies have been unable to make the necessary radical transformations to social structures and attitudes. Such systems of care and support as do exist tend to be inadequate, inappropriate and unstable.. The consequence of a failure of care is that the health status of the elderly is poor in both absolute and relative terms.
3. Existing policies for the elderly have served only to marginalise them; to take them out of the mainstream of society by inducing dependency and loss of status. The result is that society tends to perceive the elderly not as contributors but as major and disproportionately large consumers of social resources and hence as, actually, or potentially, a burden on the rest of the population.
4. There is an emerging awareness, increasingly explicit in elements of contemporary social, economic and political thinking, that the elderly represent a large and growing political force whose continuing low health status and inequity is itself a major source of social and economic stress demanding - on each of ethical and pragmatic grounds - an urgent policy response to induce essential and desirable change - the **demographic imperative**.
5. Changes in the physical and psychosocial condition of the elderly can only be properly understood - and hence promoted through effective policy responses - by reference to complex interactions between specific multifactorial forces which are external to the ageing individual and forces which are internal.

- 6 A developing understanding of the complexities of ageing, combined with what Evers has referred to as the "changing definitions of sociopolitical and demographic imperatives" has led progressively to a re-ordering of priorities on the social and political agendas relating to the care of the elderly, with "care in the community" now identified as the principal cornerstone of care policy and with consequent major significance thereby attaching to domestic settings for care.

An emerging characteristic of the study of age and ageing in recent years has been the exposure of the problems of ageing to the consideration of different disciplines possessed of different experiences and different policy agendas. Such exposure allows for the possibility of new questions being asked, new perspectives sought, new insights being gained, new connections being made, new potentials recognised, new dangers identified, new imperatives defined. The present research is founded upon the definition of two such imperatives - identified as the **ecological imperative** and the **health-equity imperative** - which, whilst they impact on all populations, are predicted to have especially profound significance for the health status of the elderly and which, it is argued, are demanding of correspondingly radical and urgent changes in care policy.

The presumption, first, of an ecological imperative is made with reference to the following statements from a series of eminent sources:

From This Common Inheritance, The White Paper on Britain's Environmental Strategy, September 1990:

Human activity has now become the dominant influence on the environment of the whole planet; we can no longer afford to ignore the environmental consequences of our actions. Environmental problems [of global significance] include:

- * the threat of global warming arising from the over-production of greenhouse gases
- * the threat to the ozone layer in the upper atmosphere arising from the production of certain compounds containing chlorine
- * threats to the oceans from dumping wastes and from over-fishing
- * threats to the polar regions from unregulated development
- * loss of species and habitats, reducing the world's biological diversity
- * excessive use of non-renewable resources through wasteful or inefficient exploitation [10].

From the Report of the United Nations Population Fund, in May 1991:

The next decade may decide the future of earth as a habitation for humans. Already our impact has been sufficient to degrade the soils of millions of hectares, to thin the ozone layer, to threaten the rain forests and to initiate a global warming whose full consequences cannot yet be calculated. At some time in the not too distant future the changes in the environment may cross the threshold into catastrophe [11].

From Academician N. N. Moissejev, Deputy Director of the Computing Centre at the USSR Academy of Science in 1988:

Today, owing to advances of civilisation, anthropological stress on the biosphere has assumed a planetary scope. The question of human impact on the environment and man-induced ecological crises have become the main problem facing society. If the present order of things is retained the human race as a biological species could disappear. If it is to survive, humanity will have to think and live in a completely different way [12].

From David Pearce, then Special Adviser in Environmental Economics to the Secretary of State for the Environment, in October 1990:

The underlying reality is that nations, regions and the planet earth have come up against some of the genuine boundaries that natural environments place on human activity. The price of [further] expansion, [through a combination of population growth in the developing economies and economic growth in the developed economies] is probably a warmer world ... and even more poverty for those already at the bottom of the global economic ladder [13].

From Ivan Illich, in a collection of essays entitled In the Mirror of the Past, to be published in October 1991:

Modern Society has transformed the earth from an open, breathing space into a stinking junkyard ... The damages done by increasing consumption necessarily entail a depleted, degraded and poisoned world ... A certain geo-sophical principle, an earth wisdom, has been violated. Through a continual flow of the water cycle through the atmosphere, the topsoil and human culture, the earth lives in a kind of open system ... An essential condition for the flourishing and survival of any society is the protection and enhancement of the water-soil matrix of the environment. Western society, through the intensification and extension of disvalue, goes in the opposite direction ... Excretia, junk, poisons, waste heat cannot be transformed and radiated back into the cosmic cycle. The possibilities of human cultivation are smothered under the stinking blanket of a yellow-grey miasma. The earth now evolves into a self-centred pile of trash where the accumulation of wastes extinguishes the rhythms of a living and breathing planet ... One can trace the history of economic development in the West ... through the transformation of a planet into a junkyard, to the evisceration of the human comedy itself [14].

From Paul Ekins, a founder of The Other Economic Summit (TOES) which runs concurrently with the G7 Economic Summits:

Most environmental destruction is the direct responsibility of the industrialised countries, only a small proportion of whose production can be said to be related to "needs". The satisfaction of wants is what drives Western economies [15].

From Ulrich Loening, Director of the Centre for Human Ecology, University of Edinburgh, speaking to an international audience of planners in July 1991:

Needs can be sustained; wants cannot [16].

What emerges is a clear consensus identifying (a) a world which is accelerating rapidly towards ecological disaster on the global scale, as a result of unsustainable forms of human development - principally over-population and over-consumption - which are progressively stressing the biosphere beyond recoverable limits and (b) both a pragmatic and an ethical obligation on humankind urgently to evolve effective policy responses to arrest and reverse the emergent global-scale threats to the health of the planet, its ecosystems and its populations, human and other, by placing explicit limitations on the nature, scale and pace of present and future human development. The essence of environmental policy must be the restoration and maintenance of ecological health.

The implicit consequences of a failure to respond to the ecological imperative are environmental degradation, loss of essential habitats, loss of biological and genetic diversity, depletion of finite natural resources, acute global-scale poverty, social dislocation, threats to the health of vulnerable groups and the reinforcement of inequities in health status both between and within populations. At the extreme, what is at risk is the survival of the human species itself.

The suggestion is that, in response, humanity faces not a short term, localised crisis but a permanent restructuring of the global future with, inevitably, profound social and economic implications, again most especially for vulnerable groups such as the old, the poor and the infirm.

The presumption, secondly, of a **health-equity imperative** is made with reference to the following set of authoritative statements:

From John Clark in Democratising Development, 1991 :

The overall war against poverty is being lost [17].

In the words of El-Hinnawi and Hasmi:

Today there are hundreds of millions of people without the basic human needs of adequate food, shelter, clothing and health services; there are also hundreds of millions who lack access to even a rudimentary education or to regular employment. Not only is this an intolerable situation in human terms, but it also seriously threatens the environment. The pressures that arise when basic needs are not met and when man endeavours to satisfy these needs by any available means, can destroy the resource base upon which man depends for his sustenance. Relief of the poverty affecting so large a part of humanity is hampered by the present concentration of the world's economic strength in the developed countries and by the ... waste of resources there [18].

From Victoria Brittain, writing in Environment Guardian, April 1991:

The catastrophe for Africa's 27 million hungry people will see no instant solution. Because the crisis is endemic donors no longer use the word "emergency" with its implication that speedy action can avert it ... Part of this story is of the failure of the Western ... development strategies which concentrated on exporting growth and the idea that increased wealth would trickle down to the poor. In fact poverty has trickled up as food yields have dropped, the rural poor have got poorer and the environment has become degraded [19].

From David Griffiths in Politics of Care, 1991:

On the face of it there does not appear to be grounds for debate over the general health of the population [in the United Kingdom]. Since the beginning of the 19th century there has been a steady and at times dramatic improvement in the country's health. At that time life expectancy was low and the infant mortality rate - the number of children dying within a year of their birth was high. Terror diseases ... swept through whole communities decimating their populations. However, by the end of the 19th century medical advances, and more importantly, public health reforms, better housing conditions and improvements in the production and distribution of food had greatly reduced the infant mortality rate and enabled people to live longer and healthier lives. [And yet] in some respects we are sicker than our ancestors, not healthier. While we may have all but beaten many of the old killer diseases, we have only succeeded in replacing them with the so-called major epidemics of the 20th century - heart disease, strokes, blood pressure, obesity, cancer, stress-related disorders and new social diseases. We now have more people than ever before who survive well into their seventies, eighties and nineties ... but this has been accompanied by an increase in the mortality rate for [those] in their thirties and forties [20].

From Ivan Illich, in In the Mirror of the Past, 1991:

Our major institutions exercise a paradoxical power; they prevent most of their clients from reaching the goals for which they were originally designed and financed ... Health care cannot but create a more terrifying range of suffering and despair [21].

From the Black Report, Inequalities in Health, 1980:

While the health of the nation [United Kingdom] as a whole has improved, inequalities in health have not been eliminated. Indeed, the evidence strongly suggests that the health gap between the higher and lower social classes is widening. These persistent class health inequalities are mainly the result of social and economic conditions [22].

From David Griffiths, Politics of Health, 1991:

The mass of research since the publication of the Black Report confirms the existence of inequalities in health between the rich and the poor. The health gap between the wealthy and [those in poverty] has widened rather than narrowed in the period following the Black Report ... The General Household Survey indicates that people in the lower occupational classes experience more long-standing chronic illness. Many [studies] identify a clear link between factors such as ... social deprivation ... and ill health and mortality ... A person's financial resources, social position, ethnic origin, gender and area in which they stayed [all affect] their chance of achieving good health ... It is not just a question of the wealthy enjoying better health than the poor, but [of] health inequalities [existing] even between the very rich and those who are merely well off [23].

From Richard Wilkinson in Guardian Society, June 1991 :

Social justice is a crucial determinant of health standards throughout society. Income distribution, or how big the differences between rich and poor are in each country, seems to be the most important determinant of health standards in the developed world. The smaller the gap between rich and poor the higher the society's overall standard of health [24].

From The Health of the Nation, Government Green Paper, published May 1991:

[There exist] wide variations [in health] between different parts of the country, different ethnic groups and different occupation and income groups. However, tackling the links between poverty and health is a perfectly legitimate though not realistic objective for government policy. The issues involved are too fundamental, too complicated and too enduring for the reduction in health inequalities to be included among the Government's health policy targets [25].

The assembled evidence points to acute and abject poverty and dispossession on a global scale and to growing, not diminishing, divisions between the health status of populations and within populations. That inequity is itself perceived as a prime source of ill health and of consequent environmental stress is recognised specifically in the setting of a target by the World Health Organisation global strategy Health for All of a worldwide reduction in health inequality of 25% by the year 2000 [26]. Health for All explicitly acknowledges the intimate relationship between health and social and economic status and embraces, as a consequence, the concepts of social justice and the alleviation of relative and absolute poverty as well as improvements in general health and environmental standards.

From the above contentions a health-equity imperative can be inferred which demands socio-economic policy responses which will lead to:

- (a) an absolute improvement in the health, fitness and well-being of human populations through the eradication of global poverty, hunger and disease resulting variously from over-population, environmental degradation and inadequate public health care,
- (b) the establishment and maintenance of conditions of greater health equity within and between populations. Public health, according to the Acheson Report, is "the science and art of promoting health through the organised efforts of society" [27].

Health is here understood not in the narrow and restrictive sense of "the absence of disease and infirmity" but as "a state of complete physical, mental and social well-being". Such a definition, embraced by the World Health Organisation [28] implies that a healthy individual is one who is well-balanced bodily and mentally, well adapted (and adaptable) to their physical and social environments and who possesses the capacity for self-renewal.

Following Pfeffer and Coote [29], the promotion of equity here is taken to imply not the pursuit of uniformity - in the sense of giving everyone the same - but of allowing everyone an equal chance to determine for themselves how their basic health needs should be met within the context of a more responsive and pluralistic social and economic system, capable of managing radical change - in populations, in energy supply, in methods of production, in social and political structures, in institutions and in means of communication.

Embodied in the health-equity imperative and the wider definition of health are the implications that poor health amongst global populations is associated with increasing longevity, overpopulation, poverty, industrialisation, industrial decline, environmental damage and ecological imbalance with the corollary that poverty, hunger and disease, as manifestations of poor public health, themselves translate into stresses on the environment which again are critical and global in nature.

Of special significance is the recognition that the defined demographic imperative imposed by the dramatic shifts in the age balance of British society is simply part of a global health-equity challenge presented to developed and developing countries alike by the ageing of the world's population. Evidence presented at the United Nations debate held to mark the first International Day for Elderly People on October 1st 1990, showed that, between 1965 and 2020, life expectancy in Ethiopia is predicted to increase from 37 years to 59 years, in spite of the chronic health inequities suffered by that country. In Britain over the same period it is expected to improve from 71 to 77 years. While Europe is likely to see an average increase of about 90% in the number of people aged 85 years and over, the increase for tropical South America is likely to be 405% and for South-east Asia to be 408%. Whilst the developed countries presently have the "oldest" populations in the world, the impact of ageing will be greatest on the developing nations typically unable to offer pensions or other forms of state support [30].

Collectively, these selected fragments of evidence, opinion and commentary on global pollution, environmental despoilation and degradation, loss of biological diversity, disease, social injustice, and inequity assemble into a damning mosaic of proof of the tragic failure of mankind to find the way for human populations - indeed all species of life - to live sustained, healthy and equitable lives within the finite limits imposed by the environment. Man¹, "the shaper of the landscape" [31] has become man the polluter, man the stressor, man the destabiliser and man the destroyer. The effects of ecological stress are being experienced across national, regional and international boundaries and within every part of the biosphere, from the surface to the bottom of the sea, in the ground, on the ground and to the very edges of space.

¹ Throughout the study the term "man"- and its derivatives - is used in the sense understood by the social anthropologist and the human ecologist: as a collective term of reference to the species homo sapiens and its members. This protocol is followed in the present study where consistency, clarity and grammatical correctness demand. No gender differentiation is intended nor should be implied.

In consequence of such failure, the prediction must be that a continuation of present human development policies and practices will result in ever more adverse social and ecological change on a global scale, exacerbating existing social divisions and inequities and still further marginalising the most vulnerable members of populations who are least able to adapt and to protect themselves against such change. Most vulnerable of all, the poorest of the poor, it is argued, are the elderly within both developed and developing populations - the "Fourth World". Most critically of all, human activity is producing systemic imbalances in the ecology of the biosphere, with effects which present a real threat to the sustainability of the planet. The timescale for effective action may be, in the view of many, desperately short.

It is against this background that the following hypotheses - organised to provide a logical conceptual framework for the study - are now proposed:

1. Profound limits to the nature, scale and pace of sustainable human development, and upon the direction of environmental and social policy, are imposed by a global ecological imperative - an urgent and critical obligation on mankind to avoid ecological catastrophe by the arrest and reversal of those worldwide threats to the health and survival of the planet and its populations which are manmade and the consequences of both poverty and affluence. Confronted with the ecological imperative humanity faces not a short term crisis but a permanent restructuring of the future.
2. Fossil fuel-derived energy use associated with the construction and servicing of buildings is - together with global poverty and overpopulation - the principal contributory cause of biospheric pollution, adverse climate change and environmental degradation and hence the key to the avoidance of pending ecological disaster.
3. Without special protection, those populations and sections of populations most significantly and adversely affected by both the determinants of the ecological imperative and its consequences will be the vulnerable; the poor, the sick, the very young, the elderly and the socially, economically and environmentally deprived.

4. Humankind faces a simultaneous health-equity imperative - the obligation both to improve absolutely the health of those populations and sections of populations who are the sufferers of acute poverty, disease and hunger and to eliminate the gross inequities in health, advantage and opportunity which exist between and within populations worldwide. Principal amongst the sufferers of ill-health and inequity within all populations are the elderly.
5. Each of the ecological and health-equity imperatives derive from both pragmatic and ethical bases. At the pragmatic level they are reciprocally interdependent. A sustainable future for the planet depends ultimately upon the eradication of global poverty and the achievement of the goal of universal social justice. The health of populations is conditional upon sustaining the world's ecosystems and improving global environmental quality. The health of the planet will be secured and enhanced by equitable social policies. Human well-being will be enhanced by sound environmental policies in the fields of energy use, building design, transport, agriculture and land-use.
6. The interdependency of the ecological and health-equity imperatives demands an integrated, holistic approach to the formulation and implementation of environmental and social policy, in which the social dimension of environmental policies and the ecological dimension of social policies are mutually and explicitly recognised.
7. Linkage between social and environmental policy is provided by the issue of health. The model of health adopted for the assessment of the health status of individuals and populations is a critical determinant of the direction and efficacy of policy responses to the combined ecological and health-equity imperatives. An effective, integrated approach towards socio-environmental policy development requires the adoption of an holistic model of health.
8. Buildings have a significant impact on the "whole health" of their occupants, especially members of vulnerable groups such as the poor, the old and the disabled. Buildings stand doubly indicted as stressors of both the global environment and of public health. Buildings provide a critical link between ecological and human health. A key objective of effective socio-environmental policy must then be the creation of healthy buildings.

9. The ageing of populations is an issue of profound political, economic and social significance and translates into a demographic imperative - the need to develop effective policies for the care for the elderly which are based upon a sound set of principles derived from the study of age, health and environment. The demographic imperative is a subset of the more universal health-equity imperative.
10. The whole health of the elderly population of Britain today - measured along each of seven dimensions - is both absolutely and relatively poor. Such inequities are patterned by social and environmental rather than individual factors. Almost all elderly need some form of social support to maintain whole health against the effects of socio-environmental stress.
11. The demographic imperative cannot, in either theory or practice, be disassociated from the ecological imperative. The combined impact of both demographic and ecological pressures will be devastating for the elderly themselves, for all populations and for the environment, unless radical policy changes are affected. Contemporary social policies relating to the care of the elderly fail adequately to address emerging environmental concerns. Existing and proposed environmental policies lack a necessary social dimension and fail to account adequately for the needs of vulnerable groups such as the old and the poor. Urgent global environmental concerns may lead to an over-centralisation of decision-making which would conflict with the principles of decentralised, participatory decision-making embodied within the concept of whole health. The promotion, restoration and maintenance of the whole health of vulnerable sections of populations such as the elderly through appropriate forms of care will be the acid test of effective, unified socio-environmental policies.
12. The ageing of populations is a global problem, presenting a challenge to both developing and developed countries and reinforcing the notion that the demographic imperative is a subset of the more universal health-equity imperative. Such an identification implies that those principles and prescriptions of care derived from a study of age, health and environment may reasonably be assumed to have application to the understanding and resolution of the wider problems of global poverty, inequity and environmental degradation.

Testing the Hypotheses

Implicit in the above hypotheses is what is believed to be an innovatory approach to the vital issues of ageing and health in modern society - an approach which sets the demographic imperative within the context of global scale ecological and health-equity imperatives and argues for a unified approach to the critical problems of age, health and environment.

The intended contributions of this study are (i) to offer new perspectives on established social and environmental issues (ii) to raise new questions and to suggest new, unifying connections (iii) to set new agendas for research and practice (iv) to propose a coherent framework of principles for the formulation and practice of socio-environmental policy for the care of the elderly and (v) to offer a rational basis for making choices between existing and proposed policy options against a background of radical socio-economic and political change and the challenge of a global ecological threat to a sustainable future.

Three particular and related perspectives are presented: a perspective on environment and health in Part One of the study; a perspective on age and ageing in Part Two and a perspective on contemporary social and environmental policy in Part Three. From each perspective, a detailed, comprehensive and critical review of selected documentary evidence - fact, comment and opinion - is undertaken, key relationships identified, arguments developed and findings consolidated, analysed and interpreted in order to confirm or confound each of the hypotheses stated above.

The research is founded in the essential belief that caring for the old and caring for the planet are inextricably linked and that the concept of whole health is fundamental to both. The idea of mutual supports for human and environmental health is given expression in the notion of "eco-care". The essential principle of eco-care is expressed in the belief that equitable social policies will enhance the health of the environment whilst sound environmental policies will enhance the health of society. Both will serve to reinforce the promotion of whole health and to include rather than exclude the elderly as active decision-makers within the community.

In the final part of the study, a synthesis of the relevant research findings is presented in the form of a set of "principles of eco-care", offering a framework for integrating and unifying socio-environmental policies which seek to protect and enhance the health of both the elderly and the environment.

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PART ONE

PERSPECTIVES ON ENVIRONMENT AND HEALTH

CHAPTER 1

SOCIO-ECOLOGICAL IMPERATIVES

In this opening chapter, the foundations for the research are established in the form of a comprehensive account of the ecology of human development and of the dynamic interactions between human communities and their physical environments against a background of radical social and environmental change. Particular study is made of the ecologies of poverty and of affluence. The principal concerns of Chapter 1 are (i) the concepts of ecological balance, interdependence and health (ii) human adaptation to biotic and abiotic changes within both local and global ecosystems (iii) the impact of human economic activity and population stress on fragile ecosystems and (iv) the preconditions for combining sustained, healthy and equitable human development with environmental protection.

In this first Chapter, detailed evidence is assembled and evaluated to test those hypotheses which specifically concern the existence of, and the interrelationships between, what will be defined as respectively an ecological and a health-equity imperative. The first of these hypothesis states that profound limits to the nature, scale and pace of sustainable human development - and upon the direction of environmental and social policy - are imposed by a global ecological imperative which represents an urgent and critical obligation on mankind to avoid ecological catastrophe by the arrest and reversal of those worldwide threats to the health and survival of the planet and its populations which are manmade and which are the direct consequences of both poverty and affluence. The contention is that, confronted with the ecological imperative, humanity faces not a short term crisis but a permanent restructuring of the future.

The second hypothesis holds that fossil fuel-derived energy use associated in particular with the construction and servicing of buildings is - in combination with global poverty and overpopulation - the principal contributory cause of biospheric pollution, adverse climate change and environmental degradation. As such, building related energy use may be seen to represent the key to the avoidance of pending ecological disaster.

The third hypothesis asserts that, without special protection, those populations and individuals most significantly and adversely affected by both the determinants of the ecological imperative and its consequences will be the socially, economically and environmentally deprived. Principal amongst this group, it will be argued, must be considered the elderly.

The fourth hypothesis supposes that, simultaneous with an ecological imperative, humankind faces what is defined as a health-equity imperative - the obligation both to improve absolutely the health of those populations and sections of populations who are the sufferers of acute poverty, disease and hunger and to eliminate the gross inequities in health, advantage and opportunity which exist between and within populations worldwide, again most particularly in the case of the elderly.

The fifth hypothesis then holds that each of the ecological and health-equity imperatives derive from both pragmatic and ethical bases. At the pragmatic level they can be said to be reciprocally interdependent in that a sustainable future for the planet depends ultimately upon the eradication of global poverty and the achievement of the goal of universal social justice whilst the health of populations is conditional upon the sustaining of the world's ecosystems and the improvement of global environmental quality. The health of the planet will be secured and enhanced by equitable social policies. The well-being of populations will be enhanced by sound environmental policies particular in the field of energy use.

Finally, the sixth hypothesis contends that the interdependency of the ecological and health-equity imperatives demands an integrated and holistic approach to the formulation and implementation of environmental and social policy involving explicit mutual recognition of the social dimension of environmental policies and the ecological dimension of social policies.

Ecosystems and the Ecology of Human Development

Ecosystems are formed from communities of living organisms and the physical environment which they inhabit in a state of dynamic equilibrium and what William Rees calls "obligate dependency" [1]. Ecosystems vary in scale from the micro to the global and are characterised by their specific climate, soil conditions, physiography, flora and fauna. Major global scale ecosystems include the tundra, the coniferous forests, the deciduous forests, the savannah, the tropical rainforests and the deserts [2]. Each major ecosystem may be subdivided into smaller scale and progressively more localised ecosystems which, whilst continuing to share some common defining features with the archetype, differ from it in significant ways as a result of variations in regional or micro-level conditions. Such variations may occur naturally or may be induced as a result of the intervention of human populations. Within each ecosystem complex interactions take place between climatic, edaphic (soil) and physiographic factors (collectively known as abiotic factors), and those associated with the living organisms (biotic factors). The combination of temperature, light, humidity and rainfall are the principal climatic determinants of any ecosystem. The major global ecosystems collectively form a single functional, fragile matrix known as the biosphere - the atmospheric, marine and terrestrial planetary envelope that constitutes the world of living things, including humankind.

All species survive and develop by extracting both material and energy resources from the ecosystem of which they are a part and returning them back to the ecosystem in some altered form. At each interaction involving energy and material transformations, energy is dissipated in the form of low temperature heat in accordance with the Second Law of Thermodynamics. The entropy or state of disorder of any system which exchanges only energy with its surroundings continuously increases and the system tends to a progressively disordered and (in thermodynamic terms) stable state. The constant dissipation of potential energy from natural ecosystems - the progressive degradation of all forms of energy to heat - should thus tend to increase the entropy, or degree of disorder, of the ecosystem [3]. In practice ecosystems are inherently self-sustaining and, over geological time, the Earth's physical environment has been maintained within the narrow limits essential for the existence and persistence of life. The process which enables living systems to maintain themselves in apparent contradiction of the laws of thermodynamics - sustaining what Hawkings calls a "small corner of order" [4] in an increasingly disordered universe - is known as autopoiesis [5].

Autopoiesis is possible only because ecosystems are driven by the sun, an external source of free energy which replaces energy losses as part of a constant interchange of radiation with the rest of the universe. The principal mechanism of energy replenishment is photosynthesis. Photosynthesis is the conversion of solar energy into chemical energy by green plants (producers) within the ecosystem. The process is only some 1-5% efficient. Photosynthesis involves the synthesis of carbohydrates from carbon dioxide and water and the release of oxygen into the atmosphere. Carbohydrates, together with the more complex proteins which are synthesised by green plants with the support of nutrients from the soil, are directly or indirectly, the sole source of food for producers and for the first, second, and third-order consumers which depend on them. Through the process of respiration this food provides energy for cell development and growth as well as releasing carbon dioxide into the atmosphere. The relationship between producers and different orders of consumer - herbivore and carnivore - is known as the food chain. When plants and animals die, the activity of fungi and bacteria on the remains causes decay and returns useful organic material back into the soil. Where the process of oxidation is inhibited carbohydrates are converted instead into energy rich substances such as coal, oil and natural gas. Over a period of some 600 million years the accumulative deposition of dead animals and plants under conditions of retarded decay has produced the world's finite stock of fossil fuels. Energy can be recovered from fossil fuels by a process of combustion with an accompanying release of carbon dioxide into the atmosphere.

Short wave radiant energy from the sun is absorbed by the atmosphere and by the water and land masses at which point it is converted directly into life-sustaining heat. The warmed Earth reradiates part of this heat as long wave radiation. Solar radiation also provides the energy to power the principal global atmospheric cycles. The principal global cycles include:

- (i) the hydrological cycle of evaporation, condensation, precipitation, transpiration and respiration,
- (ii) the nitrogen cycle of nitrification and denitrification which maintains the essential levels of protein-building nitrates within the soil.,
- (iii) the oxygen and carbon cycles of respiration, decay and photosynthesis,
- (iv) the atmospheric movements which create winds, tides and ocean currents.

Whilst the availability of supply of life-supporting solar energy into an ecosystem is effectively infinite there are very real ecological limits imposed on the system by the efficiency of the conversion processes involved, by the ability of the system to manage the effective disposal of the waste by-products of energy conversion, by the availability of finite nutrients and by the tolerance levels of animals and plants to variations in abiotic factors. The continuity of supply of the other vital elements of ecosystems, such as water, oxygen, carbon, nitrogen and mineral salts - which cannot be replenished from sources external to the global systems - is wholly dependent on delicately balanced recycling processes.

Thus, whilst a "healthy" ecosystem, "plugged into the sun" and existing in perfect natural balance will be able to adapt effectively and continuously to the variety of demands and stresses imposed upon it, the sensitivity of natural ecosystems to adverse change can render many vulnerable to even minor stresses, both biotic and abiotic. There is therefore a substantial risk that any natural ecosystem, and the life support systems which they maintain, may suffer ecological catastrophe as a result of disturbances of the energy balance, with the most highly adapted and specialised of species the most vulnerable. Loss of species has been a fairly common occurrence, even before the impact of man.

Whilst the process of biological evolution - the steps that separated human kind as an upright species with large brains from their ape-like ancestors - occupied several millions of years, the process of cultural evolution - the crowded steps which separate modern man from man the hunter-gatherer - has occupied a very much shorter period, probably not more than 15 millennia. At the point of transition from human biological to cultural evolution, perhaps 15,000 years ago, man would have presented a relatively unobtrusive figure in the ecological landscape. He was generally well adapted to the natural ecosystems he had made his home. One million years earlier, before the discovery of fire, primitive man had lived on the very edge of survival, with an energy input limited to the food he could eat. Best estimates date the discovery of fire around 400,000 BC or possibly earlier [6]. Man's demands and stresses upon the environment would have been few and highly localised. Now, as nomad or hunter-gatherer, he had learned to use fire to keep warm, to drive off predators, to clear woodlands, and to make what Bronowski has called "the simple transformations of everyday life" - cooking, drying, hardening, heating and splitting [7]. His energy per capita had risen by perhaps two and a half times [8] but populations were small and limited by the capacity of the resource available to them through hunting. His impact on the environment remained limited in both intensity and scope.

With the end of the last ice age, it became possible for man to settle and to make the transition from nomad to village dweller. He cut down trees, tilled and ploughed fields, grew and harvested crops, built more permanent structures from timber, mud, stone, stored grain, preserved foodstuffs, domesticated animals. With the agricultural revolution, man's impact upon the environment intensified and expanded whilst his per capita energy consumption increased, perhaps a further two and a half times [9].

Village man lived a biomass-based, subsistence level existence. In a subsistence economy populations rely almost entirely upon either direct or indirect use of solar energy for their energy needs. Food, fuel, fodder, fertiliser, building materials for shelter and clothing are all derived from biomass. At the subsistence level of human development, with basic needs confined to the provision of food, water, shelter and the means for basic hygiene, local ecosystems are capable of supporting small human populations through natural processes of renewal and repair and without, so Mollison argues, the requirement for high energy forms of eco-management or husbandry [10]. Today there are many millions of people worldwide who continue to live close to this subsistence level but, more generally the agricultural revolution was the trigger for - and the distant beginnings of - the cultural revolution.

Settled communities made both social and technological invention more possible and more likely. In particular man was able to develop the ability to mine metals, to extract metals from their ores, to use fire to transform, mould, forge and combine metals to make tools and weapons and later, machines to harness power. The capacity to grow and store more food, to generate greater power and to transform materials made it possible to support larger populations. Intensive agriculture was the support for the foundation of early cities with populations of up to 10,000 people, socially and technologically sophisticated by comparison with anything that had passed before. From this point the supply and utilisation of energy became the most important determinant of the rate and direction of human development and the history of human culture becomes the history of man's increasing ability to control and manipulate energy. Just as the agricultural revolution and access to secure energy sources made it possible for ecosystems to support increasing populations so evolving and growing human communities required ever-increasing supplies of energy - internally in the form of food and externally for producing food on a large scale, for maintaining population health, for improving physical comfort and for driving economic activity [11].

During this intense period of cultural progress, man has evolved an immense potential for human development - through the expansion of his unique gifts of manipulation, imagination, invention, organisation and adaptation; through the modification of his behaviour; through the reshaping of his environment and through the exploitation of natural resources. Through the exploitation of the earth's finite stock of "internal" energy in the form of fossil fuels, man has been enabled, as Markus describes it, to "push against" entropy [12].and maintain the stability of ecosystems without, in the short term, increasing the net entropy of the system.through the evolution of what might be called ecological economies - the human management of material resources, energy resources and waste systems through the employment of appropriate forms of technology. Expressed in thermodynamic terms, as the natural limits of adaptability, renewal and regeneration of ecosystems are exceeded, so the entropy of the system has been opposed by progressive human intervention in the form of a built environment. Agarwal refers to the processes of intervention - the damming of rivers, the draining of marshes, the reclamation of land from the sea, the cutting down of forests, the growing and rotation of crops, the replacement of diverse natural ecosystems with unnatural monoculture, chemical production, the evolution of car and air travel and the development of energy-intensive agricultural, commercial, industrial and domestic infrastructures as the "transformation of nature" [13].

The adaptability of ecosystems to human intervention cannot be sustained indefinitely, however, once human economic activity has developed and expanded beyond the point at which man's consumption of ecological resources exceeds the rate of biological replenishment and at which the earth's capital stock starts to become depleted. At this point, as an inevitable consequence of the Second Law of Thermodynamics, the essential resource base is seriously degraded with a corresponding increase in the deposition of ecologically damaging waste products. The amount of low entropy energy and material resources available for human utilisation is gradually decreased as both are irrecoverably dissipated to a higher entropic state by economic activity [14]. Simultaneously there is a progressive increase in man's potential to cause extreme and lasting damage to the health of populations and to that of the environment, including the habitat of other life forms.

Human cultural evolution has demanded the balancing of the opposing potentials for development and damage.through the setting of necessary limits on the nature, extent and pace of human development. The essential constraints on human actions have been set, at least in part, by the evolution of ethical codes.

Such codes embrace both the essentially homo-centric, "human-centred" or anthropocentric traditions which Engel associates firmly with the idea of universal social justice and the eco-centric ("life-centred") ethics which, according to Engels, stresses "the objective value of the holistic nature of the biosphere and the right to existence of all its interdependent parts, human beings, animals, plants and the physical landscape" [15]. Bronowski [16] sees justice as a universal of all cultures and as part of the biological equipment of man. Karl Popper, whilst questioning the universality of the theory of evolution by natural selection, accepts that the "concern" of natural selection is physical survival [17]. Whilst denying the existence of a "law" of evolution, Popper accepted the possibility of what John Stuart Mill has called a general tendency in evolution towards improvement - a tendency towards "a better and happier state" [18].

Whilst the imposition and adoption of ethical codes of human behaviour have acted as a partial corrective, two parallel trends now threaten the uneasy balance between human development and the viability of ecosystems - overpopulation and overconsumption.

Whilst total accuracy is not possible, best estimates put the world population at about 5 million in 5000 BC, 165 million in AD 1650 and at 1000 million (one billion) in the early 19th century [19,20]. The growth rate began to accelerate most significantly in the middle of the 18th century when developments in intensive farming enabled the production of food crops and meat to be increased many fold so that land could support far more people. At the same time the Industrial Revolution - the harnessing together of power, technology and social organisation to produce a massive new force for human development - transformed agricultural into industrial societies and generated the demand for more workers, more consumers and more raw materials to marry the two. Parallel developments in medicine meant that fewer infants died at birth whilst life expectancy was extended. What has followed, in the past two hundred years, has been an exponential increase in the world population.

By 1930 the population of the world had reached 2 billion. In 1990 the estimated population of the world was 5.29 billion [21]. The world's population doubled between the years 1950 and 1987. This means that some 90 million human beings are being added to the population every year, a rate of 250,000 every day [22]. The population is expected to reach 9.5 billion by the year 2050 unless disease, war, mass famine or natural disaster intervene [23].

If population growth rates follow present trends then, in the "worst" case, the ultimate total for the world's population is projected to reach well over 14 billion people [24]. Almost all the present and projected population increase (95%) is taking place within the so-called developing countries [25] though recent results of the US Agency for International Development Demographic and Health Survey indicate a significant decline in fertility in the developing world over the past twenty years [26]. The standard distinction is made here between the developed advanced industrial nations of the world such as the 24 Organisation for Economic Co-operation and Development (OECD) countries and the 140 or so developing or less developed countries of Africa, Asia and Central and Southern America, most of whose economies are essentially agricultural and whose populations are largely involved in subsistence agriculture. With the effective disappearance of the "Second World" of Eastern Europe, the idea of the "Third World" is now of questionable significance as a political and economic concept. Some commentators equate the "developed-developing" or "rich-poor" axis with a North-South divide though this can be misleading in diverting attention away from areas of relative poverty and need that clearly exist within "developed" regions. The expression "Fourth World" is sometimes used to refer to the "poorest people wherever found" [27].

Whilst population growth in the developed economies is tending to stabilise, a further and highly significant trend is the restructuring and ageing of these populations. Both the proportions and absolute numbers of very old people are increasing dramatically, with profound effects on dependency ratios. The "dependency ratio" is a measure of the balance in populations between those members who are economically inactive (and therefore "dependent") and those who are economically active. Experience suggests that the dependency ratio tends also to be an index of economic and social inequity within a population. This is a theme which will be returned to in later chapters.

As human populations generally have followed exponential growth and development patterns so their impact on the ecosystems has inevitably intensified and multiplied with the ever rising demand for food, fuel, raw materials and land. Natural ecosystems, however healthy, have an inherent carrying capacity and ability to absorb the effects of stress. The carrying capacity of any ecosystem is the maximum population that can be supported by a given set of natural resources or, more practically, the maximum rate of resources consumption and waste discharge that can be sustained indefinitely without progressively impairing ecological productivity and integrity [28].

For most of the period of human economic development the effects of overcapacity and overconsumption on the environment have remained relatively localised in their impact, with ecological impairment and loss of integrity confined to specific ecosystems. The second half of the twentieth century, however, has seen world economic activity increase by a factor of five [29]. Today its impact is global in scale and complexity. Ecosystem man has become biosphere man. So grossly inefficient are the processes of transformation and the institutional structures associated with the supply and use of energy within this increasingly integrated, global industrial economy that the world's finite reserves of natural resources are rapidly being exhausted. Over 40% of the useful products of photosynthesis worldwide are already being consumed by human beings and the proportion is increasing [30] whilst high grade, low entropy energy - obtained almost exclusively from the Earth's capital stock of non-renewable fossil fuels - is being transformed, irreversibly, into low grade, high entropy heat. Furthermore, the land-related resource base of the developing countries is being taken out of useful production to feed the insatiable appetites of the industrialised economies which already consume some 80-86% of the world's non-renewable resources. and 34-50% of food supplies [31]. In the process, harmful waste-products and resultant pollutants are being deposited into the natural cycles and waste streams of the ecosystem with both direct and indirect impact on each of ecological and population health. Illich argues that such waste is something more and other than an unwanted side effect of a developed economy. Rather is it a "disvalue"; the condition which makes modern forms of production possible. Increasingly, disvalues appear as the principle output of the economy, and the production of goods and services as the means to prevent being injured by these disvalues [32].

Whilst ecosystems do possess a limited capacity to recover from the abuse to which they are being subjected by humankind as a result of both overpopulation and overconsumption, there is growing confirmation that present patterns and rates of human development are simply not sustainable. There is also a growing worldwide recognition that both developed and developing worlds are contributing to the world's environmental problems, for very different reasons. In the words of the Human Development Report of the United Nations Development Programme (UNDP), the root causes of environmental degradation, ecological disruption and geopolitical instability are "poverty in the South and affluence in the North" [33]. The ecologies of poverty and of affluence are now examined in greater detail in the remaining two sections of this chapter.

The Ecology of Poverty

Current official estimates based on measures of per capita Gross National Products in developed, developing and less developed countries - indicate that between two-thirds and three-quarters of the world's population are living in real poverty. More than one billion people live below the World Bank's "absolute poverty" line, lacking even minimum standards of food, shelter, clothing and safe drinking water. To economists and politicians, "poverty" is a matter of definition. To the one fifth of all the people on earth in 1991 who are "absolutely poor" it means being perpetually hungry. To at least 1.5 billion people "poverty" means lacking access to basic health care and to safe water. To over two billion people it means being without safe sanitation [34].

Such acute poverty, where even basic needs are unsatisfied, is linked inextricably with the growth of populations and with the degradation of the natural environment. The three elements form a seemingly unbreakable vicious circle within which it is almost impossible to decide where cause ends and effect begins. As the population density of the developing countries grows (at a rate of 200,000 every day) so too, inexorably, does both the demand for natural resources to meet basic needs and the pressure on the land. In turn the health of a population depends closely upon its size and upon its effectiveness in meeting basic needs [35]. Over-grazing, over-cultivation and poor irrigation, together with deforestation, has already placed a major proportion of the world's land area at serious risk from soil erosion and loss of fertility [36]. Meanwhile the dependence of four-fifths of the human race on wood as their primary fuel leads to a consequent rising demand for timber [37]. The paradox is that this hunger for timber, together with the search by dispossessed populations for a cleared space in which to achieve some sort of livelihood, is resulting in the world's forests being progressively destroyed by logging and by slash and burn agriculture at a rate far greater than that by large scale, commercially-orientated development [38]. Since 1959 the world has lost one fifth of its tropical forests [39]. The forests most at risk - the tropical rain forests and forests in semi-arid regions - are those essential for ecological health in regulating global climate and preventing soil erosion, flooding and the formation of deserts. Deforestation destroys the livelihood of communities, adversely affects watershed and water resources and reduces soil productivity. Already there is an acute shortage of fuelwood in many areas. In some countries it may now take a whole day to collect sufficient firewood for heating and cooking purposes for one day [40].

When the denuding of forests, the erosion of topsoil and the diversion of rivers combines with the effects of drought, inundation, crop failure, contamination of water and food sources, crop failure, flooding and civil war, the result in rural areas is environmental degradation on a regional, even global scale. As more and more people are driven into the urban areas, pressures on space, food, water supplies, sanitation and social organisation multiply.

The consequence of environmental degradation for rural and urban populations throughout the less developed countries is mass starvation, malnutrition, pollution, disease and social disintegration. In India, one third of the urban population have no proper sanitation. Only 10% have a connection to sewage treatment facilities. Generally the poor have little protection against either atmospheric or water-bourne pollution.[41].

The World Health Organisation estimates that 80% of all sickness and disease in the developing countries is due to inadequate water or sanitation whilst indoor and outdoor atmospheric pollution, principally associated with the combustion of biomass for cooking and heating is a significant cause of respiratory illnesses [42]. Worldwide some 14 million children die before the age of five and 180 million suffer chronic, severe malnutrition. Nine million children die prematurely every year from water-bourne diseases such as cholera [43]. In Southern Asia mortality amongst children under five exceeds 170 deaths per thousand of the population. The equivalent figure for Sweden is ten per thousand. [44].

The threat to health and livelihood and the loss of quality of life is experienced most by societies already marginalised by war and natural disaster, by those already living in ecologically fragile zones and by the most vulnerable members of any society; women, the very young and the very old. According to the United Nations Development Programme, some three-quarters of the poor people in the South live in areas which are ecologically precarious [45]. In general, the poorest and least developed countries experience the greatest difficulty in breaking out of the vicious circle of poverty, ill health and environmental degradation. The greatest poverty creates the worst environmental pollution. The poorest are affected most by the adverse impact of human activity and population growth on the environment. The life expectancy of people in Africa generally is 41-50 years compared with 75 years in most developed countries [46].

The problems of poverty, pollution and pending ecological disaster divide the world along East-West as well as along North-South lines. A recent study carried out by the European Bank for Reconstruction and Development together with the World Bank, the OECD and the International Monetary Fund reports evidence that many of the industrial and agricultural regions of the USSR are on the verge of ecological breakdown, posing a threat to the health of present and future generations. In the most polluted regions environmental health risks are believed to be 10 to a 100 times greater than those that would be considered acceptable in most industrial countries. Estimates suggest that the now disintegrating Soviet Union has been generating 20 million tons of hazardous waste annually and has failed to managing its safe disposal. Two-thirds of water supplies are below standard. In hundreds of urban areas, toxic air pollution is at least 20 to 50 times that in (west) Germany. In parts of Eastern Europe leukaemia and meningitis, linked to pollution, are endemic in children [47].

Deaths from respiratory diseases amongst men in the former Soviet Union are nearly three times as high as in Germany. Ten per cent of food tested there has proved unsafe for human consumption because of contamination by pesticides, heavy metals and other pollutants. In the Kola peninsula, life expectancy is 50 years compared with the OECD average of nearly 70. The financial consequences of this unfolding ecological holocaust are, at a time of political and economic instability and loss of control, incalculable. The social and environmental ramifications, under the prevailing conditions of acute stress between what remains of the centre and the newly independent republics, can only be imagined and feared.

The adverse connection between poverty and health is not limited to the developing countries. Confirmation of this is provided by the evidence of socio-economic inequalities in health status in the United Kingdom, revealed by the Black Report [48], which has highlighted the correlations that still exist between class, income, living conditions and health. More recently Wilkinson [49] has argued that social justice is a crucial determinant of health standards throughout society. He contends that the more equitable the income distribution - the smaller the gap between rich and poor - the higher the society's overall standard of health.

According to the Annual Report of the Chief Medical Officer, On the State of the Public Health for the Year 1990, published in Sept 1991 [50] there is a proven link between deprivation in the form of low income, lack of education and inability to take personal health initiatives and ill health.

The Chief Medical Officer maintains that health inequalities will be eradicated only by government measures to tackle poverty and improve the conditions in which people live. His report confirms a health divide within the United Kingdom and suggests that there is a limit to the extent to which improvements due to health promotion initiatives to reduce risk factors such as smoking, poor diet and physical activity are likely to occur in the absence of a wider strategy for changing the circumstances in which the risks arise by reducing deprivation and improving the physical environment. In the end "economic action" is essential.

It remains uncertain precisely how income differentials affect health - whether through the effect on self-esteem, through the possession or otherwise of resources for helping the process of adapting to stress or through the quality of the personal environment. What is clear, however, is that equity is an essential precondition of well-being and that inequity can seriously damage your health [51].

As understanding of the ecology of poverty grows, so does recognition, firstly of the levels of stress which poverty and environmental destruction are placing on global as well as national and regional ecosystems and secondly that arguments for improving the man's environment are arguments for improving his health and well-being as well as for achieving great equity within and between populations.

The damage to ecological health caused by the poor, developing countries is essentially the result of the mass utilisation, by inefficient means, of the natural resource base; the misuse of soils, forests, water and energy resources within the context of badly planned, poorly managed economies which lack the stable institutional organisations and regulatory control mechanisms which would allow them to deal effectively with waste and pollution as part of a coordinated policy of environmental protection. The economies of most poor developing countries simply cannot support the investment in - and maintenance of - appropriate and effective technologies for the protection of ecosystems whilst the world economies generally will face collapse without alleviation of the unremitting stress caused by population growth, social dislocation and environmental degradation in the poverty-stricken countries of the South and East.

From this perspective the poverty associated with over-population is seen, as in words of the Brundtland Report [52] as "a major cause and effect of global environmental problems". There is therefore a correspondingly global ecological imperative to find long terms solutions to the mutually reinforcing crises of endemic poverty and environmental degradation in developing countries and to allow the poorer nations to respond to the legitimate demands of their populations for improved standards of living, proper water supplies, effective systems of waste management, adequate housing, better medical care, decent education and more efficient forms of transport and communications. The hope that the problems of population growth can be resolved at source through education and social programming, within the necessary timescale, provides an inadequate basis for crisis planning on the global scale. Other mechanisms for breaking the cycle of over-population, poverty and environmental degradation must be found.

Recognising the reciprocal links between poverty and environment and starting from the premise that economic development and environmental issues cannot be separated it is the the view of many, including the World Bank, that the most effective way to break the cycle lies with global investment in economic growth and development in the poorer economies. The position of the World Bank which, through its Global Environmental Initiative, plays a key role in coordinating international action to assist developing countries solve global environmental problems, can be summarised as follows. Health, development and environment are inextricably linked as determinants of the future of human populations. Environmental protection and development are mutually dependent. Good economic policy is good environmental policy and good environmental policy is good development policy. People cannot progress economically if their rivers are polluted, their forests burned, their soils eroded, their cities overcrowded. Only rising national incomes can free people from the burden of acute poverty. Whilst aid has a short-term role only real growth can generate income on the massive scale required. It is in the developed world's interest to solve the economic and environmental crises of the developing world. Only cooperative action on a world scale can produce a long-term solution.

Such a development philosophy seems logical and persuasive but presents as many problems as it seeks to solve, not least because few countries in the South now show much enthusiasm for the development process as they see it operating in the North where 100 million people still live in relative poverty and the wealthiest 20% of the population receive almost seven times as much income as the poorest 20% [53].

On the one hand, there is a natural suspicion about the motives of the industrialised economies in linking development and environmental protection. One fear, expressed by Agarwal, is that too much concern for the environment will have the affect of retarding economic and industrial development and, in so doing, preserve the affluence of the rich nations and protect their own environments at the expense of the poor nations [54]. On the other hand, there is the belief, given expression by Connaughton and others, that, on current trends, growth-led economic and social development on a scale necessary to meet even the basic needs of growing populations and still more to respond to demands for higher living standards, can only be fuelled by greatly increased per capita energy use [55].

According to current estimates provided by Eastop and Crofts [56] and by Olesen [57], current per capita energy consumption in developing countries is, on average, only one-tenth or one-twentieth that in industrialised countries. Even limited economic growth in the developing countries - and in the reconstructed eastern bloc countries - would, on present trends, demand very substantial increases in fossil fuel consumption with all the associated adverse impact on the environment from pollution and the effects of climatic change. Schlaich estimates that the combination of a doubling of the world population and even a modest increase in global living standards could translate into a 600% increase in energy demand within the developing world [58]. Walt Paterson has estimated that, on present trends, China's energy production alone will be 50% greater in the year 2000 than it was in 1989 [59]. The problem is made acutely worse by the fact that whilst developing countries presently make up three quarters of the global population but consume just 25-30% of the world's energy [60] this translates into a contribution to world pollution levels of nearer 50% because of their inability to afford "clean" fuels and technologies [61]. The importation by the developing nations of energy-intensive technologies from the industrialised economies is already a major source of added pollution [62]. The overall result is that for India and China alone, increasing the per capita energy consumption of the populations of those countries alone to that of a typical western European country such as France would increase the net world wide pollution associated with the use of fossil fuels by 68% [63]. The strategy of encouraging poorer countries to develop along the lines presently followed by the richer industrial economies - as a mechanism for breaking the cycle of poverty and environmental degradation - thus carries the great danger foreseen, for example, by Krause and colleagues that the effect will be simply to replace one cause of global ecological damage with another still worse and do little to resolve existing inequities within populations [64].

Energy demand in the developing world will thus be an increasingly critical component of the ecological balance equation. If countries such as China cannot be dissuaded from a policy of exploiting their own massive resource base in pursuit of the goal of higher living standards for uncontrollably expanding populations, through development processes which are inherently unsustainable, unjust and environmentally degrading then the analysis offered here suggests that the global future is bleak indeed. The ecological imperative places an obligation on the developed world to set an example by offering the developing world a life-enhancing alternative based on the principles of sustainability and equity. Thus, paradoxically, the starting point to solving the problems of the ecology of poverty - economic and environmental instability and social dislocation - must be the understanding and resolution of the problems of the ecology of affluence.

The Ecology of Affluence

Through the establishment of large-scale, highly-concentrated market-based, planned industrial and agricultural economies, combined with enhanced systems of eco-management, human societies in resource - and knowledge - rich regions of the world have successfully exploited the earth's material and energy reserves to achieve unprecedented standards of livings for their populations, as measured in terms of life span, health, diet, income, and consumer choice. "Rich" is understood as a relative term. Globally, all resources are scarce relative to demand. It is here assumed that the role of economics is to allocate these scarce resources to achieve the greatest benefit for human populations.

The key to economic development in the industrialised societies has been the coincidence of the right concentration of resources which include population - the "ultimate resource" in the view of Simon [65] - labour, knowledge, skill, entrepreneurship, climate, land, water, biological diversity, mineral reserves and energy resources. The industrialised countries of the world produce 85% of global wealth. Some 11% of the GNP for these countries is spent on social welfare, 8.3% on health care, 6% on education. Average life expectancy is 75 years and dependency ratios may be as high as 50%. Principal amongst the industrial economies are the 24 "most developed" member nations of the Organisation for Economic Co-operation and Development which, whilst representing only 16% of the world's total population and 24% of its land area, produce 72% of the world's gross product, own 78% of all road vehicles and import 73% of all forest products [66].

OECD membership - and most particularly membership of its associated body the International Energy Agency - extends to the European Community (EC), Scandinavia, USA, Canada, Japan and Australasia. In the case of the European Community in particular, the creation of the Single European Market in 1992 is expected to lead to a rise in the Community-based Gross Domestic Product of between 4% and 7% [67]. Economic growth and development in the industrialised nations has led to greater material prosperity and higher disposal incomes for large sections of their population though not without simultaneously creating and maintaining divisive inequities between the richer and poorer members of those populations. Higher disposable incomes are converted into higher levels of consumption. Higher levels of consumption mean greater profits for producers. Greater profits means greater capital for reinvestment in the means of production which allow still higher levels of growth.

This cycle of economic activity identifies and defines the "consumer society". The affluent society is consumption-led. It is also resource-profligate. In particular, industrialisation has led to a massive increase in the demand for energy, supplied from the earth's finite stock of fossil fuels through conversion processes which are inherently inefficient and wasteful. Energy demand represents the sum of millions of end uses: industrial and agricultural processes, transport, electrical appliances, motors, heating and cooling systems, lighting etc.

The OECD countries, with less than a fifth of the world's population, consume between them over 50% of the world's energy production, most in the form of non-renewable gas, oil and coal. The United Kingdom, with 1% of the world's population is responsible for the consumption of 3% of the world's use of fossil fuels [68]. Scotland, with a population of around 5 million (out of a total United Kingdom population of around 56 million) has a current total energy bill of around £4 billion which represents some 10% of the total UK energy bill [69].

Sustained levels of growth have been achieved over a century of industrial development through the evolution of technical, economic and political structures which have hitherto locked developing countries into a direct linkage between growth and increased energy consumption. Energy use has become, in the view of Paterson and others, the major index of development [70]. Yet such is the resource-profligacy of the consumer society that probably one-half of this energy use is wasted as a result of gross inefficiencies within each sector of the economy - industrial, commercial agricultural, transport and domestic.

Energy will remain the key - and the barrier - to maintaining and improving standards of living in the developed world in the future unless and until the link between growth and energy demand is broken. That the linkage between external growth (as represented by GNP) and energy demand is, in fact, sensitive to factors both internal and external to an economy is demonstrated by the fact that, in the United Kingdom, energy consumption is currently lower than in 1973 despite a one-third increase in real GDP since that time. Semple has shown that the major influences on the fall in energy ratio have been the oil price hikes of 1973 and 1979, fuel substitution and the effects of subsequent recessions and structural changes within the economy on both demand and the efficiency of energy production, distribution and use. The energy ratio (or energy intensity) is defined as the primary energy required (in tonnes of coal equivalent) per £1000 unit of Gross Domestic Product. Energy ratios for UK for the period 1890 to 1988 are shown [71]:

Year	Energy Ratio
1890	3.2
1901	2.2
1925	2.4
1950	1.7
1973	1.4
1988	1.0

In 1960, coal accounted for 70% of the UK primary energy requirement. In 1991 the primary energy supply is shared more or less equitably amongst coal, oil and natural gas with the remainder supplied by "primary electricity" from nuclear and hydro-electric sources [72]. Worldwide, biomass plays a significant role as a primary fuel.

According to figures presented by David Jones, the energy ratio of the economies of member states of the International Energy Agency fell by nearly a quarter between 1973 and 1986 [73]. Again the reduction was brought about by the rapid price rises of the 1970s, by structural changes in the economies, by the intervention of governments and by improvements in energy technology. The rate of improvement, however, has now slowed and, in some cases, reversed. This against a background of official projections of rising demand for energy with some forecasts of a doubling of GDP in the United Kingdom by the year 2020, with an associated growth in energy demand of perhaps 30% [74].

During 1990 the UK reversed the trends of recent years and actually became less energy efficient. The GDP for the fourth quarter was 1.1% down on that for 1989 but, conversely, energy use increased by 1.8% compared with 1989 [75]. Total energy use in the United Kingdom amounted to £49 billion or 9% of GDP [76].

Of over-riding significance is the estimate, provided by Burberry and others, that some 50% of the total world energy consumption is building-related, the highest proportion of any end use [77]. A similar percentage figure for the proportion of total energy consumption accounted for by buildings in the United Kingdom is quoted in the Government's Environmental White Paper, This Common Inheritance, 1990 [78]. Building-related energy use can be divided into two principal categories: (i) direct, which represents the energy consumed in operating the building and includes the energy required for maintaining the comfort, health and hygiene of occupants and (ii) indirect, the energy embodied in a building through processes of materials and component manufacture, construction and demolition. People in developed nations spend around 95% of each day in artificial environments, around 75% in their home [79]. As a consequence of meeting human needs the built environment is a prodigious consumer of resources, energy, water and materials. Connaughton [80] has shown that, on average, the embodied energy in a typical building can be equivalent to the energy used in operating it for the first five years of its life, or more. Official statistics show that the construction industry generally is one of the most energy and resource intensive industries [81].

If now, as Alan Rodger proposes [82], the energy demands associated with the systems of transportation between buildings are included in the sum of building-related energy requirements then the figure of 50% will represent a gross underestimate.

Henderson and Shorrocks show that energy used in housing alone accounts for some 60% of building-related energy consumption in developed countries [83]. This is equivalent to about 30% of the total primary energy consumption. The total energy delivered to the UK housing stock in 1987 was estimated at 1820 petajoules (peta = 10^{15}), with space heating as the principal end use. Estimates provided by Hunter Danskin show that energy costs for housing in UK amounted to over £11 billion, or 29% of the UK's total energy bill. Space heating contributed 40% of this cost total whilst electrical appliances, hot water, cooking and lighting are the other end uses [84].

The consequence of concentrated, demand-led, energy-intensive economic activity which is both resource-profligate and inefficient is firstly the rapid depletion of finite natural resources and secondly the production of hazardous waste. With the failure of the industrialised economies to match growth in consumer demand with the development of efficient and effective systems of waste management, the waste and associated pollution produced by their economic activity - principally through the combustion of fossil fuels - now presents a real and immediate threat not only to the health and amenity of local populations and environments but also to the sustainability of global ecosystems [85].

The threats to human health, the degradation of environments and the stress on ecosystems increases with the level of consumption, the level of resource-depletion and the level of waste and pollution deposition in the atmosphere, on the land and in the oceans.

Waste can be defined as the unwanted by-products of human activity but the term is relative because some wastes are potentially valuable and can be reused or recycled. In the case of solid waste, an estimated 300 million tonnes of industrial, commercial, agricultural and household waste are produced each year in the UK alone - approximately 6 tonnes per head of the population - much of it toxic [86]. In addition, industry uses 10,000 million tonnes of water a year. Waste products, solid, liquid or gaseous, which are non-biodegradable or directly toxic and have the potential to cause harm to health and to the environment, are identified as pollution.

Air quality is of special concern, with the main source of air pollution in developed economies being the burning of fossil fuels for energy in power stations, as part of industrial processes, in transport and directly in homes. Overall at least a half of all pollution in the United Kingdom and other developed countries is associated, in one form or another, with the construction and operation of buildings [87]. Good air quality is especially essential for human health and for the health of the planet as a whole. Polluted air can seriously affect the quality of life of those with asthma, bronchitis and similar respiratory problems. Indoor pollution is of particular significance (i) because buildings can present essentially closed environments which may allowed pollutant concentrations to build up and (ii) the proportion of time people spend within buildings. Air pollution can also directly damage buildings themselves, kill sensitive plant life and have long term effects on soil and water.

Pollution - the by-product of affluence - is impacting on both population health and on global ecological health in four critical ways: (i) through the effects of toxic waste, such as industrial solvents, polychlorinated bi-phenyls (PCBs), dioxins and trace metals, (ii) through the depletion of the ozone layer by man-made chloro-fluorocarbons (CFCs) and similar compounds, (iii) through the effects of acid rain and (iii) through the effects on climate change and, in particular, through global warming associated with an enhanced greenhouse effect. The sources and impacts of global pollution, as they are currently understood, are reviewed - with special emphasis on the contribution made by energy use in buildings - in the remainder of this chapter.

Causes and Effects of Global Pollution

In the latter half of the twentieth century, concern over the issue of the depletion of finite natural resources has been increasingly matched by concern over the large-scale environmental degradation caused by atmospheric, terrestrial and marine pollution, principally though by no means exclusively in the industrialised economies.

Atmospheric and water pollution has been a matter of public concern for centuries [88]. Preventative measures within the United Kingdom can be traced back at least to the 13th century though effective national systems of control on water pollution were not introduced until the Public Health Act of 1848 or on air pollution until the Alkali Act of 1863. In the middle of the 19th century pollution by smoke and sulphur presented the main problem, with the spread of heavy industry generating widespread, lethal emissions of hydrochloric acid and coal smoke. Since the first introduction of industrial clean air controls, subsequent legislative landmarks in the UK have included the Public Health Acts of 1875, 1926 and 1936 and the Clean Air Act of 1956, amended in 1968.

In recent years European Community (EC) legislation has had increasing influence [89]. Following the agreements reached at the European summit at Maastricht this impact is likely to intensify, perhaps profoundly so. The first Air Quality and Health Protection Standards in the United Kingdom imposed by EC Directive, and setting levels for sulphur dioxide emissions, were introduced in 1980. Other Directives, to control many types of emissions including nitrogen dioxide and lead, have followed with the intention of requiring member states to introduce their own legislation in line with such directives by agreed dates.

A major landmark has been the adoption by the EC of the Convention on Long-Range Transboundary Air Pollution which deals with problems of acid rain gases and long-distance pollution by dust and by oxides of sulphur and nitrogen.

The United Kingdom enacted the first stage of the Environmental Protection Act in November 1990. Full implementation is intended for March 1993. Principal areas covered include integrated pollution control system for emissions, whether to air, land or water and reform of the systems for handling and managing waste disposal. All forms of operation and process, including in particular energy efficiency in buildings, are covered. The Act requires that by the end of the century, 50% of everything that can be recycled must be recycled.

Despite the introduction of extensive national and trans-national legislation and waste management controls, an ever-increasing range and concentration of man-made and natural substances threaten to damage population health and degrade the environment through waste streams or through the use or disposal of products which contain them. In the case of agriculture, there has been growing awareness of the cumulative harmful effects of the widespread use of pollutants such as nitrates and phosphates used as fertilisers, pesticides, chemical additives in foodstuffs, feed supplements, and other toxic chemicals [90]. The problems of eutrophication - the over-enrichment of inland water bodies causing excessive plant growth and damage to animals, due to nutrient enrichment - has led to demands for increasingly stringent legislation to control nitrogen and phosphorus discharges in the region of sensitive water bodies. Particular concern attaches to contamination of groundwater as well as surface water, especially that intended for the abstraction of drinking water or in areas designated as of special ecological importance.

In the case of industry and transport, demands too have grown for controls over air pollution resulting from the burning of fossil fuels, petrochemical processing, emissions from motor vehicles and the widespread use of ozone-depleting aerosol propellants, water pollution resulting from the dumping of untreated sewage, detergents and industrial chemical effluents containing trace elements, lead, cadmium, other tridoxins and polychlorinated bi-phenyls (PCBs) and land pollution resulting from the dumping of toxic wastes associated with mineral and metal processing. Special concern currently relates to problems of air quality, both outdoor and indoor [91].

A key stage in the development of an awareness that pollution had the potential for environmental damage which transcended local boundaries and could indeed have global consequences was reached in 1972 - two years after the formation of the Department of the Environment in the United Kingdom - with the holding of the United Nations Conference on the Human Environment in Stockholm. The Conference called for an official organisation with a global commitment to "safeguard and enhance the environment for present and future generations of man" and led directly to the establishment of the United Nations Environment Programme (UNEP) whose role is to stimulate and coordinate environmental activity through the United Nations network and beyond.

There is now growing evidence and recognition of a linkage between pollution, principally the result of inefficiencies inherent in the extraction of energy from fossil fuels by combustion, and region-wide, even global, environmental effects [92]. Changes in weather patterns, climate change, loss of biological diversity and the destruction of whole ecosystems such as forests, lakes and rivers are now clearly associated with forms of pollution such as acid deposition, eutrophication, nitrification of waste supplies, deposition of highly toxic chemical waste and long-range transport of micro-pollutants in aerosol form. Levels of carcinogens, sulphur dioxide, nitrogen monoxide, carbon dioxide, various particulates, tropospheric ozone and trace metals such as lead are the cause of major concern for both public and ecological health. That the threat does indeed extend to population health and not only to ecological health is evidenced by estimates that in some parts of the world some 80% of all deaths are due to "environmental" disease, principally exposure to pollution either in the form of radiation, in the food chain, in the water supply or in the atmosphere [93].

There is further evidence of a worldwide increase in lung diseases related to environmental pollution and in particular to the highly poisonous form of low level ozone resulting from reaction of exhaust gases - oxides of nitrogen (NO_x) and hydrocarbons emitted by cars and industrial plant - and sunlight which changes oxygen into ozone (photochemical smog). At low concentrations this can irritate eyes, cause headaches and affect breathing. Higher concentrations can also damage plant tissues, cause crop damage and forest damage [94].

Public awareness of the effects of pollution has recently focussed special attention upon the problems of ozone depletion and acid rain.

Depletion of the Ozone Layer

The ozone layer is a part of the atmosphere where concentrations of the gas ozone - a form of oxygen in which three atoms make up a molecule rather than the normal two - are especially high. The layer forms part of the stratosphere at a height between 10 km and 50 km above the surface of the earth. The naturally occurring ozone layer has special significance because of its role in absorbing potentially harmful ultraviolet (UV) radiation which can affect crop yields as well as causing malignant melanomas or skin cancers in humans. There exists convincing evidence that the concentrations of ozone in the protective stratospheric ozone layer are being depleted through emissions of stable, long-lifetime compounds known as chloro-fluorocarbons (CFCs) and related compounds [95]. Their long life has led to a rapid build up of CFC concentrations in the atmosphere where one molecule of CFC can destroy many thousands of molecules of ozone, thus depleting the ozone layer and diminishing the protection offered to UV radiation. Man-made CFCs are inert, relatively non-toxic, non-flammable, odourless and colourless gases; properties which have led to their common use as propellants in aerosols, as components of refrigeration and air conditioning systems, as foam blowing agents and as solvents. Their use in the building industry has become particularly widespread. There are a number of different forms of CFCs, each with a different ozone depletion potential. World production of CFCs was, by 1988 approaching some one million tonnes per years [96]. International recognition of the serious environmental and health implications of ozone layer depletion by CFCs has evoked urgent and coordinated international policy responses such as the Montreal Protocol which was a consolidation of the earlier Vienna Convention and which itself was strengthened in June 1990 through an agreement of signatory nations to bring forward the ban on implicated chemicals to the end of the century.

The most recent studies [97] have shown that the earth's protective ozone layer is depleting twice as fast as previous best estimates over latitudes which include northern Europe and North America. Analysis shows widespread depletion with winter losses of about 5% over the last decade at these latitudes. The effect has also spread further south than previously thought and persists later into the year. In some areas, ozone levels in the spring were 8% lower than a decade ago, risking a rise in skin cancers and blindness from cataracts. Farming yields could also be affected because of damage to crops.

It now seems clear that, despite action by many countries to phase out the use of CFCs, ozone depletion is likely to get very much worse before reaching a peak around the end of this century. Projections are that conditions will not return to those of the early 1970s until after the middle of the 21st century. The problem is that CFCs are especially long-lived and cause damage over many decades. Thus even if production ceased today it will take the atmosphere at least until 2025 to recover. Replacements such as HCFCs do less damage but do it over a shorter timescale. These new results are likely to increase pressure on countries to phase out production even more quickly because of proven impact on health, climate and food production. Viable substitutes for certain of the offending gases have already been made available by the industry in response to Montreal Protocol. Others are expected by 1992-3.

Acid Rain

The burning of fossil fuels is identified as the major cause of acid rain, a term which describes a mixture of air pollutants - principally products of combustion such as oxides of sulphur (SO_2) and nitrogen (NO_x) but including also sulphuric and nitric acids, sulphates, nitrates and ammonium compounds - which react with water, mist, rain or snow to form acidic solutions which can have severe adverse effects on freshwater fish stocks, tree growth, mosses and the lower parts of the food chain as well as upon buildings and metal structures [98]. The damage caused can be direct when concentrations are high (dry deposition) or can be transformed by sunlight to secondary pollutants at great distances from source. When precipitated out of the atmosphere as rain, snow and mist (wet deposition), these secondary pollutants can increase the natural acidity of soils and groundwater. When soils overlay granite bedrocks their neutralising capacity is effectively eliminated with the result that the acid rain leaches toxic aluminium traces out of the soil. The fact that the effects of acid rain can be felt at large distances from the source gives them regional and global significance. Recent reports suggest that Britain is suffering far greater damage from acid rain than previously thought and evidence is emerging to indicate that, for example, current emissions of sulphur dioxide would have to be cut by 81% to stop damage to wildlife, woods and buildings [99]. At the present time the UK has agreed only to make 20% reductions in sulphur emissions by 1993 (relative to a 1980 baseline), 40% by 1998 and 60% by 2003. Intentions are to reduce nitrogen oxide emissions by 15% by 1993 and 30% by 1998 [100].

Global Warming and the Enhanced Greenhouse Effect

Life support for the world's ecosystems is the energy received from the sun. This energy generates climate, sustains plant life, and supplies the food chain [101]. The energy received by the planet is largely in the form of visible, short-wave, electro-magnetic radiation which is able to pass through the earth's atmosphere relatively unobstructed. About 80% of the sun's energy reaches the earth's surface, the remainder being absorbed by the atmosphere. On reaching the surface of the earth a third of the radiation is reflected back out into space; the remaining two thirds is absorbed, heating the land, oceans and atmosphere in the process. As the earth warms so it reradiates energy in the form of long-wave infra-red radiation. Selected atmospheric gases, whilst relatively transparent to short-wave radiation, are able to absorb a proportion of this longer wave radiation, effectively trapping heat which would otherwise have been lost back to space. A certain amount of heat is therefore retained within the lower atmosphere even at night in the absence of incoming sunlight and the overall result is a general rise in global temperature. The process is similar to that involved in the trapping of heat by glass in a greenhouse; the additional global warming is known as the greenhouse effect [102].

The greenhouse effect occurs quite naturally as a result of the presence of certain indigenous gases in the atmosphere. Altogether some thirty gases contribute, the principal natural "greenhouse gases" being water vapour, carbon dioxide, methane, nitrous oxide and ozone. Carbon dioxide is released when living organisms respire and decay and is then re-absorbed into the food chain. At the present time about 0.03% of the lower atmosphere consists of carbon dioxide. Methane is produced by the anaerobic decay of organic matter (biomass). Nitrous oxide is released by vegetation and soils whilst ozone is generated by the action of sunlight on volatile organic compounds which migrate to the stratosphere.

The greenhouse gases are thus released (from "sources") and absorbed (in "sinks") as part of naturally occurring recycling processes within the major planetary ecosystems. The net effect is a critical balance of gases in the atmosphere which control the losses in the form of long-wave infra-red radiation which form part of the total global energy balance which maintains the average temperature of whole global surface at a relatively constant value at least over fairly short time periods.

Set against the radiation received from the sun, the geothermal energy obtained from the interior of the earth and man-made heat generated by decomposing waste, deforestation etc., the effect of the greenhouse gases is to maintain the earth at an average global temperature some 30°C warmer than it would otherwise be; an essential requirement for the evolution of sustainable life as we know it. Any significant disturbance to the balance could be expected to seriously affect the degree of global warming, with potentially catastrophic impact on the world's climate and other life-support systems which depend on the net energy flows into the ecosystems [103].

What is now becoming increasingly clear is that human activity is indeed adding to the sources of greenhouse gases without the provision of compensatory sinks. In fact deforestation has the effect of removing existing sinks by reducing the levels of photosynthesis by which carbon dioxide is converted into oxygen. The overall result is precisely that net increase in concentrations of the greenhouse gases which threatens to overload the atmosphere in such a way as to disturb the delicate energy balances upon which ecological health depends [104].

The sources of the man-made greenhouse gases and the contributions they are making to the enhanced greenhouse effect can be identified. Different greenhouse gases have different global warming potentials. The effect of different gases depends on their residency time as well as the greenhouse potency [105].

Carbon dioxide. The primary sources are large-scale fossil fuel-burning for energy production, deforestation and other forms of changing land use, biomass burning and erosion. Of all global carbon dioxide emissions some 70-80% come from burning fossil fuels, the remainder from deforestation. Taking global warming potential and residency times into account the effective contribution of carbon dioxide to the enhanced greenhouse effect is estimated at some 55%, with emissions of methane, CFCs and NO_x contributing most of the remainder. The contribution of carbon dioxide emitted in the process of fossil fuel combustion to global warming is estimated at 35-40% with deforestation accounting for the other 15-20% [106]. It is estimated that, since the middle of the 19th century the equivalent of some 300 billion tonnes of carbon dioxide, the most common of the greenhouse gases, have been released into the atmosphere. Global emission of carbon dioxide due to the burning of fossil fuels presently stands in excess of 20 billion tonnes per year, an increase of 200% in less than 40 years. World energy use has almost trebled in the 30 years from 1960. Globally, the equivalent of 23 billion barrels of oil are burnt every year [107].

The increase in fossil fuel consumptions which is the major cause of the increase in atmospheric concentrations of carbon dioxide is coincident with the clearance of the tropical forest. Some 140,000 square kilometres of the forest is being cleared each year (around 2% of the total) which as well as contributing to carbon dioxide emissions is having a further unbalancing effect on the climate system [108].

Predictions for the future are that at current rates of growth (measured by gross domestic product) global levels of carbon dioxide emission can be expected to rise by 37% by 2005 and by 73% by 2020 [109]. In the United Kingdom, annual emissions of carbon dioxide average about 600 million tonnes. Overall, atmospheric concentrations of carbon dioxide have increased from pre-industrial levels of 280 parts per million to 350 parts per million in 1990. With just 1% of the world's population, the United Kingdom contributes some 3% of the total carbon dioxide output [110].

Almost all of British carbon dioxide emissions come from combustion of fossil fuels. Britain's main energy users produce 542-580 million tonnes of carbon dioxide a year from fossil fuels. On present growth trends this will increase by 15-20% by 2005 (748-777 million tonnes) [111]. Broken down by fuel, solid fuels contribute 44% of carbon dioxide emissions, liquid fuels 35 % and natural gas just 19%. In terms of end use domestic space heating is presently responsible for over a quarter all carbon dioxide emissions in the United Kingdom. whilst over a third of emissions are accounted for by electricity generation [112].

Buildings are the major source of the UK's contribution to gases responsible for greenhouse warming and ozone depletion. About one-half of UK energy consumption is used in heating, lighting and servicing the building stock. Electricity accounts for more building-related emissions than all other fuels combined whilst, in terms of end use, some 45% of emissions are associated with space heating [113].

Emission of carbon dioxide as a result of energy consumed by water and space heating, cooking, lighting and other appliances is of the order of 150 million tonnes per annum [114]. This does not include the amount emitted as a result of energy consumption for manufacture and transport of construction materials and in the construction process itself [115].

Methane. Sources are intensive agriculture, coal mining, natural gas extraction, waste disposal, landfill sites, biological decay in water-logged areas and animal waste, enteric fermentation in cattle and termites, biomass burning, oil and gas exploitation, leaks in production, transmission and use of natural gas (which is 94% methane). Effective contribution to the enhanced greenhouse effect is 20% [116].

Nitrous oxide. Levels are being increased as a result of fossil fuel burning and farming, fertiliser use, fossil fuel combustion, biomass burning, changing land use. Effective contribution is 4% [117].

Ozone. Levels are rising from the effects of sunlight on nitrogen oxides and hydrocarbons, from burning fuels and from soil denitrification. Effective contribution is around 4% [118].

Chloro-fluorocarbons (CFCs). Sources are leakage etc from refrigeration and air-conditioning plant, aerosols, manufacture of foamed plastic, insulation, packaging, disposal of some of these materials to landfill sites, solvents, food freezants and sterilants. Effective contribution may be as high as 10% [119].

The developed and developing economies are responsible in almost equal measure for emissions of man-made greenhouse gases generally; the former principally as a result of high per capita consumption of energy, the latter through combination of high population levels, low efficiencies in energy conversion, and deforestation. On average each member of the world's population contributes 1.65 metric tonnes of carbon and equivalent (MTCE) every year, though such a statistic conceals enormous inequities in per capita greenhouse gas emissions between the developed and developing countries [120].

The behaviour of the global climate system is highly complex and the processes of the enhanced greenhouse effect are simply not yet fully understood. Concentration levels, the length of time greenhouse gases are retained within the atmosphere, the ability of large water masses to absorb carbon dioxide and the ability the tropical rainforests and other forms of vegetation, to "fix" carbon as plant material or biomass are all believed to be significant factors. Changes in cloud cover and the extent of polar ice cover may serve to mitigate and increase respectively any warming effect. Whilst the available three-dimensional global climate models - the so-called general circulation models - tend to agree in broad terms about the predicted gross changes in climate, and all suggest large variations in rain and temperature change from season to season and place to place, there is no satisfactory regional agreement between models [121].

The prevailing uncertainty over the precise response of the climate systems to an enhanced greenhouse effect has allowed estimates of the consequences of an enhanced greenhouse effect to vary from the catastrophic to the merely inconvenient. On one side of the argument, there is a belief that global warming is inevitable because:

- (i) global temperatures are controlled by greenhouse gases in the upper atmosphere
- (ii) concentrations of the key gases such as carbon dioxide are increasing, especially in relation to fossil fuel burning
- (iii) there is a time-lag between the build up of greenhouse gases and an increase in global temperatures - future rises are inevitable as a result of greenhouse gas accumulation over the past 30 years or so
- (iv) global climate models based on existing knowledge of climatic physics indicate a consequential rise in temperature
- (v) examination of the natural long-term global temperature cycles suggests that the earth should actually be in a cooling phase at the present time so even a slight increase in average global temperatures could be taken as evidence of much larger underlying man-made change [122].

On the other side, global warming predictions are believed to be questionable because:

- (i) as greenhouse gases (in particular water vapour) increase so temperatures will go down (largely as a build up of clouds)
- (ii) reliable climate measurement records go back only a matter of decades; insufficient time to detect large-scale changes
- (iii) temperature records that do show an increase over the years are located in urban areas and therefore record the increased temperatures which result from an urban island effect
- (iv) present changes are simply part of the normal long term global temperature fluctuations
- (v) the physical climatic models used in making predictions about future temperatures are not sufficiently refined to be acceptable in their present form [123].

In recent years a consensus of scientific opinion has emerged which supports the view that the enhanced greenhouse effect and global warming - resulting from increased man-made greenhouse gas concentrations in the atmosphere - are critical phenomena with the potential to inflict catastrophic and irreversible damage on the world's ecosystems.

Against this background, growing public and official concern promoted the establishment, in 1988, of the United Nations Intergovernmental Panel on Climate Change (IPCC) under the auspices of the United Nations Environment Programme (UNEP) and the World Meteorological Organisation (WMO). This body of over 300 leading experts was remitted to advise governments firstly, upon the likely climatic changes contingent upon the greenhouse effect, secondly, upon the physical, social and economic impact of such changes with and thirdly, upon the necessary and appropriate policy responses. The findings of the three IPCC working groups which were presented to the World Climate Conference in Geneva in November 1990 are substantially in line with earlier conclusions reached by the US Environmental Protection Agency and give support to the recommendations contained within the Brundtland Report. Together they form the most authoritative statement on the issue of global warming and its impacts on ecological health presently available and are summarised below with commentary [124].

Assessment of the scientific evidence on climate change:

It is **certain** that

- (1) Man-made emissions are substantially increasing the atmospheric concentrations of greenhouse gases, resulting on average in an additional warming of the Earth's surface

There is **confidence** that:

- (1) Carbon dioxide has been responsible for over 50% of the enhanced greenhouse effect in the past; presently accounting for some 56-57%. This figure remains the best estimate for the future. Major greenhouse gases have been increasing at an accelerating rate for the past 200 years, showing a 12% increase in carbon dioxide since measurements started in 1957. Present levels are higher than at any time in the last 160,000 years.
- (2) Since atmospheric concentrations of the long-lived gases such as carbon dioxide, nitrous oxide and the chloro-fluorocarbons adjust only slowly to changes in rates of emission then the longer emissions of long-lived gases continue to increase at present day rates, the greater reductions will have to be for concentrations to be stabilised at any particular level

- (3) Emissions of enhanced greenhouse gases at current rates will double concentrations by 2025. In Britain's case, the Department of Energy estimates that carbon dioxide emissions from fossil fuels will increase by up to 34% by the year 2005 if present policies continue, from the present 580 mtonnes per annum to between 748 and 777 mtonnes.
- (4) Immediate reductions of over 60% in the man-made emissions of the long-lived gases would be needed to stabilise concentrations at today's levels; methane would need 15-20% reduction. Failure to reduce emissions immediately and progressively can lead to severe economic disruption. A more realistic target is 60% reduction in emissions by 2020.
- (5) The human related carbon emissions represent a "significant disturbance of the natural carbon cycle"

It is **predicted** that:

- (1) The average rate of increase of global mean temperature during next century will be 0.3°C per decade on a "business-as-usual" scenario. This is a more rapid increase than seen over the past 10,000 years
- (2) By the year 2025, likely global mean temperature will have risen about 2°C above those of pre-industrial times. By 2100 the rise will be 4°C. The rise will not be steady. An increase of just 3°C would make the world warmer than at any time in the last 100,000 years. A 1°C change in temperature is equivalent to a move north or south of between 100 and 300 km or to a change in altitude of 150 metres.
- (3) Sea levels will increase by an average level of about 6 cm per decade, as a result of expansion leading to a rise of 20 cm in global mean levels by 2030 and 65 cm by 2100. There will be significant regional variations.
- (4) The oceans will delay the full effect of a greenhouse warming effect meaning that a warming "commitment" exists which has not yet been realised because of the time lag in the system. The realised temperature rise at any given time is 50-80% of the committed temperature rise.



There is still **uncertainty** about:

- (1) The precise timing, magnitude and regional patterns of climate change, caused principally by difficulties in modelling with accuracy the action of clouds and oceans on the global warming effect. These uncertainties should be reduced by further research and by improvements to the computer models of climate. However, the risks of human activities enhancing the greenhouse effect are too great to wait for greater scientific certainty by which time higher concentrations will have further increased the commitment to climate change. Effects may indeed be greater, not lesser than current forecasts.
- (2) The debate should, in any event, now be more about defining the severity of the problem and the nature of regional and local climatic effects which result from a general increase in global temperatures.

The provisional **conclusions** are that:

- (1) Global surface air temperatures have increased by between 0.5°C and 0.7°C since 1800 and by between 0.3°C to 0.6°C over the last 100 years. The five warmest years were in 1980s.
- (2) Observational evidence obtained over the last 100 years is generally consistent with the increase in global averages that computer models predict should have occurred to date. However, due to the natural variability in patterns of climate it is unlikely that definitive and unequivocal confirmation of the enhanced greenhouse effect from observations will be possible for a decade or more.
- (3) Despite uncertainties, those feedback processes which are understood suggest that they will lead to an overall increase rather than decrease in the natural greenhouse gas concentrations in which case climate change is likely to be greater than the estimates given above.
- (4) However uncertain may remain the precise nature of global warming effects, it is indisputable that human activity is fundamentally changing the composition of the earth's life-sustaining atmosphere and the structure of the biosphere. Both are indicative of an unfavourable ecological imbalance which is being reinforced through negative feedbacks and whose impact is potentially disastrous.

Assessment of the likely impacts of climate change

The main **conclusions** are:

- (1) The climate change induced by human activity will accentuate large-scale natural events and variations affecting ecosystems, coastal areas, energy demand, fresh water, food production and human settlements.
- (2) The greatest effects of warming will be felt nearest the poles where temperatures may be some 50-100% greater than the global average.
- (3) Precipitation is expected to increase worldwide by some 7-15%, being greater than at present in high and middle latitudes, lower in the tropics and sub-tropics.
- (4) Evaporation rates will increase, however, so that the net effect will be an overall decrease in soil moisture in many areas.
- (5) In many case the impacts will be felt most severely in regions already under stress; mainly the developing nations. And also by the most vulnerable members of any society, the rural and urban poor, the very young, the disabled and the elderly
- (6) Estimates in physical and biological effects of climate change are problematic and confidence in regional estimates is low.

The impacts on **agriculture and forestry**:

- (1) The evidence as to whether global agriculture potential will increase or decrease is inconclusive but there may be severe effects in some regions, especially those least able to adjust.
- (2) Desert areas of Africa will advance whilst wood supplies for cooking will disappear. Water available will decrease which could have critical effects on marginal areas such as the African Sahel. Mediterranean countries will become semi-desert with severe water shortages.
- (3) There will be changed patterns of agricultural trade due to decreased cereal production in "breadbasket" regions of Western Europe, Southern and Middle USA, Canada and Western Australia.

- (4) Current areas of forest will mature and decline within a climate to which they will become increasingly more poorly adapted. The result will be large losses from parasites whilst losses from wildlife will be increasingly extensive.

The impact on **natural terrestrial ecosystems:**

- (1) Climate zones could shift several hundred km towards the poles; flora and fauna could lag behind these climatic shifts, with northern forests being particularly severely affected.
- (2) Rates of climatic change are likely to be faster than the ability of some species to respond. The speed of change could leave many animals stranded in an unsuitable environment as the conditions they have evolved to live in changes faster than their ability to adapt. Extinctions and consequent loss of biological diversity seem inevitable as plants and animals fail to match to their shifting habitats or adapt too slowly to the new conditions. The White Paper This Common Inheritance states that there may be up to 50 million living species of organisms inhabiting the earth. As many as one third could become extinct by about the year 2025. The tropical rain forests cover 7% of the world's land surface but may well contain over 90% of its living species. Species are disappearing rapidly as a result of over-hunting, over-collection and pollution but most of all through destruction of their habitats. As species disappear, the world may be losing potentially valuable sources of food, medicine and industrial materials as well as access to an invaluable genetic resource for future generations [125].
- (3) The species most at risk are those ecological communities which have least options for adaptation.

The impact on **hydrology and water resources:**

- (1) Many areas will have increased precipitation, soil moisture and water storage
- (2) The availability of water will decrease in other areas. The problems will be particularly acute in regions with unregulated river systems.
- (3) Improvements will be required to water management practices such as reservoirs and drainage systems.

The impact on oceans and coastal zones:

- (1) A sea-level rise of between 30-50 cm will threaten low island and coastal zones. A rise of 1 metre would render some island countries uninhabitable, flood productive land, contaminate fresh water supplies, change coastlines and displace tens of millions of people. At special risk are regions of East Anglia, Holland, Egypt, the Maldives and Bangladesh.
- (2) A global rise of 2°C by the year 2100 could raise sea levels to a point where Bangladesh loses about 35% of its most productive agricultural land and where upwards of 360,000 people are displaced.
- (3) Coastal protection costs would be highly significant. One estimate of \$US500 billion to protect vulnerable cities and ports is probably an understatement.

Other impacts:

- (1) The inundation of coastal lands due to sea level rises and storm surges could lead to significant population migrations with consequent spread of disease.
- (2) There is the possibility of major health impacts due to heat stress, spread of infections such as Malaria and parasitic diseases, water and food shortages, especially in large urban areas.
- (3) The global extent and the volume of seasonal snow cover, permafrost and ice caps will be substantially reduced as a result of a associated climatic warming positive feedback. The reductions could be sudden rather than gradual and permafrost could experience significant degradations within the next 40-50 years
- (4) Glacial recession and loss from ice sheets will also contribute to sea-level rise.

One of the major conclusions of the IPCC report is that, in order simply to stabilise atmospheric concentrations of the greenhouse gases, a reduction in carbon dioxide emissions to levels less than 40% of current values is required. Set against this theoretical target, the 1988 Toronto World Conference on the Changing Atmosphere proposed a long term goal of reducing carbon dioxide emissions from combustion of fossil fuels by 50%.

In the shorter term, against an initial global goal of a 20% reduction by the year 2005, taking 1988 as the base year, thirteen western governments have made commitments - confirmed at the World Climate Conference in Geneva in October 1990 - to freeze or cut emissions of carbon dioxide which accounts for over half the greenhouse gases warming the earth's atmosphere [126]. The UK has agreed only to stabilise carbon dioxide emissions to 1990 levels by 2005 "if other countries take similar action". Other EC member states have made higher commitments. Germany, for example, has agreed a 25% reduction on current levels by 2005. The new Danish Energy Plan calls for 20% reduction by 2000 and up to 50% by 2030. On the other hand neither the USA nor the "USSR" are presently in favour of emission controls despite between them accounting for 40% of global CO₂ emissions. Japan has agreed to stabilise at "lowest possible levels" by 2000. Further global climate convention negotiations involving more than 100 governments began in June 1991 with a view to reaching agreement in time for the 1992 United Nations Conference on Environmental Development to be held in Brazil. This Conference will seek global collaboration on sustainable energy development. At subsequent preparatory sessions for the proposed UN Convention on Climate Change, estimates of the risks of continued greenhouse gas emissions affecting climatic stability have been reassessed upwards though differences between rich and poor nations on the appropriate policy responses have yet to be resolved. A very approximate calculation suggests that the IPCC targets for greenhouse gas emissions for stabilising atmospheric concentrations translate into a per capita threshold value of around 0.66 metric tonnes of carbon and equivalents (MTCE). Over 50% of the world population currently produce greenhouse gas emissions less than this value [127]. Equity suggests that the fraction of fossil fuels consumed by the developing countries will need to rise. Thus the industrialised countries will have to bear the brunt of necessary reductions. Present targets appear to take little account of projected world population growth or even modest increases in energy demand in developing countries commensurate with raised living standards. Accounting for these variables, the targets set imply that per capita rates of consumption in the developed countries would need to be cut by between 75-90%. Through a combination of measures which might include lower standards, higher efficiencies and the substitution of energy sources which would have to be, in the words of Schlaich [128] inexhaustible, environmentally sound, available everywhere and which everyone can afford. If the world was to act on these limits then, in essence, the fossil fuel era will be over by the middle of the next century.

Socio-Ecological Imperatives: Consolidation and Interpretation

The evidence and argument presented in Chapter 1 has made clear that a viable future for mankind depends upon (i) the maintenance of essential ecological processes governed, supported or strongly moderated by ecosystems and are essential for food production, health and other aspects of human survival and sustainable development (ii) preservation of genetic diversity as an insurance against disease and an investment for the future and (iii) the sustainable development of species and ecosystems. Here sustainable human development is taken to mean, in the definition offered by the Brundtland Report in 1987 "satisfying the needs of the present without compromising the ability of future generations to meet their own needs" [129] with explicit recognition given to the rights of future generations to diverse energy resources, to a pollution-free environment, to a rich biological diversity and to a stable climate.

The evidence is equally conclusive that existing forms of human development, and in particular present economic structures, are unsustainable and that unsustainable development is leading progressively and critically to ecological imbalance and environmental degradation. The result has been shown to be an adverse transformation of nature on a biospheric scale and with consequences that threaten imminent catastrophe for the planet and its populations.

The principal threats have been identified as global warming, destabilisation of world climate, the pollution of the earth's air, water and land resources and irreversible damage to the world's natural cycles, resulting specifically from the burning of non-renewable fossil fuels and the resultant emission of greenhouse gases. The threats arise from a complex combination of overpopulation and overconsumption. Global warming has been shown to be a function of lifestyle but in perversely different ways. Both poverty and affluence are identifiable as the primary causes of pending ecological disaster. The reality is that the developed and developing economies are responsible in almost equal measure for emissions of man-made greenhouse gases; the former principally as a result of high per capita consumption of energy and the over-exploitation of resources, the latter through a combination of high population levels, low efficiencies in energy conversion, and deforestation. In both cases root causes of pollution are inefficient and ineffectual systems of environmental and waste management.

More fundamentally, the common cause of ecological damage has been shown to be ignorance; a lack of proper understanding of (a) the relationship between environment and development under conditions of accelerating change (b) the interdependence of all the parts of global ecosystems and (c) the risk of a catastrophic recoil of these natural systems under the pressure of human populations. Only now is new thinking on public health leading to the recognition that states of physical, psychological, social and economic well-being of populations are major determinants of ecological health and that inequity in health is itself a cause of poor public health and hence a contributory factor in environmental degradation.

The impacts of global pollution and adverse climatic change brought about by the effects of human activity on the composition of the Earth's atmosphere and the structure of the biosphere itself are likely to transform the ecological face of the planet, perhaps in as little as 10 years. Prevailing uncertainties are about precise effects, not about the fundamental underlying ecological imbalance that has resulted from large-scale human intervention. The impacts are not just local and regional but global, thus converging the interests of both developed and developing countries. Nor are they just environmental; they are also economic and political. The cost of restoring the environmental health of Eastern Europe, for example, could seriously undermine the current reform process and prevent the newly independent states playing a full economic role in an expanding market whilst placing enormous burdens on the already stretched economies of western Europe and of Germany in particular. The impacts are also social. Environment has been identified as a prime cause of social stress, exacerbating existing social divisions and inequities. The massive social dislocation created by drought, famine and enforced population migration on a vastly increased scale would have untold consequence far beyond any regional boundaries. There is no such thing as a "global warming free zone".

The linkage between environment and health has been established; the health of populations worldwide is demonstrably put at risk by global pollution and environmental degradation, wherever and whatever the source, poverty or affluence. As well as direct effects on health, crisis management measures to solve environmental problems can damage public health indirectly by taking resources away from social, food-aid and health care programmes. One estimate, by Norman Myers is that the global marginal cost of "saving the world's environment" is around £170 billion per annum - the equivalent of trebling every wealthy country's aid budget to the Third World [130].

The conclusion is that, without radical action to promote the development of human management systems which are, in practice, ecologically and socially sustainable it may soon be too late for mankind to adjust to a changing global climate without facing potentially catastrophic environmental, social and economic consequences. The necessary action will have to be taken in the main by the richer nations of the world because the developing countries are least able to afford the more expensive, cleaner methods of energy production and the essential means of environmental protection. The industrialised economies, as the prime over-consumers of natural resources and environmental bespoilers, will have to be prepared to take a greater share (perhaps 75%) of the burden involved in meeting global targets for reducing fossil fuel consumption and associated pollution and to invest vast resources and knowledge in transferring clean technologies and management methods to the developing world.

The above clearly translates into an ecological imperative. The implications for the social and environmental policy agendas of the developed countries will be profound. The necessary responses will have to go far beyond "feel good" greenness, requiring different attitudes, different priorities, different allocation of resources to redefined ends, different management structures and different geopolitical arrangements. What is being projected is the need for a radical reshaping of society and in particular of the way society thinks about and uses energy.

Evidence is overwhelming that, whilst energy is the driving force of economic growth and human development and the key to the raising of living standards in the developing world, energy derived from fossil fuels is the principal cause of global warming and biospheric pollution. The present dependency of the developed economies on unsustainable forms of energy is shown to constitute a overwhelming challenge to human society and to contain the seeds of its own destruction. Changed attitudes towards energy use, dramatic improvements in energy efficiency, the development of alternative, renewable and clean forms of energy and the progressive phasing out of fossil fuels are thus identified as critical factors in responding to the demands of the ecological imperative.

Of special significance in policy terms is the energy use associated with the design, construction, occupation and management of buildings which is now clearly identified as the major single source of the world-wide enhanced greenhouse gas emissions which are degrading the global environment and which are the primary cause of life-threatening climate change.

Overall at least a half of all pollution in the developed countries is associated, in one form or another, with the construction and operation of buildings. Accounting for the energy demands associated with the systems of transportation between buildings elevates this figure significantly above 50%. The implication must be that both the problems - global warming , biospheric pollution and environmental degradation - and the solution - including reductions in per capita energy use - will have profound effects on all populations. Taking this argument one stage further, support has been provided in Chapter 1 for the contention that the impact of adverse ecological change will inevitably be greatest on populations and on sections of populations who are in poorest health, are most susceptible to environmental stress, are least able to adapt to adverse change and whose personal and material resources afford them the least protection.

One of three paradoxes is that the poor, the sick and the deprived in all societies enjoy least benefits from the excessive consumption of material and energy resources yet suffer disproportionately from its deleterious impacts. A second paradox is that, though their per capita energy and material consumption may be both absolutely and relatively low, the poor are likely to be disproportionate contributors to ecological stress because there is an enforced tendency for them to use the least clean fuels in the least efficient ways. The third paradox is that poverty reinforces poverty not just locally but globally. The reliance of low income groups in developed countries on the least clean, least efficient fuels makes a substantial contribution to biospheric pollution and global climate change which adversely affects the health of the poverty-stricken populations of the third world. Absolute poverty and the consequent failure to administer effective environmental protection measures in developing countries will, through pollution, disease, social dislocation etc. similarly impact adversely on populations in developed countries. In each case the most vulnerable are most at risk.

The additional danger is that inappropriate policy responses to the ecological imperative will also have a discriminatory impact on the most vulnerable groups. The use of the price mechanism to control energy consumption would, if not counterbalanced, clearly disadvantage lower income groups whilst a crisis-led redistribution of limited resources to environmental policy areas would have the effect of diverting much needed resources away from social welfare programmes to the special disadvantage of those who most depend upon them. The expectation is that principal amongst such groups in Britain, indeed universally, will be the elderly.

Perhaps the biggest danger for all is that there will be a failure on the part of governments to recognise the full significance of the ecological imperative, with a consequent lack of commitment to implementing the necessary policy changes. One year after the publication the White Paper on the Environment (1990) and one year before the critical United Nations Conference on Environment and Development (UNCED) in Brazil (1992) it is still not clear just how great is the commitment of the British government in particular to radical environmental reform.

Recognition of the linkage between environment and development takes the argument beyond that of an ecological imperative alone. The findings of Chapter 1 have highlighted the social dislocation and stress generated by the acute and absolute failure of populations to satisfy even the basic needs of their populations for food, shelter and health care in the face of chronic overcrowding, poverty, disease and inequity, and support in particular the demand from developing countries for action which will improve the overall living standards of their populations and eradicate inequalities in health and opportunity. It is these findings which are held to translate into a **health-equity imperative**.

Confirmation has been given to the contention that social justice is itself a factor in determining the health status of populations and that, as a consequence of both social and environmental factors, divisive and ultimately unsustainable inequalities in health are discovered within all populations as well as between populations, thus effectively marginalising the poor and the unhealthy and excluding them from the mainstream of their society. Principal amongst the environmental factors affecting health and equity is global pollution, impacting most adversely on those vulnerable sections of populations already living precarious existences and least able to protect themselves against or adapt to environmental pressures. The reciprocal relationship between environment and health has been clearly identified.

Recognition has been given to the fact that environmental concerns are frequently derived from an ethical base. The acknowledgement that human beings are able to transform the biosphere radically but lack the knowledge to control it properly, imposes an ethical as well as an environmental management imperative on the maintenance of ecosystems, the preservation of genetic diversity and the sustainable utilisation of renewable resources. The ethics implicit in an eco-centric view of the world has been expressed by Leopold as "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise" [131].

The acceptance of an ethical component to the ecological imperative implies that there are moral and humanitarian as well as pragmatic limits to the policy options available to man in addressing the profound environmental problems that confront him.

Whilst there is a clear ethical dimension implicit in the health-equity imperative which demands improvements in the quality of life of the most deprived populations, the evidence presented in Chapter 1 has shown that there are also overwhelming pragmatic reasons for reassessing the priority which the industrial world attaches to solving the problems of global poverty and inequality. At a direct level, poverty has been identified as a prime cause of environmental degradation on a world scale. At an indirect level, the vast (but still inadequate) resources which are being poured into aid for developing countries in order to treat the symptoms (but all too rarely the root causes) of over-population, famine, drought, disease and social dislocation continually divert essential means away from environmental programmes.

Under existing conditions - and given the evidence of gross inequalities in consumption levels between the rich and poor nations - it is difficult to see how the legitimate demand for major improvements in the health-equity standards of developing countries can be satisfied without a huge increase in their per capita energy consumption. When coupled with huge projected population growth in the third world this translates into a vast extra energy and pollution load which threatens to swamp the present efforts of the industrial economies to meet environmental protection targets. A future of greater equity, both ethically and pragmatically, will require that the developed world take compensatory measures, particularly in the fields of fuel substitution and of energy efficiency, and sever the traditional link between affluence and environmental degradation. Short term economic growth in the third world on the existing model offered by the richer industrial nations could only be at the expense of longer term environmental degradation, with even more profound global consequences.

What the analysis presented in Chapter 1 makes explicit is that environmental degradation, poor health and inequity form a classic vicious circle of mutual cause and effect. In general, the poorest and least developed countries experience the greatest difficulty in breaking out of the vicious circle of poverty, ill health and environmental degradation. The greatest poverty creates the worst environmental pollution. The poorest are affected most by the adverse impact of human activity and population growth on the environment.

The health of people and the health of the planet are inseparable. The clear implication is that the ecological imperative can only be fully resolved by resolving the health-equity imperative because health interventions for human populations have real environmental impact. Effective public health policies will be those which serve to sustain local and global ecosystems. Conversely, the health-equity imperative can only be fully resolved by resolving the ecological imperative because environmental quality is a major determinant of human health. Furthermore, the consensus holds that social justice and ecological health are mutually supportive and that "solutions" to socio-environmental problems which do not seek to redress the inequities present in the whole health status of vulnerable groups such as the poor and the elderly are not solutions at all. The pursuit of health and of equity on the global scale must be a key element of both social and environmental policy. Thus arguments for improving man's environment are arguments for improving his health and well-being as well as for achieving great equity within and between populations. From such conclusions comes the understanding that the ecological and health-equity imperatives are interdependent and that in order to ensure a sustainable future for human kind, environmental policy - concerned with protecting the ecosystems - must address issues of public health whilst social policy - concerned with the well being of populations and most especially that of the most vulnerable groups within those populations - must equally address the issue of ecological health. The positive side of the argument is the evidence that equitable social policies will help to secure the future of the planet whilst sound environmental policies in the fields of energy use, building design, transport, agriculture and land-use will both directly and indirectly enhance the health and well being of populations through improvements in the quality if not the material measures of life. These are benefits which must be properly accounted for when the potential costs of restructuring society and its institutions in response to the ecological imperative are assessed. In the same way the opportunity costs of not taking decisive action - the costs, for example, of impaired human health, increased mortality, higher demands on the health and social services systems, resource depletion and diminution of personal choice - must be included in a full evaluation of profit and loss.

Whilst the linkage between ecological health and human health may be clear, it is not simple. So complex are the dynamics of health-environment relationships that simplistic and reductionist policy changes which seek to find solutions to one narrowly defined set of issues are likely to serve only to create a different set of problems elsewhere.

The special danger is that environmental crisis will invoke draconian, centralist controls leading to loss of individual freedoms especially amongst the powerless and the underprivileged sections of populations.. The arguments presented in Chapter 1 provide support for the case, made by Engel and others, that appropriate policy responses to the ecological imperative must be those which address both social and environmental issues in an informed, coherent and integrated way and which seek to combine protection of the environment with social equity. In particular, Engel emphasises the connection between social justice and ecological wholeness by stressing the difficulty of finding actions that do significant harm to the environment that do not also harm human beings or actions that result in social injustice (especially poverty) which do not harm the environment [132].

Overall the findings of Chapter 1 have confirmed the existence of both a global ecological imperative and a health-equity imperative which are shown to be interdependent and which, mutually, will be major determinants of future environmental and social policy, with profound significance for the well-being of the most vulnerable groups within society. The imperatives have been shown to present mankind with a critical challenge which can only be addressed effectively through a unified approach which gives priority, for both ethical and pragmatic reasons, to the promotion and maintenance of public health - most especially that of vulnerable populations and of groups within populations such as the elderly - and which acknowledges the key role in health care of buildings and energy.

The central and vital importance of health, of buildings and of energy - and the case for a unified policy framework which embodies the principles of decentralised, participatory decision-making - is further investigated in Chapter 2.

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CHAPTER 2

ASPECTS OF HEALTH

Accepting the conclusions of Chapter 1, and in particular that health provides a vital linkage between social and environmental policy, an argument is first developed in Chapter 2 to support the hypothesis that the formulation of an integrated social and environmental policy response to the defined ecological and health-equity imperatives demands a clear conceptualisation of health and that the nature and effectiveness of such responses will, in practice, be critically determined by the particular model of health which is adopted for the assessment of the health status of individuals and populations.

Specifically, the case is made for the adoption of an holistic model of health. What is defined as "whole health" is conceived as a positive state of physical, mental, social and environmental well-being which is held to provide a unifying framework for exploring ideas about socio-environmental stress and support and about the interconnectedness of public and ecological health. Such ideas are shown to have particular relevance to understanding and meeting the needs of vulnerable sections of populations such as the elderly for whom the inequities of health are greatest.

Finally in this chapter, support is given to a second hypothesis, namely that buildings - and domestic buildings in particular - can be a major factor in determining the "whole health" of their occupants, most especially that of members of vulnerable groups such as the poor, the old and the disabled. It is concluded that buildings stand doubly indicted; as both stressors of the global environment and as the source of adverse influences on public health. Buildings are held to provide a critical link between ecological and human health such that a key objective of effective socio-environmental policy must be defined as the creation of healthy buildings.

The Meaning of Health

For a society which, some may feel, is unhealthily obsessed with the subject of health there is, in the developed world at least, a surprising lack of conceptual clarity about the issue not only amongst the public at large but, more particularly, amongst researchers, practitioners and policy-makers. No substantive agreement seems to exist as to what precisely constitutes "health" or what is its true social - or indeed environmental - significance [1].

The dictionary offers us "well-being"; "soundness of body, mind or spirit"; "the general condition of the body"; "vitality"; "vigour"; "fitness" and "goodness". Other interpretations range from "freedom from disease, dysfunction and disability" to "a state of equilibrium, adaptation, harmony and wholeness". Reference to the proliferation of health correspondents, media medics and New Age therapists who contribute to popular newspapers, magazines and breakfast television only compounds the confusion, with the suggestion that the recipe for true health can range anywhere from aerobics to zen, coupled with liberal helpings of royal jelly, Lapsang Suchong tea and a course of Hormone Replacement Therapy.

Where limited agreement can be found it is for the view, expounded most cogently by Atchley [2], Bergner [3] and Moriyama [4], that health may be represented as a continuum, with the extremes of health and well-being at one end and death at the other, but little consensus exists with respect to the stages which fall between. There are those who, like Hunt [5], believe that there can be found a certain measure of agreement as to what constitutes the antithesis of health, "not health", but this too must be open to serious question. How many non-specialists could, with facility, distinguish meaningfully between the concepts of disease ("the presence of pathology"), sickness ("an incapacity to fulfil roles and performances") and illness ("the subjective feeling of ill-health")?

The conclusion seems to be that, on the subject of health, where vagueness ends, confusion begins.

But why should it matter if we lack a single agreed model in terms of which society can conceive and discuss the issue of health? The beginnings of a convincing answer can perhaps be found amongst the following propositions put forward by Ware and colleagues [6]:

Firstly, if clinical decisions within the statutory health services are to be improved and if limited resources are to be most effectively deployed it is essential to be able to measure, in a consistent and meaningful way, the efficiency and effectiveness of medical interventions and treatment.

Secondly, and more generally, the provision by society of effective forms of support for vulnerable members of the population requires us to be able to assess the quality of all forms of care, medical, social, economic and environmental.

Thirdly, and faced with the massive inequalities of lifestyle and life-standards which are revealed within and most especially between the populations of the world, there is an outstanding need to be able to both understand the cause and consequences of differences in health and to be able to estimate the totality of need within and between populations.

To these must be added the most significant reason of all; namely that the responses to the ecological and health-equity imperatives identified in Chapter 1 demand the formulation of integrated social and environmental policies and this can only be done effectively on the basis of a clear conceptualisation of health.

In all cases there exists a requirement to be able to measure what may properly be called the health status of individuals and populations. Such measurement, to have meaning and validity across trials and between subjects, requires the employment of agreed health indicators. These in turn must be sensibly defined by - and understood in terms of - a single and specific model of health.

The danger is that the lack of a clear conceptual framework for health research, practice and policy formulation may lead to the adoption of inappropriate, irrelevant and purposeless measures of health. Such measures may then serve only to reinforce stereotypical and misconceived views concerning the capacity and fitness of vulnerable social groups such as the mentally handicapped, the disabled and the elderly. Since such measures clearly serve to shape the attitudes of both providers and recipients about the form and direction of socio-environmental policy, about the nature and effectiveness of treatment, about the provision of services and about the organisation of care [7] then it becomes a matter of prime importance that an agreed model of health be adopted which is meaningful, appropriate, relevant and, above all, useful in allowing for a valid and reliable measure of the health status of individuals and populations.

The importance of moving towards an agreed model of health may be accepted but the question must be, faced not with a shortage of health models but with an excess, how do we proceed? If, as Wilkin and Hughes [8] argue, concepts of health are complex social constructions, such that no single concept is common to all individuals or appropriate to all circumstances, can we expect any of the available models of health to satisfy the critical requirements we have identified above and, if so, which one?

A promising way forward lies, perhaps, with reference to the framework provided by Wilkin and Hughes themselves who suggest that the many alternative, and frequently contradictory, definitions of health can, in fact, be rationally ordered under three broad headings which they identify as medical, functional and holistic [9].

Encouragingly close parallels with this categorisation are then to be found in the work of Claudine Herzlich whose survey of lay attitudes to health similarly distinguishes between three concepts which she identifies as, respectively, "states of being", "states of doing" and "states of having" [10].

The state of being, or what Herzlich evocatively calls "health in a vacuum" is conceived as involving the absence of illness and in this sense is found to equate broadly with the medical model of health. The state of doing involves the capacity to carry our customary activities and engage in normal social relationships, and equates generally with the functional model of health. Finally, the state of having refers to the possession of the positive aspects of strength and robustness and, in this sense at least, can be taken as having associations with the holistic model of health.

Each of the medical, functional and holistic models of health are now explored and evaluated in turn.

Medical Models of Health

In conventional Western health research, practice and policy the most orthodox, prevalent and, indeed, dominant biomedical paradigm is undoubtedly the "absence of disease" model [11]. In this model, "ill-health" is defined in terms of the existence of clinically demonstrable pathologies and "health" is conceived as the elimination of these pathologies. A number of logical difficulties can immediately be seen to surround the adoption of a purely medical model:

First, a direct consequence of viewing health from an "absence of disease" perspective - that is viewing health as the negative of ill-health- is that the focus of interest inevitably tends to be not upon the patient but upon the form of medical intervention which allows for the "correct" diagnosis and treatment of the pathological processes affecting particular physiological functions of the body [12]. Since, from the perspective of the medical model, the presence of disease states implies an absence of health, the success of any such medical intervention is then judged in terms of cure - that is the absence of pathology - rather than care [13].

Second, given the range and sensitivity of clinical technology and according to Hunt and colleagues [14], almost all individuals would, if tested, show some deviation from "normal" biological functioning and hence be classified as "less than totally healthy". In particular, given the high incidence of biological "abnormalities" amongst the elderly and the relative ease with which diseases of all forms can be detected and classified, the medical model tends to categorise all old people as suffering from disease and hence to be, by definition, unhealthy.

Here are all the conditions for a reinforcement of a prevailing negative stereotyping which, in the view of Hobman [15] and others, tends to confuse age with disease, which classifies all old people as homogeneous, mentally defective, suffering from incurable diseases and a problem to society and which generally perceives advanced age as a more important determinant of quality of life than any of an individual's social, economic or environmental circumstances. The result, all too easily, can be a lowering of expectations and a progressive drift towards inertia and inaction.

Third, if the opinion of Brocklehurst [16] is accepted, health is established as a relative quality, varying arbitrarily with time and with the performance limits of contemporary medical technology.

Fourth, the medical model fails to differentiate clearly enough between disease and illness. Whilst disease implies the presence of clinical symptoms, detectable with the appropriate procedures and instrumentation and objectively identifiable according to a standard system of classification, illness can be supposed to be possessed of an essentially subjective component and to be an expression of an individual's perceived state of physical and mental well-being [17]. In this sense illness will be subject to many influences other than the presence or absence of any particular pathology. Thus one may be diseased without being ill and ill without being diseased.

Fifth, it would be within the temper of the medical model of health to conceive of longevity as the ultimate criterion of health, and thus to assess health in terms of mortality rates [18]. But, in practice, such statistics may conceal as much about the real health status of populations as they reveal since improved mortality rates may show that fewer people are dying yet mask the fact that survivors are experiencing increased morbidity [19]. The conclusion must be that traditional measures such as mortality lack sufficient sensitivity to be useful in the evaluation of the health status of groups such as the elderly. Hunt and colleagues [20] have demonstrated that some partial improvement in the usefulness of biomedical models of health may be achieved by the measurement of age-related morbidity rates, employing "refined" indices such as the prevalence and incidence of specific diseases and symptoms, hospital bed days or number of prescriptions issued.

Sixth, the consideration of groups such as the elderly, typically possessed not of single, acute disease states with well-defined aetiology but of multiple-pathology, chronic, degenerative and relatively ill-defined conditions [21] presents serious logical and operational difficulties for a medical model of health predicated upon, to quote Hodkinson [22] "classical medical teaching which stresses the importance of unifying all the findings of history, examination and investigation into the framework of a single diagnosis". And, incidentally, elevating the status of the practitioner.

Finally, whilst acknowledging the importance of effective diagnosis, Fillenbaum [23] in particular has recorded that individuals with the same diagnosis may nevertheless vary with respect to the manifestation of their disease, the course of the disease, the severity of their symptoms and their resulting disability. Most specifically he observes that medical diagnosis does not adequately identify people with similar needs for care.

The overall conclusion to be drawn from a review of the main characteristics of medical models of health is that they would seem to provide only a limited conceptual framework for understanding and assessing the health status and needs of individuals and populations, especially those involving vulnerable groups such as the disabled and elderly with multiple chronic conditions. For such groups in particular the suggestion can be made that the primary concern should perhaps not be with cure in the conventional medical sense but with the maintenance of their functional independence and this leads us naturally to a consideration of functional or social models of health.

Functional Models of Health

Shared concern amongst research investigators, medical practitioners and policy-makers over the limited utility of the "absence of disease" model of health has led to attempts to reinterpret health in terms of a person's functional adequacy. Functional adequacy is defined as the present capacity of a person to perform in certain physical, psychological and social ways.

The concept of health as a measure of the ability of an individual to fulfil what Wilkin and Hughes [24] refer to as his or her "role obligations", developed from a social definition of health first proposed by Parsons [25,26]. From this perspective, health is viewed as "a state of optimum capacity for the performance of the roles and tasks which establish a person as a functioning individual within a normal social context and through which they express their independence".

Instead of primary attention being paid to whether or not disease is present, as would typically be the case under the terms of reference of the medical model, concern (in the true sense of the word) is now switched to the extent of a person's disability. Here disability is defined in terms of the loss of an individual's normal functioning activities and with the resultant degree of dependence (loss of independence) that such disability may occasion that person. Dependency is identified with the extent to which disability or illness demands a reliance on others for the performance of normal functions. A functional model of health therefore redirects the principal concern of health care away from the concept of cure towards that of minimising disability and maximising independence. The underlying argument, as expressed by Key [27], is that a person who is unable to dress themselves will require the same level of care irrespective of the root cause of their disability, be it a "stroke, severe arthritis, obsessive neurosis or low self-esteem". The clear implication is that health is a complex process of interaction between individuals and their environment and is best defined, as by the World Health Organisation [28], by "degree of fitness" rather than extent of pathology.

There is now abundant evidence that many individuals, including old people, with multiple disability prove perfectly able to cope with the impact of their disabilities and to lead effectively normal lives [29]. Out of this growing recognition has developed the valuable concept of "effective health", first introduced by Hobson and Pemberton [30] and later refined by a number of authorities, including the World Health Organisation [31,32,33].

The notion of effective health represents an attempt to view the health of the individual in a broader environmental framework than that which might be implied solely by his or her limited relationship with the standard medical care services. The functional perspective this offers affirms health, in the view of George and Bearon [34], as a relative rather than absolute concept with the emphasis more upon the social and behavioural significance of a person's state of health than upon the aetiology of their disease. In this context, an important conceptual distinction is to be made, as by Shanas and Maddox [35], between impairment which is defined as a physiological or psychological abnormality that does not interfere with the normal activities of the individual and disability which is defined as a condition that results in partial or total limitation of normal activities.

Earlier reference has been made to the concept of functional adequacy and a common measure of a person's capacity to function effectively is assumed to be their ability to undertake the activities of daily living or ADL. This term refers reasonably to those common activities whose performance is required for personal self-maintenance and for independent living within the community [36]. Such activities are typically divided into three categories: self care tasks, domestic activities and mobility and have been formalised, initially by Katz and colleagues [37] into an ADL Index. Table 2.1 shows examples of the type of items which may be included in each of the three categories.

Functional assessment is usually carried out with the use of instruments such as checklists, rating scales and questionnaires. A particular measuring instrument for the assessment of functional health, as described by Williams and colleagues [38], includes reference to housework, dressing, hygiene and physical mobility and uses a form of Guttman scaling, a technique which assumes that disabilities can be ordered.

In comparison with the standard medical model, measures of health based on the functional model have the advantage that individuals can be assessed in terms of their degree of limitation (or capability) rather than on the grounds of whether they have or do not have a particular problem [39] but suffer from twin disadvantages. Firstly, that functional indices must always relate to certain culturally-inspired assumptions about what constitutes a normal range of abilities and activities and, secondly, that functional models tend to concentrate on defects in performance rather than levels of higher competence and hence to emphasise disability and dependence [40]. Such defects are serious enough to direct the search for an acceptable working concept of health towards holistic models.

TABLE 2.1
ACTIVITIES OF DAILY LIVING

Self-Care Tasks:

- * Brushing own hair and/or shaving
- * Dressing and undressing
- * Bathing
- * Washing
- * Getting to and using the WC
- * Getting in and out of bed
- * Feeding
- * Cutting toenails

Domestic Activities:

- * Making a snack and a cup of tea
- * Cooking a main meal
- * Using a frying pan
- * Getting something from a shelf
- * Opening screw-top jars
- * Do light cleaning
- * Sweeping floors
- * Washing clothing by hand
- * Sewing
- * Doing heavy cleaning
- * Cleaning windows inside
- * Cleaning windows outside
- * Washing paintwork
- * Carrying out minor repairs
- * Decorating

Mobility-Related Activities:

- * Getting around the house
- * Getting up and down stairs
- * Get out of doors
- * Using public transport
- * Carrying shopping home

SOURCES:

Idris Williams, The Care of the Elderly in the Community (London: Croom Helm, 1979), Tables 4.1, 4.2

Graham Fennell, A Place of My Own: A Consumer View of Sheltered Housing (Edinburgh: Bield Housing Association, 1987), Figure 10, p.59

Holistic Models of Health

The literal meaning of health is wholeness. Holistic models of health derive from this notion of wholeness and seek to direct attention away from the relatively narrow focus of disease and dependency and towards the positive aspects of well-being, a state recognised by Wilkin and Hughes [41] as including freedom from illness and dysfunction but extended to embrace personal satisfaction with physical, mental, environmental and interpersonal circumstances. Such a definition of health, accords closely with that adopted by the World Health Organisation:

A state of complete physical, mental and social well-being and not merely the absence of disease and infirmity ... The extent to which an individual or group is able, on the one hand, to realise aspirations and satisfy needs and on the other hand, to change or cope with the environment. Health is therefore seen as a resource for everyday life, not the objective of living; it is a positive concept emphasising social and personal resources as well as physical capacities [42].

Here medical intervention is conceived as just one option to be considered alongside many other possible economic, environmental social and psychological measures by which what will henceforth be referred to as the "whole health" of a person can be maintained or regained. Brocklehurst [43] similarly equates "true" health with a state of personal congruity with the social and cultural environment whilst Wedderburn [44] argues that an holistic conception of health correctly emphasises the relationship between the biological and physiological aspects of the human condition on one hand and the social, psychological and cultural aspects on the other.

The total adequacy of the World Health Organisation definition has been challenged by, amongst others, Van den Plaats [45] who proposes instead that health should be conceived in less static, more dynamic terms as a continuous process of adjustment of the individual to their total environment. Under the terms of such a definition, health and illness are no longer polarised. If, through adaptation, mental and physical function are satisfactorily maintained, then one may be suffering from a "disease" and yet still be in "good health".

In similar vein, Sigerist defines a healthy individual as one who is:

Well-balanced bodily and mentally and well-adjusted to his physical and social environment. He is in full control of his physical and mental facilities and can adapt to environmental changes so long as they do not exceed normal limits, and contributes to the welfare of society according to his ability [46].

Sigerist goes on to argue that:

Health is therefore not simply the absence of disease; it is something positive, a joyful attitude towards life and a cheerful acceptance of the responsibilities that life puts upon the individual.

From the above, two uniquely defining characteristics of whole-health can be inferred. **First**, whole-health is multi-dimensional in character. The implication of "wholeness" must be that true health cannot be measured simply in terms of a limited series of biological indicators but must include reference to a comprehensive range of selected psychological, social, economic, environmental and, indeed, political factors. **Second**, whole-health is a dynamic concept and involves the individual in a continuous process of adaptation to unfavourable change. These special and highly significant characteristics now require further and more detailed investigation.

We refer to collections of surrounding events, forces and influences which give definition to our lives and which serve to determine or modify the course and rate of our individual development as our environment. More specifically and descriptively we find it useful to differentiate between different forms of environment as physical, social, emotional and so on. Almost by definition, our environment continuously subjects us to a wide variety of forces, pressures and tensions which collectively have the tendency to disturb both our actual and our perceived states of well-being. We can refer to such influences as environmental stressors. Such stressors, as implied, may be identified with a complex and interrelated range of stress-inducing social and environmental factors. It may be reasonably assumed that the more degraded the environment, the greater the stress imposed. The allusion to stress reinforces not only the idea of a dynamic tension but also that of emphasis; the notion that it is our relationship with our environment which gives our lives their particular meaning.

Now, if unresisted, such stressors will induce departures from essential or desired states of equilibrium between the individual and his or her environment, generating shortages or deficiencies which, when "discerned and socially recognised" are experienced as needs [47]. The concept of "need" is a powerful one, extensively employed as the basis for both the formulation of social policy relating to "needy" groups and to its practice [48]. Of overwhelming significance for a majority of the world's population is the satisfaction of basic needs - the minimum standards for the provision of food, water, shelter, clothing, income and education etc., essential for a sustained, secure livelihood.

Increasingly, world development and conservation strategies for alleviating absolute poverty whilst protecting natural ecosystems are seen to embrace the idea of universal sustainable livelihood security, a concept given meaning by the report Food 2000 presented by the Advisory Panel on Food Security, Agriculture, Forestry and Environment to the World Commission on Environment and Development.

From Food 2000:

Livelihood is defined as adequate stocks and flows of food and cash to meet basic needs. Security refers to secure ownership of, or access to, resources and income-earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. Sustainable refers to the maintenance or enhancement of resource productivity on a long term basis [49].

The principle of universal sustainable livelihood security implicitly embodies the ideal of social justice - the recognition of the inherent dignity and of the equal and unalienable rights of all members of the human family as set out in the Universal Declaration of Human Rights as adopted by the United Nations in 1948, which asserts that "all human beings are born free and equal in dignity and rights" and which defines basic human needs to include the elements of social security, work, rest, health care and education. In this sense equity is formally recognised as a precondition of whole health.

Whilst the concept of basic needs is fundamental, in practice needs never exist in isolation but always, as Brearley [50] expresses it, "within a socio-cultural framework". Whilst it is possible to identify a relatively limited number of human needs which represent objective requirements for the sustaining of life, such as shelter, nutrition and warmth, most needs are subjective and can be assessed and discussed only in the context of the standards of a particular society. What this means is that needs are shaped by prevailing social forces, by expectations and by the actual or perceived availability of resources. They thus, inevitably and characteristically, vary from society to society, from age group to age group, from individual to individual and over time. An essential distinction is being made here between needs and desires [51,52].

Special interest attaches to the relationship between need and age. Bernard Issacs and Yvonne Neville [53], in their seminal study of the medical and social needs of older age groups, found that potential need was a strongly age-related phenomenon, increasing with frequency and severity with increasing age of the subject. It was largely independent of all other variables studied.

The association between age and potential need was found to be highly significant for all types of need. Further, and of particular significance in the context of an appraisal of whole health, Brearley has argued that it is especially important to distinguish, in the case of older age groups, between two types of need. **Firstly**, there are needs which are related to the "simple" fact that people are growing older - what Brearley calls non-problematic needs. **Secondly**, there are needs which are not necessarily related directly to the ageing process but to the fact that older people may be less well provided for and less well able to adapt to certain losses in their lives and changes in their circumstances - which Brearley identifies as problematic needs [55].

More generally, Bradshaw [56] has sub-divided needs by classifying them under four headings: normative, which are needs defined by experts, felt, which are needs equated with wants or desires, expressed, which are needs equated with demands and comparative. Magi and Allander [57] have proposed a similar classification, categorising statements of need according to who makes them, distinguishing between "self-assessed needs" and "other-assessed needs". Such forms of categorisation draws special attention to the competitive quality of need both for an individual and between individuals. The implication is that against a background of dynamic social change with constantly shifting norms, standards and levels of expectation and - given the open-ended and subjective nature of need - the extent to which expressed needs can be satisfied will inevitably be constrained by the limitations of personal and social resources. Such conditions are likely to induce competition and, potentially, conflict; issues of special concern where particularly vulnerable members of a society are involved.

In summary, it is being argued here that environmental stressors, to which all human beings are subject, induce shifts in states of individual well-being. These shifts are perceived, both objectively and subjectively, as needs. Within the population as a whole and both within and between age groups, human needs, as we have defined them, will appear almost infinite in their number and variety. It is possible, nevertheless, to offer first some useful sub-classification which categorises needs under one of four heading: physical, environmental, psychological and social and then to provide, as in Table 2.2, an appropriate though far from exhaustive listing of generally acknowledged needs. In the same way we can provide a corresponding list of recognised stressors as in Table 2.3. Given the subjectivity of need, it should be said at this stage that it would be a mistake necessarily to anticipate a simple correlation between the stressor experienced and need felt.

TABLE 2.2
CLASSIFICATION OF SELECTED HUMAN NEEDS

Physical Needs:

- * Proper standard of nutrition
- * Sleep
- * Affordable warmth
- * Thermal comfort
- * Mobility
- * Means of communication
- * Medical
- * Review
- * Personal care
- * Secure accommodation
- * Basic shelter in adequate repair
- * Essential amenities
- * Environmental quality
- * Personal and household hygiene
- * Financial security

Psychological Needs:

- * Identity
- * Self-esteem
- * Shared affection and humour
- * Regard and respect of society
- * Independence
- * Self-realisation
- * Self-determination
- * Life-satisfaction
- * Increased choice
- * Participation in decision-making

Social Needs:

- * Company
- * Fellowship
- * Relationships
- * Support
- * Reduced isolation
- * Reduced loneliness
- * Interests
- * Reduced vulnerability
- * Increased security and stability
- * Privacy
- * Communication
- * Access
- * Participation

TABLE 2.3
CLASSIFICATION OF SELECTED ENVIRONMENTAL STRESSORS

Physical Stressors:

- * Heat and cold
- * Humidity
- * Indoor and outdoor pollution
- * Waste
- * Noise
- * Contaminated food
- * Impure water
- * Disease
- * Disability
- * Malnutrition
- * Poor housing conditions
- * Inadequate heating system
- * Damp and condensation
- * Lack of basic amenities
- * Impaired thermoregulatory system
- * Loss of mobility
- * Impaired balance
- * Impaired sight and hearing
- * Low income
- * Cost of energy

Psychological Stressors:

- * Dependence
- * Depression
- * Anxiety
- * Loneliness
- * Isolation
- * Vandalism
- * Harassment
- * Bereavement
- * Lack of regard and respect
- * Loss of choice
- * Exclusion
- * Vulnerability

Social Stressors:

- * Overcrowding
- * Family breakdown
- * Migration
- * Separation
- * Loss or illness of partner
- * Lack of communication

The satisfaction of needs in order to maintain or restore total well-being depends upon the individual being able to adapt to the effects of the environmental stress experienced. Adaptation represents, in the words of Maddox, "the capacity to function independently in meeting the demands imposed by the environment and to sustain a subjective sense of well-being" [57]. Adaptation is taken to be a highly individual process of adjustment to the life-course and the principle mechanism whereby states of well-being, of full life-satisfaction and happiness are achieved. According to Brearley, adaptation is conditional upon "the congruence of inner mental state of a person with external circumstances and material factors" [58]. The suggestion can therefore be made that the processes of adaptation, which include resistance, adjustment, accommodation and compensation, are the key to well-being and hence, by implication, to whole-health. But before developing the argument further it is first necessary to make a closer examination of certain aspects of need and of stress and, in particular, to consider the significance of independence.

The terms "dependent" and "independent" are used widely and with frequency to refer to the condition and status of the certain groups within society, notably the handicapped, the disabled and the elderly. Independence, like self-determination and the ability to make personal choices, ranks high amongst the list of expressed psychological needs and it is widely accepted, as by Quershi and Walker that most people will be, by nature, the reluctant subjects of any relationship which places them in a dependent state [59].

Dependency is taken, by John Bond, to express the inability of an individual to maintain a normative standard of everyday living where normative standards are deemed to be defined by the prevailing social context. Dependency can variously relate to physical, mental, emotional, cognitive, social, economic and environmental aspects of life [60].

A particularly influential description of the concept of dependency is provided by Margaret Clark [61] who distinguishes between:

- * socio-economic dependency
- * developmental or transitional dependency
- * dependency of crisis
- * dependency of non-reciprocal roles
- * neurotic dependency
- * dependency as a culturally conditioned character trait.

Van der Heuvel [62], alternatively, suggests three meanings for dependency. **First**, dependency can be viewed as a practical helplessness necessitating attention or care, which may be, for example, economic or physical, by others. **Second**, dependency can be recognised as a form of powerlessness in a social or personal relationship and may be characterised by receiving help without giving thus representing an unequal or non-reciprocal relationship. This is the equivalent of Clark's "dependency of the non-reciprocal role". **Third**, dependency can be understood as a psychological need to be looked after and corresponds to Clark's notion of "neurotic dependency". In van den Heuvel's terms, dependency always occurs in the context of social relationships. Either side of the relationship may define it as a dependent relationship. Thus individuals may have one or other form of dependency thrust upon them by the social relationship in which they find themselves i.e. when the physical or social environment defines or determines him or her as dependent through the roles they are required to play.

Some objective measure of dependency and independency is offered by Paillat, who defines independence as a condition in which an individual, through his state of physical and mental health and through his income, is able to use his time freely and to enjoy his chosen form of personal, social and cultural life [63]. Paillat's definition focuses upon the relative nature of independence, upon the satisfaction of material needs, upon the individual's physical and mental capacity, upon the availability of time and upon the degree of integration into society. He suggests a five-dimension scale of independence, involving measures of mobility, free time, income, activity and social contact.

The idea of dependency is developed further by Solem who conceives of it in terms of a limited access to resources [64]. The suggestion here is that, for any particular individual, dependency may result from a shortages of resources which may be classed as personal or environmental. Environmental resources may be further identified as either social or material. Examples of situations in which dependency might arise include those of an individual with a predisposition to poor health where this might reduce personal resources; the loss of role and status and resultant reduction in social contacts associated, say, with retirement, where this might diminish a person's social resources and, finally, inadequately maintained and unsuitable housing and low income where this may be taken as reducing material resources. Where the inability to resist stressors may establish and reinforce dependency, the right form of compensatory support can help the vulnerable individual to maintain independence.

In general terms maintaining independence requires, as a minimum, an income sufficient to provide for a reasonable standard of living and to enable the individual to take a full part in the life of the community. There is a continuing important link here with the idea of adaptation in that, within limits, diminishing personal resources may be compensated for by access to appropriate environmental resources and social services which can provide an essential measure of support whilst, again within limits, a well-adapted, personally well-resourced individual may be able to cope with the stresses imposed by inadequate environmental resources, under-developed support services and weak social networks. The key phrase in both cases is "within limits". Excessive reliance on external resources, especially where the individual's degree of control over these is limited and where they are unable to reciprocate, induces dependency. On the other hand, excessive reliance on "self" and upon one's own personal resources can render a person acutely vulnerable to further stress and to the possibility of the breakdown of a stable existence. Whilst independency is generally acknowledged, together with self-realisation and freedom of choice, as basic human needs, individual independency may promote social isolation, which generally is not. Those who are socially isolated have relatively few social contacts and are not integrated into a large number of social networks. Those who are emotionally isolated may have a number of social contacts but lack an attachment figure. What social isolation does is deprive the individual of a level of social support and makes them critically dependent upon their personal resources, increasing vulnerability and the risk of depression.

Deprivation and isolation can be expected to be antagonistic to health at any age [65] but social isolation might be expected to be a special problem in the case of the elderly. Graney has demonstrated a close link between states of happiness and levels of social activity amongst the elderly [66] whilst Shanas and colleagues have identified four different types of social isolation which are appropriately applied to elderly individuals [67]. **First**, there is what the investigators call "peer-contrasted isolation" in which the isolated individual compares their situation with that of their contemporaries in age, class or status. **Second**, "generation-contrasted isolation" in which a socially isolated person makes the comparison with people of a later generation. **Third**, age-related isolation or desolation in which comparisons are made between the present situation of the isolated elderly and that at an earlier stage in the life-cycle. **Finally**, preceding cohort isolation, in which the isolated elderly of the present generation make comparisons with the preceding generation.

In assessing the causes and associations of isolation, an important distinction must be made between objective isolation and subjective loneliness. Loneliness, as opposed to just being alone, is defined as a subjective state which involving feelings of unhappiness associated with a perceived loss of companionship and, as such, has very little to do with the actual amount of social contact which a person enjoys. Some people who have high levels of social contact may still experience loneliness whilst others who have few contacts clearly do not. Isolation and loneliness are complex social constructions and are not immutable.

Overall then, within this argument, the balance between dependence and independence is established as a delicate one; a balance which changes over a person's life-course and which involves a complex amalgam of personal, social and environmental factors leading to inevitable differences in interpretation of states of dependency in individual cases.

Given the complex and interdependent nature of human-human and human-environment relationships, conditions of dependency (or, alternatively, autonomy) are, in practice and for all individuals and groups, never absolute but at all times relative. The acknowledgement that independence can never, in any realistic sense, be complete means that judgements of states of dependency as being either negative or positive must, inevitably, vary subjectively with social norms, circumstance and time.

Whilst Lawton and Nahemow have introduced the theory of what they call the "environmental press" to seek to explain why, depending upon the level of environmental demands and upon the individual's past and present experience of deprivation, a given capacity may be insufficient for successful adaptation [68], there seems generally to be relatively little understanding of the processes by which an individual who has previously coped with life in a full and active way comes to terms with a sense of increased dependency on others for personal and intimate aspects of their daily lives.

What can be assumed is that some restrictions on life may generally be more acceptable than others and may be simpler to adapt to, presenting less of a threat to an individual's dignity and personal integrity. For some individuals, "self" is expressed through their own sense of self-sufficiency so that, for them, the fact rather than the nature of dependency may be traumatic and destructive to their dignity, integrity and self-esteem, especially where some measure of role-reversal is involved as with the case of an adult child taking on parenting functions with respect to their own parents.

What might be further argued, as by Brody [69] is that the inability to face up to dependency can, paradoxically, be one of the greatest threats to the preservation of some measure of independence for certain groups and individuals. For them it can be the provision of the right kind and level of external support which is the means by which the divide between their existing ability to function effectively and their potential is narrowed.

Valued as the concept of personal independence may be, for most individuals, the experience of the social world will be one of interdependence rather than true independence. It is the reciprocal nature of a relationship which allows them to accept and adapt to the reality of dependency providing its form and manner is right for them and that the element of choice, even to take risks, is left open to them. Titmuss [70] has formalised the notion of reciprocity in his theory of the "gift relationship" which is held to bind people together in complex societies. Johnson [71] argues that, within such societies, selected groups, notably the elderly, are excluded from this relationship because of the social roles they are expected to play [72,73] which require them to receive support from others yet deny them the privilege of reciprocation. The balance for any individual between interdependence, as the need for involvement with others, and independence as the need to maintain one's own chosen lifestyle through reliance upon one's own resources, is again an extremely delicate one.

Returning now to the central argument relating the process of adaptation to environmental stressors to the attainment of a condition of whole health, the proposition we can now put forward is that the extent of need-satisfaction enjoyed by individuals - and hence their state of whole health - is ultimately determined by the degree of success with which they are themselves able to adapt to the effects of multidimensional socio-environmental stress by processes of resistance, adjustment, accommodation and compensation. In other words, a person's whole health status is determined by - and measurable against - the individual's capacity to achieve a wholeness of body and mind through an accommodation to varied forms of stress which might include disease, disability, loss of function, isolation, loss of companionship, lack of family support, low income and poor housing. Adaptation itself is taken to be contingent upon the satisfaction of some fundamental psychological needs such as independence, self-determination, freedom of choice, respect, dignity, individuality and privacy and, more generally, the adaptation process can be accomplished fully and effectively only if the individual has access to - and the support of - an equivalent "wholeness" of appropriate resources.

Such resources may be categorised under three distinctive headings, individual, social and material. Such resources, in appropriate combination, provide the means for aiding adaptation, satisfying need and sustaining health and may be conceived as acting in direct opposition to stressors. As such they may be identified as supporters. Table 2.4 lists a selected set of supporters relevant to maintaining domestic independence.

The proposition that independent domestic living requires the maintenance of an effective balance between socio-environmental stressors and supporters was first advanced by the present author [74] in a study of the winter heating problems faced by elderly people in Edinburgh in 1976. The argument developed then was that when support exceeds stress the individual was able to enjoy a comfortable and fulfilled life, exercising a significant measure of choice in the way they lived their lives. When support only just balances stress the result is a tolerable existence but one acutely vulnerable to quite small shifts in circumstance. When stress begins to exceed support the results are, progressively, a degradation of quality of life and reduced choice, severe restrictions on activity and the onset of anomie, and finally, critical risks to health.

In an illustrative analysis of the socio-environmental correlates of health offered by Brocklehurst, deprivation, isolation, malnutrition, poor housing, low incomes, the high cost of fuel, and a lack of proper heating are all identified as social stressors which, in association with medical stressors such as the impairment of the body's thermo-regulatory system and with functional stressors such as loss of mobility, are seen to be directly detrimental to health [75]. The corollary of this is that the maintenance of health requires supporters in the form of pollution-free environments, good housing and town planning, recreation, social contacts, uncontaminated water, adequate and nutritious food together with access to sufficient, affordable and clean forms of energy. Mitchell has alternatively defined the attributes of healthy living as a clean and safe environment, time for rest and recreation, a reasonable living standard, freedom from chronic worry, hope for the future, an adequate level of self confidence and autonomy and having a worthwhile and fulfilling social role [76].

Social, medical and functional factors are seen, by the terms of this analysis, to be interdependent in determining health status. Special attention here is drawn to the identification of energy - and in particular the energy use in buildings - as a key factor both as stressor and supporter.

TABLE 2.4
CLASSIFICATION OF SELECTED ENVIRONMENTAL SUPPORTERS

Individual Resources:

- * Personal characteristics
- * Personal abilities
- * Mental capacity
- * Memory
- * Senses
- * Knowledge
- * Physical strength

Social Resources:

- * Personal relationships
- * Companionship
- * Social status
- * Social contacts
- * Role and influence
- * Membership of supportive networks
- * Recreation
- * Life satisfaction
- * Access to decision-making
- * Partnership
- * Love
- * Compassion
- * Care

Material Resources:

- * Capital
- * Income support
- * Food
- * Energy/fuel
- * Efficient, controllable heating
- * Warmth
- * Good air quality
- * Adaptive shelter
- * Sensible clothing
- * Nutritious food
- * Means of transport
- * Medication
- * Medical care
- * Dental care
- * Chiropody
- * Hearing and sight aids
- * Hygiene

It should be added that resources, as categorised, are themselves strongly interdependent in that individuals with limited personal resources are clearly likely to need greater levels of social and environmental support in order to maintain an equivalent state of function.

By definition, whole health, as a positive state of physical, mental and social well-being, will result only when availability of the appropriate resources is matched by the possession of a commensurate level of control by the individual over the supply and application of such resources to the satisfaction of their total needs. Without such a measure of control, the fundamental human needs of independence, self-determination and choice will not be fully satisfied.

Those individuals or groups denied - by physical or mental incapacity or by socio-environmental deprivation or by both - the appropriate measure of access to and control over essential resources may then be forced into a state of partial or even total dependency on external agencies. Such forms of dependency, resulting from limited access to resources, may reinforce feelings of helplessness and may predispose the individual to expect - and passively accept - further loss of independence when confronted with new and stressful life-situations.

Adoption of the holistic model of health then leads to the conclusion that the influence of disease on health is neither fixed nor predetermined. A distinguishing characteristic of the whole health concept is the belief that health is determined by the individual's capacity to accommodate disease and other environmental stressors, such as isolation, disability, lack of family support, inadequate social services, low income and poor or unsatisfactory housing, with ineffective heating systems, plus anxiety over their vulnerability to crime and vandalism. A further critically important distinction between the functional and holistic models, drawn by Wilkin and Hughes [77], is that whereas the functional conception of health is predicated upon the fundamental dichotomy between dependence and independence, the holistic model embraces the notion of interdependence, which challenges this dichotomy and recognises the patient not simply as a passive recipient of care but as an active participant in the process.

The adoption of the holistic model then requires that professional judgements be synthesised with the subjective views of the patient about their own health status, in order that health policy and care can be responsive to the diverse individual needs of the elderly as opposed to the batch-processing implicit in what the present author has referred to as "production line welfare" [78].

Thus the concept of holistic health explicitly acknowledges - in a way which medical and functional models do not - that the freedom of an individual to exercise personal choice; to be directly involved in the decision making process regarding both the definition and expression of their well-being and the nature of the health treatment and care they receive, is a fundamental and essential requirement of health itself. Further, as Hunt and colleagues [79] have argued, the holistic model is underpinned by a growing recognition that it is "subjective" need which dominates the utilisation of health and care services; that perceived benefit is a primary indicator of the effectiveness of services and that perceived need must play an increasing role in health care planning and resource allocation.

The importance of including an individual's rating of his or her own health in studies of health status is now more fully recognised as is the need to include an appreciation of the beliefs and attitudes of people towards the health and care services [80]. Further reinforcement of the essential subjectivity of health assessment has been provided by Magi and Allander [81] who have differentiated between perceived illness, which they identify with the lay concept of ill health, and objectively observed disease. It is recognised that both objective and subjective perspectives may be equally valid in describing states of health, confirming subjective indicators of perceived health as potentially valuable, indeed essential, complements to the more traditional objective measures of health status. In practice there still remains some uncertainty about the relationship between self-assessed health and more objective measures. Taylor [82], for example, has reviewed the problems associated with the procedures of self-reporting and self-estimates, as the mechanisms for surveying health states amongst the elderly. At one extreme Taylor quotes evidence from the US National Centre for Health Statistics [83] which concluded that survey information, and that inferred from medical records, were poorly correlated. More generally he notes that, on the evidence of a wide range of validation studies, the reliability and completeness of self-reports can be expected to vary systematically with the age, education and income level of the respondent. At another level, however, Taylor quotes from a number of studies which suggest that a respondent's perception of their own health has a greater effect on their health-related behaviour than their health as assessed by "objective" medical examination. The strong relationship between self-health ratings and specific attitudinal and behavioural correlates of health are further demonstrated by the Cornell Study [84] and by the findings of the Duke Longitudinal Study [85]. The best prediction of mortality has been shown to be the elderly individual's self-perception of health status [86].

Overall it is clear that, whilst the primacy of the individual's own goals and perceptions of his or her own health status and needs is not disputed, and whilst the potential contributory value of subjective assessments is acknowledged, as for example by Illsley [87], there remains much about the subjective assessments of health status and life satisfaction that is not yet fully understood or resolved, not least the notion of illness as social-role, the complex relation between the "patient" and the medical institution and the stigma/status of being sick and in need of help. What does seem certain is that subjective "lay" concepts about health and illness are more complex than those which are taken to form the basis of most strategies for health promotion and education [88].

The conception of health in holistic terms has, then, profound implications for the way health status should be assessed and for the evolution of systems and procedures of health promotion and health care. This is recognised by, for example, McQueen [89], who argues that the effective enhancement of health demands a process of health promotion which involves integrated action at each of economic, environmental, social and personal levels and which includes, in particular, a focus upon access to health, the development of an environment which is conducive to health, the strengthening of social networks and supports and increasing knowledge and dissemination of information about all aspects of health.

The assessment of the health status of individuals and populations has four principal objectives: defining needs; evaluating the extent to which needs are met, and planning and allocating health and social care services to meet unmet need and providing a basis for socio-environmental policies. Table 2.5 lists selected functions which have particular relevance to the assessment of the health status of the elderly. Within the framework of the whole health model, such assessment must be conceived as multidimensional and multi-disciplinary and as involving an effective synthesis of objective and subjective measures. It is argued here that highly significant, but often neglected subjective measures of health status are the regard and respect in which an individual or group is held by the rest of the society and, perhaps even more importantly, the extent of self-regard. Generally, judgements about states of health must ultimately relate to standards which are socially rather than biologically defined. To date, the holistic concept of health has found its main application in the operational development of a range of comprehensive, multidimensional health assessment instruments which embrace, in different forms and with different emphases, the essential elements of the holistic health model and where assessment is identified as the process of information gathering, diagnosis and evaluation.

TABLE 2.5
SELECTED FUNCTIONS OF HEALTH STATUS
ASSESSMENTS AMONGST ELDERLY POPULATIONS

- * The evaluation of the quality of care provision and of the efficacy of treatment
- * The survey of communities and the detection and assessment of individual and community needs
- * The establishment of priorities for the allocation of resources and services at each of a household, community or population level
- * The evaluation of the impact of illness and functional disability upon the quality of the everyday life of an individual and their carers
- * The prediction of the utilisation of social and medical services
- * The examination of each of the costs and benefits of various forms of intervention and models of care.
- * The general assessment of trends and developments in the status and condition of the elderly at home.
- * The measures of effectiveness of social policies relating to the care of the elderly.

A useful overview of the proliferation of health assessment instruments over recent years is provided by Kane and Kane [90]. Typically, the dimensions of multidimensional needs-assessments, predicated upon the concept of "whole" health, will be drawn from the following list of elements [91]:

- * physical health
- * activities of daily living (ADL)
- * mental health
- * social resources
- * economic resources
- * environmental aspects
- * level of strain on the caregiver

Each of the seven core dimensions is itself multidimensional. Physical health assessments, for example, are frequently based on a combination of measures selected from self-reported health, presence of symptoms, medical diagnosis, prescribed medication, use of medical services and the extent to which normal function is impaired. Mental or cognitive assessments are likely to assess orientation in time and place, memory, and states of depression, anxiety, loneliness, energy and sense of general well-being. Assessment of social resources will generally include information on the extent and adequacy of social contacts, participation in social activities and receipt of assistance. Alternative assessment methods have been reviewed by Warheit and colleagues [92], and by Havens [93]. Table 2.6 provides a summary of the more common methodologies.

One special problem associated with all epidemiological studies, as highlighted by Exton-Smith [94], is the difficulty in distinguishing the normal from the abnormal on the basis of statistical, clinical, prognostic or operational criteria. In other examples of health assessment procedure, attempts are made to assess perceived social well-being or satisfaction through the use of scales which measure factors such as morale, life satisfaction or a related construct. Economic resources will be assessed typically in terms of adequacy of income (related also to employment) and ownership of assets. Environmental health may be assessed by reference to the quality of housing and neighbourhood. The burden on caregivers may be assessed by the observed and self-reported strain and emotional disturbance experienced by caregivers, by their behaviour and by their call on external services [95].

TABLE 2.6
METHODOLOGIES FOR INDIVIDUAL NEEDS ASSESSMENTS AND
COMMUNITY RESOURCES PROFILE

*	Epidemiology method (impact assessment)
*	Social indicator method (social statistics)
*	Community forum method (public group)
*	Key informant method (respected, influential person)
*	Consumer method (including self-reporting)
*	Economic method (existing records)
*	Survey methods

SOURCE: G. J. Warheit, R. A. Bell and J. J. Schwab, Planning for Change: Needs Assessment Approaches (Gainesville, FL: University of Florida, 1974)

Several assessment instruments of established validity, reliability and usefulness have been developed, including those specifically relating to the concept of well-being [96,97]. One such example, is the multidimensional model of health proposed by Ware and colleagues [98] which includes elements of physiological health, physical health, psychological health, social health and health perceptions. In the multidimensional model, physical health is assessed in terms of the physiologic status of the body (e.g. blood pressure) and by the physical status (e.g. mobility levels). Mental health is taken to refer to the state of mind as well as to basic intellectual functions such as memory and feeling. Such dimensions are assumed to "end at the skin" in the sense of excluding factors that exist and behave independently of the person.

Social health, on the other hand, extends the concept of health beyond the person to embrace the notions of social functioning (measured in terms of the quantity and type of social contacts and interactions), social support (measured by the quantity and type of social resources) and social networks (measured by the quality and diversity of such networks) [99].

One of the most comprehensive of the multidimensional assessment instruments is the Older American's Resources and Services Multidimensional Functional Assessment Questionnaire (OARS) developed by Duke University [100,101]. The OARS instrument is in two parts. **Part A** of the questionnaire assesses whole health on a series of scales based on five dimensions of functional status, social, economic, mental, physical and activities of daily living, as listed in Table 2.7. In addition, Part A collates statistics of a socio-demographic nature, including information on age, sex, race and living arrangements. Overall results are expressed as a summary rating across all dimensions and scales. **Part B** of the questionnaire gathers information about the need for, and utilisation of, medical and social services under 24 specific headings which can be found listed in Table 2.8. A shortened version of the OARS instrument, known as the Functional Assessment Inventory [102] has been developed. OARS has a range of cited uses which include the following:

- * clinical assessment
- * surveys (general and special populations)
- * longitudinal assessments
- * professional training
- * individual and community needs assessment
- * treatment planning and evaluation
- * the evaluation of care programmes
- * service and resource allocation.

TABLE 2.7
OARS MULTIDIMENSIONAL FUNCTIONAL ASSESSMENT
DIMENSIONAL SCALES OF FUNCTIONAL STATUS

Social:	Measures the extent of, and the satisfaction with, contact with others and the availability of help from family and kin.
Economic:	Measures the amount of income by source, home ownership, perceived adequacy of income
Mental:	Measures the individual's mental status, psychiatric status and self-assessed well-being
Physical:	Measures recently prescribed medication, current physical condition with associated impairment level and self-assessed physical health.
Activities of Daily Living:	Measures self-care, domestic and mobility-related activities associated with normal daily living.

SOURCE: Duke OARS, Multidimensional Functional Assessment: The OARS Methodology (Durham NC: Center for the Study of Aging and Human Development, Duke University, 1978)

TABLE 2.8
OARS MULTIDIMENSIONAL FUNCTIONAL ASSESSMENT
LISTING OF MEDICAL AND SOCIAL SERVICES HEADINGS

- | | |
|---|---|
| * | Transportation |
| * | Social/recreational |
| * | Employment |
| * | Sheltered employment |
| * | Education |
| * | Remedial training |
| * | Mental health |
| * | Psychotropic drugs |
| * | Medical |
| * | Supportive devices |
| * | Physical therapy |
| * | Continuous supervision |
| * | Checking |
| * | Homemaker-householder |
| * | Meal preparation |
| * | Administrative, legal and protective |
| * | Systematic multidimensional evaluation |
| * | Financial assistance |
| * | Food, groceries |
| * | Housing |
| * | Coordination, information and referral. |

SOURCE: Duke OARS, Multidimensional Functional Assessment: The OARS Methodology (Durham, NC: Center for the Study of Aging and Human Development, Duke University, 1978)

Longitudinal assessments are those in which the same individual is studied at various stages in their life span and generate information about changes within each individual. By contrast, cross-sectional surveys which involve the study of different individuals at different ages, limit information gained to that concerning differences between individuals. The important distinctions between age differences and age changes are discussed by Shock [103] and there is, in parenthesis, a close parallel here with studies undertaken by the present author in which ageing is viewed from what are referred to as, respectively, Lagrangian and Eulerian perspectives [104]. The Lagrangian (longitudinal) model recognises the discreteness of individuals and describes change in terms of the dynamic life-stream of specific individuals of fixed identity. The Eulerian (cross-sectional) model accepts that in appropriate circumstances, it is possible to gain useful information by assessing the statistical means and variations associated with large numbers of non-differentiated individuals at the same point in time.

Another form of structured assessment, with application to clinical assessment and epidemiological studies of geriatric health, is the Comprehensive Assessment and Referral Scales (CARE) [105,106] whilst the Cornell Medical Index (CMI) [107] is a widely used 195-item, self report checklist of physical and psychological health which has generated useful information on the relationship of age to symptoms.

An extended variant of a comprehensive holistic health model is that developed by Bergner and colleagues [108] as the basis for the Sickness Impact Profile (SIP) [109,110]. The Bergner model (Table 2.9) identifies five dimensions of health: genetic foundations, biochemical conditions, functional conditions, mental conditions and health potential. Bergner has identified four groups of factors that may affect the different dimensions of health status, namely social factors, health care factors, social and familial factors and personal factors which are conceived as inputs into the health status system. These are itemised in Table 2.10. The Sickness Impact Profile is then organised into 12 domains, grouped as shown in Table 2.11. The Sickness Impact Profile allows for self-administration and has proved particularly valuable for assessing the impact of illness on the chronically ill and for measuring the effect of non-medical interventions [111].

In the United Kingdom, multidimensional health and needs assessment instruments include the General Household Survey [112], part of which provides information on each of the utilisation of health and social services, disability and the effect of illness on people's daily lives and how they cope.

TABLE 2.9
BERGNER HEALTH MODEL
DIMENSIONS OF HEALTH

<p>Genetic Foundations:</p> <ul style="list-style-type: none">* Upon which all other aspects of health status are measured
<p>Biochemical/Physiological/Anatomical Conditions:</p> <ul style="list-style-type: none">* Disease States* Disability of handicapped state
<p>Functional Conditions:</p> <ul style="list-style-type: none">* Social role performance* Physical performance* Cognitive performance
<p>Mental Conditions:</p> <ul style="list-style-type: none">* Mood or feeling state* Affective state
<p>Health Potential:</p> <ul style="list-style-type: none">* Longevity* Functioning* Disease and disability

SOURCE: Marilyn Bergner, "Measurement of Health Status", Medical Care 23 (May 1985), 696-704

TABLE 2.10
BERGNER HEALTH MODEL
FACTORS AFFECTING HEALTH STATUS

Societal Factors:	
*	Housing
*	Crowding
*	Air, water and soil quality
*	Food, quality and quantity
*	Sanitation
*	Distribution of resources
Social and Familial Factors:	
*	Personal health care, habits, attitudes, use and knowledge
*	Economic resources
*	Educational resources
*	Psychological
Health Care System Factors:	
*	Health care availability, quantity, quality, type, sophistication, complexity, accessibility, location, cost and organisation
Personal Factors:	
*	Personal health care, habits, attitudes, use and knowledge
*	Social networks, diversity, quantity and sophistication
*	Coping skills
*	Economic resources
*	Educational resources
*	Psychological resources

SOURCE: Marilyn Bergner, "Measurement of Health Status", Medical Care 23 (May 1985), 696-704

TABLE 2.11
SICKNESS IMPACT PROFILE DOMAINS

Independent Category:	
*	Sleep
*	Rest
*	Work
*	Home management
Physical:	
*	Ambulation
*	Mobility
*	Body care and movement
Psychosocial:	
*	Social interaction
*	Alertness behaviour
*	Emotional behaviour
*	Communication

SOURCE: M. Bergner, R. A. Bobbitt, W. E. Pollard, D. P. Martin and B. S. Gilson, "The Sickness Impact Profile: Validation of a Health Status Measure", Medical Care 14 (1976), 57-67

M. Bergner, R. A. Bobbitt and W. B. Carter, "The Sickness Impact Profile: Development and Final Revision of a Health Status Measure", Medical Care 19 (1981), 787-805

A more direct comparison with the functional assessment methods described above is provided by the Nottingham Health Profile [113,114,115] which is based upon lay perceptions of health status and provides a reliable and validated measure of "subjective health" which can be applied to the assessment of general populations as well as with small groups. The Nottingham Health Profile, as outlined in Table 2.12, is in two-parts and is designed to be self-administered. It allows for the measurement of perceived health problems and for the measure of the extent to which normal activities are affected.

As a variant, the economic model of health, based on the ideas of Grossman [116,117] and developed by Muurinen [118,119] and Wagstaff [120] conceives health as a capital stock, a commodity in demand by the individual and subject to both lifestyle-related depreciation which may involve both usage and time elements. Rates of depreciation can then be reduced - by healthy living - or increased by, for example, smoking and diet. Lifestyle, as defined by Havighurst [121] is a way of distributing one's time, energy, and involvement in work roles, family roles and social activities etc. It is identified, by Novick [122], as a complex determinant of health that is based upon class., occupation, income, diet, quality of housing, smoking, alcohol intake, exercise and sexual behaviour. Robinson [123] has argued that a knowledge of lifestyle is especially important to an understanding of the "whole" patient in making assessments of need. Whilst an individual's innate behaviour, personality, preferences and abilities may remain relatively untouched by time, their lifestyle will almost inevitably change with age over the life course, in ways which may not always be within the direct control of that individual. In such circumstances, Erikson [124] stresses the importance to the process of adaptation to ageing for the person to be able to see a total pattern to their lives through a process of introspection which Butler [125] calls the "life review". The argument is that both personality and the conception of "self" developed over the life course help the individual to adjust to transitions, particularly in old age.

Implicit in the development of all multidimensional assessment instruments which are founded upon an holistic conception of health is the recognition that determinants of health include many factors other than medical care. It is indeed possible, as McKeown [126] has argued, to make the case that improvements in lifestyle actors such as nutrition, housing and workplace conditions and general environmental hygiene, have played even more important roles than medicine in contributing to the reduction of disease and the extension of life.

TABLE 2.12
NOTTINGHAM HEALTH PROFILE

PART 1 is organised in six sections:

- * Personal energy
- * Pain
- * Emotional reactions
- * Sleep
- * Social isolation
- * Physical mobility

PART 2 is organised in seven sections:

- * Work
- * Looking after the home
- * Social life
- * Home life
- * Sex life
- * Interests and hobbies
- * Holidays

SOURCE: Sonya M. Hunt and James McEwen, "The Development of a Subjective Health Indicator", Sociological Health and Illness 2 (1980), p.231

In comparing the features and characteristics of the three models of health reviewed it is apparent that only the holistic model offers a conception of health which centres primary attention on the role and responsibilities of the individual as the key actor in a dynamic process of health maintenance. Both medical and functional models of health categorise and classify individuals such that, under conditions of limited resources, the "correct" and most effective form of care and support services are provided but do so in ways which principally benefit the organisation carrying out the assessment and providing the care. This is what Key [127] has referred to as selective assessment. The holistic model, conversely, forces recognition that what may be marginal to the organisation providing services - and thus may be easily missed by selective procedures - may be central to the life of the individual concerned. The assessment is thus focused much more by the perspective of the individual. The implication is that efforts must be made to identify a person's past and current situations, strengths and difficulties as well as their future potential, all from the individual's point of view. The idea is that only by understanding the whole person is it possible to provide the most positive and appropriate forms of support individualised to the person's special needs. This is what Key refers to as affirmative assessment [128]. The notion of affirmation, linked to that of whole health, implicitly asserts the rights and roles of the individual above those of the institution assessing need or providing support.

The concept of whole health reflects a belief that people are purposeful individuals with aims and desires which guide and direct their attitudes and behaviour. All individuals, irrespective of age and disability, are conceived as active participants in society rather than passive objects. At the same time, the concept of whole health provides a unifying structure of understanding which makes it possible to bring together complex ideas about human need, stress, adaptation and support and which emphasises the interconnectedness of the multidimensional environmental influences - biological, social, economic and political - upon personal health. From the idea of interconnectedness follows the proposition that the holistic model places the person, undeniably and inevitably, in a symbiotic relationship with his or her environment and in particular with the ecosystems - living communities and their associated habitats - which collectively constitute the natural environment. Person and environment in practice both represent dynamic, open systems. Change in one induces stressors upon the health of the other. At the same time each has the potential to provide positive supporters for health; the environment in terms of natural resources, human beings in terms of ecological management skills.

Symbiosis implies ecological interdependence, harmonious coexistence, reciprocity and mutual benefit. However, the less able an individual is to rely upon their individual resources to adapt to environmental stressors, through all or any of age, disability, poverty or social isolation, the greater the imbalance in the interdependency and reciprocation relationships between that individual and their environment.

David Donnison [129] records that research on health, happiness and stress shows that poverty and pain go together with each other, with stigma and with powerlessness. It is this powerlessness which works to exclude still further the poor and the unhealthy from the mainstream of society. Donnison further argues that what he refers to as the elements of pain, poverty and powerlessness - which in terms of the present study can all be recognised as threats to what is understood as whole health - are indivisible problems and that all must be tackled together if solutions are to be found to any of them. It follows that human populations must evolve a synthesis of effective and coherent socio-environmental policies which not only enable them to live in equilibrium with the ecosystems for the good of their mutual health - each utilising the support of the other without exceeding the limits of stress - but to do so on the basis of greater social equity and with critical reference to the concept of whole health.

In completing this review of aspects of health, special significance attaches, in the context of the present study, to the fact that, on average, people in urban communities spend some 90% of their time within buildings. Of that time, 75% is spent at home in a domestic environment [130]. In the case of older, less mobile individuals, the proportions may be even greater. The environment imposes many forms of stress upon the individual, setting the person constant challenges to adapt positively, physiologically and psychologically to influences such as heat, cold, altitude, noise, pollution and overcrowding as well as to meet nutritional requirements and to cope socially as well as biologically with disease and other threats to health. Experience tells us that, even without any special cultural and technological skills, the healthy human is remarkable adaptable to change providing only that the rates of change are not excessive. Supports for whole health thus include the maintenance of environmental stressors within limits to which a person can effectively adapt. But experience similarly tells us that, all too often - and especially in the case of the most vulnerable members of the population - the buildings and their environmental control systems which should provide precisely the level of support for whole health needed fail to do so and instead becomes themselves sources of stress.

In the development of effective social and environmental policies for achieving both sustainability and equity in the field of ecological and population health buildings thus stand doubly indicted as principal stressors of the global environment and of public health. The converse also holds. Ecologically sound buildings will not only minimise the adverse impact upon the environment but be positive supporters of whole health. The environment in and around buildings must therefore be assigned special importance in relation to studies of adaptation to stress and of the concept of whole health generally and effective socio-environmental policies will be those which promote the design and operation of "healthy buildings".

A detailed analysis of the complex and multivariate relationship between buildings and health is beyond the scope of this study. Some of the key issues which have special relevance to domestic environments are identified in the final section of this chapter, listed under six of the major divisions of whole health.

Buildings, Energy and Health

Viewed within the framework of whole health it is clear that living and working within building environments will affect whole health along all of its principal dimensions. The quality of the built environment generally affects the well-being of its inhabitants in many ways and all parts of the building process - planning, site preparation, construction, use, maintenance, refurbishment and demolition - have implications for public health. In the context of what Acheson calls the "new public health" - in which the interdependence of environment and health is clearly recognised - buildings then take on a special role and significance [131].

In the present study, a "healthy" building is defined as one which promotes and supports the complete well being of occupants - including elements of safety - and gives individuals personal control over the variables of changing environments. Specific recognition of the importance of proper housing for health is provided by the World Health Organisation who, as part of their objective of achieving health for all has set a target to provide everyone with a decent home by the year 2000 [132]. Some of the key aspects of the relationship between buildings and health., with particular emphasis on the role of energy in domestic buildings, can be listed under the headings of six principal dimensions of whole health - physical, functional, psychological, social, economic and environmental - as follows:

Physical Health:

Key issues include:

(1) The quality of indoor air:

- * Indoor air pollutants and emission of toxic and other health-affecting compounds from building materials, products, furnishings, appliances, sanitation, waste and the activities of occupants, the most common contaminants include water vapour, carbon monoxide, oxides of nitrogen, tobacco smoke, volatile organic compounds, formaldehyde, constituents of wood preservatives, respirable suspended particulates, fibres, viable particulates, radon [133]
- * Environmental standards of temperature, humidity, air movement, air tightness, ventilation, glare and noise.
- * Sick building syndrome; given the nature of whole health it is predictable that certain forms of "ill-health" associated with buildings will display diverse and frequently non-specific symptoms which prove to be multi-factorial in origin [134, 135, 136]

(2) The effects of damp, condensation, cold and mould growth:

- * Hypothermia and cold related deaths; seasonal mortality and morbidity variations; up to 40,000 excess winter deaths in United Kingdom are recorded [137,138]
- * Effects of cold on asthma, respiratory and cardiovascular illnesses, allergies (which may affect up to 15% of the population) [139]
- * Dampness and mould growth; smell, bacteria, viruses, allergies, infection, respiratory problems in very young and very old; affects an estimated 3.5 million homes [140, 141, 142]
- * Minimum heating requirement for houses to avoid dampness, mould growth etc [143]
- * Emotional distress caused by effects of damp etc [144].

Functional Health:

Key issues include:

- (1) The relationship between aspects of house design and management and the occupants' capacity along three scales of health (a) mobility (b) self-care (c) domestic care:
 - * Mobility tasks include getting around the house, managing stairs, and getting in and out of bed.
 - * Self-care tasks include washing, bathing and feeding.
 - * Domestic tasks include preparing meals, light housework, carrying out minor and major repairs.
- (2) The ergonomics of spaces, appliances and facilities.
- (3) Provision of and access to aids to daily living.

Psychological Health:

Key issues include:

- (1) Comfort, which is defined as that condition of mind which expresses satisfaction with the environment [145].
- (2) Seasonal Affective Disorder syndrome, linked to both the physiological and psychological influences of daylight in buildings [146].
- (3) Orientation and recognition.
- (4) Privacy and dignity.
- (5) Control and adaptation.
- (6) Individuality and choice.
- (7) Opportunity and flexibility.
- (8) Management of risk.

Social Health:

Key issues include:

- (1) The provision of appropriate environments for social contact.
- (2) Access to - allowing involvement in - the local community.

Economic Health

Key issues include:

- (1) The cost of maintenance, repair and thermal improvement
- (2) The cost of fuels and warmth; the concept of affordable warmth
- (3) Fuel poverty:
 - * Fuel poverty - the inability to afford adequate warmth for health and comfort - in the home exists because people with lowest incomes are often housed in homes which are most difficult and expensive to heat to comfortable and healthy standards [147].
 - * Combination of low incomes, poor housing conditions and inefficient heating systems leads to (a) use of cheaper but less healthy fuels (b) heating of only parts of homes, with consequent risk of health-affecting damp and condensation (c) heating of house for shorter periods (d) heating to temperatures lower than those for comfort and health [148].
 - * Many poorer households spend higher proportion of their disposable incomes on fuel than the more affluent [149]
 - * Many of poor are pensioners and disabled who are at home and relatively immobile for longer than normal periods and thus require warmth for health and comfort.
 - * Per unit of floor space it is estimated that it can be up to 16 times more expensive to provide adequate warmth for a pensioner in a poorly insulated property with an electric fire than it would be to achieve a comparable standard for a family living in a well insulated house heated by gas central heating [150].
 - * An estimated six million households in the United Kingdom suffer fuel poverty [151]. Many are pensioner households
 - * The manifestation of fuel poverty can take four forms: (a) a cold household but avoidance of debt (b) warm household and debt (c) cold household and debt (d) choice between warmth and other basic necessities of life.
 - * Meeting fuel poverty needs requires capital investment in improved energy efficiency plus increased income through benefits [152].

Environmental Health:

Key issues include:

- (1) State of repair of dwelling, amenities and fitness
- (2) Thermal standards: levels of insulation, draughtproofing etc
- (3) The capacity and efficiency of heating system
- (4) The availability and convenience of fuels
- (5) Structural effects of dampness and condensation
- (6) Space standards and access.

Without recourse to a more detailed analysis the outline presented in this section nevertheless demonstrates that a highly significant relationship exists between buildings, energy use and whole health. When coupled with the identification of energy use in buildings as the major contributor to carbon dioxide emissions from fossil fuel consumption, it is clear that buildings and energy will form a critical element of effective socio-environmental policies for promoting ecological and public health.

Generally buildings can be either stressors or supporters of health. For vulnerable groups such as the elderly, properly designed and managed domestic buildings can provide secure, warm and comfortable environments for living; supportive and efficient settings for care.

Conversely buildings which are poorly insulated and maintained, equipped with inadequate or simply inefficient heating systems, are difficult and expensive to heat, lack basic amenities, are constructed of hazardous materials emitting toxic pollutants and inadequately ventilated, may be major sources of stress. Such stressors may, in particular, render elderly persons especially vulnerable to a failure of maintenance, to disruptions in energy supplies, to increases in energy costs, to the prospect of the imposition of a "green" tax on fuel and to periods of especially cold weather.

For the majority of elderly people who spend long hours in their homes under conditions of relative immobility, have low incomes and little capital, whole health depends upon the following factors:

- (a) the maintenance of good all-day, all-year, all-room thermal comfort conditions,
- (b) the provision of adequate light for movement and safe, effective seeing,
- (c) a nutritious diet linked to the safe and efficient storage and preparation of food,
- (d) the maintenance of personal hygiene linked to adequate washing, bathing and laundry facilities,
- (e) clean air and water free from contamination and pollution,
- (f) absence of damp and mould,
- (g) access to recreational facilities such as TV and radio,
- (h) the provision of suitable environments for, alternatively, privacy and social contact.

Buildings which fail to provide the right conditions can seriously - perhaps fatally - compromise the whole health of the elderly by placing excessive and potentially insupportable demands on their ability to adapt to environmental stress. Problems are seen to arise from a failure to address the whole person needs of building occupants. Unhealthy buildings seem to result from a reductionist rather than an holistic approach to design and management.

Aspects of Health: Consolidation and Interpretation

In Chapter 1 it was concluded that effective responses to the ecological and health-equity imperatives were dependent upon the formulation and implementation of integrated social and environmental policies. In Chapter 2 such arguments have been developed to show, first that such unified policies demand a clear conceptualisation of health, and secondly that effective policy development is critically determined by the particular health model adopted. An appropriate model must be broadly conceived and be relevant within the total socio-environmental context to which it is to be applied. Above all, such a model must provide a valid, reliable and meaningful measure of the health status of individuals and populations.

The measurement of health status is held to be the essential precursor of the assessment of the effectiveness of health interventions and of the quality of care and to be the basis upon which a necessary understanding of inequities in health between and within populations can be gained.

Within a context in which the ecological and health-equity imperatives are shown to be interdependent, it has been concluded that a concept of health must be adopted which explicitly acknowledges the interconnectedness of ecosystems and health systems. In particular the preservation of human health has been taken to demand effective adaptation to a totality of social and environmental stressors. Health is thus associated with the idea of wholeness where wholeness implies a state of complete well-being. A goal of human development is then understood to be the creation of environments which can support a full quality of life.

It has been argued that social and environmental policies must be mutually consistent with achieving and maintaining an acceptable quality of life for all through processes which involve the active participation of individuals and communities in decisions that affect their health and that of their environment and which recognise dignity, identity and self determination as essential preconditions of sustained health.

A comparative evaluation of established models of health has led to the conclusion that conventional medical and functional models provide inappropriate bases for the development of integrated socio-environmental policies. Instead a new variant of the holistic model health - whole health - has been proposed which describes health in terms of needs, of adaptation, of stressors, of supporters and of the intricate linkage established between ecological and personal well-being. Such a conceptualisation of health sets the biological and physiological aspects of the human condition properly and essentially in the context of a broader social, psychological, financial, environmental and cultural framework.

Whole health has been identified as a multi-dimensional concept. An individual is said to be able to maintain whole health only if he or she can resist the effects of socio-environmental stress along each and any of seven defined dimensions by employing a combination of personal and material resources or supporters. Stresses may include such factors as disease, disability, poor housing, low incomes, social isolation. Supporters, correspondingly, may include adequate income, investment potential, good housing, information, friendship and care. The lack of effective supporters for health in turn has been held to constitutes need.

Failure of social and environmental policies have then been perceived as sources of stress upon whole health. Successful policies are those which generate the right kind and level of support. Health - whole health - has thereby been recognised as a key factor on both social and environmental policy agendas. The dimensions of whole health are held to be interconnected and may negate, compensate or reinforce.

The findings of Chapter 2 are that the adoption of a whole health model has profound implications for the way health status is assessed and for the evolution of systems and procedures of health promotion and health care. In particular the concept of holistic health explicitly acknowledges - in a way which medical and functional models do not - that the freedom of an individual to exercise personal choice; to be directly involved in the decision making process regarding both the definition and expression of their well-being and the nature of the health treatment and care they receive, is a fundamental and essential requirement of health itself. The association of health with self-determination, equity and participation implies recognition of the value of human beings as resources.

The case for the adoption of a whole health model is given specific support by Alex Robertson, who notes that the experience this century has been of a shift away from acute diseases with well-defined aetiology towards chronic and degenerative conditions that were far less well defined [153]. He suggests that, as a consequence, there is a need to move in the direction of more comprehensive services and a closer integration between medical and social services with the emphasis upon adaptation rather than cure. He further argues that the consumers of health services need to be much more closely involved with the allocation of resources with decision-making devolved to the consumer and away from the centre.

The argument for greater equity in health is advanced by the World Health Organisation challenge of "Health for All by the Year 200" [154]. Helen Zealley identifies the main themes of the World Health Organisation strategy as the addition of years to life by the prevention of premature deaths; the addition of health to life by the prevention of unnecessary ill health and the addition of life to years by ensuring respect and the opportunity to develop self-respect despite illness and disability [155]. She further supports the conclusions of Chapter 2 in arguing that the achievement of these aims demands active cooperation between the different sectors of health care and social support together with greater participation by the public at all levels of decision-making about health.

In Chapter 1 the vital linkage between environment and health has been clearly established. Recognition that, on average, people spend some 90% of their time within indoor environments - a percentage which may be even higher in the case elderly or disabled individuals - then implies that the relationship between buildings and health must assume major importance and that the subject of health in buildings should be a priority issue on any health care agenda. Buildings link ecological and personal health in three ways (i) through the impact of the external environment on the building (ii) through the impact of the building on environment and (iii) through the impact of the building's internal environment on the health and comfort of its occupants. The critical linkage between public and environmental health thus endows buildings and energy with special significance. On one side of the link, buildings stand indicted as principal contributors to ecological degradation generally, and to global warming in particular, as a consequence of those carbon dioxide emissions which are associated with the combustion of fossil fuels for building-related purposes. Policy responses to protect the global environment must then address, as a priority, the issue of energy use in buildings. On the other side, indoor air quality, dampness, cold and fuel poverty are identified amongst the most critical known stressors on health. For the old and vulnerable adequate and affordable housing is virtually a precondition of health.

The conceptualisation of health in holistic terms, the idea of environmental stressors and supporters and the definition of whole health in multidimensional terms all imply that the impact of buildings and energy on health is not limited to physical factors. Chapter 2 has identified key relationships between buildings, energy and health along each of five further dimensions of whole health, functional, psychological, social, economic and environmental. Overall, effective socio-environmental policies will be those which promote healthy buildings.

The conclusions reached in the studies of aspects of environment and health undertaken in Part One provide the essential foundation for the central element of the research - an investigation of age and ageing in modern society and an assessment, using the whole health model, of the health status of the elderly population of Britain. In the final analysis, the acid test of unified socio-environmental policies formulated in response to the interdependent ecological and health imperatives may be supposed to be the maintenance of the whole health of the most vulnerable sections of a population; those least adaptable to socio-environmental stressors and possessed of the least adequate personal and material supports.

Strong correlations have been shown to exist between age, class, income, living conditions and health. Frank Bechhofer reinforces the evidence provided in Chapter 1 to show the close association between health and social inequality and argues that health and illness generally are patterned by social rather than individual factors, being highly structured with regard to occupation, class, region, gender and age [156]. Una Maclean notes in particular that the poor and deprived have a markedly reduced life expectancy when compared to the better off. [157]. They will not live so long after retirement; they suffer more chronic illness and their chance of dying from practically every classified cause is greater.

On the question of comparative health, it is hypothesised that, just as the health of the populations of the developing countries are poor relative to those of the industrialised economies, so the elderly will generally represent the most vulnerable sector of all societies - whether industrialised or developing - being multi-disadvantaged by each of age, environment and social condition and being the least well adapted to socio-environmental stresses. It is a principal contention of the research that, without radical and unified policy developments which embrace each of the concerns of age, health and environment, the social and environmental stresses contingent upon projected ecological change will have the most adverse and inequitable impact on the whole health of the elderly.

These assumptions are tested in Part Two.

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PART TWO

PERSPECTIVES ON AGE

CHAPTER 3

ASPECTS OF AGE AND AGEING

In this chapter, detailed evidence is presented to test the hypothesis that the ageing of populations is an issue of profound political, economic and social significance and translates into a demographic imperative which may be expressed as the need for society to develop effective policies for the care for the elderly which are based upon a sound set of principles derived from the study of age and health. Age and ageing are presented as complex biological and socio-environmental constructions.

Though the ageing of populations is identified as a world problem (the net global increase in people aged 55 and over is estimated at 40,000 per day) specific evidence is obtained through an analysis of demographic statistics for the United Kingdom, showing trends in the density and distribution of the population, and through a review of a select body of knowledge obtained from the discipline of gerontology which offers an understanding of the functional problems experienced by the elderly in adapting to the stressors imposed by age and environment. Particular issues investigated are definitions of ageing, the concepts of primary and secondary ageing, ageing and disease, theories of ageing, the physical and mental effects of ageing and the basic needs and rights of the elderly.

The Demographics of Age

Exactly how many elderly people are there in Britain today? How many will there be at the start of the next century? Are numbers growing or decreasing? Are people living longer today than they were 50 years ago. Do women generally live longer than men? And how old do you have to be to be classed as elderly in the first place? Answers to these questions, and to the many others which are needed to give shape to the vague enquiry "who are the elderly?" lie within the province of demography. Demography is the science of vital and social statistics relating to significant trends in the density and distribution of populations. It is a discipline which provides an essential foundation and support for the development of social theory and the formulation of social - and environmental - policy.

Demography is, by nature, an uncertain science and demographic forecasting presents many pitfalls for the unwary. In particular, though official principal projections of population can be expected to represent the best estimate possible on the basis of the data currently available, it should not be assumed that the publication of a single "central" projection implies that future population numbers are determinable given suitable techniques and information or, at least, that a measure of probability can be attached to any particular projection [1]. Whilst forecasts about the total numbers falling within any particular age group can be made by demographers with a reasonable degree of confidence, percentage figures appear much less certain, depending as they do upon the total numbers of people in the population and hence upon future fertility rates, death rates and migration rates. Over relatively short periods of ten or twenty years, possible variations in migration numbers and fertility patterns have a numerically greater impact upon the projected size and age or sex structure of the population than do likely variations in mortality and this may be of particular significance when applications relating to the elderly are involved. In the long term the completed family size is the main determinant of the increase or decrease in the overall size of the population.

A further source of uncertainty is the lack of any universal agreement on the definition of key terms. A specific and relevant example concerns the definition of "elderly". The most commonly adopted definition of the elderly is those over retirement age which, in the United Kingdom, is currently established as 60 years of age for females and 65 years for males though even here there is scope for ambiguity and confusion.

Whilst there seems relatively little prospect of a change in the retirement age in the United Kingdom this century (though some commentators have suggested this might be part of a "hidden policy agenda" for a future Conservative Government) a European Community draft directive, which seeks to end discrimination between the sexes in the matter of state benefits, proposes retirement between 60 and 70, with an optimum age of 63 for both. It is not unusual, in research publications or in official tables of population statistics, to find either 60 years or 65 years adopted as the defining threshold for both sexes. In the present context, and unless otherwise stated, the term "elderly" will be taken to refer to those over the present age of retirement.

Official population statistics are published annually in a number of forms and usually present a combination of census-enumerated, estimated and projected data. In the present study, most projections are based upon the Registrar General's estimate of population of the United Kingdom, derived from the 1981 Census of Population and updated to allow for subsequent births, deaths and migration. The principal official publication is Population Projections, with data in summary form being published in , variously, Annual Abstract of Statistics, Social Trends, Monthly Digest of Statistics, (for the United Kingdom), OPCS Monitor (for Great Britain) and Population Trends which, as the journal of the Office of Populations, Censuses and Surveys, is published quarterly. Projections for Scotland appear in the Registrar General's Annual Report and the Scottish Abstract of Statistics. Populations are never static and the most useful information comes from studying trends. Four sets of relevant statistics provide the foundation for a better understanding of the dynamics of the elderly population of the United Kingdom. These are firstly, data relating to the total population; secondly, data relating to the proportion of elderly within the total population; thirdly, data relating to the age structure of the elderly population and fourthly, the sex structure and balance of the elderly populař.

The total population

Both estimated and projected trends for the general population, covering the period from 1951 to 2027 are shown in Table 3.1. These trends are derived, as is most of the demographic information in this section, from data contained within two official publications; the Central Statistical Office (CSO) publication, Social Trends, 19 and the Office of Population Censuses and Surveys (OPCS) publication Population Projections 1987-2027.

TABLE 3.1

**GENERAL POPULATION TRENDS FOR THE UNITED KINGDOM
1951-1987 (MID-YEAR ESTIMATES) AND 1991-2027 (PROJECTED)**

Year	Total Population (Millions)	Percentage Increase (Base = 1951)	Percentage Increase (Base = 1987)
Estimated			
1951	50.3	---	---
1961	52.8	5.0	---
1971	55.9	11.1	---
1981	56.4	12.1	---
1986	56.8	12.9	---
1987	56.9	13.1	---
Projected			
1991	57.6	14.5	1.2
1996	58.5	16.3	2.8
2001	59.3	17.9	4.2
2006	59.7	18.7	4.9
2011	60.1	19.5	5.6
2016	60.5	20.3	6.3
2021	60.9	21.1	7.0
2026	61.2	21.7	7.6
2027	61.3	21.9	7.7

SOURCES: Central Statistical Office, Social Trends, 19 (London: HMSO, 1989), Table 1.2

Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I

What these trends reveal is that, following a period of unprecedented population increases in the first half of the 20th Century, the total population of the United Kingdom is now relatively stable. From 1901 to 1951 the population increased by no less than 32%, from 38.2 million to 50.3 million. Present rates of growth are very much smaller. The 1987 population level of just below 57 million is projected to rise to only around 59.3 million by the end of the century and thereafter to a peak of about 61.3 million by the year 2027, followed then by an actual fall.

Population projections for the United Kingdom as a whole can conceal significant regional variations. The population of Scotland, for example, is actually expected to decline by about 11% over the next forty years [2] from a figure of 5,112,000 in 1987 to 4,557,000 in 2027. Furthermore statistics relating to the overall density of population rather than to its distribution will tend to conceal underlying structural changes which may actually be of major social significance. The following statistics relating to trends in the size and structure of the elderly population demonstrate this clearly.

The proportion of the elderly in the population

If trends relating to the absolute numbers of elderly and to their relative proportions within the total population are presented then there is a significant increase in information content. For completeness, trends are displayed for three different definitions of "elderly". Table 3.2 shows trends for the population aged 60 and over (both sexes). Table 3.3 shows trends for the population aged 65 and over (both sexes). Table 3.4 then shows trends for the population of official retirement age (60 years for women, 65 years for men) and over. In this latter category the population of pensionable age, currently totalling around 10.4 million or some 18.5% of the total population, is projected to remain relatively stable until the end of this century but then to increase again, slowly and steadily, by about 1% per year to around 11.5 million by 2011 and to 13.8 million by 2027. By 2031 one in every five of the population will be a pensioner. In 1951 the population of pensionable age was under 7 million and has therefore increased by 50% in just 40 years. Projections beyond 2027 suggest that a peak at around 14.5 million will be reached in 2034 [3]. At a regional level, 17.7% of the population of Scotland is presently of pensionable age, some 902,000 individuals in total. This figure is projected to rise to 1,126,000 by 2027 when it will represent very nearly 25% of a (declining) total population [4].

TABLE 3.2
POPULATION TRENDS
FOR THE UNITED KINGDOM, AGE 60 AND OVER
1951-1987 (MID-YEAR ESTIMATES) AND 1991-2027 (PROJECTED)

Year	Population 60 and over (Millions)	Percentage of Total Population	Percentage Increase (Base = 1951)	Percentage Increase (Base = 1987)
Estimated				
1951	7.9	15.7	---	---
1961	9.0	17.0	13.9	---
1971	10.7	19.1	35.4	---
1981	11.4	20.2	44.3	---
1986	11.8	20.8	49.4	---
1987	11.8	20.7	49.4	---
Projected				
1991	11.9	20.7	50.6	0.8
1996	11.9	20.3	50.6	0.8
2001	12.0	20.2	51.9	1.7
2006	12.4	20.7	57.0	5.1
2011	13.3	22.1	68.4	12.7
2016	13.8	22.8	74.7	16.9
2021	14.6	24.0	84.8	23.7
2026	15.8	25.8	100.0	33.9
2027	15.9	26.0	101.3	34.7

SOURCES: Central Statistical Office, Social Trends 19 (London: HMSO, 1989), Table 1.2
Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I

TABLE 3.3

**POPULATION TRENDS
FOR THE UNITED KINGDOM, AGE 65 AND OVER
1951-1987 (MID-YEAR ESTIMATES) AND 1991-2027 (PROJECTED)**

Year	Population 65 and over (Millions)	Percentage of Total Population	Percentage Increase (Base = 1951)	Percentage Increase (Base = 1987)
Estimated				
1951	5.5	10.9	---	---
1961	6.2	11.7	12.7	---
1971	7.5	13.4	36.4	---
1981	8.5	15.1	54.5	---
1986	8.7	15.3	58.2	---
1987	8.8	15.5	60.0	---
Projected				
1991	9.0	15.6	63.6	2.2
1996	9.1	15.6	65.5	3.4
2001	9.2	15.5	67.3	4.5
2006	9.2	15.4	67.3	4.5
2011	9.6	16.0	74.5	9.1
2016	10.4	17.2	89.0	18.2
2021	10.9	17.9	98.2	23.9
2026	11.6	19.0	110.9	31.8
2027	11.6	18.9	110.9	31.8

SOURCES: Central Statistical Office, Social Trends 19 (London: HMSO, 1989), Table 1.2
Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I

TABLE 3.4
POPULATION TRENDS
FOR THE UNITED KINGDOM, RETIREMENT AGE,
1951-1987 (MID-YEAR ESTIMATES) AND 1991-2027 (PROJECTED)

Year	Population (F60+/M65+) (Millions)	Percentage of Total Population	Percentage Increase (Base = 1951)	Percentage Increase (Base = 1987)
Estimated				
1951	6.9	13.7	---	---
1961	7.7	14.6	15.9	---
1971	9.1	16.3	31.9	---
1981	10.2	18.1	47.8	---
1986	10.3	18.1	49.3	---
1987	10.4	18.5	50.7	---
Projected				
1991	10.5	18.3	52.2	1.0
1996	10.6	18.1	53.6	2.0
2001	10.6	17.9	53.6	2.0
2006	10.9	18.3	58.0	4.8
2011	11.5	19.1	66.7	10.6
2016	12.2	20.2	76.8	17.3
2021	12.4	20.4	79.7	19.2
2026	13.8	22.5	100.0	32.7
2027	13.8	22.5	100.0	32.7

SOURCES: Central Statistical Office, Social Trends 19 (London: HMSO, 1989), Table 1.2
Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I

The general picture which emerges is that the proportion of the elderly in the population has risen very sharply whilst the percentage of "young" people has fallen. The absolute and relative growth in the numbers of elderly people in Britain this century have resulted in an unparalleled restructuring of the population.

It should be understood that the ageing of the population is a relatively recent manifestation and Eric Midwinter [5] points out that from the middle of the eighteenth century until around the beginning of the twentieth century, the proportion of the population over 60 remained constant at around 7%. It is now treble that amount. In common with other advanced countries, Britain can be said to have experienced a demographic revolution; the greatest ever internal modification of the population structure.

Whilst Alfred Sauvy [6] has referred to the phenomenon of ageing populations as "the least doubted, the best measured, the most regular in its effects and the easiest to forecast ahead, as well as the most influential", in fact future projections, particularly those involving percentages, are critically dependent upon assumptions made about both fertility and mortality rates. Though there are still more births than deaths in Britain, the fertility rate of 1.8% is well below the 2.1% (i.e. two children on average for each set of parents) needed for population replacement [7]. The total period fertility rate is defined as the average number of children which would be born per woman if women experienced the age-specific fertility rates of the period in question throughout their child-bearing life-span. If such a trend continues then, as observed by Cunningham and Brookbank [8] in relation to the developed economies generally, the eventual result must be a relatively smaller total number of people of which a larger proportion will be elderly. One immediate and apparent consequence will be the effect of such structural changes on the combined dependency ratio, namely the balance of individuals who are either over retirement age or under the age 16 and therefore classed as economically inactive to those who are economically active within the normal working age range. This ratio is a necessarily imperfect indicator of the balance between those who are principally consumers and those who are principally producers. Norman Davis has shown that the dependency ratio reached relative stability in the 1970s after doubling over the first half of the century [9]. Whilst the declining birth rate (and hence reduction in numbers of "dependent" children) will partially compensate for the rise in the elderly population, there is expected to be a gradual further increase in the dependency ratio for the rest of this century, a pause for ten years then a sharp rise after 2011.

The full significance of this, and of other underlying trends, can be more clearly revealed through an examination of the changes in the age structure within the elderly population itself.

The age structure of the elderly population

At this point what transpires to be a critical distinction must be made between the "young-old" - those men and women in the age group 60-75 - and the "old-old" - those aged 75 and above. Table 3.5 reveals that whilst the number of "young elderly" are actually projected to decline somewhat towards the end of this century, the number of very old people will increase ever more sharply over the same period. The result will be a highly significant shift in the balance of ages within the overall elderly age group. Numbers of the younger elderly will fall from 8.0 million in 1987 to 7.6 million in 2001 but the number of people over 75, having more than doubled from 1.8 million in 1951 to 3.8 million in 1987 will undergo a further rise to 4.4 million over the next 20 years, at which time more than one in every three elderly people will be aged 75 or above. Most dramatically of all, the population aged 85 and over, which was no more than 57,000 in 1901 [10] had risen to 200,000 by 1951 and to 800,000 by 1987. By the late 1990s their numbers will have reached 1.1 million, an increase of around 4% per year. By 2006 the numbers of elderly aged 85 and over are projected to rise even further to 1.2 million; an increase of 50% in just twenty years. Thereafter numbers in this "highest dependency" age-group will continue to rise but at a somewhat lower rate, still reaching 1.4 million by 2027. At that time people aged 85 and over will form nearly 10% of the total elderly population and over 2% of the total population.

In Scotland, with a present population of 329,000 people of 75 years and over, the proportion of old-old in the total population is projected to increase from 6.5% in 1991 to 9.2% by 2027 when they will form 37% of all elderly [11].

The underlying causes of the restructuring of the elderly population are to be discovered in increased life expectancy and in certain critical changes in the birth rate during the twentieth century. Life expectancy is the age in years when 50% of an initial group remain as survivors. In the case of humans it tends to reflect the severity of the environment rather than any effects of medical advance. This should be compared with life span which is defined as the maximum age that will be attained by a member of a species. Life span is genetically determined and is changeable only over evolutionary time periods.

TABLE 3.5

**AGE STRUCTURE OF THE ELDERLY POPULATION
(UNITED KINGDOM) 1951-1987 (MID YEAR ESTIMATES)
AND 1991-2027 (PROJECTED)**

Year	Age 60-64 (Millions)	Age 65-74 (Millions)	Age 75-84 (Millions)	Age 85 plus (Millions)
Estimated				
1951	2.4	3.7	1.6	0.2
1961	2.8	4.0	1.9	0.3
1971	3.2	4.8	2.2	0.5
1981	2.9	5.2	2.7	0.6
1986	3.1	5.0	3.0	0.7
1987	3.0	5.0	3.0	0.8
Projected				
1991	2.9	5.0	3.1	0.9
1996	2.8	5.0	3.2	1.1
2001	2.8	4.8	3.2	1.2
2006	3.2	4.8	3.2	1.2
2011	3.7	5.2	3.2	1.3
2016	3.4	6.0	3.2	1.3
2021	3.7	6.1	3.5	1.3
2026	4.2	6.2	3.9	1.3
2027	4.2	6.3	4.0	1.4

SOURCES:

Central Statistical Office, Social Trends 19 (London: HMSO, 1989), Table 1.2

Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I

Some explanation for the trends observed can be gained by reference to data presented in Population Trends 15 [12]. This shows that the low birth rate of the First World War was followed by a post war bulge, accounting for the large numbers who were aged 66 or 67 in 1986 and who will be 85 and over at the start of the next century. A similar pattern occurred during and after the Second World War, with a trough in 1940-41 followed by a post war boom. The impact of this latter, "baby-boomer", generation or cohort will be felt in the 65-70 age group between 2010 and 2025 and in the 85 and over age group after 2025.

The sex structure and balance of the elderly population

The information content of demographic analysis can be increased still further if we look at a breakdown of the population of the United Kingdom by both age and sex. Table 3.6 shows trends in these categories for the period 1951 to 2027. This confirms that there are more surviving women than men. Nearly sixty percent of all elderly aged 60 and over are female. Amongst the retired population - a definition of "elderly" which removes all men aged between 60 and 65 from the statistics - the proportion is even higher. The ratio of female to male increases further at higher age levels. Amongst the 85 and over age group, there are currently three times as many women as men. The explanation lies with higher rates of male mortality at every age. Why women, on average, live longer than men is a matter of contention and there is continuing debate about the relative effects of genetics and life-style. Certain implications, however, become clear. Older women, who are more likely than men to be physically disabled and to suffer from conditions such as arthritis, will form the majority of those elderly requiring treatment and care but will also themselves be a major section of the population on which the burden of care for others will fall [13]. Of special significance for many purposes are the number of elderly living alone or without the support of a spouse. Statistics published in Social Trends 19 show that, in 1986, there were over four times as many widows as widowers in the general population [14].

Gerontology

The unprecedented increase in the elderly population of the United Kingdom, representing the most radical and significant of demographic shifts, has exploded the issue of ageing onto the social agenda.

TABLE 3.6

**AGE AND SEX STRUCTURE OF THE ELDERLY POPULATION
(UNITED KINGDOM) 1951-1987 (MID-YEAR ESTIMATES)
AND 1991-2027 (PROJECTED)**

Year	Age 60-64 (Millions)		Age 65-74 (Millions)		Age 75-84 (Millions)		Age 85 Plus (Millions)	
	M	F	M	F	M	F	M	F
Estimated								
1951	1.1	1.4	1.6	2.1	---	---	---	---
1961	1.2	1.5	1.6	2.4	0.7	1.2	0.1	0.2
1971	1.5	1.7	2.0	2.8	0.7	1.4	0.1	0.4
1981	1.4	1.6	2.3	2.9	0.9	1.8	0.1	0.5
1986	1.5	1.6	2.2	2.8	1.1	1.9	0.2	0.5
1987	1.4	1.6	2.2	2.8	1.1	1.9	0.2	0.6
Projected								
1991	1.4	1.5	2.3	2.8	1.1	2.0	0.2	0.7
1996	1.3	1.4	2.3	2.7	1.2	1.9	0.3	0.8
2001	1.4	1.5	2.2	2.6	1.3	2.0	0.3	0.8
2006	1.5	1.6	2.2	2.6	1.3	1.9	0.4	0.9
2011	1.8	1.9	2.4	2.8	1.3	1.9	0.4	0.9
2016	1.6	1.7	2.8	3.2	1.3	1.9	0.4	0.9
2021	1.8	1.9	2.8	3.2	1.5	2.0	0.4	0.9
2026	2.0	2.1	2.9	3.3	1.7	2.3	0.5	0.9
2027	2.1	2.1	3.0	3.4	1.7	2.4	0.5	0.9

SOURCES:

Central Statistical Office, Social Trends 19 (London: HMSO, 1989), Table 1.2

Office of Population Censuses and Surveys, Population Projections 1987-2027, Series PP2, no. 16 (London: HMSO, 1989), Appendix I.

Whilst knowledge of the magnitude, structure and dynamics of the elderly population is a critical foundation for the study of age and ageing in society it does, however, offer only one perspective from which to view what is a complex and multi-faceted phenomenon. Diversity of purpose requires and justifies the adoption of different conceptual models of age and ageing. For example, the needs of research into longevity and the precursors of mortality may properly call for the adoption of a biological model of ageing. The investigation of adaptive and compensatory behaviour during the ageing process may demand a psychological model of ageing whilst the study of norms, roles and relationships requires the adoption of an appropriate sociological model. In an attempt to present at least a partially unified perspective of ageing, the relatively new and pragmatic science of gerontology has emerged, developing principally along the three fronts of biology, psychology and sociology and having the prime purpose of understanding the functional problems experienced by the elderly in adapting to the stressors imposed by age and environment, and of using this understanding to help the elderly to recognise and to realise their optimum physical, intellectual and social potentials.

Gerontology has evolved in parallel with the growing consciousness that, with the ageing of populations in the developed countries, the manifest medical, social, psychological and economic problems of the elderly increasingly become the problems of society itself. As such they urgently demand intensive and effective social interventions and solutions which lie with no exclusive academic tradition or body of professional knowledge to offer [15]. Gerontology seeks to stimulate the multi-disciplinary studies which will generate the necessary body of knowledge upon which a fuller understanding of the true nature and progress of ageing can be founded. Kirkwood [16] has observed, however, that despite more than a century of clinical and biological research, gerontologists still cannot identify with complete confidence or any degree of unanimity, any specific mechanisms which drive the ageing process. In this respect, the problems of gerontology, he believes, flow not from a lack of possible models of ageing but from a surfeit.

Before searching for areas where some measure of consensus does exist it is necessary to distinguish briefly between gerontology and geriatrics. Though sometimes used synonymously, the term geriatrics should be reserved to describe that major subdivision of general medicine concerned specifically with the clinical, preventative, remedial and social care and treatment of the elderly and with the characteristics of old age. Geriatrics is now established as one of the major branches of medicine with 600 consultants in service in 1987 [17].

Gerontology is a much broader concept, including as it does - but geriatrics, in practice, does not - a number of fields outside of medicine such as psychology, sociology, social administration and policy and, most significantly of all perhaps in the present context, ecology [18]. The inter-disciplinary foundations of gerontology imply that the whole health needs of the elderly can be satisfied only within the context of policy responses which embrace and integrate both social and environmental aspects of their lives and situations.

Definitions of Ageing

To date we have talked of ageing without defining precisely what this means. We might expect something so fundamental and generic to all living thing to be capable of an exact and unambiguous definition but no such clarity exists at this time. Where there is a consensus, in the opinion of Brocklehurst [19], is in accepting that ageing is an apparently irreversible process which is a universal property of all living things at the cellular level, leading to a progressive reduction of the capacity of cells to perform their normal functions. In fact, in the real world, ageing is experienced by very few individual organisms. The extreme manifestations of old age that are experienced in humans simply do not occur in feral animals [20]. Where such ageing occurs at all in wild animals, it lasts for only the briefest of periods before the associated deterioration in physiological and functional performance renders the individual ready victim to disease or to attack by predators. At the heart of this apparent enigma lies one of the basic tenets of gerontology; namely that, whilst certain fundamental aspects of ageing are inherent, intrinsic and inevitable, the rate of ageing and the point in the life continuum at which death may occur are not clearly fixed but are determined, under normal conditions, by a range of extrinsic factors [21].

It can also be argued that what is true of quantitative aspects of ageing can also be true of the qualitative, the implication being that as a person ages the residual degrees of function and the measure of life satisfaction they are able to enjoy are not predetermined by age but can be influenced both positively and negatively by environmental, social and life-style factors. Here there is a clear and important link with the ideas developed earlier in the study concerning environmental stressors and supporters.

At a phenomenological level ageing clearly has a profound sociological dimension, but it remains, fundamentally, a biological process. The term "biological ageing" is used, as by Busse and Blazer [22], to describe those decremental physical changes, both structural and functional, that usually develop with the passage of time and eventually and inevitably end with death. Clarity and precision of definition is not helped, however, by the common usage of a related term senescence, to refer to the general decline in bodily systems in later years. Rockstein, Chesky and Sussman [23] define senescence to be those manifestations in structure and function of a declining or deteriorating nature which take place during the period of life when the mortality rate of a population is accelerated.

Under the first broad definition, biological ageing is not confined to the end phase of the life span and both growth and sexual maturation can be conceived as aspects of ageing. According to the definition provided by the Encyclopedia of Aging [24], however, biological ageing is the "manifestation of a multitude of biological decrements that occur **after** sexual maturation" (my emphasis). Birren and Renner [25] too have identified ageing with the regular changes that occur in mature, genetically representative, organisms living under representative environmental conditions as they advance in chronological age. This latter definition has important implications because it reflects an understanding of ageing as a developmental process whose natural course may be significantly affected by the impact of environmental influences. The proposition that the environment can impact upon the course of the natural ageing process and affect it in either positive or negative ways reinforces ideas introduced earlier in the study regarding the notion of stressors and supporters of health.

The views of Alex Comfort [26], who has conducted some of the most important and influential studies in Britain on the biology of senescence, give added substance to the linkage of age with health and of health with adaptation. Comfort maintains that ageing is characterised by a failure to maintain homeostasis under conditions of physiological stress and that this failure is associated with a decrease in viability and an increase in vulnerability of the individual. Homeostasis denotes the automatic regulation of the environmental conditions at the mammalian cellular level for maximum or optimum performance. The proper function of such cells requires control, within close limits, of variables such as temperature, acidity, oxygen content, electrolyte content and osmotic pressure.

Such regulation is affected by a range of physiological mechanisms including interactions between the nervous and endocrine organ systems and intracellular processes. Such regulatory systems depend upon the ability to detect slight deviations from optimal conditions and on the presence of mechanisms to correct the deviations which result in impaired performance and to return the system to balance. In the view of Nathan Shock [27], a primary effect of ageing is to reduce the effectiveness of homeostatic control.

Kirkwood [28] takes issue with definitions of ageing which are based upon the description of generally recognised physical changes associated with a universal decline of bodily functions, arguing that these may conceal important differences between individuals within a population and may not readily allow comparisons between the ageing processes within different species for whom senescence may appear in significantly different forms. He proposes instead that a preferred definition of ageing at the population level should be one related to patterns of mortality. In the case of human beings, the attainment of sexual maturity and the peak of vitality in early adulthood (where survival rates are high) is followed by an extended period of progressive decline during which the probability of an individual dying increases until, eventually, the age-specific mortality rate becomes so great that an effective upper limit is imposed upon an individual's life-span. Such patterns will only become apparent when the masking effect of non age-related mortality caused, for example, by hazardous ("stressful") environmental conditions is removed or when the population is transferred to a more protected ("supportive") environment. This is a view shared by Cunningham and Brookbank [29] who add that the cause of what may then be called "natural death" is a failure of the organ system brought about by progressive senescence and that such failure may include that of the immune system which protects against infection.

Kirkwood adds the qualifications that not all age-related changes are disadvantageous to the survival chances of an individual whilst the survival curve itself is clearly sensitive to modification by extrinsic factors [30]. A specific example of the masking effects imposed on ageing by environment can be found by contrasting the life expectancies of human beings in the developed countries today (around 75 years) with those of prehistoric times (around 18 years). The implication is that ageing may even be thought of, in the suggestion of Maddox [31], as a product of civilisation or domestication since these "unnatural" states have provided the protected environments under which age-characteristic physiological decrements, never previously revealed, have become manifest.

Primary and secondary ageing

It is now clear that any satisfactory model of ageing must be one which will describe and explain the complex and, as we have seen, frequently masked interactions between intrinsic ("within the body") and extrinsic ("outwith the body") factors, both of which can singly and mutually contribute to the ageing process, to senescence and to life expectancy [32]. To this end a distinction is made by some gerontologists, such as Evans [33], between primary, natural or true ageing on one hand and secondary ageing on the other, though even here there is no absolute consensus of view on the definition of terms or on the relative status and import of the two forms.

On the one hand Bromley [34] suggests that the cause of human ageing is to be discovered almost exclusively in the generative physical changes that take place in the human body over time, extrinsic factors playing only a minor role. On the other Comfort [35] attributes just one-quarter of age-related changes to physical ageing, the remainder being the result of what he calls "sociogenic ageing". In the biological sense, true ageing may be taken to be that class of ageing whose cause is restricted to intrinsic factors, these representing the only constraints on longevity of the life form under ideal, protective environmental conditions. The use of the word "intrinsic" implies that the primary causes of ageing are, in some way, genetic in origin and that maximal life-span is genetically determined. At the present time the genetic basis for true ageing is not disputed though, as will be shown, the precise mechanisms are not agreed.

It is now generally held [36,37,38,39] that, within genetically determined limits, the ageing process, senescence and life expectancy can be influenced by unpredictable and accumulative extrinsic factors including forms of environmental stress, accident and certain traumatic and transmissible diseases. Whilst many environmental stressors serve to shorten life within the framework of the genetically determined life span, other extrinsic factors may be seen to have the effect of prolonging an individual's life expectancy. A trace of human survival curves from ancient to modern times shows the degree to which increased life expectancy is due to the effects of improved housing, sanitation, antiseptics, public health, hygiene, immunization, antibiotics, improved medical practice, nutrition, health education and recent biomedical breakthroughs. Over the equivalent time period it is clear that genetically determined changes to life span can have played no significant part.

The concept of "secondary ageing" has been introduced as the means of categorising the effects of such external factors. Grimley Evans [40] and others have advanced the argument that the distinction between primary and secondary ageing is highly significant in social policy terms because the recognition of the influence of the recognition of extrinsic causes, which are neither universal nor inevitable, allows for the possibility of prevention and modification.

The distinction drawn between primary and secondary classifications of ageing now brings into sharp focus a fundamental dispute in modern gerontology regarding the extent to which ill health is endemic to old age and to which disease, in particular, is an inevitable, unavoidable attribute of ageing.

Ageing and Disease

In its extreme form, the unresolved controversy regarding ageing and disease has been most clearly expressed by Blumenthal [41]. On one hand there is the view that whilst ageing is primarily a genetically programmed process, diseases are non-programmed events which are largely attributable to extrinsic, environmental factors. On the other both ageing and diseases of ageing are understood to be inseparable, intrinsic phenomena in relation to which environmental factors play a secondary role. The majority of gerontologists would support the view of Brocklehurst [42] that, whereas ageing is universal, disease is not. There would also be wide agreement with Williams [43] that normal age changes take place in the body in the absence of any recognised disease. Loss and greying of hair, reduced exercise capacity and stamina, wrinkled skin, the menopause, presbyopia, loss of short term memory and hundreds of other similar decrements associated with old age are, from this perspective, perceived not as diseases but as natural losses of function [44]. The cumulative effects of such decrements manifest themselves as a general frailty of the body but do not increase an individual's vulnerability to death. Dispute arises, however, over the fact that other normal, age-related decrements, such as those which take place in the immune system functions, do render the individual more vulnerable to diseases which, in youth, are easily defeated. Thus, proponents such as Williams [45] argue, whilst the distinction between natural ageing, secondary ageing and disease may be an important philosophical one, in practice the correlation between ageing and disease is high, with the processes of senescence and disease frequently coexisting and interrelating.

In the view of Brocklehurst [46] and others, multiple pathology is a distinguishing characteristic of age and many disease processes affecting the elderly are generalised in their distribution and can lead to a progressive loss of competence in body function. Conditions such as arthritis, atherosclerosis and osteoarthritis, for example, are so common in old age as to be effectively endemic [47]. The perception of old age offered is that of a time of inevitable deteriorating ill health, progressive physical infirmity and degenerating mental capacity with declining health as the most conspicuous feature of ageing.

In opposition to this view, Cunningham and Brookbank [48] ask what would seem to be a highly salient question, namely, if decline in old age is inevitable and universal how can one explain the major observable differences between the significant numbers of elderly persons who enjoy excellent health and those who have serious multiple pathologies. Brocklehurst [49] too supports the view that whilst incidences of disease, illness and disability undoubtedly increase with the years, health and old age are by no means mutually exclusive. Both argue that growing old is a highly individualistic phenomenon with wide differences exhibited both within and between age groups which are at odds with the notions of inevitability and universality.

Evans [50] has sought to cut the Gordian knot by arguing that the dispute is actually a sterile one and that distinctions between normal ageing and disease are, in practice, irrelevant and unhelpful. His argument is that such distinctions derive from outmoded forms of traditional clinical practice and to a point of view that holds disease to be a "proper" medical responsibility, entitling the victim to a full measure of sympathy and social support in contrast to ageing which, by implication, may be perceived to be the ineluctable and unameliorable consequence of the human condition, entitling its victim to no special sympathy nor access to medical care. Evans proposes instead that, in the absence of any prevailing, identifiable, remediable cause for ageing, the study of age-related phenomenon should be a unifying one, conducted on the basis of care as much as upon cure and in such a way that the distinction between natural ageing and disease is rendered irrelevant. Evans suggests that this should be done by replacing the clinician's traditional concern with diagnosis with the identification of a patient's problems expressed in functional terms. In most cases such problems will be found to relate to the differential between the demands made on the patient by social and physical environments and the individual's own abilities and capabilities.

Evans therefore identifies ageing with a loss of adaptability, and notes that the way in which society is organised tends to exaggerate the effects of ageing by presenting the elderly with what he terms a "differential challenge", posing more severe problems and obstacles than those faced by younger people. Again there are close parallels here with the ideas of environmental stress and support developed earlier in this study.

This fundamental dispute about the true nature of the relationship between age and disease seems to confirm the earlier contention that attitudes towards health-related issues are shaped by prevailing models of health and that the adoption of inappropriate models can lead to serious errors and misconceptions.

Thus whilst many health surveys seem to give support to the notion that to be old is to be sick this may be more to do with limitations inherent in the model of ageing upon which the surveys are based than a wholly accurate reflection of the health status of the elderly population. An emerging picture of health in old age characterised not by single, acute disease states with well-defined aetiology but multiple-pathology chronic, degenerative and "fuzzy" conditions will, for example, present serious logical and operational difficulties for a medical model of health which is predicated upon, to quote Hodkinson [53] "classical medical teaching which stresses the importance of unifying all the findings of history, examination and investigation into the framework of a single diagnosis". Furthermore, whilst acknowledging the importance of effective diagnosis, particular attention is drawn to the observation that those elderly with the same diagnosis may vary significantly with respect to the manifestation of a disease, the course of the disease, the severity of the symptoms and the resulting disability. The clear implication is that traditional medical diagnosis does not and cannot adequately identify people with similar needs for care. The overall conclusion must be that the biomedical model presents a limited conceptual framework for understanding and assessing the health status and needs of the elderly and that, in the case of elderly people with multiple chronic conditions, concern should not be primarily with cure but with the maintenance of their functional independence. Then again, the functional model of health tends to concentrate on defects in performance rather than levels of higher competence and hence to emphasise disability and dependence as characteristics associated with old age. In this sense the functional model of health serves to reinforce rather than challenge the stereotypes of old age, particularly when the results of functional assessment are used by care managers and policy makers as survey data rather than individual assessments.

We are left with the conclusion that ageing is an infinitely more complex and varied process than the stereotype would imply. Given the heterogeneous nature of the elderly - which manifests itself as widely differing characteristics and capacities to adapt to biological, social and environmental stress - such complexity and variety should, of course, be expected and firmly reinforces the arguments in favour of an holistic model of health. Placing the study of age in the context of whole health, Evans [55] has emphasised the need for a unified explanation of age-related phenomenon which will provide a sound foundation for integrated social policy on ageing and the care of the elderly.

In pursuit of such an objective many different theories have been advanced to explain why ageing occurs and what are its causes. These are summarised in the next section.

Theories of Ageing

Amongst the many theories of ageing comprehensively reviewed by Felstein [53], Davies [54] and Burch [55] no single theory emerges which is currently held to account satisfactorily for all the observations of ageing at the cellular level or to command consensus support. The main theories can be classified, after Burch, as (i) programmed theories which regard senescence as a genetic endowment of an organism and as an inevitable stage in the life sequence that embraces fertilisation, birth, growth, reproduction and death, (ii) toxic theories which argue that poisonous substances accumulate in the organism and produce dysfunction and eventual death, (iii) "wear and tear" theories which conceive of old age as analogous to the wear of machines and (iv) the complex random error theories principal amongst which are the auto-immune version in which mutations are believed to occur which result in an immunological intolerance and the consequent self-impairment of cells and the more fundamental auto-aggressive theory which postulates mutation in the system which normally controls the size and the growth of target tissues throughout the body.

Where the theories agree is in the belief that ageing is a process under genetic control and that death occurs not at the division limit of the cells (which may never be reached) but when their gradually failing metabolism in some vital organ is no longer able to support the demands made upon it.

Metabolism, broadly defined, refers to the sum of all chemical reactions occurring in a living organism but, in the present context, may be used in a more specific sense to denote the fuel utilisation by that organism. Then metabolic rate refers to the rate at which fuel is used to provide energy for physiological activities including the generation of heat. A review of metabolism relating to age and the ageing process is provided by Masoro [56]. On balance it seems most probable that ageing will ultimately be revealed as a multi-factorial process involving a synthesis of more than one group of theories.

On the fundamental question as to why ageing should happen at all, the most popular explanation, originally offered by August Weismann in 1892 and expanded by Maddox [57], is that senescence provides a mechanism for limiting the survival of individual organisms in order to prevent overcrowding and thus provide living space for newcomers. Senescence is further judged to shorten the intergenerational time and so to promote evolutionary progress. The argument, however, seems illogical and the explanation unsound because, if chronologically older animals remained fit, their deaths would not benefit younger members and there would appear to be no basis for an ageing process to have evolved in the first place. A further objection is that since, in the non-domesticated state, few if any feral animals ever reach old age there is little chance that evolution could have selected for the ageing process. At another level of argument there appears no selective advantage for members of a species to live significantly beyond the age of sexual maturity and child rearing. A life span of, say, thirty years would allow adequate time for the conception, production and rearing of progeny to an age when the cycle would repeat. Kirkwood [58] postulates, more convincingly, that intrinsic ageing occurs because of constraints on an organism's ability to repair random environmental damage at the cellular level. He argues that ageing is a non-adaptive process which occurs, through natural selection, when strategies for investing fewer resources in the maintenance and repair of somatic cells and tissues than are necessary for the indefinite survival of the organism are favoured. The argument develops around the concept of an organism as an entity which converts resources in the form of nutrients gained from the environment into progeny. Of the resources available to it, however, only a fraction are allocated directly to reproduction, the remainder being utilised for growth, food procurement, defence and, most particularly, the repair and maintenance of the non-reproductive or somatic parts of the body. Then, since resources are finite, the greater the fraction that is allocated to any one function, the less will be available for others.

The argument concludes that the optimum allocation of resources involves a smaller investment in somatic maintenance and repair than would be necessary for the soma to be sustained indefinitely.

There remains one very important question to be answered in this chapter, the basic objective of which has been to explore demographic and biological aspects of ageing as an aid to greater understanding of a section of the population whose numbers and needs place them at the top of the social policy agenda.

The elderly, in common with other vulnerable groups, face a future of special risk and uncertainty if predictions of impending environmental disaster prove well founded. So what is it actually like to be old? Whilst the elderly are as notable for their differences with each other as with younger members of the population [59] there are nevertheless some significant characteristic effects of ageing and these are reviewed in the following two sections.

Physical Effects of Ageing

Whilst illness may not be endemic in old age, when it does occur there are important differences which serve to distinguish geriatric health and geriatric medicine from their more general counterparts. We have already learnt that a principal distinguishing characteristic of medicine in old age is the presence and effect of multiple pathology which is partially accounted for by the accumulation of non-lethal and mainly degenerative conditions such as osteoarthritis, osteoporosis, rheumatoid arthritis, which affect functional ability, as well as cataracts, deafness and varicose veins [60]. Osteoarthritis is a degenerative joint disease which is the chief form of arthritis in the elderly. It commonly affects multiple joints and increases in extent and severity with advancing age, becoming a major cause of disability. Osteoporosis refers to bone which is qualitatively normal but is reduced in density. Osteoporosis is totally asymptomatic until a degree of structural weakness occurs which leads to mechanical failure of the bone in the form of fracture or collapse. The condition accounts for high incidence of femur fracture in old age. Arteriosclerosis is a thickening of the walls of the arteries due to fatty deposits and calcification - also known as atherosclerosis. Underlies much of the mortality and morbidity of old age. Though showing a strong association with age, appears not to be a true ageing change. Dementias are characterised by a progressive and generally irreversible global deterioration of mental function.

Emphysema is a disease of the lungs characterised by distension of the alveoli and may occur as a complication of chest infections in the elderly. Myxoedema is a common disease of the thyroid in old age, resulting in mental and physical slowing, puffiness of the face, croaky voice, intolerance to cold, apathy, and sometimes deafness and constipation. The condition may be accompanied by ischaemic heart disease. Thyrotoxicosis is a thyroid disease which may present itself in old age with cardiac complications of heart failure, apathy, depression and weight loss. Common symptoms are muscle weakness and fatigue. Many such disease processes are generalised in their distribution and lead to a progressive loss of competence in bodily function.

In his standard work on geriatric health, Malcolm Hodkinson [61] reports that other more serious degenerative conditions become increasingly common with age, including a variety of forms of heart and circulatory diseases including angina, high blood pressure, peripheral vascular disease and arteriosclerosis, as well as neurological deterioration, strokes, confusion or dementia, Parkinson's disease, bronchitis and emphysema. Cancer, pernicious anaemia, myxoedema and thyrotoxicosis are all more prevalent, perhaps because of a deterioration of the body's immune functions. Age-related diabetes and depression, often associated with isolation, are also more common in the old. Most conditions result in reduced mobility, episodic ill-health and functional disability.

Further distinguishing characteristics of geriatric health, noted in the Encyclopedia of Aging [62], are changed and usually diminished pain response which leads to "silent" presentation, altered temperature response, missing symptoms (such as, for example, those evoked principally by excessive exertion), complications induced by depression and acute confusional states, non-specific (i.e. vague and ill-defined) presentation and the masking of new diseases by existing ones. Also recorded is the frequency of "catastrophic", multi-system disease presentation of the elderly, resulting from the general involution of physical function with aging. James Williamson, Professor of Geriatric Medicine at the University of Edinburgh summarises the special nature of ageing by stressing that almost everything to do with the medical health of the elderly is a matter of urgency [63].

Individuals age at different rates so that chronological and biological ageing are not synchronous. This has been clearly demonstrated, for example by Simone de Beauvoir in her classic study Old Age [64].

De Beauvoir shows that there are many factors which increase or diminish the rate and extent of decline, including states of health, genetic inheritance, environment, life-style and socio-economic status. Ageing may manifest itself in different forms and in a manner which is determined by the order and degree in which particular vital functions are affected and upon the extent to which the individual is able to compensate for lost capacities and abilities. The conclusion must be that, although the regularities of ageing are clearly of interest, chronological age is not necessarily a useful indicator of the ageing process under all circumstances.

Whilst the symptoms of old age vary greatly from one individual to another, the effects of ageing on body cells and tissues will become apparent in all individuals if their life is sufficiently extended. Then measures of vital capacity, blood pressure, disease state and even appearance may, in some circumstances, be better predictors of functional adaptation than chronological age itself.

Characteristic appearance changes are associated with ageing in human beings. Comprehensive surveys of appearance changes are to be found in studies by de Beauvoir [65], Cunningham and Brookbank [66] and Brocklehurst [67]. Principal amongst the superficial appearance changes are the whitening and loss of hair due respectively to the death of pigment-forming and hair-forming cells in the hair follicles, and the wrinkling of the skin, resulting from dehydration and the loss of elasticity caused by a stiffening of the collagen of the connective tissues of the dermis, just below the epidermis. In addition, the skin becomes thinner and more transparent. Small blood vessels are less well supported and more easily ruptured, causing senile purpura [68].

Ageing skin growth and loss of tone in the muscles which elevate eyelid causes a thickening of the eyelids and a tendency for them to droop (senile ptosis) whilst hollows simultaneously appear beneath the eyes. There is a thinning of the upper lip and a increase in the size of the ear lobes. The loss of teeth occasions a shortening of the lower part of the face whilst the nose is lengthened in the vertical plane by muscular atrophy and the loss of elasticity of nasal tissues. The result is that the distance between nose and chin is lessened. Hall [69], Brocklehurst [70] and de Beauvoir [71] all record characteristic changes in the musculoskeletal system. The diminution of bone density predisposes the vertebrae to compression whilst dehydration of the intervertebral discs results in the vertebrae coming closer together with a consequent bowing of the spine and a gradual loss of height, both real and apparent.

With age chest measurements decrease, shoulders become narrower whilst the pelvis broadens. Muscular atrophy and sclerosis of the joints may cause loss of mobility. Osteoporosis occurs in the skeleton causing the dense part of the bone to become frangible with a corresponding increase in the risk of femoral fracture. Overall the body loses muscle and gains fat. Muscular strength declines; stimuli transmission speeds in the motor nerves are not maintained and reaction times are slowed.

Slowing generally appears to be a pervasive characteristic of age and is observed at both the cellular and physiological levels. Heart function deteriorates with a progressive loss of the power of adaptation demanding a corresponding reduction in activity. In the cardio-respiratory system, the cells of the myocardium and conducting tissues can be affected by both age and disease; veins lose their elasticity and the heart's output declines with an associated slowing of circulation and increase in systolic blood pressure. Cerebral circulation is diminished with a consequent reduction in oxygen feed to the brain, a situation exacerbated by growing rigidity in the thoracic cage, leading to a fall in respiratory capacity.

Of the other major organs, the efficiency of kidney infiltration is decreased and urinary frequency is increased by age-induced changes in bladder function. The performance of the endocrine system, which shares with the central nervous system total responsibility for the regulation of body functions, declines due to decreases in hormone production and to the loss of hormone receptors on target organs. Immune functions diminish whilst auto-immunity increases. In women the reproductive function is arrested abruptly at a comparatively early stage in the life-cycle but continues in the male, with reduced fertility, until late age.

In the central nervous system itself, the non-reproduction of neurones leads to an inevitable impairment of their function with ageing. The effect of this may be most evident in some loss of memory and may have a deleterious effect on body posture which is partly under the control of the central nervous system. The decline in central nervous system function may impair the performance of body temperature regulation, the maintenance of blood pressure and the control of the bladder. Pain and touch thresholds increase with age. Metabolic rate and heat storage declines with age. There is a significant increase in the threshold temperature for sweating. The effects on behaviour of age-related slowing in the central nervous system have been investigated in an important study by Birren, Woods and Williams [72].

The effect of age on temperature regulation is of special significance. Hypothermia is a condition which occurs when the deep body temperature falls below 35°C [73]. The evidence is that some elderly may have a predisposition to clinical hypothermia because of an impairment of their thermoregulatory mechanisms as a result of a falling off in thyroidal function called myxoedema with a consequent lowering of heat production in the body. In some cases an actual failure of the thermoregulatory mechanism may take place [74,75].

Collins and Exton-Smith [76] have shown that some though not all elderly people receive temperature less well than younger people and may not notice they are cold because of an impairment of peripheral temperature perception. In cold conditions these may not be able to sense a fall in ambient temperatures as well as young people. Watts [77], on the other hand, has found that elderly people were quite capable of experiencing cold or cold discomfort but some experienced cold at a lower environmental temperature than might be expected. Though Passmore and Durniun report a gradual reduction in the energy expenditure of a resting person during adult life of about 15% between the ages of 25 and 80 of greater importance is the reduction in physical activity which accompanies old age. Less active people will require higher temperatures or warmer clothing [78]

A recent and disturbing finding by Keatinge and colleagues is that the susceptibility of elderly to changes in blood composition which occur when exposure to even mildly cold conditions is prolonged can place them particularly at risk of cold stress which can lead to heart attack or stroke [79].

Fanger, in Denmark, has found whilst metabolic rate decreases slightly with age elderly people do not appear to prefer different thermal environments than younger people, the lower metabolism being compensated for by a lower evaporative loss [80]. Claydon has confirmed that the neutral temperature for the elderly is not significantly different from that of young adults [81], being 21.1°C at a clo value of 1.0 and an activity level of 70 W/m². The earlier observations by Royles and Johnson in the USA that as people grow older there either put on more clothes or seek a warmer environment in order to be comfortable [82] now seems to be more closely related to loss of mobility amongst the elderly rather than to reduced metabolism. The onset of chronic disability increases vulnerability of older people to cold and there is evidence to support the case for maintain a minimum temperature of around 16°C in rooms used by elderly [83].

Common experience confirms that age affects other human sense organs in a variety of characteristic ways. In the eye, the power of visual accommodation diminishes. Differential curvature of the cornea leads to astigmatism whilst the cornea itself becomes more opaque. A refractive loss and flattening of the lens, known as presbyopia, is an almost universal condition of the old and has the effect of moving the point of sharpest vision away from the eye. The lens itself becomes increasingly opaque and yellowed as insoluble proteins accumulate and cause increased scatter of blue light. Both visual acuity (sharpness of vision) and colour fidelity diminish whilst sensitivity to glare increases.

Hearing loss, associated with a physiological degeneration of the auditory system (presbycusis), is endemic in the elderly whilst impairment of the motion-detecting mechanism in the inner ear may cause dizziness and lead to problems with balance. Taste buds decrease in number with increasing age and olfactory sensitivity declines, partially as a result of loss of brain cells and partially due to the desensitising effect of prolonged exposure to toxic agents.

Further detailed descriptions of age-induced changes in human organs systems are to be found in standard texts by Finch and Hayflick [84], Shock [85] and Behnke, Finch and Moment [86]. Bortz [87], additionally, offers a useful short summary of physical changes commonly assumed to be the result of normal ageing:

- * Ageing naturally causes a decrease in cardiac output, stroke volume, plasma volume, lean body mass, bone density and insulin sensitivity
- * Ageing naturally leads to an increase in systolic blood pressure, peripheral resistance and intolerance to tilting.

Mental Effects of Ageing

The association of ageing with an inevitable loss of mental powers is as enduring as it is mistaken. Stereotypical in a way which is the same time comic and tragic is the experience of one of the principal characters in Kingsley Amis' Booker Prize-winning novel The Old Devils, who discovered that his life "was coming to consist more and more exclusively of being told at dictation speed what he already knew".

Whilst it is true that ageing is frequently accompanied by some degenerative change and that a wide range of mental disorders including depression and other forms of mental illness such as schizophrenia, paraphenia, neurotic states and alcoholism, may occur in old age as at any other time of life, the majority of the elderly population lead lives undisturbed by serious mental impairment or confusion [88].

The term cognitive function comprises areas such as orientation for time and place, personal and current information, comprehension and verbal reasoning, conceptual and arithmetical ability, psychomotor performance, perception, constructional ability, problem solving, learning, retention and, indirectly, language and sensory function [89]. Whilst studies of the effects of ageing on cognitive functions are generally indicative rather than conclusive, the seminal work of Kausler [90] concludes that though, at the perceptual level, performance levels and speeds may be diminished by specific age-related changes in structure, some 90% of perceptual function and intellectual skills such as verbal comprehension and facility with number remains unaffected largely as a result of the compensatory mechanisms such as memory and experience whose effectiveness will be conditioned by the individual's learning history and inherent ability to use semantic memory to overcome losses of perceptual speed, sensitivity and attention. Memory and experience can compensate for any losses which do occur in all but the most stressful or demanding situations. In their standard American text on gerontology, Cunningham and Brookbank [91] report further research findings which suggest that sensory and semantic memory appear to be largely unaffected by ageing but that episodic memory is vulnerable to the ageing process.

Studies have failed to demonstrate, unambiguously, any significant correlation between age and general intelligence. Tests of mental capacity, cited by de Beauvoir [92], reveal that, whilst immediate memory is scarcely affected, what she terms concrete memory (that associated with thoroughly absorbed knowledge) diminishes with age as does the logical memory. The dimension of memory which shows the greatest decrement with age is that corresponding to the formation of new association and this may offer one explanation of the difficulty old people find in adapting to new situations. Whilst Lorge [93] believes perceptual speed to be the most age-sensitive ability factor, Owens [94] has suggested that a retention of semantic memory function accounts for the absence of any demonstrably strong correlation between age and verbal comprehension or numerical facility.

In the case of reasoning ability, the available and somewhat conflicting evidence leads to a verdict of "not proven". It is more certain that the intellectual performance of the elderly can be improved with training and practice [95] and that compensatory mechanisms may operate to overcome some of the defects of diminished capacity. Whilst there is, therefore, no convincing evidence of an ineluctable decline in learning ability with increasing age, it is a common observation that in extreme old age there is often some loss of intellectual function most commonly shown as a failure to cope with new ideas, recent memory loss or a tendency to live in the past. J. K. Galbraith neatly encapsulates the phenomenological evidence that the memory of older people appears to be less reliable than that of the young in relating the story of a one-time US Ambassador in Europe who "remarkable in view of his age, was said to approach all problems with a closed mind and an open fly."

Set against this still generally rather comforting background, the problem of mental disorder amongst the elderly is one of acute, disturbing and accelerating concern. The term "mentally disordered", as used here, embraces both mental illness and mental handicap. Joan Clegg, in the Dictionary of Social Services: Policy and Practice [96] defines "mental illness" as a condition suffered by individuals "whose minds have previously functioned normally but who suffer a breakdown, the symptoms of which are often odd behaviour that ordinary groups may find difficult to tolerate". Again following Clegg, "mental handicap" is defined as a condition suffered by individuals "whose intelligence in relation to their age is so far below average that they are incapable of assuming the kind of responsibilities accepted as normal".

Most critical attention at this time is directed towards the growing problem of that class of mental disorder known as the "dementias". The words "senile", "senility" and "dementia" are often used indiscriminately to describe failing intellect, particularly when it is accompanied by disturbed behaviour. Dementia mean literally "loss of mind" and is a progressive degeneration of the brain which affects both intellect and personality. Alison Norman, in her seminal study of longstay care provision for severe dementia sufferers [97], quotes R. L. Symonds who wrote:

Dementia is a dismantling of the human being, starting at the most organised part and proceeding with the failure of the central nervous system components. It involves brain cell death; it progressively involves lower parts of the central nervous system, so that if no other illnesses were to intervene it would cause death. It follows that dementia is a form of dying [98].

The most common form of dementia is that known as Alzheimer's disease, first discovered at the turn of the century and now agreed to encompass most cases of senile dementia. The disease is thought to be caused partly by an imbalance in the chemical "messengers" to the brain resulting in a progressive decline in mental and intellectual powers and increasing incapacity for self-care. A second familiar form is known as multi-infarct dementia and results from multiple and repeated small strokes, leading to disruption of blood supplies to the brain.

The progressive symptoms of dementia are almost invariably combinations of severe memory loss, changed and often (but not inevitably) bizarre and obsessively repetitive personal behaviour, loss of speech and muscle coordination and double incontinence.

The literature of the Alzheimer's Disease Society provides a vivid and disturbing description of the typical progress of the disease and of its affect upon carers:

Initially a person may become forgetful and have trouble with things such as addition, reading and everyday tasks. Later a person will have noticeable difficulty with language and movement disorders. He may use wrong words or not finish a sentence. He may not understand fully what it is you are saying. His handwriting may change and there could be a difference in his physical stature; he could even walk with a shuffle. There could be a personality change or even uncharacteristic bouts of anger. Becoming lost in familiar surroundings and 'wandering off' are also common. In the latter stages a person may be severely impaired, doubly incontinent and immobile. He may be unable to recognise people places or things and speech may become restricted. [Alzheimer's Disease] has a devastating effect on the wife or husband and is worst when a sufferer has to go and live with one of his children and grandchildren. The home becomes a place of bewilderment and anxiety as the illness is so little understood and its progression may take 7 or 8 years.

If the sufferer is not to be mislabelled and mismanaged it is necessary to draw a clear distinction between dementia and functional illnesses such as depression or paranoid delusional states, from disorientation caused by social isolation and from reversible confusional states caused by physical illness, inappropriate drug prescriptions or environmental shock.

Bergman, in a comprehensive paper which seeks to define the boundaries of the specialism of psychogeriatrics, classifies the commonly occurring psychiatric disorders in the elderly [99].

He notes that the stresses experienced by the elderly patient are generally the result of complex interactions between physical disorder, social deprivation, emotional upset and mental impairment caused by organic brain damage. He distinguishes between the organic psychosyndromes which include the dementias and functional psychosyndromes which embraces depressive illness. Depressive illness may result from endogenous or reactive causes or may have no evident cause at all.

Depression "from within" may have an association with chemical or hormonal imbalance. The effects are usually severe and symptoms may include loss of weight, general loss of interest and growing introversion. Subjects may show suicidal tendencies. Reactive depression is less severe and is frequently associated with loss, which may be of a close relative or friend, of a job, of status, of a social role, of purpose, of a feeling of adequacy or of control over events directly affecting their lives. Those who depend most upon others for basic needs or for approval and particularly those who have what Seligman has termed "learned helplessness" [100] are most at risk from neurotic depression and this would seem to place the elderly in particular danger. Equally, however it should be recognised that unhappiness in old age, as at any other time of life, is a natural reaction to adverse experiences. It is not unreasonable to assume that amongst the elderly there will be a greater experience of specific incidents of bereavement, separation from families, financial hardship, illness and disability etc. which might be expected to lead to episodes of mood change, melancholy, anxiety and "low spirits"; symptoms of normal emotional stress. Reference to "depression" is generally reserved for acute and persistent neurotic states where some contact with reality is lost, leading to a distortion of perspectives.

The Needs and Rights of the Elderly

Simmons [101] has defined the basic needs of the elderly as follows:-

- (1) To live as long as possible or at least until life's satisfactions no longer compensate for its privations; or until the advantages of death outweigh the burdens of life.
- (2) To get more rest or, better stated, to get more release from the necessity of wearisome exertion at humdrum tasks and to have protection from too great an exposure to physical hazards.

- (3) To safeguard or even strengthen any prerogatives acquired in mid-life such as skills, possessions, rights, authority and prestige.
- (4) To remain active participants in the affairs of life in either operational or supervisory roles, any sharing in group interests being preferred to idleness and indifference.
- (5) To withdraw from life where necessity requires it, as timely, honourably and comfortably as possible.

Bosanquet [102] identifies the five aims of an ideal social policy for the elderly as (i) to increase choice and extend opportunity (ii) to improve standards of care (iii) to reduce isolation and loneliness (iv) to make possible continued engagement with society for those who wish to participate whilst respecting those who wish to disengage and (v) to replace vulnerability with security and stability.

Three fundamental principles of social help, as applied to the elderly, are expressed by Idris Williams [103] in the following way:

- (1) A preventative approach should be followed to avoid problems and crises whilst preventing undue strain on carers.
- (2) Flexibility is essential to ensure that the care given is appropriate to needs.
- (3) Co-operation between social and medical workers is vital in both a community and institutional setting.

Midwinter [104] argues that retirement should be seen as a civic right available to everyone by choice not by arbitrary imposition whilst Isaacs [105] maintains that social policy should seek to replace paternalism by participation, homogeneity by individuality and parsimony by public expenditure.

In perhaps the most authoritative of normative statements, Age Concern, in a Manifesto on the Place of the Retired and the Elderly in Modern Society [106] presented for the attention of:

- (i) those who frame public policies
- (ii) those who administer medical and welfare services and allocate resources
- (iii) those involved in manufacturing and retailing and
- (iv) those who organise voluntary associations and community affairs,

sets out a series of social policy objectives to meet the needs of the elderly, expressed as follows:

- (1) To allow the elderly to establish a balance between the independence which gives them a sense of dignity, and the security of knowing they will receive the care and support they need in times of illness or stress.
- (2) To ensure sufficient income to meet their needs for social, physical and emotional well-being.
- (3) To provide accommodation which ensures their rights to privacy and the retention of material possessions, within the context of a secure and well-appointed environment.
- (4) To provide easy access to transport to help the elderly maintain social contacts and play a full part in community life.
- (5) To organise a system of health care and comprehensive domiciliary support which will help the elderly to retain the maximum degree of independent living in spite of infirmities or disabilities.
- (6) To provide opportunities for employment for those who want them and for participation in a full range of social and community activities
- (7) To allow the elderly, on all possible occasions, to make their own choices on all matters affecting their welfare, living conditions and activities.

Finally, Muir Gray [110] identifies five objectives for good domestic health amongst the elderly as:

- (1) To slow down functional decline that occurs in old age in order to overcome the loss of fitness which leads to a gap between actual and potential levels of ability
- (2) To maintain and improve the quality of life in old age. Most old people would like to live in their own homes provided that they can be given enough support to do so. Independence couple with privacy helps maintain a good quality of life
- (3) To provide support for the informal carers of older people
- (4) To keep older people at home as long as possible
- (5) To help people have a good death as well as a good life.

Aspects of Age and Ageing: Consolidation and Interpretation

The evidence presented and analysed in Chapter 3 has shown that, as a consequence of major and rapid demographic changes in the age structure of the population of the United Kingdom (people over the age of 50 now form 40% of the population, a proportion which will rise to 50% by the year 2005) concern with the special needs, status and condition of the elderly in British society has been dramatically elevated to the very top of the social policy agenda, not least because of the high and growing demands which the old make upon every type of support service available to the community. The necessary massive shift of economic resources towards the care of the elderly has resulted in ever greater interest in the physical and psychosocial health of the old and very old.

The care of the elderly can therefore be identified as perhaps the single most significant social issue facing the developed economies today. Such a demographic imperative would have force irrespective of a convergent ecological imperative. The main argument advanced here is that the coincidence of a demographic imperative with a critical ecological imperative has the most profound social and environmental policy implications which demand radical shifts in socio-political attitudes, priorities and approaches.

An important conclusion of the investigation of aspects of age undertaken in Chapter 3 is that ageing (i) renders the individual less adaptive and therefore more vulnerable to intensified life-stresses (ii) lowers the threshold of sensitivity to small changes in the socio-environmental stressors with a resultant destabilisation of the state of equilibrium between the individual and each of the physical and social environments (iii) predisposes the individual to a greater level of need (iv) increases the chance that essential needs will not be satisfied, with a consequent reduction in health status and (v) increases the probability of dependency. What is even more significant, however, is the recognition that the most relevant aspects of ageing are not those associated with age as such but rather with the way in which society manages the process of ageing and reconciles the ethical and pragmatic dimensions of the demographic imperative. Such conclusions, and the implications which may be derived from them give the problems of caring for the elderly within the context of an ecological imperative a more generic relevance. Specifically they serve to support the argument that the demographic imperative should be understood as a subset of the more universal health-equity imperative.

The notion of universality is reinforced by the promised adoption by the United Nations of a set of generic "principles for older persons" which are to give expression to what elderly persons "should" be entitled to, provided with or allowed to do. The United Nations is also giving consideration to adopting a series of recommendations for global and national targets for improving the condition and status of older people.

The contention that the demographic imperative is a subset of a wider health-equity imperative can be tested through an assessment of the whole health status of the elderly population of Britain today to confirm the hypothesis that, notwithstanding the major allocation of resources to the care of the elderly population, their health is both relatively and absolutely poor when measured along each of the seven dimensions of whole health and that inequities in the health status of the elderly are patterned by social and environmental rather than individual factors. Such an assessment of the health status of the elderly is undertaken in the following two chapters.

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CHAPTER 4

PRIMARY DIMENSIONS OF HEALTH

Primary Measures of the Whole Health Status of the Elderly in Britain

In this and the following chapter, evidence is assembled to test the hypothesis that the whole health of the elderly population of Britain today - measured along each of seven dimensions - is both absolutely and relatively poor as a result of both social and environmental factors. The supposition is that almost all elderly need some form of social support to maintain a state of whole health against the effects of socio-environmental stress to which a combination of both intrinsic and extrinsic factors renders them especially vulnerable. A profile of the whole health status of the elderly population of Britain is constructed from aggregated measures of health using as the instrument an adaptation of the OARS Multidimensional Functional Assessment Questionnaire introduced in Chapter 2. OARS is recognised [1] as a consistent and reliable means of gathering information on the overall health status, and on the objective and subjective well-being, of the elderly. In its adapted format, this instrument consists of an array of seven measurement dimensions, subdivided for present purposes into primary and extended categories. **Primary** measures of health status, identified as subjective health, physical health, functional health and mental health are evaluated in the present chapter whilst **extended** measures, identified as social health, economic health and environmental health are evaluated in Chapter 5. Each area of measurement is itself multi-dimensional. For the purposes of comparison, and to provide an indication of both the range and variance of health measurement, equivalent results of surveys conducted on a sample population of sheltered housing tenants - a group "weighted" towards the higher age bands and with special housing needs - are, where possible, presented in parallel with those relating to the elderly population as a whole. Also where appropriate and where significant differences are evident, comparisons are made between measures relating to Scotland and those relating to the rest of Great Britain or the United Kingdom.

Dimension 1: Subjective Health

The subjective health status of the elderly is considered under two headings. Firstly, society's views of the elderly and secondly, the elderly's views of themselves.

Society's Views of the Elderly

Age is not a problem, rather is it society's attitude and reaction to age which is the problem. So said Raymond Illsley, Professor of Medical Sociology and Director of the Institute of Medical Sociology at the University of Aberdeen in 1981 [2]. Ten years on the situation has not changed.

Social attitudes about age matter because the regard and respect in which the elderly population are held by others is an important measure of what we will call their "subjective health". Attitudes matter to the extent that they colour the everyday experience of old people. In the way they are spoken to and spoken about; in the way they are treated or mistreated; in shops, on buses, in post office queues, by meter readers and at the doctors. In the way they are written about in newspapers and books. In the way they are talked about (but very rarely talked to) on the television and the radio. But social attitudes also matter to the extent that social policy is allowed, consciously or unconsciously, to reflect the prejudices and misconceptions of society generally. Stereotyping of the elderly is pervasive and may always have been so. As Guggenbuhl-Craig [3] implies, the notion that, in other societies and at other times, the elderly were revered and respected for their wisdom is probably itself a myth and, in any case, tells us more about those societies than it does about the elderly within them.

Guggenbuhl-Craig can find no test to prove the special wisdom of age. What he does discover is the difficulty society has in coming to terms with the increased probabilities of disease, depression, dementia, deficit and diminution in the old age of others and, by projection, itself. The tragedy, according to Guggenbuhl-Craig, is that the failure to face up to invalidity - and a little foolishness - in old age prevents society from recognising the positive values in dependency, passivity and lack of competition. The days of treating the elderly as a sacred elite - if they ever existed - are long past. What remains is a prevalent attitude which oscillates between fear, guilt, patronisation and contempt [4].

Ford and Sinclair observe that the very language of age, euphemistically speaking, speaks volumes [5]. Listen and everyday, somewhere, you will hear or read of some old person referred to as "past-it", "over-the-hill", "old duffer", "old dear", "old codger", "little old lady", "dirty old man", "wrinkly", "old wifey" or just "silly old sod". This is the linguistic tendency of rampant ageism - a process of systematic stereotyping and discrimination against people for no other reason than that they are old - and it is just as invidious in its way as racism and actually far more widespread. What it must be like to be old and black - and poor.

Comfort offers a devastating caricature of the prevalent stereotype of the "ideal" old person, which can be summarised as follows:

White-haired, inactive and unemployed, docile, not demented - which would be a nuisance to other people - but slightly deficient in intellect and tiresome to talk to, asexual (because old people are incapable of sexual activity and it is unseemly if they are) and unemployable because everyone knows that the old make a mess of simple work. Their main occupations are religion, grumbling, reminiscing and attending the funerals of friends. If sick they need not, and should not, be actively treated and are best stored in institutions. A few, who are amusing or active, are kept by society as pets. The rest are displaying un-pardonable bad manners by continuing to live [6].

Excoriating in its effect, such a commentary nevertheless gets uncomfortably close to reflecting deep-rooted social attitudes. This is confirmed by Hobman who writes:

This is one widely held image of ageing, full of assumptions and value judgements, with its underlying theme of patronising attitudes, setting the elderly as a race apart to be pitied as people who are no longer capable of managing their own lives. It assumes that ageing is synonymous with a changing personality and an incompetent level of social functioning. It also implies limited intellectual thresholds, devoid of critical faculties [7].

Isaacs too has referred to the "metamorphosis principle" which states that:

After a certain age and below a certain income, the infinite variety of human nature clots into a formless mass; adult men and women metamorphose into 'old people' or 'the elderly' ... with attributes and needs which are characterised by the years which they have attained rather than the years that they have spent in attaining them [8].

Alex Comfort again:

[There exists a form of] ageism ... the notion that people cease to be people, cease to be the same people or become people of a distinct and inferior kind, by virtue of having lived a specified number of years [9].

More Comfort, recognising retirement, in the public perception, as virtually a rite of passage into senility:

At a specific age, the elderly retire or, in plain words, are rendered unemployed, useless and in some cases, impoverished. After that transition, and in proportion to their chronological age, they are prescribed to be unintelligent, unemployable, crazy and asexual [10].

One of the most obvious manifestations of such ageism is the lack of discrimination shown between different, post-retirement ages, a span of 30 years or more. The sense is that if the retirement age was reduced to say 50 then those suddenly cast by society into the role of "newly retired" would find themselves just as suddenly reclassified amongst the un-differentiated masses of the elderly and treated accordingly. The all-too-obvious implication, as Hobman forces us to recognise, is that:

The old are unable to exercise informed or rational choice or of maintaining control over their circumstances ... (whilst) ... lacking the resources to meet their own needs for recreation, or welfare [11].

The charity Age Concern is just as damning:

The widely held image of the old [is] as passive, poor and pitiful second class citizens [12].

They add that western society all too often considers the elderly to be sick or socially incompetent, incapable of exercising informed or rational choices or of maintaining a degree of control over their circumstances. Hendricks and Hendricks [13] too recognise incipient ageism in what they identify as the commonly held stereotype that most older people are living isolated lives beset by serious health problems, causing them to be emotionally distraught; that women experience psychological trauma with the onset of the so-called empty-nest years and that retirement spells certain morale problems for men because of loss of role, diminished economic status and lack of political power. Stereotypically, the elderly are irritable, self-centred and irredeemably conservative.

From Eric Midwinter's review of social attitudes emerges what he calls a "shadowy composite" of the profile of the elderly in Britain today, an image which is typified by:

The elderly widow, living alone in her home, without a car, not getting out much, not many interests, just watching TV or pottering, probably not much bothered by social workers or others, not being being especially ill nor on the other hand especially well [14].

One need hardly add that the poor widow in question would inevitably have dry skin, white, sparse hair, stiff joints, short sight, poor hearing, false teeth and incontinence.

The overwhelming impression, then, is of a society in which ageism is pervasive and entrenched and of a society struggling with great difficulty to come to terms with the realities of an ageing population within a socio-cultural context in which growth and acquisitivism is venerated and economic passivity depreciated. The recourse has been to escape to the refuge of myth and stereotype, accompanied by an unwillingness, perhaps incapacity, to see beyond a superficial image of physical deterioration and mental slowing to the recognition that where depression, hopelessness, inferiority, passivity, dependency and even paranoia exist, this may very likely be, as Palmore maintains [15], the result of social and cultural deprivation, role loss, status loss and discrimination rather than of any biological process. It is also a society in which the principal feeling of and towards the elderly is one of guilt. The elderly are made to feel guilty about being a burden. Their children feel guilty either because they cannot, or will not, care for their parents in old age. And society feels guilty because society's ills - disease, disability and poverty - are more prevalent amongst the elderly than any other section of the population. One manifestation of this guilt is, paradoxically, a widespread tendency, even amongst professional carers, to cosset elderly people, providing them with tokens of esteem rather than the means to live healthy, independent lives [16].

Whilst it may well be true, as Walker [17] has commented, that old age is a period when "we reap what we have sown in earlier years and the harvest is not necessarily of a pleasing nature", the changes brought about by old age go far beyond those explicable by individual temperament and characteristics. To Nicholas Bosanquet [18], the elderly are "a nation within a nation", with a way of life which is not of their own choosing. To the natural and to some extent inevitable decline of health has been added the contrivance of a decline in aspiration and opportunity born out of a pervasive belief that "looking after" the elderly equates with the satisfaction of their basic physical needs rather than - as with everyone else - the combination of needs, physical, social, emotional and spiritual. Philibert [18] summarises this position with both perception and precision in commenting that society has simultaneously managed to add years on to human life and to deprive most of those added years of life, zest and meaning.

And now, to add further insult, the media, the advertising agencies and the marketing men have discovered a new stereotype - that of the well-off old persons ("woopies"), the greying, leisured, middle-aged spenders ("glams") and the jet-setting oldies with lots of loot ("jollies").

The picture presented is of a "grey-boom" with a substantial minority of newly retired, property-owning middle classes, enjoying relative prosperity on the benefits provided by occupational pensions supplemented by income from well-advised investments. That in Britain at least, this rosy picture has been shown by Bosanquet and Propper [20] to be a myth may not stop the stereotype fuelling resentment amongst young adult workers against payment of increased health and pension costs for the "rising tide" of retired elderly [21]. The truth is that whilst there may be a small and growing number of people whose circumstances allow them to be as well off in retirement as in employment, people in retirement are still three times as likely to be in poverty as people in work. Pensioners account for two-thirds of all rent rebates and only four percent of pensioners enjoy the same income as the average working household.

Whilst intergenerational conflict, however falsely based, could in theory threaten the implicit contract on which the welfare state is founded whereby the current generation of workers agrees to pay the pension and health costs of the previous generation and so on there is, to date little evidence of any erosion in this most critical of social commitments.

Indeed the annual British Social Attitudes report continues to show widespread support amongst both the young and those nearing retirement for providing the elderly with a decent standard of living and a clear preference for state rather than private provision of pensions and other retirement benefits.

Though the elderly are, from any rational perspective, self-evidently not a homogeneous group with identical characteristics and needs, the question is not what is true or false but what is believed. The danger in stereotyping is that it precludes the need for further and deeper thought and analysis. Ill-formed, unbalanced social policies born out of prejudice, and reflecting prevailing attitudes rather than objective consideration, may force the elderly to adapt to the current organisation of society rather than allowing for the possibility that society itself should be subjected to fundamental structural change. Forty years ago the Royal Commission on Population issued grave warnings about an ageing population and suggested that the future elderly would be less dynamic, less innovative and less productive.

Measured on any scale such predictions have proved totally wrong. For all the problems they face, the elderly population today is no longer a marginalised group. They have the potential to exercise both major economic power as an important new consumer group (as advertising and marketing agencies have already recognised) and, even more significantly, growing political power. Today some 41% of the British electorate are over 50. By the year 2025 this proportion will have risen to 51%. If this massive constituency turns passivity into action and decides that its interests, its needs and its rights matter, then the rest of society is going to have to listen. Whether the potential will be realised may depend in no small measure on the elderly's view of themselves.

The Elderly's View of Themselves

Bury [22] is one of many commentators who believe that studies of health status and the quality of life among the elderly must properly include an appreciation of the beliefs and attitudes of older people themselves. Self-estimates of health and need by the elderly are frequently and consistently revealed to be radically different from the judgements made by professionals. Findings also suggest that such discrepancies are frequently ignored, suggesting either that the professional knows best or that the respondent's opinions are of little account [23]. Whether reliance on self assessments of health is always in the individual's best interest is, however, an open question. As Johnson [24] explains, when the expectation of others is that because you are old you must also be sick and decrepit it is small wonder that many elderly will refuse as long as possible to conform to stereotype whatever their actual condition. Unreported illness appears to be a unique aspect of health management in relation to the elderly. Social attitudes towards the elderly are of a species which is both threatened and threatening. There is also a sad lack of knowledge and understanding about the effective, even heroic, adjustments which millions of old people make in the face of radically changed physical, social and emotional conditions. Under such circumstances is it surprising that so many elderly have difficulty in maintaining a positive image of themselves. Anthea Tinker [25], recently appointed Professor of Social Gerontology at Kings College, London, speaks with particular authority when she maintains that a number of factors, such as loss of employment, dependency on state pensions, receipt of "special" services all contribute to the pressures on the elderly to see themselves as a subordinate, dependent group.

Such pressures are manifold. Robert Pinker [26] and Richard Titmuss [27] have both emphasised the stigma attached to being always the recipient and never the giver whilst Blythe [28] believes that even the growth of a "gerontocracy" dedicated to studying the elderly as a "class" has a potentially negative effect on self-image when, as Midwinter [29] maintains, all the elderly want is simply to be respected as ordinary individuals not perceived as a special group.

When the right research is carried out in the right way, the elderly are revealed to be rich and varied in their estimates of self. Williamson and colleagues [30], for example, identify one group of the elderly who have comparatively low expectations of healthiness and so are reluctant to seek medical advice in the pessimistic, fatalistic and ultimately mistaken belief that their complaints are unjustified, bothersome or beyond remedy.

Further extensive social surveys, by Abrams [31] and others, have revealed that about a third of the elderly "worry a lot" and that those who do have four main sources of worry, family life, health, friendship and financial security. Almost forty per cent of the elderly see their standard of living declining whilst a third, concentrated amongst the single, recently bereaved and in the older age groups, say they are lonely.

A further third of the elderly questioned expressed unhappiness at being forced to retire though they showed little enthusiasm for taking part-time employment because of the low return on their efforts. The recently retired are especially worried about financial matters whilst the older groups are much more aware of their health problems. The very old and disabled are particularly conscious of their transport and mobility difficulties.

In contrast, a substantial majority of elderly surveyed expressed pleasure at their retirement especially if they had some extra income on top of their state pension. They were fairly modest in their expectations of health and were appreciative of the medical and social services. Whilst aware that their leisure opportunities were becoming more restricted, most reported that they maintained regular social contacts with friends.

An interesting reflection of changing attitudes is presented by the results of a 1988 Harris Poll commissioned by a private company specialising in the development of retirement homes for the elderly. Of the elderly respondents to the survey, 90% expressed the view that they were no longer prepared to experience a frugal retirement in order that they could bequeath their homes to their children and that they had earned the right to spend the money upon themselves.

A Gallup Poll in September 1988, conducted on behalf of Help The Aged and the MSD Foundation, found the following results:

- * Most pensioners (57%) believed that responsibilities for their care should rest mainly with the state rather than with themselves, their families or voluntary groups
- * Three out of four pensioners fear that elderly people will run short of money as they grow in numbers and live longer
- * 85% of pensioners surveyed said that they were either very or fairly satisfied with their experience of the NHS
- * 62% said that their health was good or very good
- * 51% associated old age with "family happiness", 42% with "tranquillity and peace", 37% with "loneliness", 34% with "failing health" and 15% with "feeling useless"
- * 74% of the elderly thought they would have a problem of shortage of income as more of them lived longer while 55% said did not believe that the NHS would put enough resources into maintaining fitness and health amongst those of retirement age.

On balance, surveys tend to show that the elderly themselves are twice as optimistic about old age as the population generally. Put another way, of course, this might be interpreted as saying that surveys of social attitudes tend to confirm a negative perspective of ageing amongst the population as a whole.

An American survey by the National Council on Aging [32] showed that the elderly rated the best things about being over 65 as having more leisure and free-time, being free from responsibilities, not having to work, having time to enjoy their families. They rated the worst things as poor health, loneliness, financial problems, dependency and boredom. Audrey Hunt has discovered similar findings in the United Kingdom, with 34% of respondents listing loneliness as one of the things about age that was particularly disliked [33].

Perhaps the most dominant theme to emerge from surveys of the subjective health of the elderly is the importance they attach to perceived control; the feeling that they are retaining a certain initiative in the conduct of their own affairs, without becoming a burden to their family or friends. Langer [34] has associated loss of control with a lowering of self-esteem which in turn and in the view of Seligman, may lead to what he calls learned helplessness [35].

An aspect of subjective health studies still to be fully developed is that relating to the expectation older people have of social and health services provided and their experience of them. Only through an understanding of such expectations and experiences can the assessment of effectiveness and the measure of patient satisfaction be given a sounder base.

Dimension 2: Physical Health

Reference has already been made to the common and long-standing assumption that ill health is an inevitable consequence of growing old [36], and the belief has prevailed that accurate diagnosis of the physical illnesses, confusion and states of depression of elderly people was unnecessary since nothing useful could be achieved at their age. Hodkinson [37] for one believes that as a result of such misconceived convictions the elderly, as a group, have tended to be under-investigated leading to many instances where perfectly treatable conditions have gone unattended. In fact the experience of geriatric medicine is that most elderly people who complain of ill health are found to be suffering from a treatable disease or condition of one form or another.

In the following sections, and against a background in which rising standards of living, better education, better nutrition and medical advances have all supposedly combined to improve the general state of the nation's health, measurements of both the absolute and relative condition of the physical health of the elderly in Britain, are presented in terms of a number of key dimensions, fully listed in Table 4.1

Life Expectancy and Life Span

The life span is known to be impervious to the short term effects of medical intervention or environmental improvement [38], but as deaths by accident and disease are reduced within a developing society and survivability increases so increasing life expectancy may be taken as some reasonable indicator of improving population health. Modern expectations of life are best judged within their historical context and from Table 4.2 we can trace average (male) life expectancy rates at birth from Greek and Roman times to the present day. The extent to which expectations of life for different age groups within the United Kingdom have increased over the this century is shown by Table 4.3, giving trends for the period 1906 to 1985.

TABLE 4.1
DIMENSIONS OF PHYSICAL HEALTH MEASUREMENT

- * Life expectancy
- * The use of hospital services
- * The use of primary health care services, including consultations of general practitioners and prescriptions of medication
- * The use of personal social services
- * Self-evaluation of health
- * Self-assessed incidence of acute and chronic sickness
- * Public expenditure on health and social services
- * Death

TABLE 4.2
EXPECTATIONS OF (HUMAN) LIFE
AT DIFFERENT HISTORICAL TIMES
40,000 BC TO PRESENT DAY

Historical Period	Male Life Expectancy (Years)
Early Homo Sapien (circa 40,000 BC)	29
Greek (circa 1000 BC)	35
Roman (circa 100 BC)	32
England (Middle Ages)	48
England (circa 1850)	41
England (circa 1906)	48
England (present day)	72
Projected	
England (circa 2011)	75

SOURCES: R. G. Cutler, "The Evolutionary Biology of Senescence", in The Biology of Aging, eds. J. A. Behnke, C. E. Finch and G. B. Moments (New York: Plenum Press, 1978)

Leonard Hayflick, "Prospects for Increasing Human Longevity", in Duke University, Perspectives on Aging, (Durham, NC: Ballinger Publishing Company, 1981)

TABLE 4.3
EXPECTATIONS OF LIFE
FOR DIFFERENT AGE GROUPS
(UNITED KINGDOM) 1906-2026

Year	At Birth (Years)		Age 65 (Years)		Age 75 (Years)		Age 85 (Years)	
	M	F	M	F	M	F	M	F
Estimated								
1906	48.0	51.6	10.8	11.9	6.4	7.1	4.9	5.4
1931	58.4	62.4	11.3	13.0	6.4	7.4	4.8	5.4
1951	66.2	71.2	11.7	14.2	6.7	8.0	4.8	5.8
1961	67.9	73.8	11.9	15.1	7.0	8.7	5.3	6.3
1971	68.8	75.0	12.1	16.0	7.3	9.4	5.5	6.9
1981	70.8	76.8	13.0	16.9	7.6	10.2	5.7	7.4
1985	71.5	77.4	13.2	17.2	7.9	10.4	5.9	7.6
1986	72.4	78.0	13.7	17.6	8.2	10.8	---	---
Projected								
2011	75.0	80.0	---	---	---	---	---	---
2026	75.7	80.5	15.9	19.3	9.9	12.2	---	---

SOURCE: Central Statistics Office, Social Trends 19
(London: HMSO, 1989), Table 7.2

As an index of population health, life expectancy figures for the United Kingdom appear less favourable than in many other countries. A report published by the King's Fund Research Institute in 1988 [39] acknowledges "some modest improvement" in the state of physical health of the elderly in Britain but quotes World Health Organisation (WHO) statistics which indicate that the life expectancy of a 65 year old man is now greater in 21 other countries, than in Britain and these other countries, rather surprisingly include Sri Lanka and Uruguay. For women of the same age, life expectancy of women is greater in 16 other countries, including Greece, Spain and Portugal. Estimates presented in the report suggest that, at age 65, the further life expectancy of women in Scotland is 16.1 years whilst that of their Japanese counterparts is 20.0 years. Comparable figures quoted in the report are 19.4 years for France and 18.9 years for the United States.

Use of Hospital Services

The need to stay in bed, to consult a doctor, to attend a hospital for treatment or to go into hospital for a period of time can be taken as highly specific indicators of physical health. Going into hospital is undoubtedly the most acute of these indicators. In this context it is clear, from the evidence revealed by statistics on the number of discharges and occupied bed days - a statistic compounded of admission rates and length of stay [40] - that the elderly make particularly heavy use of hospital services [41]. The figures show that whilst only 2.5% of the elderly population are in hospital at any one time, they do occupy a high proportion of hospital beds and that this principally the result of the very great length of stay on average of elderly patients. Bosanquet has estimated that average hospital stays for elderly persons are at least twice as long as for younger age groups [42]

From Table 4.4 we can see that elderly people in the 75 and over age group occupy on average 22.7% of hospital beds. A half of all National Health Service beds are occupied by the elderly who account for just 15% of the total population. Looking then at the percentage of individuals within different age groups who underwent in-patient stays in hospital over a twelve month period, as shown in Table 4.5 this clearly demonstrates that hospitalisation increases with increasing age. Amongst the very old, there is a 60% greater incidence of in-patient stays than for the population as a whole.

TABLE 4.4
IN-PATIENT OPERATIONS PERFORMED
AND NUMBER OF BEDS USED DAILY,
BY AGE (GREAT BRITAIN), 1985

Operations Performed		Average Beds Used Daily	
All Ages (Thousands)	Age 75 and over (%)	All Ages (Thousands)	Age 75 and over (%)
2803.5	11.5	542	22.7

SOURCE: Central Statistics Office, Social Trends 19
(London: HMSO, 1989), Table 7.26

TABLE 4.5
IN-PATIENT STAYS IN HOSPITAL
OVER A TWELVE MONTH PERIOD,
ALL AGE GROUPS, (GREAT BRITAIN), 1982-1987

Age Group	1982 (%)	1984 (%)	1985 (%)	1986 (%)	1987 (%)
0-4	13	9	10	10	9
5-15	5	6	6	6	6
16-44	10	10	11	10	11
45-64	8	8	8	8	9
65-74	10	11	10	11	12
75+	13	15	15	16	16
Total	9	9	10	9	10

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey (London: HMSO, 1989), Table 12

With particular reference to Scotland, John Brotherston, Professor Emeritus of the Department of Community Medicine at the University of Edinburgh and formerly Chief Medical Officer at the Scottish Home and Health Department has strongly emphasised [43] that the use of national health services by the elderly are not restricted to so-called geriatric services but embrace the full range of specialist medical disciplines, including urology, thoracic medicine, radiotherapy, ophthalmology, orthopaedic surgery and cardiology.

A useful point of comparison is made by contrasting the use of hospital services by elderly in the general population with those in "sheltered forms" of accommodation. In a recent survey of elderly sheltered housing tenants in Scotland conducted by Fennell [44] 18% of the sample had been in hospital within a twelve month period preceding the study, which compares with 16% for people aged 75 and over in the population as a whole. In total, 35% of sheltered housing tenants had had an in-patient stay in hospital during the time they had been in sheltered housing. This is a very substantial proportion and seems to reflect the high age group weighting and degree of dependence inherent in the sheltered housing sample though an additional explanation may be improved access to services through the support of wardens.

Use of Primary Health Care Services

Whilst hospital admissions generally reflect critical breakdown of health, the number of times an elderly person consults a general practitioner in a year relates to a much higher body of illnesses and thus may be taken as a reasonable indicator of their state of health, or at least of their concern about their state of health. It may equally, of course, reflect upon the quality of service received or expected.

Surveys of the general population, notably the General Household Survey of 1986, reveal that elderly people account for about 20% of all consultations. Table 4.6 confirms that consultations in general practice rises progressively for people over 65 and is about 50% higher for those aged 75 and over than for the population as a whole. An interesting sidelight on this statistic is thrown by a recent study by the Office of Health Economics [45] which showed that between 4 and 5 million people consult their family doctors each year because of conditions such as depression and anxiety, states known to be especially prevalent in older age groups.

TABLE 4.6
DOCTOR CONSULTATIONS BY AGE-GROUP,
ALL PERSONS (GREAT BRITAIN), 1972-1987

Age Group	1972 (%)	1979 (%)	1983 (%)	1987 (%)
0-4	14	17	20	23
5-15	7	8	10	12
16-44	12	12	12	14
45-64	12	14	14	15
65-74	14	16	18	17
75+	20	21	21	22
All Males 75+	19	21	20	22
All Females 75+	20	21	20	22
All Groups	12	13	14	15

SOURCE: Office of Population Censuses and Surveys, 1986
General Household Survey (London: HMSO, 1989),
 Table 11

An earlier DHSS survey [46] has indicated that the elderly are likely to need more home visits than the population average and that, for those of age 75 and above, two-thirds of consultations take place in the home, a finding which reinforces the results of studies of contact rates between GPs and patients conducted by Logan and Cushion [47] in 1958 and by the Royal College of General Practitioners [48] in 1974 and 1986. Unreported or untreated illness does not, of course, register within such statistics.

The use by the elderly of other primary health care services such as chiropody, the district nursing service and the health visitor service was also measured by the 1986 General Household Survey and the results, which accord generally with those obtained in the 1976 OPCS study conducted by Audrey Hunt are aggregated in Table 4.7.

In the 1986 Fennell survey of sheltered housing tenants, [49], it was found that only 12% of tenants had not consulted a doctor in the past year. Whilst 23% said that they had consulted their doctor "two or three times" in that period, 22% had seen their doctor at least once a month. A third had had a home visit from their doctor within the last month, a quarter had made a visit to the surgery whilst 20% had been to a clinic or day hospital and 19% had been visited by a district nurse or health visitor.

These reported high levels of use of primary health care services by residents of sheltered housing accommodation generally match the findings of the 1982 Scottish Office survey of sheltered housing in Scotland [50] and again is taken to reflect the high dependence levels in the sample as well as the improved levels of support which ensure that help is sought more often than in the elderly population as a whole. As an interesting footnote, and assuming that the taking of medication can be regarded as a health indicator, Fennell records that 81% of his sample reported that they were currently taking some form of prescribed medicine [51].

Michael Alderson [52] offers a useful summary of the state of dependence of the elderly on health and welfare services through estimates of the percentage of patients over pensionable age utilising each of the health and welfare services on a particular day in 1981. These are shown in Table 4.8 and include percentages seeing their family doctor, attending out-patients, resident in local authority accommodation, in-patients in general hospitals or in-patients in psychiatric hospitals.

TABLE 4.7
USE OF PRIMARY HEALTH SERVICES,
BY AGE DURING ONE MONTH, (GREAT BRITAIN), 1985

Age Group	Chiropody Services (%)	District Nurse Services (%)	Health Visitor Services (%)
65-69	6	2	---
70-74	9	2	1
75-79	14	5	2
80-84	17	10	2
85+	19	20	4

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey (London: HMSO, 1989), Fig 12H

TABLE 4.8
PERCENTAGE OF PERSONS OVER PENSIONABLE AGE
BEING CARED FOR BY HEALTH AND WELFARE SERVICES
ON ANY GIVEN DAY IN 1981

Age	Sex	GP	Out Patient	Resid.	Gen. Hosp.	Psych. Hosp.	Total
65-74	M	1.6	0.6	0.5	0.7	0.5	3.9
60-74	F	1.8	0.6	0.5	0.7	0.5	4.1
75+	M	1.9	0.6	3.1	1.7	0.9	8.2
75+	F	2.0	0.5	5.8	2.0	0.9	11.2

SOURCE: Michael Alderson, "Demographic and Health Trends in the Elderly", in Nicholas Wells and Charles Freer, eds. The Ageing Population: Burden or Challenge ? (Houndmills: Macmillan, 1988), p.97

Use of Personal Social Services

The degree of dependence experienced by the elderly is reflected in the demand they make upon the so-called personal social services such as the home help service, day centres, lunch clubs and meals on wheels. The use of such services by different age groups, based on data obtained during the 1986 General Household Survey is shown in Table 4.9. The two most "popular" services are clearly home helps and meals on wheels. Over one-third of the elderly in the 85 and above age group had a home-help whilst Eric Midwinter has estimated that, in one year, around 40,000,000 meals are delivered to the elderly [53].

The survey confirms that the majority of even the most severely disabled elderly continue to live in their own homes or in the homes of relatives. Whilst the number of elderly residents in local authority, voluntary or private homes rose by 40% between 1976 and 1986 [54], there is still between two and three times as many bedfast and disabled elderly living "independently" than in all the institutions put together. Of those elderly living in the community in 1986 some 29% of people in the age range 65-74, and 48% in the range 75 and over, lived alone [55]. Those elderly living alone were more likely to make use of personal social services. Among people aged 75 and over, living in single households, 29% received assistance from the home help service [56].

This makes an interesting comparison with the results of Hunt's survey ten year's earlier for the OPSC [57] which had suggested that just 9% of the elderly population were receiving assistance from home helps, 8% were attending lunch clubs whilst 3% were in receipt of meals-on-wheels and reflects the growth of services and degree of "take-up" in the intervening period.

In 1986, Fennell [58] found that those sheltered housing tenants receiving regular help from the statutory services included 36% who had home helps and 8% who made use of the meals-on-wheels provision, again in line with the earlier Scottish Office study [59].

Self-Evaluation of Health

Self (or subjective) health assessment is the individual's perception and evaluation of his or her overall health status which may be measured by a single rating, typically ranging from "poor" to "excellent".

TABLE 4.9
USE OF PERSONAL SOCIAL SERVICES,
BY AGE, DURING ONE MONTH,
(GREAT BRITAIN), 1985

Age Group	Home Help Service (%)	Day Centres (%)	Lunch Clubs (%)	Meals on Wheels (%)
65-69	1	3	2	---
70-74	5	5	3	1
75-79	11	6	3	3
80-84	22	8	6	6
85+	36	6	8	11

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey (London: HMSO, 1989), Fig 12H, Table 12.42 and Table 12.43

It should be recognised that the elderly's own rating of their state of physical health may reflect relatively low expectations rather than reality. Whilst evidence that self-estimates of health by the elderly may be radically different from the judgements made by professionals has been previously noted, some studies have shown a positive and enduring relationship between self-reported health status and doctor-assessed health [60].

A finding of some particular interest is that the elderly tend to report better health as they get older. Comparing perceived health, measured on a five point scale from "very good" to "very poor", with eight medical indices, Linn and Linn [61] showed that persons over 75 years reported better health than those aged 65-74 and that these perceptions were supported by most of the objective measures. A possible explanation may be that those who survive tend to be those in better health.

Both the validity and the reliability of self-assessed health measures can be expected to vary amongst different sub-groups and Sonya Hunt and her colleagues have argued that the context in which self assessments are made is likely to be a determining factor of their character. They suggest that the association between subjective and objective health can be specified by a careful investigation of the contextual variables that intervene between the two and that self assessment can provide a useful and accurate guide to both general health and propensities to seek care [62].

A number of studies have indicated close relationships between perceived health status and subsequent health outcomes. Several studies, including that of Kaplan and Camacho [63] have found that self-assessed health is a strong predictor of mortality.

Of the most recent studies of perceived health amongst the elderly population, a Gallup Survey conducted in 1988 on behalf of Help the Aged and the MSD Foundation reported that 62% of pensioners said their health was "good" or "very good". The survey by Fennell [64] of sheltered housing tenants with an average age over 75, produced the result that only 10% judged their health to be "poor" whereas 66% felt their health was either "good" (35%) or "alright for their age" (31%). The essentially subjective nature of such self-evaluation exercises is emphasised by Fennell [65] when he shows that 37% of respondents felt that most of the other tenants were in worse health than themselves with only 6% thinking they were in better health.

A Harris Poll in 1989, amongst the residents of private sheltered housing schemes, found that 28% described their health as "very good", 38% as "good" and a further 29% as "fair". 80% had reportedly not been in hospital as in-patients during the previous twelve months and 67% not as out-patients. Some 15% had not visited their GP during the previous year. Any observed differences between the occupants of sheltered housing for rent and for sale is likely to reflect variations in admissions policy between the public and private sectors.

Self-assessed Incidence of Acute and Chronic Sickness

One effect of developments in medicine has been a progressive "transfer" of the incidence of chronic and disabling illnesses from the younger to the older age groups, leading to a higher concentration of both acute and chronic sickness amongst the elderly. Acute sickness is defined as that which results in the restriction of normal activities. Chronic sickness relates to conditions which are long-standing and inveterate. The evidence seems to be that, though we are living longer, these extra years of life are being bought at the cost of greater chronic illness. It should, however, be noted that where self-reported illness is assessed, trends may reflect changes in public expectations of health as well as changes in incidence or duration. A major survey carried out in Great Britain in 1968/69 assessed the number of individuals, living in private households, who were suffering from handicapping conditions and showed that, in the oldest age groups of 75 and over, 7% of males and 10% of females reported very severe handicap. An additional 11% of males and 15% of females reported severe handicap [66].

A more limited study, carried out as part of the 1986 General Household Survey, asked whether informants had long-standing illness, disability or infirmity. Those who reported a long-standing illness were then asked whether this limited their activities in any significant way. The results, shown in Table 4.10, confirm firstly that the proportion of the population reporting chronic sickness increases sharply with age. Further results indicate that some 72% of those aged 75 and above reported a long-standing illness compared with 33% for all informants whilst 58% of the oldest age group had a condition which significantly limited their activities. Of this latter group, 21% reported an acute form of illness. Important differences are revealed between the sexes, women being more likely than men to suffer from both chronic and acute forms of sickness, particularly in the older age groups.

TABLE 4.10
SELF-REPORTED CHRONIC AND ACUTE SICKNESS,
BY SEX AND AGE, (GREAT BRITAIN), 1987

Category of Illness	Age 0-4 (%)	Age 5-15 (%)	Age 16-44 (%)	Age 45-64 (%)	Age 65-74 (%)	Age 75+ (%)	Tot (%)
Long-Standing Illness							
Male:	10	19	25	45	60	69	32
Female:	10	15	25	46	63	73	35
All:	10	17	25	46	61	72	35
Limiting Long-Standing Illness							
Male:	4	8	12	29	43	56	15
Female:	3	8	14	30	45	58	22
All:	3	8	13	29	44	58	21
Restricted Activity							
Male:	13	13	11	13	14	18	12
Female:	11	14	14	16	20	23	16
All:	12	14	12	15	18	21	14

SOURCE: Office of Population Censuses and Surveys, 1986
General Household Survey (London: HMSO, 1989),
Table 13

Overall the rate of disability amongst elderly people aged 75 and over is 63% for women and 53% for men. Some 97% of all elderly people wore glasses whilst one-third of people aged 65 and over said they had difficulty with hearing and one-in-ten wore a hearing aid. The proportions reporting hearing problems rose sharply with increasing age [67]. Hodkinson [68], Williamson et al [69] in a study of unreported needs, and Brotherston [70] have all confirmed that the elderly tend to have more multiple pathology than younger age groups. Williamson, for example, showed that elderly people over the age of 65 have an average of three disabling conditions. Bosanquet [71] identifies the most common disabling conditions to be arthritis, chronic heart disease, bronchitis and the after-effects of strokes. Hodkinson further notes that there are other significant differences between younger and older patients [72]. One example is that, whilst certain diseases occur more frequently with age, others (such as infective hepatitis) become less common. The elderly also tend to react differently to disease processes. A general picture of disease amongst the elderly thus emerges in which a substantially high proportion of the elderly are affected to a greater or lesser extent by a wide range of common medical problems, frequently occurring in combination, all either directly related to the ageing process in some way or encountered most frequently amongst the elderly. The condition of the individual elderly person generally tends to deteriorate with increasing age though regional variations occur which may have social and economic causes. In Scotland, specifically, some estimates have suggested that 50% of all substantially disabled people are of pensionable age. The percentage is higher than the UK average and may be explained in part by a legacy of poor housing and unsatisfactory diet [73].

Public Expenditure on Health and Social Services

The total and proportionate expenditure on the statutory health and social services for the elderly might reasonably be taken as an index of their health needs. Statistics of actual and planned expenditure on health from 1982 to 1989 are contained within the Government's Expenditure Plans for 1988/89, reported in Social Trends 19. Relevant figures are presented in Table 4.11, the real significance of which is that total health and social services expenditure per person over 75 is estimated at over 2.5 times that per person aged 65-75 and about 4.8 times the average for all ages. At the same time, in comparative terms, Britain spends proportionately less of its gross domestic product (GDP) on health care than other western nations as official figures shown in Table 4.12 demonstrate.

TABLE 4.11
PUBLIC EXPENDITURE ON HEALTH SERVICES
(UNITED KINGDOM), 1981-1989

	1982/83 Actual (£m)	1987/88 Actual (£m)	1988/89 Plans (£m)
Hospital and Community Health Services Current Expenditure	10228	14109	14980
General Practitioner Services Current Expenditure	3181	4724	5067
Total All Expenditure	14685	20569	21818

SOURCE: Central Statistical Office, Social Trends, 19, Table 7.37, based on HM Treasury, The Government's Expenditure Plans (Cmnd 288) (London: HMSO, 1988)

TABLE 4.12
EXPENDITURE ON HEALTH
AS PERCENTAGE OF GROSS DOMESTIC PRODUCT,
OECD COUNTRIES, 1989

Country	Expenditure on State-Funded Health (% GDP)	Expenditure on Private Health (% GDP)	Totals (% GDP)
USA	5.6	6.9	11.8
Sweden	8.0	0.8	8.8
France	6.5	2.2	8.7
Netherlands	6.1	2.2	8.3
West Germany	6.4	1.8	8.2
Japan	4.9	1.8	6.7
Spain	4.5	1.8	6.3
United Kingdom	5.1	0.7	5.8
OECD Average	4.9	1.7	7.3

SOURCE: OECD, Financing and Delivering Health Care, 1989

Gross domestic product has been defined as the money value of all the goods and services produced in the country. It is the sum total of all Government and personal consumption, private investment and net exports or, since the revenue from GDP is either paid out to the hired factors of production or retained as profits, is the sum total of salaries, wages, net rents, interest and company profits. Further evidence of inequities in health care provision is shown by the fact that before the NHS Reforms introduced in April 1991 there were acknowledged extreme variations in levels of expenditure per head in different parts of the country and in the way the money is spent [74].

Death

Health education, prevention, fitness programming, diet, early detection and diagnosis of disease, effective treatment and rehabilitation and, finally, high levels of social support can all serve to prolong active and fulfilled lives. On the other hand, a chronic combination of physical ill-health, mental decline, drug dependency, poor living conditions and loneliness may lead to a progressive reduction in the quality of residual life. The last years before a premature death may be spent without dignity; the final months perhaps even without awareness. Thus whilst death may be represented as the wholly natural and inevitable concluding stage of a productive and well-ordered cycle of life, it might equally be viewed as the ultimate index of ill-health.

The five main causes of death in the age range 60 to 84 for each of males and females are shown in Table 4.13 together with the percentages that each of the causes represents of all deaths. These five causes account respectively for 70% of deaths amongst males and 60% of deaths in females. Britain is reported to have the highest death rates in the developed world from cardiovascular disease, lung cancer and breast cancer. Whilst the majority of such deaths occur within the elderly population they are only indirectly associated with ageing and many are preventable [75].

Circulation and respiratory problems render the individual particularly susceptible to the cold, raising the blood pressure and increasing the clotting factor in vulnerable people, and partially account for the phenomenon of "extra" winter deaths from, for example, broncho-pneumonia and heart attacks.

TABLE 4.13
MAIN CAUSES OF DEATH IN MALES AND FEMALES
IN THE AGE RANGE 60-84
(ENGLAND), 1984

Sex	Cause	%
Male	Ischaemic heart disease	33
	Lung cancer	11
	Cerebrovascular disease	10
	Digestive organs cancer	8
	Chronic obstrusive pulmonary disease	8
Female	Ischaemic heart disease	27
	Cerebrovascular disease	16
	Digestive organs cancer	8
	Breast cancer	5
	Lung cancer	4

SOURCE: Office of Population Censuses and Surveys, Mortality Statistics: Causes, England and Wales, 1984, DH2, No. 11 (London: HMSO, 1985)

An average of around 30,000-40,000 additional deaths occur over the six month winter period [76], though numbers can be much higher in particular years. In the freezing winter of 1984, according to OPCS statistics on winter deaths published in March 1985, 160,000 more people (predominantly elderly) died in the first quarter of the year than in the third. One international study for the period 1976-79, quoted by Wicks [77] showed that, whilst the February increase in deaths for England and Wales was 24% on average and for Scotland 19%, the equivalent figures for France and Sweden (a country with a more severe winter climate than the United Kingdom) were just 6% and, for the United States, 8%. The suggestion must again be that factors other than age are influential in causing the increased winter deaths amongst the elderly and that these factors are, in some way, socially, not biologically, determined.

Dimension 3: Functional Health

There have been many attempts to develop and refine a set of indicators which measure functional capability in old age. In particular the term "activities of daily living" (ADL) has been introduced to refer to a range of common activities whose performance is required for personal self maintenance and for independent residence within the community.

For assessment purposes, such activities are generally divided into two categories. These categories distinguish between:

- (i) Physical ADL which refers to the most basic of personal care tasks, and
- (ii) Instrumental ADL (IADL) which is concerned with the more complex activities required for independent living and, in particular, with the assessment of mobility - the ability to get around.

In the case of physical ADL, typical items of personal self-care selected as the basis for assessment are feeding, continence, transference (moving in or out of bed or chair), attending to self at the toilet, dressing, brushing hair, shaving, bathing and cutting toenails. In its original form, the OARS questionnaire assesses the following instrumental ADL items, in hierarchical order; handling personal finances, preparing meals, shopping, travelling and doing housework. Amongst the comprehensive reviews of the various ADL measures used in the assessment of the elderly should be numbered those by Kane and Kane [78], Katz [79] and Stewart, Ware, Brook et al [80].

Physical ADL

For the elderly population within Britain, the 1986 General Household Survey provides a limited measure, on the basis of self (and hence subjective) reports, of the extent to which the elderly are able to exercise personal self-care in matters such as bathing, feeding, shaving, brushing hair and cutting toenails. In this nationwide survey, some 9% of the elderly as a whole reported that they were unable to bathe or shower without assistance. This figure rose progressively with age, totalling 31% of the oldest age group. In addition, 29% of all elderly people (two and a half million) said they were unable to cut their own toenails without assistance, this proportion increasing sharply with age, totalling 65% amongst those aged 85 and above [81]. Equivalent statistics obtained in the 1976 Office of Population Censuses and Surveys (OPSC) study The Elderly at Home conducted by Audrey Hunt [82], record that 25% of subjects were either unable to cut their own toenails or required help to do so whilst 2% were similarly restricted in the activity of brushing their own hair (in the case of females) or of shaving (in the case of males).

In the localised but coordinated study conducted by Fennell [83] on a sample of sheltered housing tenants, some 9% of respondents reported that they could not bathe themselves at all whilst a further 17% could do so only with difficulty and/or with help. Whilst only 2% reported that they were unable to dress themselves or brush their own hair, 48% were "totally unable" to cut their own toenails.

Instrumental ADL and Mobility

Repeated surveys have demonstrated that the experience of severe disability is even more concentrated amongst the elderly than is the experience of ill health generally and this is reflected particularly in the incidence of loss of mobility in the old. The 1986 General Household Survey [84] found, for example, that 13% of elderly people aged 65 and over were unable to walk along the road alone whilst 16% of those in this age group were unable to shop by themselves. This latter figure increased to 56% amongst those aged 85 and over. The same source [85] examined the ability of elderly people to undertake routine domestic activities and showed that nearly one-third of informants over 64 were unable to perform any task involving climbing. One fifth could clean neither paintwork or windows, 9% of all elderly (around 750,000) were unable to get up and down stairs unaided whilst around 2% had some difficulty getting out of bed unassisted.

In all cases disability rates increased with increasing age range. Responses to the 1986 General Household Survey further showed that 10% of elderly people had difficulty opening screw tops, 7% could only manage a small hand wash whilst 8% were unable to cook a main meal. Again results show a progressive increase with age, 31% of those over 85 being unable to prepare a cooked meal for themselves [86].

The 1976 OPSC Survey by Hunt provides a comparative source of information on self-reported functional disability amongst the general elderly population. In this survey, Hunt recorded that 11% of respondents either had difficulty getting into or out of bed or were totally unable to do so, 13% were unable to get out of doors unassisted, 24% were unable to shop alone, 6% could not negotiate stairs without help, 15% needed help to do any form of washing whilst 9% were unable to cook a main meal on their own. At the extreme end of the disability spectrum, Hunt showed that nearly 2% of those over 79 years of age were permanently bedfast whilst 1.1% of those in the 65 to 69 age band were permanently housebound, a figure which increased progressively through the age ranges, reaching 17.7% for those aged 85 and over. Almost a half of the bedfast and the housebound had not been out of their homes for at least a year [87]

Comparative results obtained by Fennell show that 15% of elderly tenants reported some or total difficulty in getting into or out of bed, 14% were unable to get out of doors without assistance, 14% could not manage to climb or descend stairs alone. 32% found shopping impossible by themselves, 13% were restricted to washing small amounts of clothing by hand whilst 8% were unable to cook a main meal unaided. Some 5% were housebound [88].

An Age Concern profile of the mobility and transport problems of the elderly shows that fewer than a quarter had access to private transport and, though about three-fifths of all elderly people made use of public transport, many found they were restricted because of disability. The elderly are thus far more dependent upon their feet for getting to the shops or reaching public forms of transport than the rest of the population. A considerable proportion of the elderly suffer from some degree of chronic disability which impairs movement and makes walking a slow and painful process. Such difficulties are compounded by congested or uneven pavements, high kerbs, inappropriately located crossing points and badly phased traffic signals [89].

The prevalence of physical and mental disability in older age group subjects living in sheltered housing has been studied by Professor James Williamson and Dr. Donald Farquar of the University of Edinburgh. Their medical survey of 801 randomly selected tenants was conducted in parallel with a social survey carried out by Graham Fennell. Williamson and Farquar obtained results which showed that medical conditions such as osteoarthritis, cardiovascular and cerebrovascular disease were common in the survey population. Since these problems are associated with poor mobility it is to be expected that a high prevalence of difficulty with climbing stairs, shopping and cutting toe nails would be recorded. In fact, only 25% of subjects led a life free from any significant restrictions commensurate with their age though a further 39% managed all activities of daily living with just some restrictions in life-style. At a lower level of functional capacity, 24% of respondents were barely able to manage daily activities and suffered considerable life-style restriction. At the extreme, some 12% of tenants required regular assistance with at least some of the basic activities of daily living such as dressing, washing, feeding and toileting [90].

Dimension 4: Mental Health

The 1978 DHSS Survey, published as A Happier Old Age [91] revealed that one-quarter of beds in mental illness hospitals were occupied by patients over 75. The realistic assumption must be that the number of elderly people suffering from mental disorder will increase as demographic changes work through society. Social policy trends since the war, with a shift away from institutionalised care and towards "care in the community" means that many more mentally disordered elderly are living at homes with relatives or even coping on their own.

This high level of demand made by the elderly upon all forms of support services available to the community has inevitably concentrated interest and attention on the degrees of psychosocial as well as physical capabilities of the elderly population and has emphasised the need for standardised, systematic and accurate methods of assessment of mental states amongst the elderly.

Assessment of mental state amongst the elderly presents a special challenge for measurement and the assessment of mood, cognition and behaviour of impaired elderly in particular presents special problems since the patient becomes progressively less able to co-operate and self-assessment and reporting may become impossible.

Distinguishing between confusional and affective states is similarly problematic. A multiplicity of assessment instruments and tests exist, embracing both the fully standardised forms of psychometric instrument and the less formal questionnaire. The former category frequently refer to areas of cognitive function and may range from global measure of intelligence to specific functions such as learning, memory, perception, psychomotor performance and language.

Some of the more common measures of levels of cognitive function in current use, as described by Gilmore and Lyle [92] include the Wechsler Adult Intelligence Scale and the Kendrick Battery. The Clifton Assessment Procedure for the Elderly (CAPE) is a popular instrument for use in the survey and screening of dementia whilst, in the field of memory assessment, the Wechsler Memory Scale and Williams Memory Test are frequently employed. The Geriatric Depression Screening Scale has value in allowing for the differentiation of dementia from other functional psychiatric disorders or from pre-existing physical conditions.

Few tests, apart from the Eysenck Personality Questionnaire are in regular use for personality assessment. The Life Satisfaction Scale allows for measures of the subjective state of an individual or their relatives whilst Lawton's Performance Activities of Daily Living is available for the assessment of everyday living skills among the mentally disabled.

The behaviour and the severity and mix, as opposed to the prevalence, of mental disability amongst the elderly may be assessed by the use of the Crichton Royal Behavioural Rating Scale (CRBRS) [93]. This scale grades individuals along each of three dimensions, memory, orientation and communication. Those scoring 0-1 are categorised as "lucid"; 2-3 as "marginal"; 4-6 "marginally confused" and 7-11 "severely confused". An example is provided by Norman [94] who, in a study of residents in 15 specialist longstay care establishments which were seeking to provide high-quality care for dementia sufferers, obtained average CRBRS scores of between 4.2 and 9.4.

Despite extensive surveys in many parts of the world, reliable estimates of the exact number of elderly dementia sufferers in any one area and of their distribution by age, sex and socio-economic class remain problematic because of the many difficulties which limit effective assessment of the prevalence of the disease - that is, the percentage of people in the elderly population who are suffering from the disease at any one time.

Particular difficulties associated with the collection of reliable data on the prevalence of dementia in the elderly arise because of variations in (i) the proportions of "young-old" and "old-old" in different areas and at different times which, since the prevalence of the condition is very different in the two groups, can affect the overall figures (ii) the survival rates of dementia patients in different areas and at different times and (iii) the diagnosis criteria for the disease. Many studies, such as those by Kay and colleagues [95,96], have estimated prevalence rates for moderate and severe dementia of around 3 to 5% of the 65 and over population though some have shown rates as low as 2% and as high as 7%.

There is little agreement on the prevalence of mild dementia. The best guess seems to be that rates for mild dementia will be of the same order as that for the moderate and severe forms combined so an overall rate of about 10%, which is the figure estimated by Scottish Action on Dementia [97], may not be unreasonable. This would indicate, at a conservative estimate, that there are least three-quarter of a million senile dementia sufferers in Britain though a recent Office of Health Economics study [98] puts the figure at "up to 500,000". In Scotland the figure is put at between 80,000 - 90,000, though even higher figures are sometimes quoted. Some indication of the strain imposed upon health services is provided then by the fact that, typically, a Health Board can expect to have something like 2,500 elderly dementia sufferers within its catchment area.

Although there is no clear consensus on overall figures, there is wide support for the view that the prevalence of dementia increases sharply with age [99]. Whilst the rate for 65-69 year-olds is likely to be less than 3%, that for the over 85 year-olds is probably over 20%, or one in four. The rapid growth in the numbers of people over 75 in the general population must inevitably bring very significant increases in the total numbers of dementia sufferers. The problems caused for the health services by this increase will be compounded by the improved survival rates.

There is some indication that the prevalence of dementia may be higher among "old-old" women than among "old-old" men. Added to the still more significant fact that, in this older age group, females greatly outnumber males, the outcome is that the majority of dementia sufferers are inevitably women, most of whom are living at home rather than under institutional care, many are living on their own and the numbers are growing as the numbers of "old-elderly" in the population increase.

The mental states of elderly subjects in the older age group have been assessed by Williamson and Farquar [100], in a survey of mental disability amongst sheltered housing tenants. Tests were carried out for cognitive function and mood, employing methods validated in previous longitudinal studies [101], [102]. Mental function was assessed using the Isaacs-Walkley nine-point questionnaire [103], whilst a fourteen point questionnaire was used to assess mood. The researchers found that 10.4% of tenants had mild cognitive impairment whilst 2.3% had a moderate degree of cognitive loss. No tenants were noted with severe dementia.

The total of 12.7% with some form of cognitive impairment is greater than equivalent results obtained in general studies of the elderly but, as has already been pointed out, the mean age of the sheltered housing tenants sampled is significantly higher than the elderly population as a whole and the prevalence of cognitive dysfunction is known to increase with age. Of the tenants surveyed, 10.8% were classified as suffering definite depression whilst a further 9% had possible depression. These again were much higher figures than those obtained with general elderly populations. This may be accounted for by the fact that, as Murphy has shown, poor physical health and severe life events in the elderly - both common in those selected for sheltered housing tenancies - strongly predispose them to depression [104].

In appraising the results outlined in this section it is important to stress again that accurate and reliable psychological assessment of the elderly presents special difficulties. As a consequence it is wise to view all results, whether relating to individuals or to populations, with particular caution. Specific problems are encountered in elderly people who suffer from motor co-ordination, language or sensory deficits [105]. In addition, unless the full co-operation of the subject has been obtained, the results of the assessment may be worthless whilst the development of fatigue brought on by physical frailty may similarly impair response. The testing procedure itself may generate stress in the subject and affect the mental state which the assessment instrument seeks to measure.

In this present chapter an appraisal of the whole health status of the elderly population of Britain has been carried out along the four primary dimensions of subjective health, physical health, functional health (activities of daily living) and mental health. The construction of a health profile of the elderly is continued in Chapter 5 in which measurements along the three extended dimensions of whole health - social, economic and environmental - are presented.

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CHAPTER 5

EXTENDED DIMENSIONS OF HEALTH

Extended Measures of the Whole Health Status of the Elderly in Britain

In this chapter the whole health status of the elderly population is further assessed along three extended dimensions - social health, economic health and environmental health.

Measures of social health include household numbers and size, the composition of elderly households, the numbers of elderly people living alone, and the quantity and quality of social contacts within and beyond the home.

Measures of economic health include the demographics of employment and retirement, the socio-economic status of the elderly, sources of income, income levels and home ownership.

Environmental health is measured principally in terms of the housing conditions experienced by the elderly with special emphasis on the problems of cold, dampness and condensation.

Finally, the collective findings of both Chapter 4 and Chapter 5 are consolidated and interpreted.

Dimension 5: Social Health

To view ageing only or even primarily as an essentially biological process would be to imply, argues Gaine [1], that age is definable in terms of some absolute, empirical criteria. Such a perspective offers us simply one version of reality when there are actually, if we agree with Gubrium [2], many such perspectives, no one complete in itself, but each offering a different and complementary insight into the phenomenon of ageing. The argument presented throughout this present study is that the aspects of age which are most relevant, most important and most interesting to know about, are not those associated with ageing itself but with the manner and the extent to which society - as an organisation with policies, objectives, goals and resources - "manages" the process of ageing. Expression is given to the belief, held particularly by McCullough [3] that psychosocial changes in old people can best be understood by reference to social rather than developmental forces, and that change in the individual may be defined in terms of an interaction between such forces as are external to the individual and those which are internal. Thus both positive and negative aspects of old age in contemporary society are seen, from this perspective, as relating primarily to sociological factors.

The difficulties of presenting a balanced picture of the elderly in society stem, if Philibert is right [4], from the very "humanness" of ageing. He points out that the changes that effect man over time do not all result from natural causes (age-induced changes) or accidents but from the way society is organised and functions (socially-induced changes) and from the actions of the individual himself (self-induced changes). In Philibert's terms, the experience of ageing involves dynamic processes of learning and integration, managed and interpreted by the individual himself. Simultaneously, socio-cultural influences and individual decisions interact with natural events over time and at different rates to produce an endless variety of ageing patterns and styles. In particular, wide differences can be expected within and between the different age groups that categorise the elderly population. Among the most significant of changes within present day society judged in terms of their impact upon the elderly, Idris Williams identifies the development of a youth-orientated society, a more materialistic outlook, the media culture, earlier retirement, increased leisure opportunities, the creation of the welfare state, changes in the status of women, advances in medical care, the technological revolution, urban development and greatly increased social and economic mobility [5].

To this we should add the profound changes which must be made to both social and environmental policy as responses to the growing threat of global ecological disaster.

There is to be discovered a complexity, a heterogeneity and an ambiguity about the true character of social ageing which allows, on one hand, the highly respected charity Age Concern [6] to contend that the great majority of people accomplish the process of ageing with little or no recourse to their medical advisers and none to the social services and, on the other, the eminent sociologist Peter Townsend [7] to assert that infirmity, isolation, loneliness, poverty, dependence and social need are endemic amongst the elderly of the late twentieth century. Such apparent contradictions are of more than simple academic interest if we accept that the formulation of social policies on ageing and the priority attached to them will be critically determined by the social models we employ to organise our knowledge and ideas about ageing.

In his preface to A Contribution to the Critique of Political Economy, Karl Marx wrote "It is not the consciousness of man that determines his existence - rather, it is his social existence that determines his consciousness". In The Open Society and its Enemies, in the Chapter he calls "The Autonomy of Sociology", [8] Karl Popper too argues that the needs, expectations and aspirations of human individuals are the products of social life rather than its progenitors. In this sense, the social status of the elderly and, in particular, measures of how, where and with whom they live and the quality of relationships and contacts they enjoy with others, may be perceived as a important further extended dimension of total health.

Household Numbers and Size

The basic building blocks of social organisation are the individual, the family, the household and the dwelling. The population of individuals is formed, in ways which reflect fundamental social patterns [9], into separate households which may, or may not, coincide with family units and may, or may not, coincide with the number of dwellings. Observations relating to the number and the structure of households may be quantified and compared with the aid of a simple statistic known as the "headship rate"; the proportion of the population, or of any group within that population, who are "heads of households".

Projections concerning the number of households may be derived from such demographic statistics, based upon assumptions about the nature of social change expressed in terms of the age structure of the population and of rates of birth, death, marriage and divorce. Complexity and uncertainty arise, however, from the need to account for the tendency of households to share dwellings or of households to occupy two or more houses. Problems of definition introduce a further element of ambiguity. Houses or "dwellings" are readily definable when most families consist of married couples living with dependent children in separate accommodation; where each household owns or rents its own home and where no one shares, subdivides or sublets their accommodation. Less easy to interpret is the census definition of "dwelling" as a building or part of a building which provides structurally separate living quarters in situations in which the typical family includes several generations, living in associated but semi-independent sets of rooms or where large houses have been subdivided, let and sublet.

Against a background in which dwellings and households are difficult to define with precision and vary greatly in character, published statistics must be treated with suitable caution.

With this proviso, useful current sources of information on household numbers and size include the Office of Population Censuses and Surveys (OPCS) publication OPCS Monitor, Social Trends and the General Household Survey. Relevant data drawn from these sources is presented in the Table 5.1 and Table 5.2. The published data suggests that, whilst the total number of households is showing a continuing increase, the average household size is steadily decreasing.

This latter finding may be explained largely in terms of two complementary trends. Firstly, the period from 1971 to 1987 has seen a very significant increase in the number of one-person households, which have risen by 50% and now total 5.3 million or a quarter of all households. Secondly, during the same period there has been a corresponding large decrease in the proportion of large households. Meanwhile the proportion of two-person households has remained virtually unchanged.

In terms of individuals, 10% of the population over the age of 16 now live in one-person households. The breakdown by age and sex, provided in Table 5.3 is especially revealing in the present context, showing that 29% of people aged between 65 and 74 years, and 48% of those aged 75 and over, lived alone. In this older age group almost twice as many women as men lived on their own, reflecting their greater longevity and, in all probability, their greater relative independence.

TABLE 5.1
HOUSEHOLD PROJECTIONS, ALL TYPES,
TOTAL NUMBERS AND AVERAGE SIZE,
(GREAT BRITAIN), 1981-2001

Households	1981	1987	1991	1996	2001
All Households (Millions)	19.5	21.1	22.0	22.8	23.2
Average Household Size	2.70	2.57	2.50	2.45	2.42

SOURCES: Office of Population Censuses and Surveys, OPCS Monitor: The 1987 General Household Survey (London: HMSO, 1988), Table 1.
 Central Statistical Office, Social Trends 19, Table 2.3 and Table 2.5

TABLE 5.2
HOUSEHOLD SIZE, ALL PERSONS,
(GREAT BRITAIN), 1971-1987

Household Size	1971 (%)	1987 (%)
6 Person and Over	6	2
5 Person	8	6
4 Person	18	17
3 Person	19	17
2 Person	31	32
1 Person	17	25
	100	100

SOURCE: Office of Population Censuses and Surveys, OPCS Monitor: The 1987 General Household Survey (London: HMSO, 1988) Fig. 1

TABLE 5.3
INDIVIDUALS IN ONE-PERSON HOUSEHOLDS,
BY AGE AND SEX, (GREAT BRITAIN), 1986

Age Group	Percentage Living Alone		
	Women	Men	Total
16-24	4	3	4
25-44	7	4	5
45-64	8	13	10
65-74	17	38	29
75+	24	61	48
All Ages	7	13	10

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey, Table 3.3

The Characteristics of Elderly Households

Here an "elderly household" is identified as one with at least one person aged 65 or over. Townsend's 1962 seminal survey, carried out as part of an important cross-national study [10], revealed that about one third of the sample of people aged 65 and over lived with children and another one in ten lived with other relatives, usually brothers or sisters. Few of the elderly people in the sample lived with non-relatives. Comparison with more recent surveys, such as the 1986 General Household Survey, confirms the remarkable change which has taken place over 25 years. Looking at the distribution of individual elderly amongst different types of elderly household in 1985 shown in Table 5.4, 36% of all elderly are seen to live alone. There are major and profound differences between the sexes. Whilst only 20% of elderly men live alone, the proportion of elderly women living on their own is as high as 48%.

The probability of living alone increases with age. In 1985, nearly three-fifths of women aged 75 and over lived alone compared with less than 50% in 1973. This represents a five-fold increase since the Second World War. Over the age of 85 the proportion of elderly living on their own is closer to 50%. [11]. Of all elderly, 73% either lived alone or with just an elderly spouse as shown in Table 5.5 which analyses elderly households by type of household and age of occupant.

Expressed in terms of households, 47% of all elderly households in 1985 consisted of an elderly person living alone whilst 35% consisted of a married couple with a least one person aged 65 or over [12] This is equivalent to some 6.8 million households out of a total of 19.5 million in the United Kingdom. Only 18% were of other types, including elderly people, either individuals or couples, living with children. Nearly three-quarters (73%) of elderly men living in elderly households were married and fewer than one-fifth (17%) were widowed. Exactly a half of elderly women in the same category were widowed and less than two-fifths (38%) still married. This marked contrast between the sexes is seen to increase still further with increasing age [13].

Overall, the proportion of elderly people living alone or with just their spouse has risen as the proportion living with kin - children, siblings or others - has fallen. The number of pensioners living with adult children has dropped by half over the past 30 years. Willmott [14] relates this change to the increase in the supply of housing.

TABLE 5.4
ELDERLY HOUSEHOLDS,
ALL TYPES, (GREAT BRITAIN), 1985

Household	All Elderly (%)	Men (%)	Women (%)
Living Alone	36	20	48
Living with Elderly Spouse	37	46	31
Living with Spouse under 65	8	17	2
Living with Spouse and Others	7	10	4
Living with Others	12	7	15
Total	100	100	100

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey, Fig 12C

TABLE 5.5
DEMOGRAPHIC CHARACTERISTICS OF ELDERLY PEOPLE
LIVING IN DIFFERENT TYPES OF HOUSEHOLDS,
(GREAT BRITAIN), 1985

Age and Sex	Living with Spouse Only (%)	In Other Multi-Person Household (%)	Living Alone (%)
65-74 Male	38	27	12
65-74 Female	33	30	35
75-79 Male	13	7	5
75-79 Female	8	12	20
80-84 Male	4	3	4
80-84 Female	2	10	13
85+ Male	1	2	2
85+ Female	1	9	9
	100	100	100

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey, Fig 12I

The Elderly Living Alone

In assessing the whole health of the elderly, special significance attaches to independent living though whether a high and growing proportion of elderly persons living on their own would actually reflect a healthy or unhealthy trend depends very much on the conditions under which they are living. The most recent surveys, recorded in the 1989 edition of Social Trends, reveal that 62% of all single-person households are pensioner households, that is are occupied by a male over 65 years of age or a female over 60 years. This represented 3.3 million households or around 16% of the UK total. In Scotland the proportions are slightly higher than the UK average [15].

Projections from Social Trends 19 indicate that both the absolute and relative numbers of one-person, pensioner households will continue to increase, at least until the end of this century, and this is shown in Table 5.6. Of the elderly living on their own in 1985, over one-half were at least 75 years of age and one-fifth were women aged 80 and over [16].

Previous surveys, such as that by Sumner and Smith [17] and successive General Household Surveys, have identified the problem of under-occupation of households by the elderly, as their family die or move away, and the indications must be that the prevalence of under-occupancy will further increase as the total number of one-person households increases, unmatched by any comparable provision of new housing of suitable types. In the view of Niner [18] the resultant shortfall will be between 2 million and 4 million by the end of the century.

Social Contacts Within and Beyond the Home

One of the enduring stereotypes of ageing is that those elderly people who live alone will tend to live more isolated lives than do those who share homes with spouses or children and that such individuals will have fewer contacts with the outside world. In fact, different individuals have different perceptions of sociability and needs for social relationships. For example, people may variously describe themselves as basically gregarious, essentially solitary or as being in the middle position of preferring just a few close friends. In this the elderly are no different from the rest of society. Such natural (and perfectly healthy) differences must be kept in mind when interpreting measures of social isolation and contact.

TABLE 5.6
HOUSEHOLD PROJECTIONS, ONE-PERSON, PENSIONER
HOUSEHOLDS, TOTAL NUMBERS AND PERCENTAGES,
(GREAT BRITAIN), 1987-2001

Households	1981	1987	1991	1996	2001
One-Person Pensioner Households (Millions)	2.8	3.3	3.5	3.7	3.9
Percentage of All Households	14.2	15.6	15.9	16.2	16.7

SOURCE: Central Statistics Office, Social Trends 19, Table 2.5

The assumption of most social policy, and many commentators, is that the social health of the elderly and the relief of social isolation and loneliness, must be judged in the context of the family, with old people being treated as an inseparable part of the family group and as the recipients of widespread family help and services [19]. When judgements are made or opinions expressed about the lack or otherwise of family support for - or contact with the elderly - it is frequently forgotten that not all pensioners have children on whom they can depend whilst others have children who are simply not able to offer support. A survey by Abrams, for example, found that 30% of those respondents over the age of 75 had never had children whilst nearly 40% of those living alone were childless [20]. The survey of Scottish sheltered housing tenants conducted by Fennell [21] likewise found that a very similar proportion had no surviving children.

For those elderly with at least one surviving child - but excluding those living in the same household - Abram's survey [22] also provides evidence about the proximity of the nearest child. Some 38% had one child living within ten minute's journey time or less, though for 48% the nearest child lived more than 30 minutes away.

A measure of the extent of, and satisfaction with, the social contacts enjoyed by the elderly is provided by the findings of the 1986 General Household Survey. Results show that 59% of those respondents aged between 65 and 69 made a visit to a relative or friend at least once a week. In the 85 and over age group this figure fell to 25%, whilst over a half of this category reported that they no longer made any visits at all. 84% of all elderly people - and 75% of the very old - had social contact with friends or relatives at least once a week, either within or outwith the home. Only 2% reported that they never received any visits of any kind [23]. Abrams found that, of those oldest group of respondents who had living offspring, nearly three-quarters saw them at least once a week whilst nearly one-quarter did not see any of their children more than once a month. Of this latter group, only 39% indicated that they would like to see more of their offspring [24]. Fennell observed that 17% of tenants saw their closest child every or most days, 21% saw them once a week whilst around 16% saw them no more frequently than once a month. Some 4% reported that they hardly ever or never saw their closest offspring [25]. Of other close relatives, the same investigator found that 9% were seen very frequently, 11% more than once a week and 15% about once a week [26]. Of the respondents in the Abrams' survey, 73% of the over 75 age group and 66% of the 65 to 74 age group reported that they received visits from friends and families once a week or more [27].

Overall, when relatives and friends are taken together Fennell too discovered very little evidence of social isolation amongst tenants [28]. Over one fifth said they saw an outside friend more than once a week and more than half saw such a friend at least once a fortnight. A 1982 Market Opinion and Research International survey on the subject of neighbours found that some 54% of people over 65 had "neighbours calling round for a chat", whilst 90% reported speaking to neighbours weekly or more often [29]. On the other hand, Wenger, in a study of elderly people in rural communities in North Wales [30], found that 15% had "no real friends" nearby whilst Willmott [31] reports a London Study which revealed 14% of the sample who had not met at least one friend during the previous month. Other surveys have suggested that as many as one in six of all elderly people saw relatives or friends less often than once a week.

Fennell [32] stresses the important distinction between being visited by relatives or friends and actively making visits. Whilst, in one three day period, 53% reported receiving a visit, just 21% said that they had social contact with friend or relative outside of their home. Abrams found comparable results, with just 37% of the over 75 age group and 46% of the younger age group reporting visits to friends and family at least once a week. Very few respondents had visits from voluntary workers or social workers [33].

It was found by Abrams that relatively few elderly people were housebound in a technical sense yet a majority did not go out for walks because of lesser ailments and physical difficulties [34]. This result was partially confirmed by Fennell who reported that only 46% of tenants regularly went for walks though as few as 20% never went for a walk. In this latter survey results showed that 34% regularly went to church or participated in church activities, 16% were active in belonging to a local club or society whilst 8% either watched or played sport on a regular basis [35].

Most social contact surveys ask for information about the forms of support provided for elderly people by friends, relatives or neighbours. Fennell, for example, found that in 28% of cases relatives shopped for tenants at least once a week; in 13% of cases they went shopping with them and in 10% of cases did the cooking for them [36].

As a measure of sociability, no less than 80% of Fennell's sample said that they got on "very well" with their neighbours. Some 85% felt that they could readily ask a neighbour to undertake some small task on their behalf, such as posting a letter or bringing something back from the shops [37].

As many as 78% said that they had a neighbour who would come in to visit if the respondent had to be in bed for a few days. When asked if they ever participated in shared activities with neighbours, 30% reported that they regularly had a cup of tea together whilst 27% regularly exchanged reading material. Thus the great majority of elderly people appear to have some positive social contact with neighbours but there is evidence that the small majority who lack such contact increases with both advancing age and degree of infirmity [38]

Abrams observes that there is no simple relationship between isolation and loneliness. It cannot be assumed that all those who live alone and have comparatively few contacts with the outside world automatically feel desolate and depressed nor can it be taken for granted that those leading gregarious lives are immune from feelings of loneliness [39].

As a means of identifying the "most isolated" amongst the sample of elderly people, Abrams used an eighteen-point scale of isolation which included items on the scale such as "living close", "having no close relatives", "having no telephone" and "no contact with neighbours" [40]. The study found no people aged 65-74, and only 1% of people aged 75 and over, who were in the "most isolated" category. Not unexpectedly, slightly higher proportions have been found in studies of rural communities. Of those respondents in the survey who were living alone, an average of 19% of the older age group and 15% of the younger group expressed some feelings of loneliness [41]. In an especially high proportion of cases this manifested itself as a belief that they were no longer of any use to others [42]. Of respondents to the Fennell survey of sheltered housing tenants, around 70% said they never experienced feelings of loneliness either before or since their move into sheltered accommodation. Some 16% replied that they occasionally felt lonely even after their move whilst around just 6% reported experiencing frequent or constant loneliness irrespective of their living conditions. Fennell believes that this implies that loneliness may be less rooted in objective sociability or social opportunities than in feelings of optimism or depression about life [43]

The quality of social health enjoyed by an individual may be measured in part by their participation in a confiding relationship, which may be considered more important than a range of social contacts. Fennell found that 94% of his respondents had at least one person with whom they could confide whilst 75% could nominate two people with whom they could talk over their personal problems [44].

Reciprocity remains an important feature of the social relationship between elderly people and their families. The inability to reciprocate creates a reluctance to help [45]. In fact a good deal of evidence [46,47] exists to support the view that the elderly provide a great deal of practical help to their children, including child care, shopping, cleaning and cooking.

Dimension 6: Economic Health

The economic health of most individuals is fundamentally determined, as it has always been determined, by employment. As the very concept of a "dependency ratio", introduced earlier suggests, nowhere are the financial and social divisions greater than between those who are economically active and those who are not.

Employment and Retirement

Work brings with it not simply financial benefit but the potential of social status, independence, dignity and self determination. To many elderly, forced retirement brings with it not only substantial loss of real income but a loss of status, social contact and challenge. And yet, for a significant part of the twentieth century, earlier and longer retirement for the individual has been seen as a social goal "devoutly to be wished". The origins of such a drive for social reform in employment practice are deeply embedded, of course, in the experience and consciousness of generations of manual workers, industrial and agricultural, "burnt out" by years of hard labour, long hours and poor working conditions. Bosanquet notes that, only fifty years ago, almost two-thirds of men over the age of 65 were still working [48]. Townsend adds that, as late as 1959, only 47% of men retired at age 65 though ten years later this had risen to 70% [49]

The composition of the civilian labour force and the associated level of economic activity rates (the percentage of a particular age group within the civilian labour force who are gainfully employed or presently unemployed) amongst the elderly has changed dramatically over a twenty year period, as Table 5.7 and Table 5.8 show. In 1973, 85% of men aged between 60 and 64 were economically active but by 1986 this figure had dropped to 53%. Whilst 19% of men over the age of 65 were still economically active in 1973, this had more than halved, to 8%, by 1986.

TABLE 5.7
COMPOSITION OF THE CIVILIAN LABOUR FORCE,
BY AGE, (GREAT BRITAIN), 1971-1995

Year	Age 16-24 (Millions)	Age 25-54 (Millions)	Age 55+ (Millions)	Age All (Millions)
Estimated				
1971	5.1	15.0	4.9	24.9
1981	5.8	16.3	4.1	26.2
1986	6.1	17.2	3.4	26.7
Projected				
1991	5.6	18.9	3.3	27.9
1995	5.0	19.8	3.3	28.1

SOURCE: Central Statistical Office, Social Trends 19, Table 4.3

TABLE 5.8
ECONOMIC ACTIVITY RATES,
BY AGE AND SEX, (GREAT BRITAIN), 1973-1986

Age and Sex	1973 (%)	1975 (%)	1979 (%)	1981 (%)	1983 (%)	1984 (%)	1985 (%)	1986 (%)
Male								
16-64	94	93	92	90	88	88	89	89
60-64	85	84	75	73	63	57	56	53
65+	19	16	15	11	9	9	8	8
Non-Married Female								
16-59	74	72	70	70	67	68	74	75
60-64	34	34	23	23	17	18	18	20
65+	6	6	5	4	4	3	2	2
Married Female								
16-59	55	59	62	61	60	61	62	66
60-64	25	26	25	21	20	17	20	19
65+	8	6	6	5	4	3	4	3

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey, Table 8.6 and Table 8.8.

Whilst the overall employment position for younger women has marginally improved over the period, economic activity of women beyond retirement age has fallen from little to virtually none.

The consequences of such trends in employment and retirement patterns since the war, coupled with demographic changes and increases in life expectancy, have been diverse and profound. Whereas, before 1945, the majority of the working population only gave up work if they were forced to do so by failing health or disability, people entering retirement today will tend to be younger and healthier. Retirement periods are lengthening and, as reviewed in greater detail in the next section, individuals are spending longer periods of their life on reduced levels of income and with increased relative dependence on alternative sources of income such as pensions and social security benefits. Havighurst estimates that for an elderly couple in good health, maintenance of a comparable standard of living into retirement demands a retirement income some 70% of their last combined employment income [50].

The Socio-Economic Status of the Elderly

A comparison between the socio-economic groupings of heads of household aged 65 and over and those of the younger section of the population in the year 1986 is shown in Table 5.9. The classifications used are those of the 1986 General Household Survey, namely professional, employers and managers, intermediate, skilled manual, semi-skilled manual, unskilled manual and never worked. The results show that there is a significant decrease in the representation of the elderly in the higher socio-economic groupings, especially amongst women at the intermediate level, and a corresponding increase in representation in the lower groupings.

Sources of Income

Sources of household income may be classified under the following headings:

- * Wages and salaries
- * Self-employment
- * Social security benefits
- * Investment income
- * Annuities and pensions other than social security
- * Rental income etc.
- * Other

TABLE 5.9
SOCIO-ECONOMIC GROUP OF HEAD OF HOUSEHOLD,
BY AGE AND SEX, (GREAT BRITAIN), 1986

Socio-Economic Group	Under 65 (%)		Over 65 (%)		Total (%)	
	M	F	M	F	M	F
Professional	8	1	4	---	7	1
Employers/Managers	22	8	20	7	22	8
Intermediate	16	45	14	33	15	39
Skilled Manual	39	8	36	10	38	9
Semi-skilled Manual	12	27	18	32	13	30
Unskilled Manual	3	7	7	13	4	10
Never Worked	---	3	---	5	---	4

SOURCE: Office of Population Censuses and Surveys, 1986 General Household Survey, Table 3.18

The annual Family Expenditure Survey is an important source of information on economic health. Table 5.10 shows the proportions of gross income received from different sources by different types of household in 1986 and clearly illustrates firstly the heavy reliance of pensioner households upon various forms of social security benefit and secondly the marginal contribution to the incomes of most elderly made by employment or investment.

The most significant of all social security benefits is the National Insurance retirement pension currently payable to all contributing workers at the age of retirement, which is presently 60 for women and 65 for men. In the financial year 1988/89, the allocation to the state pension scheme under the Government's Expenditure Plans, summarised in Table 5.11, was some £19.3 billion, making it easily the most expensive item within the social security budget.

The concept of National Insurance and of a form of universal state pension paid out of general taxation has its origins with the Beveridge Report of 1942 [51]. In 1961 graduated pensions were introduced until, in 1975, earnings-related contributions replaced flat-rate payments and graduated pensions contributions. Pensions are "inflation-protected", though the linkage is to prices not earnings and takes the form of a fixed annual rate which can lead to under-valuation when large inflationary swings are experienced thereby further widening the gap between the better-off and the poor elderly. Some pensioners have been able to enhance their retirement pension entitlement either through occupational pension schemes or through membership of the optional State Earnings-Related Pensions Scheme (SERPS), introduced with all-party support in 1978. Table 5.10 shows that, on average, retired households receive about 19% of their income from occupational or other non-compulsory pension schemes though this proportion drops to 4-5% in low income pensioner homes. Until the social security reforms of April 1988, a non-contributory, means-tested supplementary pension was payable to those whose income, after receipt of the basic pension, was assessed as being too low to meet "normal weekly requirements".

Under the Supplementary Benefit system, other forms of non-contributory allowance were payable, on the basis of demonstrated need. The 1988 reforms introduced a discretionary Social Fund with repayable loans, abolished extra weekly payments for special needs and lump sum payments and replaced both Supplementary Pensions and Supplementary Benefits with a system of Income Support. Housing benefit was revised to favour low-income households. Under the reforms the SERPS scheme will be severely curtailed.

TABLE 5.10
SOURCES OF INCOME FOR DIFFERENT HOUSEHOLD TYPES,
(PERCENTAGE OF GROSS), 1986

Household Type	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)
All Households	64.3	7.7	4.2	4.3	13.0	5.4	1.1
Households with Head of Household Retired	12.1	0.4	11.9	19.2	48.3	7.8	0.3
Households with One Adult: Male 65+	1.7	4.0	12.5	24.9	48.1	8.3	0.5
Households with One Adult: Female 60+	2.3	0.6	12.9	15.2	58.9	9.8	0.3
Retired Households: Mainly Dependent on State Pension	0.1	---	2.9	3.9	83.9	9.0	0.1
Retired Households with Couple: Mainly Dependent on State Pension	0.5	0.1	2.8	5.0	83.4	8.1	0.1
Retired Households with Couple: Other	10.2	0.6	16.7	30.0	34.5	7.7	0.3
	A - Wages and Salaries B - Self Employment C - Investment Incomes D - Annuities and Pensions E - Social Security Benefits F - Rental Income G - Other						

SOURCE: Central Statistical Office, 1986 Family Expenditure Survey (London: HMSO, 1988), Table 22

TABLE 5.11
SOCIAL SECURITY BENEFITS: EXPENDITURE AND ESTIMATED
NUMBER OF RECIPIENTS, (GREAT BRITAIN), 1988/89

	Expenditure (£m)			Recipients (Thousands)		
	81/82 Actual	87/88 Actual	88/89 Plans	81/82 Actual	87/88 Actual	88/89 Plans
Nat. Insurance Benefits:						
Retirement Pension	12126	18725	19312	9015	9690	9735
Other Benefits:						
Supp. Pension	1418	1260	---	1740	1875	---
Supp. Allowance	3422	6829	---	1985	3285	---
Income Support	---	---	8584	---	---	4925
Family Credit	---	---	409	---	---	470
Housing Benefit	562	3620	---	5010	5010	4405
Social Fund	---	33	164	---	---	---

SOURCE: Central Statistical Office, Social Trends, 19, Table 5.8, based on HM Treasury, The Government's Expenditure Plans (Cmnd 288) (London: HMSO, 1988)

According to the 1984 Social Security Statistics [52], an estimated 19% of people of retirement age, around 1.96 million, were in receipt of the Supplementary Pension in that year. A further 11% or 1.1 million were estimated to have incomes below the Supplementary Pension level but were not receiving benefit for one reason or another. Thus 30% of all elderly of retirement age were living at or below Supplementary Benefit level.

The 1988 Social Security Statistics [53] estimated that 1.88 million pensioners and dependents were in receipt of Supplementary Benefit in that year and that 0.96 million had incomes below Supplementary Benefit level. Most recent estimates show that some 18% of retired people - representing some 1.8 million individuals - are in receipt of non-contributory income support.

What emerges is a situation in which the standard of living of the majority of households has increased over recent years - rising on average by 3% per year between 1981 and 1985 whilst the relative position of the majority of retired elderly has deteriorated [54]. In 1985, 7% of pensioners had incomes below half the average for all economic types (compared with 5% in 1983) and that 66% of pensioners had incomes less than 80% below average (compared with 60% in 1983). The position is summarised in Table 5.12. The 1986 Family Expenditure Survey showed that 45% of state pensioners were living on less than £80 per week whilst another 25% managed on between £80 and £100 [55].

Whilst incomes from occupational pension rose by 78% between 1975 and 1985, social security benefits for the elderly increased by only 25% [56], implying two distinct classes of old people, namely those with good occupational pensions who can look forward to a retirement full of attractive options and those in receipt of means-tested Income Support which places them in a position of acute and diminishing dependence on the state and whose quality of life is severely constrained by their financial condition [57].

There is in fact a third, and particularly disadvantaged class - those elderly individuals who do not qualify for Income Support and who through provident investments in savings or occupational pension schemes find themselves disqualified from receiving extra help even though their net income is little or no higher than the qualifying level. It is to the plight of such individuals that the term "poverty trap" is most appropriately applied.

TABLE 5.12
PROPORTION OF INDIVIDUALS IN HOUSEHOLDS
WITH BELOW AVERAGE INCOMES,
(GREAT BRITAIN), 1981-1985

	Individuals with Income Below Half Population Average (%)			Individuals with Income Below 80% of Population Average (%)		
	1981	1983	1985	1981	1983	1985
Pensioners	6	5	7	66	60	66
All Economic Types	8	8	8	42	41	43
Numbers (Thousands)	4440	4290	4990	22220	22250	23340

SOURCE: Central Statistical Office, Social Trends 19, Table 5.20

The idea of a "poverty line" - the line of demarcation between those who live in poverty and those who do not - was first devised at the end of the last century by Seebohm Rowntree. Poverty strictly means below subsistence level. In practice definitions vary in recognition of the fact that "poor" can be used to express a variety of degrees of need from absolute need, meaning the lack of essentials such as food, clothing and shelter, to relative need, meaning badly off compared with others in a similar position and embracing the concept of social need.

Variants then include Income Support level (previously Supplementary Benefit level), some percentage of Income Support level or - the definition preferred by groups such as the Child Poverty Action Group - 50% of the average national income. The Family Expenditure Survey assumes a household to be "dependent of the state" if at least 75% of its income comes from state benefits. On this basis some 6.4 million families - or 30% of all households - could be said, according to Social Trends, 20, to be dependent on the state. Of these some 60% are council tenants and over half are pensioners [58]. The present Conservative Government prefers a measure expressed in terms of the change in real income of the poorest 50% of the population and, in 1989, used this as the basis to challenge any definition which identified more than, in the then Chancellor of the Exchequer's words, "a tiny minority" as being poor. The debate is further complicated by arguments not only over the quantity of food which those on Income Support can afford but its quality in terms of nutritious value. Still more confusion surrounds the question as to whether housing costs should be included in or out of any measure of poverty. The question of definition is not a sterile, academic one. Definitions determine how statistics are collected and presented and statistics are used as the basis for social policy.

What are revealed by all measures of poverty are both the strong geographical divisions in income and the relative poverty of Britain's elderly. This latter in particular is emphasised by comparative statistics which place post-retirement incomes in Britain bottom of six industrial states; the USA, West Germany, Norway, Sweden and Canada. Whilst the disposable income of the over-75s in Britain is just 67% of average income, the equivalent figure in Sweden is 78%. In the 65-74 age bracket, the corresponding figures are 76% in Britain, 96% in Sweden and 99% in the USA [59]

Poverty amongst the old has existed throughout the post war period, as confirmed by numerous surveys, principally those of Abel-Smith and Townsend in 1960 [60], Cole and Utting in 1962 [61], Townsend and Wedderburn in 1962 [62], Townsend again in 1968 [63], Audrey Hunt in 1976 [64] and Mark Abrams in 1977 [65]. The poor financial health of many elderly is further reflected in their access to amenities and consumer durables. The 1986 General Household Survey shows that elderly households, particularly one-person pensioner households, tend to be less well provided with amenities such as central heating and telephone and such consumer goods as a car and a washing machine than non-elderly homes [66].

In August 1991 an National Opinion Poll (NOP) survey on attitudes to ageing, sponsored by British Gas, found that more than 20% of retired owner-occupiers reported their incomes to be so low that they had to struggle to pay for essential items. This compared with 50% of council tenants and 60% of private tenants, Altogether financial difficulties were identified by 45% of the sample as the main problem facing older people.

The special disadvantages faced by the elderly are shown in a number of important ways. Table 5.13 shows that they have markedly different patterns of expenditure from the rest of the population. Low income pensioners are shown to spend proportionately more on food and housing than all households and nearly two and a half times more on fuel and heat, a result confirmed by Hutton [67] and Isherwood and Hancock [68]. The lowest income level pensioner has just one-third of the weekly spending potential of all households and one-sixth of that of the average high income home. One result is that pensioners are particularly badly affected by inflation especially when, as is normally the case, energy costs are inflating at higher rates than the general rate of inflation. Special retail price indices have been introduced to show the specific effects of inflation on the elderly, as illustrated in Table 5.14. A particular and highly significant manifestation of poverty amongst many elderly is fuel poverty - defined in Chapter 2 and considered more fully under the later section on Environmental Health.

Notwithstanding the evident inadequacies of the social security system, there is acute awareness in Government of the escalating costs and, in particular, of the pressure exerted on social security expenditure by the elderly. The decision to enforce major cutbacks on the SERPS scheme and the stated intention to shift the pensions burden progressively away from the state and towards the individual can be understood in this context and against the background of the long-term demographic trends.

TABLE 5.13
PATTERNS OF HOUSEHOLD EXPENDITURE,
BY HOUSEHOLD TYPE AND INCOME LEVEL,
(UNITED KINGDOM), 1986

	Food (%)	Housing (%)	Fuel & Heat (%)	Clothing (%)	Average Total Weekly Expend. (£)
Pensioners:					
Low Income	26.5	21.5	13.5	5.8	57.32
Others	27.0	17.5	10.5	6.6	90.23
All Households:					
Low	19.6	16.8	5.9	7.6	178.10
Middle	24.1	20.0	11.7	6.4	67.83
High	20.7	17.6	6.2	7.3	164.59
	17.1	15.0	4.1	8.3	328.89

SOURCE: Central Statistical Office, Social Trends 19, Table 5.3

TABLE 5.14
INDEX OF RETAIL PRICES, RATES OF CHANGE, 1961-1987

	Average Annual Change (%)			
	1961-71	1971-76	1976-81	1986-87
General Index	4.6	14.5	13.4	4.2
Fuel and Light	5.4	16.4	15.8	-0.9
Pensioners Index:				
One-Person	4.8	15.5	12.8	2.3
Two-Person	4.8	15.8	12.8	2.5

SOURCE: Central Statistical Office, Social Trends 19, Table 5.8

Home Ownership

Results of the 1986 General Household Survey, summarised in Table 5.15 show that levels of owner-occupation have increased steadily in Great Britain over the past twenty years. Meanwhile the levels of both private and public renting have correspondingly declined. In 1987 some 63% of households were owner-occupied. Table 5.16 presents a breakdown of different forms of tenure by the age of the head of household and shows that fewer elderly households are owner-occupiers and more elderly households live in rented accommodation in the public sector than in the general population. On the other hand the relative prosperity of a significant section of the elderly population is demonstrated by the fact that nearly one-half of all heads of households aged 65 and over own their own homes.

There are major variations in patterns of tenure on a regional basis as demonstrated by the 1986 General Household Survey and shown in Table 5.17. In particular the rate of owner-occupation in Scotland in 1985/86 was just 40% compared with 72% in the South East of England.

Dimension 7: Environmental Health

Mitchell has defined one of the principal attributes of a healthy life as a clean and safe environment [69]. That health and environment - both indoor and outdoor - are inextricably linked is the major recurrent theme of this present study. In the case of the elderly whose relative immobility confines them to a domestic setting for a very high proportion of time, the quality of the indoor home environment takes on special significance. The impact of buildings on health has been reviewed in Chapter 2.

Housing Conditions of the Elderly

For many, old age brings with it forms of chronic illness which can only be exacerbated by poor housing conditions. Housing poverty, lack of basic amenities, high maintenance bills, lack of warmth, fuel poverty and dampness can all, directly or indirectly, contribute to a further deterioration of physical health and add to an individual's mental stress and sense of insecurity.

TABLE 5.15
CHANGES IN HOUSING TENURE,
ALL HOUSEHOLDS, (GREAT BRITAIN), 1971-1987

Tenure Type	1971 (%)	1975 (%)	1977 (%)	1979 (%)	1981 (%)	1983 (%)	1985 (%)	1986 (%)	1987 (%)
Owner-Occupied (Outright)	22	22	23	22	23	24	24	25	24
Owner-Occupied (Mortgage)	27	28	28	30	31	33	37	38	39
Rented with Job or Business	5	3	3	3	2	2	2	2	3
Rented from Local Authority or New Town	31	33	33	34	34	32	28	26	26
Rented from Housing Association	1	1	1	1	2	2	2	2	2
Rented Privately (Unfurnished)	11	10	9	8	6	5	5	5	4
Rented Privately (Furnished)	11	10	9	8	6	5	5	5	4

SOURCE: Office of Populations, Censuses and Surveys, 1986
General Household Survey, Table 5.2

TABLE 5.16
HOUSING TENURE, BY AGE OF HEAD OF HOUSEHOLD
(GREAT BRITAIN), 1971-1987

Tenure Type	Under 25 (%)	25-29 (%)	30-44 (%)	45-64 (%)	65-74 (%)	Over 70 (%)	Total (%)
Owner-Occupied (Outright)	---	1	7	38	32	23	100
Owner-Occupied (Mortgage)	4	13	50	31	2	---	100
Rented with Job or Business	10	14	35	37	4	1	100
Rented from Local Authority or New Town	5	6	19	30	23	16	100
Rented from Housing Association	8	9	19	23	16	26	100
Rented Privately (Unfurnished)	8	6	13	23	25	27	100
Rented Privately (Furnished)	41	22	22	9	2	4	100
Total	5	8	28	31	16	12	100

SOURCE: Office of Populations, Censuses and Surveys, 1986
 General Household Survey, Table 5.10

TABLE 5.17
REGIONAL VARIATIONS IN OWNER OCCUPANCY
1985-1986

Region	Owner-Occupation (%)
Scotland	40
North	52
Yorkshire and Humberside	57
North West	67
Wales	66
East Midlands	69
West Midlands	59
East Anglia	64
South West	68
South East	72
London	56

SOURCE: Office of Population Censuses and Surveys, 1986
 General Household Survey, Fig 6B

Low temperatures, dampness and condensation have been shown by successive surveys in different parts of the United Kingdom to be endemic within a large section of both local authority and private sector housing occupied by low income group, principally as a result of defective design, materials or construction and inefficient heating systems . As analysed by Taylor [70], the position of the elderly owner-occupier in particular is a "social disgrace". He notes that "a number of studies in recent years have revealed that there are large numbers of very elderly people living alone in houses which are difficult to maintain and often unsuited to their daily needs".

An indicative measure of the conditions under which many of the elderly in Britain live may be gained, for example, from a study of the results of the 1986 English House Condition Survey. This Survey assesses the condition of the housing stock on the basis of three criteria:

- (1) Possession of basic amenities, defined as those which would have qualified for a mandatory grant under the Housing Improvement Grant and including a kitchen sink, a bath or shower in a bathroom, a wash hand basin, hot and cold water in each of these and an indoor WC.
- (2) State of fitness, where an unfit dwelling is defined as one which would be judged unsuitable for human habitation under the terms of Section 604 of the 1985 Housing Act.
- (3) State of repair, where a dwelling in poor repair is defined as one requiring majors repairs to a value in excess of £1000.

No equivalently comprehensive house condition survey has yet been carried out for the whole of Scotland which, as Markus [71] points out, has a housing stock which is significantly different from the rest of the United Kingdom in a number of important respects, namely:

- * the substantial amount of post-World War Two multi-storey housing
- * the significant number of two-, three- and four-storey inter-war housing developments
- * the size of houses, and
- * the construction methods used.

The thermal characteristics of much post-war Scottish housing is particularly distinctive when assessed in terms of the severity of exposure to wind and rain, the low levels of insulation, the high thermal mass and the inefficiency of installed heating systems. Proposals for a full Scottish House Condition Survey are under consideration. Meanwhile a number of local authorities in Scotland have recently initiated area and district surveys, utilising a standard house condition survey package prepared by the Scottish Office and based substantially upon the experience of the 1985 Glasgow House Condition Survey [72] which relates to some 291,000 dwellings in all forms of tenure, a significantly high proportion of the total Scottish housing stock. The National Audit Office has recently analysed a select number of local Scottish house condition surveys and has shown that in just 16 of Scotland's 35 housing authorities some 79,600 houses were below tolerable standard which suggests that an earlier Scottish Office figure of 81,000 below standard houses in the whole of Scotland was a significant underestimate of the scale of the problem. The NAO report identified rising or penetrating damp as the most common cause of failure and noted further that the external fabric of much of Scottish housing stock was subjected to a more severe climate than the housing in either the rest of the United Kingdom or indeed other Western European countries. The Scottish Office figures, in March 1990, identified nearly 145,000 homes as being affected by dampness or condensation [73].

The English and Glasgow surveys are not directly comparable in that the definitions of "unfitness" differ in the two studies and no satisfactory method exists for making the Glasgow "Below Tolerable Standard" figures comparable with the "Unfitness" figures given in other surveys [74]. Further, whilst the English House Condition Survey identifies housing stock by age of head of household, no such differentiation is made in the Glasgow survey. Notwithstanding, the Glasgow survey presently represents the best available data on housing conditions for all sections of the population in Scotland and a brief summary of the main findings of the Glasgow House Condition Survey are included in this section for the purposes of comparison.

Data obtained from the English House Condition Survey is reproduced in Table 5.18 and Table 5.19 and provides a classification of all dwellings in England and Wales according to the date of construction and shows how heads of households in particular age groups are distributed amongst houses of different constructional dates.

TABLE 5.18
OCCUPANCY OF HOUSES OF DIFFERENT CONSTRUCTION DATE,
BY AGE OF HEAD OF HOUSEHOLD,
(ENGLAND AND WALES), 1986

Date of Construction	Age of Head of Household				
	17-39 (%)	40-59 (%)	60-74 (%)	75+ (%)	All (%)
Pre-1919	38.4	31.3	20.7	9.6	100
1919-44	28.7	36.1	25.3	9.9	100
1944-64	27.5	29.1	33.0	10.4	100
Post-1964	36.2	36.4	16.9	10.5	100
All Houses	33.0	33.4	23.5	10.1	100

SOURCE: Department of the Environment, English House Condition Survey 1986, Table A6.1

TABLE 5.19
HOUSES OCCUPIED BY PEOPLE OF DIFFERENT AGE RANGES,
BY DATE OF CONSTRUCTION
(ENGLAND AND WALES), 1986

Date of Construction	Age Range				
	17-39 (%)	40-59 (%)	60-74 (%)	75+ (%)	All (%)
Pre-1919	28.1	22.6	21.2	22.8	24.1
1919-44	18.7	23.3	23.2	21.1	21.6
1944-64	20.1	21.1	33.9	24.8	24.1
Post-1964	33.1	33.0	21.7	31.3	30.2
All Houses	100	100	100	100	100

SOURCE: Department of the Environment, English House Condition Survey 1986, Table A6.1

In round terms, the results show that, of a total housing stock of 18.8 million dwellings in England and Wales, 50% were built before 1944, 25% were built before 1919 and 25% have been built since 1964. Half the stock is in the form of detached or semi-detached dwellings whilst one-third of the stock is in the form of terraced housing. The remainder is flatted accommodation. Most significantly, the results further show that 44% of all heads of household aged 60 and over occupy houses built before 1944 whilst, of the dwellings before 1919, a disproportionate 30% have elderly heads of households.

Table 5.20 and Table 5.21 provide an analysis by age of head of household of those dwellings which were judged as lacking basic amenities, to be unfit for human habitation or to be in need of major repair. The survey found that 2% of all dwellings lacked basic amenities, 3.9% were unfit and 12.9% were in poor repair. In detail, whilst only 11% of all dwellings lacked loft insulation and 73% had central heating, just 11% had wall insulation and only 14% had full double glazing.

Of special significance in the context of the present study is the finding that the housing conditions of the elderly are generally worse than those of the population as a whole and that the standard of housing conditions tends to decrease with increasing age of the occupier. In particular, whilst households with heads aged 75 and over made up only 10% of all households, they comprised almost one-third of dwellings which were found to lack basic amenities and over 16% of those dwellings classified as unfit for habitation. Furthermore, elderly persons living alone were more likely to occupy housing in poor condition than elderly couples or similarly aged people in larger households. Some 19% of single pensioners lived in houses which were in poor condition compared with 14% of pensioner households of more than one person.

The ability of owner-occupier householders to undertake major repairs was assessed by the survey and the results are shown in Table 5.22. These show that, significantly, whilst householders of age 75 and above constitute 5.7% of all owner-occupiers, they form only 2.6% of those undertaking substantial repairs to their homes. The progressive withdrawal of assistance through Homes Improvement Grants to the less well-off in the private sector, coupled with financial disincentives, is clearly a contributory factor - though the revised grants scheme introduced by the Government in 1990 may offer some remedy.

TABLE 5.20
HEADS OF HOUSEHOLD OF DIFFERENT AGE GROUPS
OCCUPYING HOUSES LACKING BASIC AMENITIES,
ARE UNFIT OR IN NEED OF MAJOR REPAIRS,
(ENGLAND AND WALES), 1986

Age Group	Lacking Basic Amenities (%)	Unfit (%)	In Need of Major Repair (%)
17-39	1.2	4.1	12.5
40-59	1.0	3.1	12.8
60-75	2.6	3.9	12.8
75+	6.1	6.3	14.9
All Ages	2.0	3.9	12.9

SOURCE: Department of the Environment, English House Condition Survey, 1986, Fig 6.1

TABLE 5.21
AGE DISTRIBUTION OF HEADS OF HOUSEHOLD WHICH LACK
BASIC AMENITIES, ARE UNFIT OR IN NEED OF MAJOR REPAIRS,
(ENGLAND AND WALES), 1986

Age Group	Lacking Basic Amenities (%)	Unfit (%)	In Need of Major Repair (%)	All Houses (%)
17-39	20.6	34.8	31.9	33.0
40-59	17.5	25.9	33.1	33.4
60-75	30.7	23.3	23.4	23.5
75+	31.2	16.0	11.6	10.1
All Ages	100	100	100	100

SOURCE: Department of the Environment, English House Condition Survey, 1986, Fig 6.1

TABLE 5.22
AGE DISTRIBUTION OF HEADS OF OWNER-OCCUPIED
HOUSEHOLDS UNDERTAKING MAJOR REPAIRS,
(ENGLAND AND WALES), 1986

Age	Proportion of All Owner-Occupiers (%)	Proportion Undertaking Major Repairs (%)
17-39	33.4	37.8
40-59	39.2	39.1
60-75	21.7	20.5
75+	5.7	2.6

SOURCE: Department of the Environment, English House Condition Survey, 1986, Table 7.9

The Glasgow House Condition Survey

At the time of the survey in 1985, there were 300,833 houses in Glasgow, the largest city in Scotland and the third largest city in Britain. Whilst, as noted, no distinction was made according to the age of the heads of households the combined facts that (i) Glasgow has a higher proportion of local authority dwellings than almost any other British city and fewer owner-occupied houses and (ii) that a higher proportion of elderly people live in rented accommodation than the population generally may reasonably lead to the deduction that a finding of poor housing conditions in Glasgow would adversely affect a very substantial number of elderly people. The most common house type in Glasgow is the tenement, a three to five storey walk-up block of flats with access to individual dwellings within a given building from a common entry and internal staircase. The tenemental style was adopted by the District Council in its construction of peripheral estates, developed in the 1950s to house people displaced by slum clearance schemes. The 1985 survey consisted of an inspection of nearly 15,400 dwellings, approximately 1 in 19 of the houses throughout the city.

Housing conditions were measured with reference to three main indicators:

- (1) Failure on the Tolerable Standard
- (2) Lack of standard amenities
- (3) Disrepair

leading to a categorisation of dwellings within one of four groups as shown in Table 5.23.

A "tolerable standard" is defined in Part II of the Housing (Scotland) Act of 1974. A house meets the tolerable standard for the purpose of the Act if it:

- (a) is structurally stable
- (b) is substantially free from rising or penetrating damp
- (c) has satisfactory provision for natural and artificial light, for ventilation and for heating
- (d) has an adequate piped supply of wholesome water available in the home
- (e) has a sink provided with a satisfactory supply of both hot and cold water within the home
- (f) has a WC available for the exclusive use of the occupants of the house and suitably located within the house
- (g) has an effective system for the drainage and disposal of foul and surface water
- (h) has satisfactory facilities for the cooking of food within the house
- (i) has satisfactory access to all external doors and outbuildings.

TABLE 5.23
HOUSING CONDITION STANDARDS

Group 1:	All dwellings below the tolerable standard irrespective of amenity and disrepair
Group 2:	All dwellings which meet the tolerable standard but lack one or more of the five basic amenities, namely: <ul style="list-style-type: none"> (i) a fixed bath or shower (ii) a wash-hand basin (iii) a kitchen sink (iv) provision of hot and cold water to bath, basin or sink (v) WC
Group 3:	All dwellings which meet the tolerable standard and have all amenities but which require repair expenditure in excess of £5000
Group 4:	Satisfactory: All dwellings which meet the tolerable standard with all amenities and require repair expenditure below £5000.

On the basis of the above definitions, the Survey found 33% of occupied dwellings (97,400) to fall within Groups 1, 2 and 3 and thus to be unsatisfactory in some way, either by failing the tolerable standard, lacking standard amenities or requiring repairs greater than £5000. An estimated 15% of the city's stock was judged to be below the tolerable standard, representing some 44,500 houses. Nearly half of the properties failing the tolerable standards did so because of rising or penetrating damp. Though the prevalence of below tolerable standard conditions was highest in the private sector, nearly one in eight of all District Council properties were found to be below tolerable standard, a finding likely to affect a disproportionately high number of elderly people.

A relatively low number of some 6,400 dwellings in Glasgow were estimated to lack one or more standard amenities such as a bath or wash-hand basin. The survey found that 79,700 dwellings needed repairs costing in excess of £5000. Only 27% of occupied dwellings in Glasgow had whole house central heating whilst 45,000 were found to have obsolete electrical installations. Of the 129,000 properties which are either top floor or single storey, 42,300 were considered to have no loft insulation. Only 6% were identified as having any form of wall insulation and only 6% had whole-house double-glazing. Over 60% of local authority stock required repairs in respect of ill-fitting windows, doors or panels.

Some 20% required major repairs. Condensation was confirmed in some 28% of the Glasgow District housing stock and in 19% of the total stock - figures accepted as underestimates as result of the timing of the surveys during the summer period. Some 29% of all homes suffered from condensation, mould growth or dampness problems. In the case of Glasgow in particular, the causes of condensation might reasonably be identified with the fact that a very high proportion of District Council housing stock has a standard of insulation less than Building Regulation Standards whilst Glasgow has a more severe winter climate in relation to the South of England. The consequence is that it costs an estimated 20% more to adequately heat a house in winter in Glasgow than an identical dwelling in Southern England [75]. At the same time, some 72% of Glasgow District Council tenants are in receipt of some form of benefit which suggests that, faced with inadequate housing conditions, the response of many low-income Glasgow households is not to spend more on fuel but to spend what they can afford then switch off .

The results of the main Glasgow Housing Condition Survey serve to confirm the findings of the independent Grieve Report on the Inquiry into Housing in Glasgow [76] and, in particular, into the state of housing in the four peripheral estates of Drumchapel, Easterhouse, Castlemilk and Pollock. The Grieve Report found that 44% of the Glasgow District Council's housing stock was in an unsatisfactory condition and has outstanding repairs estimated at over £3000 per house. Grieve declared some 23,000 council houses in Glasgow to be suffering from severe dampness or significant condensation or both.

More generally, the Royal Institute of British Architects [77] have estimated that the shortfall on necessary repair and maintenance to public sector housing exceeds £10 billion, not including normal improvement or modernisation costs, whilst a report by the Association of District Councils for England and Wales [78] puts the comparative figure at £36 billion.

The National Housing Forum have estimated that a total of 1.5 million homes are presently unfit for human habitation or lack standard amenities which they relate to the existing and future need for accommodation and suggest that an extra 2 million are required now and another 2 million by the end of the century [79].

Given the higher proportion of elderly in rented accommodation in both the public and private sector and amongst the oldest of owner-occupied property, it is not difficult to see evidence of a widening "housing-health" divide between, on the one hand, relatively well-off elderly in owner-occupation or in local authority accommodation maintained to reasonable standards and, on the other, poorer owner-occupiers and those living in less well-served local authority areas or in private, minimally protected, tenancies.

The above assessments of aspects of environmental health amongst the elderly should be viewed alongside the most recent Central Research Unit (CRU) report for the Scottish Office on the housing needs of the elderly in Scotland [80]. Based on a survey of 1755 elderly people conducted in 1987 the objectives of the study were to measure the range of dependency levels amongst the elderly population of Scotland and, from this, to identify overall levels of need for different forms of housing and of care. The factors surveyed were age, household type, health, dependency characteristics, housing conditions, support needs and housing preferences. Four broad levels of dependency were identified, based primarily on mobility and the capacity for personal and domestic care.

The classification of persons into the categories of zero, low, medium and high dependency is then adjusted to take account of household type to provide an assessment of the number of houses required to met the needs of elderly people in each category.

The survey produced target figures for housing provision in each category, expressed as houses per 1000 of the elderly population as follows:

High dependency	-	18 - 23
Medium dependency	-	119 - 135
Low dependency	-	158 - 161
Zero dependency	-	441 - 464

Comparison with existing provision reveals major shortfalls in the high and medium dependency categories.

The Special Problem of the Old and Cold

It is in relation to the domestic thermal conditions experienced by the elderly that the divisions between them and the rest of the population are arguably most acutely expressed, not least because they have to spend more time indoors than most and are often prevented by physical disability from moving freely around and beyond their home environment.

Three issues are of concern: the incidence of hypothermia amongst the elderly; the difference between summer and winter deaths in this age group and the quality of life enjoyed by the elderly at home.

The recognition that cold presents a special threat to the health of the elderly manifests itself in an almost ritualistic annual public concern over accidental winter deaths from hypothermia amongst old people. Fox [81] defines hypothermia as a condition present when the "deep body temperature " falls below 35°C. It should be noted, however, that whilst it is necessary to have a precise medical definition of the hypothermic temperature threshold, bodily dysfunction is progressive as temperatures decrease and no sharp cut-off point is likely to be experienced. Human beings are homeothermic, possessing heat control and temperature-regulating systems which, over a wide range of environmental states and in combination with behavioural adaptations, enable the individual to maintain their deep body temperature, and in particular that of the "vital" organs such as the heart and liver, close to a critical level of around 37°C.

If either exogenous factors, such as low environmental temperatures, or endogenous factors, such as a malfunction of the temperature-regulating processes caused by other forms of sickness, chemical imbalances or age, result in a failure to maintain the deep body temperature at this level, then hypothermia may occur.

The evidence is of many thousands of elderly people who die each year as a result of cold-related illnesses. Curwen and Devis [82] claim that every 1°C drop in temperature below the winter average results in an extra 8000 deaths resulting in an increase in winter deaths - from hypothermia and other cold-related causes - amongst the over-60s of around 40,000 per year (see Chapter 2). Such a rate of winter excess is up to three times greater than that in countries with higher thermal standards but colder winters, such as Canada and Sweden [83]. The unusually cold winter of 1985 is estimated to have resulted in the deaths of 16,000 more people than during the same period the previous year. The number of over-75s who died during the year rose by 22,000.

The significance of lack of heating as a likely cause of excess winter deaths is confirmed by the higher incidences of heart attacks and strokes as well as respiratory and infective illnesses in winter and the high correlation of these conditions with air temperature. A recent study [84] of patients admitted to a group of inner city hospitals has found that sudden exposure to a moderate cold for as little as thirty minutes can promote blood clotting and lead to the possibility of a stroke or heart attack. Such conditions are more likely to occur outdoors in cold weather and the team conclude that exposure to outdoor cold may present a significantly higher risk to the old than hypothermia induced by freezing homes. The study concludes that some 9000 people die directly from hypothermia every year but that many more die from diseases induced by the cold.

The fact is that precise incidences of deaths from hypothermia defy unambiguous measure, nor least because of difficulties over diagnosis [85] though it is certain that many thousands of extra deaths do occur in the winter months [86]. In this context, a more significant index of the scale of the problem of the effects of cold on old people might be the number of elderly "at risk" of hypothermia including those who may actually become hypothermic and then recover.

In a survey of people over the age of 65 conducted by Fox and colleagues and reported in 1973 [87] a large number were found to have body temperatures below the threshold value of 35.5°C. Stevenson notes that a disturbingly high proportion of these were on Supplementary Benefit [88].

In these cases there was evidence of a degree of thermoregulatory failure and such individuals were deemed to be at risk of developing hypothermia. More generally the survey showed many of the rooms in the sample to be "much too cold for comfort" and in 75% of cases to be below the Parker Morris standard of 18.3°C. A number of subjects were found to be living in exceptionally cold conditions. In 106 cases the morning living room temperatures were at or below 12°C. In a national survey of the thermal conditions experienced by the elderly at home, conducted in 1972, Wicks [89] found that almost all of subjects had living room temperatures or bedroom temperatures below the minimum levels then recommended by the DHSS, and a majority lived in conditions below temperatures at which employers can be prosecuted under health and safety legislation, if workplace temperatures fall below this level.

A report by the Winter of Action on Cold Homes [90] has extrapolated from Wick's findings to suggest that a half of Britain's 10.3 million pensioners live in temperatures below the 16°C minimum set for shops and offices though between a quarter and a third might be a more realistic estimate. In Wick's study, some 9.6% of elderly respondents over the age of 65 were found to be "at risk" of developing hypothermia, a figure which, if scaled up to the present day, would lead to an estimate of around 800,000 old people at risk throughout the United Kingdom, 70,000 of them in Scotland. Wicks found that 10% of his respondents felt cold indoors "very often" and a further 10% did so "fairly often". As many as 40% of those interviewed expressed a preference to be warmer and gave the cost of fuel as the main reason why they were unable to keep their homes as warm as they wished.

Bradshaw and Hutton [91] have similarly reported findings that 88% of people interviewed who were not satisfied with the degree of warmth within their homes said that expense was the reason why they were not able to enjoy the thermal environment they preferred. A survey conducted by Talbot in 1976 amongst a sample of elderly people over the age of 65, recorded that 34% said they were "too cold for comfort" during the winter months whilst 14% said they were always "extremely cold". Only 16% of the total sample had evening living room temperatures as high as 21°C. The lowest recorded temperature was 10°C [92]. A national field survey of house temperatures by Hunt and Gidman found that non-centrally heated homes, households with a low income, households in Scotland and homes occupied by elderly people had temperatures significantly lower than the national average dwelling temperature of 15.8°C [93].

The conclusion to be drawn is that a propensity to hypothermia may result from the combined effects of a declining physiology, illness and deprived social conditions. The most vulnerable are the very old. To define the problem of the old and cold simply in terms of hypothermia is, however, to grossly underestimate the "environmental ill-health" and loss of quality of life suffered by the elderly in their homes as a consequence of winter cold.

The deleterious effects on health and environmental well-being have been clearly demonstrated, notably by Sonya Hunt and colleagues from the University of Edinburgh Research Unit in Health and Behavioural Change [94,95] who have investigated the effects of cold, dampness, and associated mould-growth on ill-health amongst both adults and children in Edinburgh, London and Glasgow. Lowrey has shown that at average living room temperatures of 16°C respiratory problems start to become more common; at 12°C cardiovascular changes increase the risk of myocardial infarction and stroke and that at 5°C there is a significant increase in the risk of hypothermia [96].

Hypothermia, cold related deaths and illnesses, and loss of quality of life due to cold and dampness in their homes, are all the result of fuel poverty amongst those many thousands of elderly who cannot afford adequate warmth. Brenda Boardman [97] has estimated that, altogether some 6 million households in the United Kingdom suffer from winter cold through fuel poverty. A very significant proportion of these are pensioner households. The evidence on physical, economic, social and environmental health has shown that the elderly tend to have the lowest incomes, to live in the poorest insulated and draughtiest housing with the least efficient heating systems, have access only to the more expensive fuels, to spend more of their time at home and to be least mobile thus requiring higher comfort temperatures.

The combination of these factors means that those with greatest demand for warmth have the least ability to provide it - a classic recipe for fuel poverty. Keeping warm in winter is probably the single most worrying whole health issue for a large proportion of old people and, at a time of growing concern over the adverse ecological impact of energy use associated with space heating in homes in particular, is clearly a problem of major significance for both social and environmental policy.

Dimensions of Health: Consolidation and Interpretation

Though the collected data tends to be distorted by differences propagated by gender, class and geography, objective assessment of the health status of the elderly population of the United Kingdom along the seven identified dimensions of whole health has revealed conclusively both the poor levels of absolute health amongst the elderly population and the inequities that exist in health status between the elderly and the population as a whole.

In terms of economic health, for example, a large proportion of elderly are amongst the poorest section of the whole population, most elderly having incomes which are on average between 30-60% below those of comparable non-elderly households. The position of those who are entirely dependent on state benefits may be even worse. Very substantial numbers of pensioners are not officially poor but fall nevertheless into the poverty trap. One of the special economic difficulties facing the elderly is that pensioners tend to spend a substantially higher proportion of their disposable incomes on the basic necessities of life - including in particular energy - than other households. Generally costs for pensioners rise faster than the general cost of living index upon which pension rises are based, putting ever greater stress on their economic health

In relation to environmental health, housing poverty is a principal cause of anxiety, stress and unhappiness amongst the elderly, disproportionately large numbers of whom live alone in housing which lacks amenities, is in a poor state of repair and difficult to maintain, is cold and damp, and is unsuited to their needs. For many elderly, unsatisfactory housing combines with ill health, isolation - itself a threat to social health - poverty and lack of support, as major sources of stress. Heating within many homes is inadequate and hopelessly uneconomic for the elderly - exacerbated by disrepair, poor insulation and inherent failures of design and construction.

Pensioners who are at home a great deal require warmth for more hours of each day to be healthy and comfortable. The poorest sections of the elderly population are least likely to have central heating - lack of capital is major cause of lack of warmth. As a result of being cold many low income homes suffer from condensation and resultant mould. Low incomes, poorly heated dwellings, high needs for warmth and the availability only of expensive or inefficient fuels and heating systems combine to produce a problem which causes misery, illness and death every winter.

There are established links between damp, cold housing and the incidence of respiratory and bronchial diseases and other forms of chronic illness amongst the elderly. Fuel poverty is virtually endemic amongst many sections of the elderly population.

Poor physical health made worse by poor housing can in turn threaten mental health by leading to acute anxiety and feelings of insecurity. For the elderly fuel poverty degrades the quality of life and denies sufferers the opportunity to exercise an acceptable range of options as to how they wish to live their lives. Such deprivations occasioned by their incapacity to maintain - with the resources available to them and without strain - a tolerable thermal balance within their domestic environment. Such an environment provides a wholly inadequate setting for care.

A general conclusion that can be drawn from a detailed assessment of the status and condition of the elderly in society is that whilst many elderly people may indeed appear to live secure and fulfilled lives within the community, sharing common needs with the rest of the population, need is a strongly age-related phenomenon, with the frequency and severity of both acute and chronic health problems increasing with the age of the subject. However, many of the problems experienced by the elderly are revealed not to be the result of old age per se but to be consequent upon extrinsic factors such as low income, poor housing, unemployment, ill health, disability, loss of mobility etc. A unique combination of biological, social and environmental factors places the elderly in a peculiarly vulnerable and dependent condition. Old age then brings special disadvantages in that not only is there evidence that ageing is characterised by a decline of the body's adaptive systems but that old age brings with it handicaps and frailties which limit activity; a gradual loss or deterioration of general health drawing heavily upon reserves of strength and endurance; greatly reduced incomes with little capital raising potential, poor housing conditions and inefficient heating equipment plus the greater probability of bereavement and separation from families to chilling loneliness.

Such factors impose stress and constitute a serious drain upon available resources which may lead to a withdrawal from social participation and a loss of community warmth; a tendency which can only be reinforced by the ageism which is pervasive and entrenched within society.

In such a context, ageing must be understood, in phenomenological terms, not simply as a biological process but as a socio-environmentally determined condition whose essential defining characteristic is that of a seemingly inevitable intensification of environmental and social stressors associated with age, paralleled by an equally inevitable diminution or actual loss of the ageing individual's capacity to adapt to or compensate for the increased levels of stress without the right forms and levels of emotional and physical support. The result is that, in practice, almost all elderly people need some form of social support to maintain whole health and this may be substantial in the case of the very old and frail.

From the multidimensional assessments carried out in Chapter 4 and Chapter 5, a profile of the elderly population of Britain has emerged which confirms that (i) their whole health status is absolutely poor in being generally below what should be accepted standards for the populations of the developed economies and (ii) major inequities exist between the health status of the elderly and that of the rest of the population which tends to marginalise the old and the disadvantaged. In this sense, the demographic imperative has been identified as a subset of the more universal health-equity imperative and, as such, cannot be disassociated from the ecological imperative, given the interdependence already demonstrated.

The recognition of such interdependence focuses special attention upon the interrelationships and limitations of contemporary social and environmental policies. The poor health status of the elderly may be attributed at least in part to failures of both; in particular the failure of contemporary social policies relating to the care of the elderly adequately to address emerging environmental concerns and the failure of existing and proposed environmental policies to embrace a necessary social dimension and to account adequately for the needs of vulnerable groups such as the old and the poor. This hypothesis is tested in Part Three through a critical review - in respective chapters - of selected aspects of social policy (specifically income support, health care and housing) care policy and environmental policy. In the latter case particular emphasis is placed on domestic energy policies and prescriptions in recognition of the special significance of buildings as determinants of whole health. Such a review also serves the process of identification of the key principles of unified social and environmental policies for the care of the elderly, to be offered in the Part Four of the study.

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PART THREE

PERSPECTIVES ON POLICY

CHAPTER 6

ASPECTS OF SOCIAL POLICY

Income Support, Health and Housing

In Part Three, aspects of social and environmental policy relevant to the domestic care needs of the elderly are reviewed critically to test the hypothesis that the demographic imperative cannot, in either theory or practice, be disassociated from the ecological imperative; that contemporary social policies relating to the care of the elderly fail adequately to address emerging environmental concerns and that existing and proposed environmental policies lack a necessary social dimension and fail to account adequately for the needs of vulnerable groups such as the old and the poor. Social policy describes the policies of government in respect of social services, health, education, housing, social insurance and social welfare. Environmental policy embraces concerns with pollution, air quality, waste management and, most specifically, with the efficiency of energy use within the built environment and within domestic settings in particular.

The current chapter is devoted to a review of income support policy, health policy and housing policy; Chapter 7, more specifically, to an assessment of policies for the care for the elderly within the community and Chapter 8 to an evaluation of relevant aspects of environmental and energy policies. A consolidation and interpretation of the findings of all three chapters in Part Three is offered at the end of Chapter 8.

The review of policy undertaken in Part Three also contributes to the identification of those key principles which - as will be suggested in the final Part of the thesis - should inform the integration and unification of social and environmental policy for the care of the elderly against the background of the ecological imperative and which may be expected also to have relevance in the context of the more universal health-equity imperative.

Income Support Policy

It is the established view of many sociologists, led by Peter Townsend, that where a condition of dependency amongst elderly people exists this is not the inevitable outcome of some natural process of ageing but is socially structured. The theory of structured dependency of the elderly - the idea that society creates the conditions which makes dependency inevitable for the majority of the elderly - has been argued persuasively by, for example, Townsend himself [1,2,3] and Walker [4]. The principle mechanism of structured dependency is identified as the institution of retirement, leading to poverty, loss of choice and a restriction of roles. If it is accepted that the economic well-being and independence of most individuals for most of their active lives is a function of their employment, it follows that nowhere are the financial and social divisions greater than between those who are economically active and those who are not. As a result, most observers are able to agree with Townsend on the association between prevailing states of dependency, poverty and need amongst the elderly and the institution of forced retirement. Since work brings with it not simply financial benefit but a social role and status, retirement may imply not only a descent into poverty but a loss of purpose, dignity and self-esteem. Through the process of enforced retirement, the elderly may thus come to see their contribution to society as substantially diminished and their dependence correspondingly increased.

Retirement, as a mechanism for managing the size of the active workforce, has become a dominant phenomenon of social life only in recent years. Bosanquet [5] notes that, just fifty years ago, almost two-thirds of men over the age of 65 were still working. Townsend [6] adds that, as late as 1959, less than one-half of men retired at 65. By 1969, however this figure had risen to seventy percent. Today one-fifth of the total population is in retirement from active employment. Such a trend in employment practice represents a major social reform which has its origins deeply embedded in the experience and consciousness of generations of manual workers, both industrial and agricultural, "burnt out" by years of hard labour, long hours and poor working conditions. Thus for most of the twentieth century, earlier (and longer) retirement for the individual has been perceived as a desirable social goal. Midwinter [7] suggests that the idea of a fixed retirement age was probably conceived as having administrative rather than social merit but the concept, and eventually that of pensions for all, was exported by Britain to the rest of the world.

Once, as Palmore [8] comments, cultural and personal differences had made the definition of old age a very individual one, varying from person to person according to competence and capacity. Today, for most people, to be 65 or 60 is to retire and to retire is to be old. In fact, prevalent social attitudes towards the elderly and employment have been reflected not only in a policy of compulsory retirement but in the exercise of pressure on those approaching retirement age to "go early" and to make way for younger, unemployed workers. Such attitudes have markedly affected the employment or re-employment prospects of older workers.

Poverty, as defined by Townsend [9], is the inability to command the resources needed to allow participation in the diets, customs and activities commonly available or expected and to impose the obligations imposed upon individuals by virtue of their role in society. As such poverty is, for many people, a fact of life not a sudden discovery of old age. Large proportions of today's elderly population have always existed on the edge of poverty through the occupation of unskilled or semi-skilled jobs. Their experience of employment has been one of low wages and low opportunities for acquiring possessions, savings or occupational pension rights. The coupling of pensions with length of service and final salary levels simply perpetuates and reinforces in retirement the relative poverty of their working lives. For almost all elderly, retirement thus represents either a sudden and severe reduction in their standard of living or simply an intensification of the poverty they have experienced during their earlier lives. In either circumstance, as Bosanquet [10] observes, for all but a small if growing minority retirement marks the start of a cycle of progressive financial decline as income maintenance becomes increasingly problematic. The experience of even the better-off retired person is likely to be that their income will fall in real terms whilst to meet their essential needs will demand an increasingly greater share of their resources. Possessions wear out, their assets deplete. Replacement and maintenance become major financial burdens. As an increased proportion of financial resources are directed towards the maintenance of even a basic standard of living so less are available to permit the individual to engage in the full range of social activities which are the necessary conditions for personal well-being and independence.

Writer, journalist and humanitarian Mary Stott argues that a fixed statutory retirement age which takes no account of personal needs, circumstances, capacities or preferences has the effect of dramatically and arbitrarily redefining the outline and the structure of the lives of people at a critical time [11].

Nearing the latter part of their life-course and faced with the onset of old age and the loss of long-established roles, status and social contacts, they may be least able mentally and physically to adapt to the changes in a wholly positive way [12]. Simone de Beauvoir [13] adds that the institution of retirement has the effect of removing the elderly individual from active participation in the nation's economic life yet fails to put in place any organisation, mechanism or structure whereby the elderly as a group may achieve the political or social cohesion needed to bring about change. For many elderly, then, the associations of retirement, real or perceived, may be with an increasing physical and empathetic separation from the rest of society, a dislocation in the pattern of their life, a restriction of their choices and a sense of powerlessness and loss of independence and value. The sense of dependency, vulnerability and helplessness experienced by many elderly are, in the view of both Klein [14] and Rochlin [15], of an order unequalled since infancy.

The fundamental conclusion of Townsend's argument of what he terms "structured dependency" is that the conditions experienced by the elderly within society are in very large measure neither necessary or natural but rather that all major social policies affecting the elderly have developed in ways which have both created and accentuated their social dependency. More specifically, "society creates the framework of institutions and rules within which the general problems of the elderly emerge and indeed are manufactured" [16]. The formal actions of society simply serve to confirm the retired and role-less status of the elderly.

Both Alan Walker [17] and Paul Brearley [18] reinforce Townsend's analysis by drawing particular attention to the depressed social status of the elderly; to the depreciating values of their limited assets with increasing length of retirement; the low rate of realisation and utilisation of capital; the institutionalisation of ageism in the low levels of state benefits; the low rate of uptake of social benefits and the denial of access to disability benefits and to mobility allowances

In summary, Townsend equates structured dependency with:

- * the imposition and acceptance of early retirement
- * the legitimation of low income, which Townsend relates to the poverty associated with class structure and the social system of occupational hierarchy
- * the denial of rights of self-determination
- * the construction of community services for recipients who are assumed to be predominantly passive.

Poverty and dependence in old age are thus seen as predetermined by-products of the social structure itself; inevitable except for the "privileged" few with access to property, savings, private pensions, and tax reliefs which collectively limit the erosion of living standards experienced upon retirement. Under the system of institutionalised retirement and state pensions, each successive generation of elderly becomes dependent for its continuing standard of living upon a tacit contract with the younger and economically more active members of society as society makes the conscious choice to favour more generously those in employment as compared with those who are retired. Such a contract is inherently unequal and unstable, leaving many elderly who are wholly dependent for their income upon the receipt of state pensions, in a highly exposed and vulnerable position. Their condition is made more unstable still by the collision of two significant and opposing demographic trends; the expansion of the retired population and the shrinkage in the number of new recruits to the labour force. Faced with the consequences of the resultant increase in the so-called dependency ratio, political pressures are now growing for the introduction of more flexible policies on employment and retirement, to provide incentives for the elderly to actually remain economically active for longer periods and for individuals to make greater private provision for personal when they do eventually retire.

For the elderly, economic health is almost certainly a precondition of social, physical and environmental health. Find poverty and you will find disability, illness, poor housing and isolation. In this sense an effective policy of social security and income support for the elderly is the bedrock upon which all other health and social services policies must be founded. The effectiveness of social interventions on behalf of the elderly in the fields of health, housing and social welfare will all be compromised by the lack of an adequate income. The reality is that, as a consequence of the evident inadequacies of existing social policy, the incomes of most elderly are indeed too low because of a combination of:

- * the low levels of state pensions,
- * the low numbers of elderly with substantial occupational pensions,
- * the low rate of uptake of benefits
- * the low rate of realisation and utilisation of capital
- * the low uptake of cost saving opportunities and
- * the social decision to provide resources more generously for those in work rather than those who have completed their term in employment.

Until the Social Security Reforms of 1988, the social security system as it affected the elderly was of extreme complexity with over 80 separate benefits administered by the then Department of Health and Social Security (DHSS). The 1988 reforms changed the basis of income support for those elderly on low incomes as well as the method of support for the costs of housing. There are now three main Social Security Benefits for the retired, the State Retirement Pension, Income Support and Housing Benefit.

State Retirement Pension Scheme

The State Retirement Pension is the major source of income for most elderly. The retirement pension is a taxable weekly benefit for men over 65 and women over 60 who have paid contributions to the National Insurance Scheme during their working lives.

The retirement pension is made up of the basic pension, an additional earnings related pension (for those who have contributed to the National Insurance Scheme since April 1978) and a graduated pension (for contributions made between April 1961 and April 1975, at which latter date the graduated pension scheme was withdrawn).

Members of an occupational pension scheme would normally opt out of the additional pension part of the state scheme. Any substitute scheme introduced by employers would however have to provide a guaranteed minimum pension to replace the additional pension. The 1988 Social Security reforms allowed for the phasing out of the State Earnings Related Pension Scheme (SERPS), by offering generous incentives to individuals to leave the scheme.

All retirement pensioners automatically get free NHS prescriptions and may also qualify for help with other NHS charges. They may in addition, be entitled to support provided by their local authority social services departments in the form of home helps, meals on wheels, access to day centres, or special transport schemes.

Income Support

If the retirement pension fails to deliver sufficient income then help may be provided in the form of Income Support which is a benefit for people who do not have enough money to live on.

Income Support replaces Supplementary Benefit and is based on a simpler three-tier structure which incorporates personal allowances, dependents' allowances and standard premium rates of payment for the special needs of families, sick and disabled people and pensioners. Income Support also replaces regular weekly additions, invalidity pensions, invalid allowances, dietary additions and emergency payments. Under the system of Income Support, payments for additional requirements which had previously been made to some 90% of pensioner recipients are replaced by a blanket age premium. Mobility and attendance allowances have been retained.

Many pensioners, whether or not they are in receipt of Income Support, can get help with rent and community charges. Everyone, however, will be expected to pay at least 20% of the community charge and all of their water rates "to improve local accountability". Some compensation for this has been included in the Income Support allowances.

The reforms established a residual Social Fund to meet emergency requirements, allowing for discretionary payments to be made in the case of exceptional circumstances. Payments which are available only to those on Income Support may include cold weather payments as well as a community care grant introduced to help certain priority groups lead independent lives in the community. The formation of the Social Fund, marks a shift away from a tradition of one-off single payments for the purchase of essential items to a system based essentially on loans and represents an important change in the welfare system, away from a dependence on a rigidly applied regulatory framework towards a system supposedly decided by common sense and discretion.

Housing Benefit

The revision of the existing system of help with rent and rates was intended to target resources to low-income households and to reduce the spread. The needs assessment used in Housing Benefit calculations has been aligned with the Income Support level. Individuals with incomes at or below the new Income Support levels are eligible for 100% assistance towards their rent. The right to Housing Benefit does not depend on National Insurance contributions and is tax free. The amount paid depends upon a combination of income, assets and outgoings. People with more than £6000 savings are excluded whilst those over £3000 have had their entitlement reduced. This latter constraint may particularly disadvantage the elderly.

There is evidence that the increasingly stringent housing benefit regulations are having a serious impact on the poorer members of society such as elderly with small incomes marginally above basic pensions. The fear generally, and given specific expression by Becker and MacPherson [19], is that reforms such as the introduction of a discretionary social fund, and the abolition of extra weekly payments for special needs and lump sum payments are actually making things actually worse for many elderly.

A review of income support policy suggests that policies for income maintenance in retirement have been socially and financially divisive as between the elderly and the economically active members of the population. The result is both a private and a public concern about the "burden of dependency" supposedly imposed by the elderly upon the rest of society. This concern has been given recent official sanction in Government White Papers in which the burden on the taxpayer of state pension provision is cited as the primary reason for changes proposed and implemented in the system of Social Security. The consequences of social policy, as noted in Chapter 5, seems to have been to create two distinct classes of old people, namely those with good occupational pensions who can look forward to a retirement of choices and those in receipt of means-tested Income Support; a condition which seriously constrains their options for life and places them in an unstable and potentially dehumanising position of dependency on the state .

Health Care Policy

Since the inception of the National Health Service in 1948 the problem facing all governments has been how to control costs whilst meeting the nation's growing health care needs. Against the background of this general level of anxiety about the perceived cost burden of the National Health Service on the Exchequer, special concern has always attached to the economic problems involved in providing for old age. Such concern is evidenced, for example, by the remits of the Phillips Committee in 1954 [20] and later the Guillebaud Committee in 1956 [21]. Against the background of an inexorable rise in the demand-led costs of the service, the increasing numbers of the very old - itself an indicator of the success of social policy in producing a general improvement in public health and life expectancy - might be seen as a drain on resources which tends to divert services away from other, politically more powerful, client groups.

At the same time policy makers must face the argument that, relative to their needs, the health care services available to the elderly are themselves chronically under resourced and inadequate.

The National Health Service (NHS) was established, and has on the whole been run, as a service whose emphasis is upon cure and containment rather than care [22]. The service is designed, and has remained throughout successive reorganisations, essentially as a mechanism for intervening in the course of acute illnesses and for returning patients to a disease-free state. Its foundations are the medical model of health and, as such, it has proved ill-equipped to respond effectively and sensitively to the major challenge posed by the prevention, treatment and care needs of people suffering from complex physical, mental, social and environmental problems.

The general experience of the NHS seems to have been that of a service seriously underfunded and unable in its present form to offer comprehensive, whole-health care; a service characterised by a fast and effective response in the case of emergencies but of long waits for non-urgent treatment. Plank [23] has not been alone in describing the existing health system as an uncoordinated set of discrete and relatively autonomous parts with service provision developing in an uncoordinated and isolated manner without the benefit of a considered framework of policy and professional practice. Just one example of many is the findings of the joint working party of the Royal College of Physicians and the Royal College of Psychiatrists [24] that the health services were failing to provide the necessary support to family carers looking after the elderly, particularly those who were mentally ill.

The overall result is acute stress on each of patient, carer and the service itself. The results of this stress include bed-blocking, crisis rather than planned management, inappropriate placements, unmet needs and carer burden. Bed-blocking occurs when a patient cannot be discharged from hospital because no suitable accommodation is available [25].

Repeated calls, as by the Merrison Committee [26] as long ago as 1979, have been for a greater range of care options, for closer collaboration and cooperation between the service agencies and for a shift away from the dominant medical model towards care policies based upon a wider and more holistic concept of health.

This is the background against which health care for the elderly has become one of the major social policy issues of the late twentieth century and it provides the framework for a review of the reforms of the NHS announced in 1990, introduced initially in April 1991 and which - when and if fully implemented - are intended to be the most radical for over forty years.

The National Health Service Reforms 1990

Since 1979 repeated attempts have been made to control the escalating costs of the NHS under pressure from demands for higher standards, the introduction of new technologies and techniques, greater spending on new and more expensive drugs and the increase in the number of elderly who make the greatest per capita demands on the health and care services. In 1984 general managers were introduced into every health authority and hospital with the aim of achieving a proper management control over health service budgets by establishing a clear linkage between treatment and costs. In practice a combination of deficiencies in the accounting procedures and a resistance by doctors to consider treatment in terms of cost effectiveness has largely frustrated these aims. In 1990 the NHS budget was some £27 billion pounds yet in 1987 three bodies representing doctors - the Royal Colleges of Surgeons, Physicians and Obstetricians - warned that the NHS was reaching financial breaking point. The resultant public and political pressure forced a fundamental review of the NHS.

The resultant reforms introduced by the National Health Service and Community Care Bill of 1990 have the stated intent not of reducing the absolute costs of the health service but of achieving better value for monies spent. This in the context of hospital waiting lists which are now only just short of a million in England alone. The basic mechanism proposed is that of allowing money to follow the patient to where the work is best done, in the belief that this will lead to a situation in which the most efficient hospitals will attract the most patients and the most resources, thus allowing them to thrive at the expense of the less efficient parts of the service.

In essence, the reforms can be summarised as firstly allowing hospitals (with more than 250 beds) to opt out of local health authority control and become self-governing, secondly allowing general practitioners to run their own budgets and thirdly introducing medical audits. A main thrust of the changes is to separate the funding from the provision of NHS services as hospitals are required to compete with one another for contracts and resources.

The changes establish a potentially free market for district health authorities to purchase services from their own authorities, from other health authorities and from the voluntary and private sectors. Such a mechanism is intended to work to the benefit of patients, as health authorities offer contracts to the best hospitals with the quickest treatment for particular conditions. If the hospital with the shortest waiting time is, however, also the most expensive it may not win the health authority contract or attract referrals from general practitioners.

Whilst, under the new procedure, district health authorities are enabled and encouraged to make increased use of private hospitals through a system of competitive tendering, early indications are that some distortion of the free market concept is already taking place under the combined pressures of demand, resource shortages and political expediency. The Government's stated position is that some modification of principle is inevitable during the transition phase and before a fully operational system of cost accounting is in place to secure a "level playing field".

Greater authority is delegated to hospitals who choose to opt out and those hospitals, known as NHS trusts, will have wider freedom to operate within the NHS. They will however depend entirely on the contracts they win from health authorities in open competition with other hospitals. It is hoped that the new competitive regime will secure the cooperation with management of doctors who have hitherto protested that the linkage of treatment with cost would threaten their clinical freedom which is said to guarantee every patient the treatment he or she needs. The Government argue that the risks of allowing a budget to dictate decisions about treatments can be minimised by specifying minimum procedures for each medical condition as in the USA.

Whilst, as a consequence of the reforms, health service patients could be offered better and quicker care it could equally be argued that they may just be offered cheaper care. What does seem certain is that patients can expect to have to travel more for treatment. In order to compete hospitals are likely to develop their own particular specialities. Instead of going to the local hospital for everything, patients are likely to be referred to different hospitals for different conditions. Will, however, hospitals voluntarily choose to develop much needed but traditionally "cinderella" specialities such as psychogeriatrics with their low status, high staffing ratios, longer than average use of beds and requirement for closer, more staff-intensive links with community medical services?

A specialist system of geriatric medicine has evolved in Great Britain from the time of inception of the NHS. However, whilst elderly people do make the most significant demands on the NHS, only a minority of geriatric care services are provided in hospital; the load falling mainly on the primary health services [27]. The effectiveness of primary health services in managing illness and disability in the elderly is therefore critical both to health maintenance and to alleviating the cost burden on the NHS itself. This is recognised by the greater emphasis now being placed on preventative medicine, the acknowledgement of the importance of safe, healthy living environments, health education, diet, health screening and on health targets as proposed under the terms of the 1991 Green Paper on Health, The Health of the Nation has the stated aim of preventing premature death or debilitation and ill health and of smoothing out differences, geographical or otherwise in health and health care. Health targets are set in 16 key areas including, most significantly in the present context, environmental quality.

At the level of primary health care, an objective of the reforms is that more treatment should become available in larger general practices. Those with more than 11,000 patients are now able to hold their own NHS budget and keep any savings they make to reinvest in the practice. The idea is that this will encourage them to undertake minor operations and provide other treatment that can be done more cost-effectively in the local surgery as opposed to the regional or district specialist health facility. From April 1991, practitioners in these large practices will be enabled to act as advocates on behalf of their patients, using the purchasing power of their own NHS budgets to obtain access to the shortest waiting lists and the best care. General practitioners are encouraged to compete by making a larger proportion of income dependent on the number of patients on their lists (known as the capitation fee). From April 1992, a system of "indicative prescribing" will come into force which will monitor GP's prescription practices against cost norms.

Such emphasis on cost consciousness is intended to compel doctors in large practices to consider (with their managers) what they spend but just as arguably may provide them with an incentive to accept only "healthy" patients in order to keep their treatment costs down. Larger practices that hold their own budgets will have an incentive to delay expensive borderline treatment or investigations whilst doctors generally will face cost limits on the amounts that each can spend on drug prescriptions. The fear must be that, against this background, multi-symptom, chronically ill patient groups such as the elderly may be seriously disadvantaged under the new reforms.

On the other hand, potential advantages should be improvement in appointment times, more convenient surgery hours, more auxiliary staff to relieve the workload on the GP and hence allow him or her to spend more time with each patient, better waiting facilities and a shortening of waiting lists.

There will be less restriction on choosing and changing general practitioners and a greater attention to preventive medicine and care with improved systems of health screening as part of which general practitioners are required to offer a "home environment" visit to patients within various vulnerable categories (including the elderly of 75 and over) at least once a year.

Opinion on the NHS reforms, both within and outwith the service, and amongst both doctors and managers, is deeply divided and seems likely to remain so. Whilst some see challenge and a real opportunity to address the fundamental issues of care that confront society, other see only the abandonment of the founding principle of universal health care for all on the basis of need rather than the ability to pay.

Housing Policy

For that majority of the elderly population who wish to have the opportunity to lead healthy, independent lives within the community, suitable housing is an essential need [28]. At a basic level, good housing for the elderly can be equated with the provision of shelter, security, warmth, accessibility, adaptability, manageability and economy and - on this definition - suitable housing is probably the finest preventive whole-health measure available to the elderly. The corollary to this is that unsuitable housing can be a major contributory factor to ill-health and to isolation amongst the old. Alan Butler [29] has drawn particular attention to the fact that any form of physical handicap can be amplified by housing factors such as awkward staircases, inadequate heating and insulation or the absence of an inside WC and that a combination of such conditions can, in the final analysis, militate against an old person remaining in his or her own home.

The conclusion must be that the ability of old people to live within the community is as dependent on their possession of suitable accommodation as on any other factor and as such, suitably designed housing which supports good environmental, physical, social and economic health within the community must be a critical element of any effective care policy for the elderly [30].

A major challenge for social policy is that, according to the above definition, many of the growing number of elderly people manifestly do not have a decent home. Older people generally are found more likely to live in poorer housing than the rest of society [31] and, Butler and colleagues believe [32], are more likely to be paying a higher proportion of a smaller income for that housing. Elderly owner-occupiers in particular may experience great difficulty in maintaining their property at a satisfactory level of repair and amenity.

The housing needs of the elderly vary in both scope and acuteness. The care needs of those elderly who are relatively fit and active and have the support of family and friends may, as suggested in the Scottish Housing Handbook [33], for example, very well be satisfied by basic provisions within mainstream, general-needs housing. This may be especially true where such housing is itself designed to be responsive to the growing demand, noted by the Royal Institute of British Architects [34] to cater for the needs of smaller households and which may include the adoption of flexible housing designs capable of extension to provide semi-independent accommodation for single or elderly relatives and siting for ease of access to community services. The better the design of ordinary mainstream housing then, argues Thom [35], the fewer the number of elderly who will require to move to more specialist forms. For many elderly, however, particularly the very elderly without family assistance, some further form of support may be essential if they are to maintain their independence within the community and be free of the anxiety associated with ill-health or isolation. The means of providing such support will vary in relation to whether the requirement can best be met through a process of physical design or through the provision of services and support. Further options exist as to where the required service or facility can be provided, be this within the elderly person's own home, or in purpose-built or adapted accommodation. Determinants of the most appropriate option in particular circumstances will be the individual's existing housing and social circumstances, their degree of need. In terms of whole health, however, which identifies choice as a fundamental need then the most significant determinant of what is best and most appropriate for an elderly person should be their personal wishes and preferences .

Traditionally, elderly people in housing need have been restricted to three available options. These are:

- * continuing to live at their own home, with family support
- * moving in with relatives
- * moving into long-stay residential or nursing care.

Such limited options makes it difficult to cope with changing needs and circumstances and many elderly remain unnecessarily in hospital because of lack of alternatives. Within the context of developing contemporary social policy responses to the evolving and diverse housing needs of the elderly over the past 10-15 years, a range of voluntary, private and statutory initiatives have begun to emerge which extend the options available by seeking to combine maximum independence with economy and progressive care. Forms of housing provision with care for the elderly, under the auspices variously of the public sector, the private sector, housing associations, local housing authorities, social works departments and health boards - acting either singly or in combination - can then be broadly grouped into the following categories:

- * the provision of physical aids, adaptations and improvements within the existing home ("staying put")
- * the provision of home-based specialist care and support services (known as domiciliary services)
- * re-housing within suitable general-needs housing stock
- * re-housing within amenity standard housing
- * re-housing within sheltered housing
- * re-housing within care housing.

Housing associations are independent, non-profit making organisations, controlled by voluntary Boards of Management and governed by legislation promoting and regulating registered housing associations. Housing associations have been variously referred to as the "third arm" of the housing movement (to distinguish them from local authority housing providers on one hand and the private sector on the other), the voluntary housing movement (because committee members work without remuneration) and the independent housing sector. None of these terms of description is wholly appropriate.

Staying-Put

Assistance with improvements and repairs to elderly people's existing homes can enable them to stay-put comfortably and affordably. One such manifestation is "Care and Repair", a primary aim of which is to enable disabled and elderly people on limited incomes in the private sector to maintain their homes to a comfortable standard of amenity and repair. The elderly occupy a disproportionately high percentage of amenity-deficient property and housing in a state of serious disrepair.

Many such cases are single person female households in which live elderly women with little experience of organising house maintenance. Care and repair projects offer the elderly and disabled a free, personal and professional service aimed at overcoming fears and practical difficulties associated with housing maintenance, getting necessary repairs and improvements done timeously and effectively. Extended forms of support in appropriate case may include the provision of alarms and of coordinated domiciliary services etc. The success of such staying-put projects depends decisively on the ability of the coordinating agency to bring together the efforts of many different professional groups to meet the diverse needs of each client [36]. Whilst, in theory, the ideal solution to the housing needs of many elderly, Butler and colleagues [37] have argued strongly that staying put should not be advocated uncritically in all cases but should be carefully evaluated alongside all other available options.

Amenity Housing

Amenity housing usually takes the form of one-to-three apartment, self-contained houses or flats which may or may not be grouped and which incorporate a full range of safety and design features aimed at alleviating the impact of functional disability and reduced mobility. Such features may include whole-house heating, bathrooms, WCs and kitchens specially designed for the requirements of elderly people. Amenity houses should be easily accessible and well integrated into the normal housing provision and can be linked to and via a community alarm system [38]. Where amenity housing is grouped, some attention may need to be given to maintaining a balanced age structure as a means for ensuring good neighbourliness.

Sheltered Housing

Sheltered housing for the elderly, which first gained popularity in the late 1960s and early 1970s, combines housing with an element of care and aims essentially to provide support whilst fostering independence. Sheltered housing (in Scotland "basic" sheltered housing) can be defined as housing which has been purpose built or converted exclusively for the elderly and which consists of grouped accommodation linked to a resident warden by an alarm call system [39]. In the case of "full" sheltered housing, communal facilities such as a shared lounge, guest room and laundry etc. may be provided, depending upon local needs.

The warden service is conceived as an enabling rather than a provision function. The warden's primary role in the view of the National Federation of Housing Associations [40] is "to encourage independence, mutual help and social contact between tenants and to initiate action by family, friends, voluntary and statutory services for any tenant in need of help or care". Sheltered housing offers a more intensive form of management support capable, as required, of providing structured care, enhanced housing management and maintenance service. In this context, proper training of staff is critical.

The essential client group for sheltered housing is those elderly in need because of poor housing, ill-health or isolation. Currently about 5% of those over retirement age occupy such housing, the greater proportion of which is for rent rather than sale. Bettsworth [41] has accurately described sheltered housing as existing at the margins between wholly independent housing and institutional accommodation. Extensive tenant surveys conducted by Fennell and Way [42] in England and by Fennell [43] again in Scotland provide support for the view that taking up sheltered housing tenancies at a suitable age can defer and, in many cases, entirely avoid entry to more dependent forms of residential or nursing care. In addition, the grouping of properly designed accommodation in this way can aid the provision of the appropriate health and social services. However, recognition must be given to the fact that, irrespective of how good the quality of housing provision, social work facilities and domiciliary care services within in the community, some elderly people will, in the final analysis still require hospital and nursing care services and is it critical that such services are not themselves compromised by any transfer of resources to social housing. There is now an extensive literature concerned with the critical evaluation of sheltered housing in relation to the housing needs of the elderly [44,45,46,47,48] most recently and favourably in the form of a report commissioned by the Scottish Development Department and published in January 1988 [49].

Care Housing

Within the sheltered housing movement, a number of critical policy issues have begun to emerge over recent years. **First**, the special-needs housing associations are having to face the collective problem of what happens to tenants as they become older and more frail? **Second**, what constitutes a healthy balance between the more fit and more dependent tenant and how can this be balance be maintained?

Finally, how can the associations respond to ever increasing need when capital and revenue finance budgets are under sustained stress in all sectors of the housing movement? Above all they is the growing recognition, given particular voice by Silverman [50] that, in meeting housing needs, tenant welfare automatically becomes the concern of housing associations, giving them a close involvement in the continuum of care. Housing agencies must seek and find an effective response to the increasing and progressive frailty and care needs of the tenants in all forms of tenure including amenity and sheltered housing.

In response to the needs of the frailer elderly person who requires constant, frequent or progressive personal care, a number of specialist and special-needs housing providers are currently developing a spectrum of housing forms which offer a level of extra care, within an essentially domestic setting, which is over and above that which is provided in traditional sheltered and supportive accommodation. Such housing takes the name of care housing or housing with care and may, at one extreme end of the spectrum, extend to nursing care and to care for the dementing elderly. The provision of care within housing, as a viable alternative to institutional care, must include consideration of the enhanced use of communal facilities, the provision of care packages for tenants, of special-need management allowances and of grants for mental illness, including dementia. A working definition of care housing is that of a small group of tenancies, either independent or within a group living establishment, where support and care services including social contact, supervision, meals, assistance with dressing and assistance to the toilet are available as and when required.

Care housing provides a domestic size resource within the local community for elderly people who are unable to cope within their own house or sheltered accommodation due to frailty, ill health or for environmental reasons and in a context in which personal choice and independence as elements of personal well-being are promoted. The services provided by care housing are on the basis of choice. The care provided should ensure that the tenant is enabled to undertake or is assisted to undertake tasks associated with ordinary living such as laundry, personal house-cleaning, baking, cooking, personal hygiene and dressing.

Of special significance is the development of a Community Alarm Service (CAS) for the elderly which links the homes of elderly people to a CAS centre to provide emergency cover. The system operates in addition to the existing warden services and provides cover during off-duty periods.

The Community Alarm Service is linked through the telephone network to connected schemes and through the warden call system to individual houses. Such systems offer two-way speech facility plus the means of summoning the emergency services as required. A community alarm service may allow dispersed dwellings to enjoy many of the benefits of sheltered housing but at reduced costs.

Across the spectrum of new housing initiatives the consensus view is that both sheltered and amenity housing are popular and successful forms of provision and that they constitute a good base for continuing to improve the services available to older people. Nevertheless more emphasis needs to be placed on enabling older people to make informed choices between different forms of provision. People may wish to change tenure for many reasons and these may include worry about upkeep, health, infirmity or a wish to move to be nearer to relatives or friends. Moving, however, can be a major source of stress and the availability of sound advice is crucial. In making the most appropriate choice the proximity of any accommodation to a whole range of support facilities - from post office to day centre - is an especially important factor in cases where mobility is limited and access to private transport is restricted.

In the conclusion to Housing Alternatives for the Elderly [51], Alan Butler and Anthea Tinker argue that staying put or moving to sheltered or care housing should not be seen as polarised alternatives but as complementary strategies aimed at offering the widest choice to older people. Overall, any encouragement to move must be based on a wider variety of suitable forms of accommodation being available and the emphasis generally should be upon the flexible provision of services rather than on the replication of standardised forms of provision. This is a point reinforced by Bield Housing Association in Scotland with their innovative "flexicare" programme; flexible packages of practical support designed to supplement statutory provision where this - and the person's own resources - are otherwise proving inadequate to allow that person to maintain effective independence within their own home. In practice the full range of options is not available to the vast majority of elderly, due to inadequate investment. The overall picture is thus one of distinctly variable provision; a serious shortage of suitable non-specialist housing and an even more acute scarcity of specialist accommodation. Shortages in one area of provision only serve to intensify the stresses in others. A wider and more flexible approach to the housing needs of the elderly is clearly required which will enable housing and social work agencies to make more suitable provision against a background of growing need while at the same making full use of the available financial and manpower resources.

The basis of a comprehensive policy for meeting the housing needs of both the rent-paying and the home-owning section of the elderly population undoubtedly exists, if both adequate funding resources and the necessary coordination from the centre are made available. These are the essential issues addressed by the Government's White Paper on Housing published in November 1988 and by the subsequent Housing and Housing (Scotland) Bills.

The Housing Bills 1988

The stated objectives of the new housing legislation are:

- * to promote higher levels of home ownership
- * to revitalise the independent rented sector
- * to promote a greater involvement of tenants in the management of their own homes within the rented sector
- * to encourage public housing authorities to change and develop their role
- * to focus the use of public money more effectively and increase the role of the private sector
- * to attract higher levels of private finance into housing through new forms of partnership
- * to allow local authorities to become planning and enabling bodies rather than direct providers of housing.

In the public rented sector in particular the objectives are:

- * to involve the independent rented sector and tenants in improving standards
- * to diversify ownership and create more balanced and mixed communities in large estates
- * to ensure authorities provide a good service for those tenants who remain in the public sector
- * to release a greater share of authorities efforts for their strategic and planning role.

The legislation is designed to encourage a transfer of management responsibilities for housing from local authorities to other agencies such as housing associations, private landlords, the four new Housing Action Trusts in England (which have been set up to take over local authority housing, improve it and then transfer stock to different ownerships and management regimes) and the equivalent agency in Scotland, Scottish Homes.

Through the provisions of the Housing (Scotland) Bill, Scottish Homes has been formed by the amalgamation of the Housing Corporation (Scotland) and the Scottish Special Housing Association (SSHA) as a new agency with a decentralised structure intended to combine a public sector co-ordination and a private sector entrepreneurial role. The establishment of the Housing Action Trusts (HATs) and of Scottish Homes is intended to give people a wider choice of housing and to encourage the independence and self-motivation of local communities. The principal mechanism for achieving these objectives has been the establishment of radical and supposedly less restrictive new funding arrangements within the social housing sector which are claimed to offer housing providers greater freedom in realising their programmes by permitting - and indeed requiring - the introduction of private finance and mixed funding.

The legislation seeks to encourage independence and a wider choice in meeting housing needs by demanding that social housing be more pluralistic and more tenant-responsive. The policy aim is to enhance public investment in the physical stock by using it to attract resources from the private sector. Implicit recognition is given in the Housing Bills to the limitations of the mass management and provision of low income, social housing. The traditional providers of social housing, local authorities, are finding it increasingly difficult to pursue sustained development and land acquisition policies. Limited capital resources have increasingly to be directed at refurbishment of existing housing stock. The solution proposed by the legislation is to encourage local authorities to satisfy the social housing needs of their areas by forging partnerships with external agencies, predominantly the housing associations.

Housing associations, which currently provide homes for rent for about 1.5 million people in around 500,000 units throughout Great Britain, are thus offered a more central and greatly enhanced role as major providers of social housing and will be "given the opportunity" to use private finance in the form of loans on an index-linked or low start basis to fund projects in order to "extricate them from total dependence on the Treasury". Public funding in the form of Housing Association Grant (HAG) will be retained to meet the residual part of capital grants which cannot be supported by rental income. Whilst for many associations this provides opportunities for growth it does, at the same time, introduce risks and uncertainties which require new skills and understanding by the housing associations.

An example is the treatment of major repairs. In mixed funding projects these will no longer be eligible for 100% capital grant but must instead be resourced by setting up sinking funds with major implications for future revenue costs and therefore for rent levels. The hope is that new forms of tenure will be promoted. Assured tenancies - which remove many of the "restrictions" imposed by the existing system of "fair rents" and "secure tenancies" - will be extended to Scotland. Alternative tenure patterns aimed at elderly with limited capital include leasehold schemes, shared equity and shared ownership as well as flexi-tenure, whereby tenure is decided according to each occupier's financial status. Overall the effect of the new social policy is to place housing associations at the centre of attempts to harness the best elements of both public and private traditions of housing to create a "third force" which has the potential to make an important contribution both to the development of new tenure forms and to the management of existing public stock.

The independent housing movement has generally welcomed the higher profile offered to housing associations in providing and managing social housing but has identified a number of problems inherent in the current legislation. Firstly, the associations will need to attract private finance to compensate for the reduction in HAG levels from 100% to 85% or less. Secondly, fair rents which had previously been set independently by rent officers have been abolished in all new housing associations lettings and replaced what are to be called assured tenancies. Assured tenancies must still be "affordable" by those on low incomes but no definition is provided as to what affordable means. The associations fear that a combination of the two changes will force up rents to levels at which low income client groups, such as the elderly, are disadvantaged relative to those who can afford rents or whose total rent costs will be covered by housing benefit. Such an outcome would seriously conflict with the traditional aims and objectives of the social housing movement with its emphasis on caring and on meeting the needs of the most vulnerable sections of the population. And none more vulnerable than the elderly.

The housing needs of the elderly relate to many different variables including mobility, the ability to look after and maintain a house, self-care abilities, health, social contact and personal preferences. Housing forms just part of a spectrum of support services available to and required by the elderly and gives emphasis to the fact that the environment in which support is provided is as important as the system of support itself. The provision of an effective environment for care has become a key issue of social policy, now reviewed in the following chapter.

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CHAPTER 7

THE POLITICS OF CARE

In this chapter meaning is given to the concept of care and to the idea of a spectrum of care which embraces the elements of self-care, informal social networks and statutory care services. Three principal social policy issues in respect of the care of the elderly are explored. The first is the problem of care burden. The second, and closely related issue, is the growing recognition that effective care for the elderly demands a close and flexible partnership between the statutory, private, voluntary and informal divisions of care. The third and, in the view of the author, most critical in the context of an evolving argument relating care to the maintenance of whole health in elderly persons, is the requirement that policy should be powerfully biased towards the community rather than towards the state. The stated objective - if not yet the achievement - of contemporary social policy, will be seen, in the final section, to be that of the devolution of greater choice and decision-making responsibility to the recipients of care. Special interest attaches to the extent to which different types of care are complementary and how effectively the two sectors of informal and formal care can be "interwoven" whilst ensuring that the characteristic strengths of the two different sectors are fully recognised and exploited. Of further consequence is the extent to which the context in which care is provided for - and received by - the elderly is actually determined by state policies in spheres other than the health and social services, such as employment, housing, education and income support. The importance of setting care in its most appropriate and effective environmental context is emphasised.

Definitions of Care

In the extensive literature of care and caring a primary distinction is generally made between the concept of care as intervention in the interest of vulnerable and potentially or actually dependent individuals (sometimes referred to more specifically, as by Parker [1], as tending) and care as a generalised concern about the welfare of others which may - or may not - lead to intervention. Interventions can be defined as forms of treatment or care which are founded in social policy, are applied through the network of social support systems, are directed towards the enhancement of the overall social well-being of the elderly and are specifically targeted at the satisfaction of a continuum of personal need.

In the view of Bulmer [2], care as intervention has two components, (i) physical tending of an intimate kind which may, by way of example, manifest itself in highly personal activities such as feeding, washing, dressing and lifting etc. and (ii) material and psychological support which does not involve physical contact. Such latter forms of support may be provided through labour-related activities such as cleaning and laundering, shopping, accompanying, managing a person's finances and contributing financially to living costs but may also embrace broader forms of concerned communal action with an affective basis and which might include such activities as the establishment of communication networks, fund-raising and political lobbying. That the care needs of the elderly embrace not only physical but also social, psychological and financial support, is an essential point given particular stress by Richard Bettsworth [3], and further reinforced by Philip Abrams [4] when he makes the important distinction between social care and medical care.

The idea of social care or social support is a powerful one and has been developed in both structural and functional terms by a number of investigators. Cohen and Syme [5], for example, have defined social support as "the resources provided by other persons" and have proposed the following subdivisions:

- * esteem and status support, where forms of emotional support are based on affection, trust, love and compassion which show evidence of concern and which increase a person's feelings of self-esteem
- * informational support, a description applied to the process whereby other persons may provide information, advice and guidance particularly in the fields of health education and promotion

- * instrumental support, which is sometimes termed aid or material support and which can include a wide range of activities such as providing assistance with household tasks, providing transportation, providing material goods and modifying living environments
- * social companionship, involving various forms of supportive activities such as social visiting, lunch clubs, excursions
- * motivational support, in the form of social networks providing stimulus, exemplars and sources of positive comparison.

The Encyclopedia of Aging [6] similarly identifies social support with the provision of information, psychological and emotional support, material and economic aid and assistance with activities and tasks whilst Peter Willmott [7] categorises social care under three headings, personal, domestic and auxiliary. What Willmott calls personal, or intimate care can be taken to correspond to what Parker has termed tending. Domestic care embraces such regular household tasks as cooking, cleaning and laundering. Auxiliary care is then confined to less demanding practical help such as collecting prescriptions, shopping, gardening, provision of transport, home decoration and repair and financial assistance.

The Divisions of Care

The recognised sources of care may be represented in terms of a continuum or spectrum. At one extreme of the spectrum is located statutory care, provided under the aegis of the government, through formally constituted national social security departments, regional health authorities and local authority social services departments. Statutory care provision forms an integral part of the welfare state system; is resourced from taxes and national insurance contributions and is managed by paid professionals. Clegg [8] defines the welfare state as "a state which has a policy of collective responsibility for individual well-being with social services provided on behalf of society" At the other end of the spectrum may be located self-care administered by the elderly themselves for themselves.

Between the extremes of the care spectrum it is possible to arrange a number of subdivisions, as follows:

- * the private, commercial, market-orientated sector
- * voluntary (not-for-profit) organisations which may include, at one level, professionally managed national agencies, including charities and some of the larger housing associations which may or may not have a local base and local accountability and, at the other level, locally organised "good neighbour schemes" and self-help groups
- * neighbours
- * friends, including other elderly people
- * kinship networks
- * a spouse or partner.

Whilst the boundaries between different divisions of care are not fixed and whilst precise categorisation is difficult, some useful and important distinctions can be made, particularly that between formal and informal care. All statutory care and most private care is formal in the sense of being institutionalised and conforming to prescribed rules. Self-care, and care by kin, friends and neighbours is most obviously informal in character in the sense of being conducted or carried out without rigidly prescribed procedure and not constrained or bound by rigid standards. It is rather more difficult to generalise about the status of voluntary care, significant sectors of which might be most accurately described as quasi-formal. A general guideline proposed by Gilroy is that activities undertaken with some external organisation in which there is a degree of professional accountability to an intermediary may be classed as essentially formal and should be excluded from the category of informal care [10]. Peter Abrams has suggested that kin, together with the wider network of neighbours and friends and most voluntary organisations may be taken as constituent elements of what he calls community care [11].

The welfare of society is clearly not the exclusive responsibility or concern of the professional and many skills and resources exist within the community which, according to Joan Clegg, may be conceived either as "a network of reciprocal relationships or, more traditionally as a small population within a defined geographical area whose social relationships are distinguished by the fact that they share a common culture which has emerged over a long period" [12].

Informal Care

The great mass of social care - as opposed to specialist medical care - is provided not by the statutory social services agencies or even by the more quasi-formal voluntary organisations, but by individual citizens linked into informal and self-help caring networks within the community. Martin Bulmer [13] notes that the idea of a social network can in fact be conceived of in any of three ways: in terms of individual relationships, in terms of the actual locality in which the individual lives or in terms of the sharing of common interests, concerns or problems. In practice social networks has been widely adopted, as for example by Peter Willmott [14], to describe those informal social ties which offer positive opportunities for both social exchanges and mutual caring. As such, social networks will have profound effects on the quality of life of any member of that network.

The report of the Barclay Committee [15], established in 1980 to review the role of social workers in the care of the elderly, talked of "networks of informal relationships between people connected with each other by kinship, common interests, geographical proximity, friendship, occupation or the giving and receiving of services" and concluded that "it is difficult to overestimate the importance of the social care that members of communities give each other". The report held that the informal family carer was the single most important provider of care and support within the normal community setting and that the majority of people in need will indeed turn first to their own families for support. If such support is lacking, or in some way insufficient, then the help of wider kin, friends and neighbours is perceived as a valuable resource which it is socially acceptable to seek. Informal care is thus most closely identified with the care provided by family, friends, neighbours, self-help groups and some voluntary associations.

Gilroy [16] has distinguished some of the characteristic functions of informal care as:

- * putting people in touch with formal services
- * sharing information or giving advice
- * providing emotional support
- * providing personal and sometimes intimate care (tending).

Informal, unpaid carers might be placed within one of three categories identified as:

- (1) old people, spouses and other relatives, looking after each other,
- (2) middle-aged or younger old people (mostly women) caring for the old,
- (3) a variety of relatives, neighbours and friends not in the same household, performing some tending activities.

Tending activities may be thought of as the more acute end of the informal care spectrum, making, as Parker has noted, much greater demands on the carer and indeed upon the recipient [17].

In a critical assessment of ageing and social policy, Hazel Quereshi and Alan Walker contend that informal care is distinguished most sharply from the other sectors of intervention in the frequently diffuse and non-specific nature of its organisation, in the complexity of the social relationships it involves and in its suitability for fulfilling different types of need [18]. Peter Abrams develops the argument by suggesting that the nature of care provided by the informal sector is not only qualitatively different from but superior to care provided by the formal sector, informal care being generally rooted in pre-existing social relationships in which caring for someone may be seen as an expression of caring about them [19]. A particular example of the special importance of informal relationships might be taken as helping the elderly to adjust to retirement and to other major life changes

Informal care by family, friends or neighbours is provided largely on the basis of emotional ties and, in contrast to each of statutory, commercial or quasi-formal voluntary care, involve essentially personal and, to a substantial degree, reciprocal relationships. The associated emotional warmth, affection and interest is then likely to endow the care provided with special intrinsic value for the recipient. Set against the clear advantages of informal care must be the recognition that demographic trends, population mobility and economic shifts are likely to reduce the availability of informal carers. In particular, the principal demand for sustained personal and domestic informal care comes from the very old, whose numbers are increasing just as the numbers of carers are decreasing. Furthermore, differences in personal circumstance - and personality - must necessarily mean that informal care will not be available to all elderly in equal measure. Elderly people without children are most likely to lack social networks and access to informal care.

Further disadvantages include the problem of care burden which falls disproportionately upon women, lack of reciprocity and the deflection of responsibility away from the state care system to which individuals have contributed all their lives. Thus, whilst a primary objective of social policy may be to maximise the capacity of informal carers to provide social support for the elderly, informal care by itself may, in the case of very old people living in independent households, be inadequate to satisfy all their care needs.

The three main sources of informal care - kin, friends and neighbours - are shown below to play somewhat distinctive roles with a certain degree of specialisation of functions between them.

Thus for most elderly people the care provision from kin, friends and neighbours is complementary in nature, meeting different kinds of need. Peter Willmott [20] maintains that the very informality, and hence flexibility, of such care allows, however, for the possibility that different sources of support can be substituted for each other when conditions and circumstances dictate.

Self-Care

Self-care is arguably the most important type of care for elderly people living at home. It is certainly, in the view of Muir Gray, quantitatively the most significant type of care [21]. Without self-care most other forms of care would be ineffective in maintaining old people in their own homes. The special significance of self-care, embracing elements of disease prevention, health maintenance, self diagnosis and self-treatment lies not only in the measure of independence it gives to the individual but in the promotion of physical fitness and well-being in old age. Elderly people's capacity for self care is frequently underestimated, with a consequent reinforcement of dependency [22].

Kinship

It is often assumed without question that society has always looked to the family as the primary caring unit in the case of the elderly and reference is drawn to the fact that, as late as 1930, the Poor Law Act imposed a legal duty of care upon the close relatives of "poor, old, blind, lame or impotent" persons. In fact, and despite a doubling of the elderly population between the start of the twentieth century and the end of the second world war, remarkably little seem to be known about the elderly as a special group during this period.

It was not until the pioneering work of J. H. Sheldon [23] and others just after the war that the full nature of the role of kinship relationships on the lives of elderly persons began to be even partially understood. Today the statutory duty for care has been replaced by a moral duty; profound changes have taken place in demographic and social structure this century and there have been significant reductions in the numbers of family members available to assume the burden of care. Despite all such changes, the evidence now available from repeated studies over the past forty years, as summarised by Willmott [24], confirms that relatives remain the primary source of informal care for the elderly. In particular Audrey Hunt's influential study The Elderly at Home [25] showed that, in the case of more dependent elderly people without spouses, the main providers of care remained women, particularly daughters and daughters-in-law though as Hagestad [26] emphasises as the population ages so the expectation must be that kinship networks will take on new shapes and forms accordingly. Hunt's study, like many others since the war, was commissioned to provide information as the basis of social policy.

Mount [27] has noted the particular emphasis which successive governments in this period have placed on the importance to policy of the outstanding role played by the family in carrying out a whole range of caring activities which may extend from direct physical care in infirmity at one extreme, through transport and social visiting to less intimate but crucial household tasks at the other. Despite changing family patterns, changing patterns of employment and greater mobility, recent research, as evaluated by Olive Stevenson, has revealed no evidence to support a view that this level of care is diminishing or that the provision of state support - or that offered by voluntary organisations - has undermined the willingness of families to care [28]. It is perhaps not surprising, however, that Parker has found family attitudes towards the care of elders to vary considerably according to circumstance and, in particular, to potential stress factors such as duration, intensity, complexity and prognosis [29]. Furthermore, whilst studies by Levin and his colleagues have confirmed that most informal carers had no wish to abdicate their responsibilities they also showed that carers wished for better levels of support to relieve the care burden supporting the view that, with the provision of selective assistance to avoid the overloading of carers and with training in basic caring skills, the family can often continue to cope even with highly dependent elderly kin [30]. Without support the outcome for the recipient is, however, the more likely to be institutionalisation.

Family carers are not a homogeneous group and the informal care for the elderly may take place within the context of widely different social arrangements which, in the classification offered by Willmott [31], can be of four characteristic types. Type one is the traditional local extended family which suggests a group larger than a nuclear family household. Type two takes the form of a dispersed extended family which operates rather like a local extended family except is not local thus meetings are less frequent. Type three is defined as a dispersed kinship network where contact is maintained by telephone, letter and by occasional visits whilst the final type is the residual network, where communication is solely by remote forms of communication.

Friends

Friends are recognised as a central component of what R. L. Kahn has called the "convoy of social support" [32]. Yet whilst friends are clearly important to almost everyone, the very essence of friendship is held to be one of equality and reciprocity which imposes limits on what it is acceptable either to give or receive in the way of sustained, intimate care. Thus Willmott explains the reason why most people do not turn to friends when serious continuing demands are likely to be placed upon them but look to relatives instead [33].

Allen [34] confirms that there is very little evidence that friends actually do provide very much long term community care being more likely to offer emotional support, advice, a source of contacts, transport, social visiting and help in specific times .

Neighbours

An important distinction is drawn by a number of commentators, including Bulmer [35] and Willmott [36] between neighbouring, neighbourliness and neighbourhoodism. If neighbours are defined simply as people who live near one another then neighbouring is seen as the actual pattern of interaction which occurs between neighbours and this can be perceived in either a negative or positive way involving a complex mix of friendliness and reserve. Neighbourliness, on the other hand, is viewed as a positive and committed relationship constructed between neighbours whilst neighbourhoodism is identified as a form of political or quasi-political action which seeks to give voice to shared concerns at a local level.

Neighbours can be an important source of certain kinds of help which might typically include surveillance, pet-minding, holding keys, shopping, small loans of food or tools, home maintenance, gardening and emergency help in the case of, for instance, fire or sudden indisposition. Most neighbourly activities are spontaneous and unorganised, derive directly from the fact of proximity and are also characteristically reciprocal in nature, as Willmott stresses [37]. Intimate personal care is normally outside the sphere of neighbourly care as is help with sensitive financial matters. Whilst there may be a genuine altruistic base for much neighbourly action, the very vulnerability of many old people and the possibility of prolonged involvement can inevitably give neighbours cause for concern.

Voluntary Care (Quasi-Formal)

The Wolfenden Report on the Future of Voluntary Organisations published in 1978, has noted the major contribution to the care of the elderly of voluntary organisations and self-help groups [38]. In the personal social services the contribution of the voluntary sector, including paid workers as well as volunteers, is measurably greater than that of the statutory services.

A voluntary organisation is defined by Clegg [39] as "any organisation which relies for its funds at least in part on voluntary subscriptions .. and which is to be distinguished from (a) statutory authorities and (b) businesses run for profit". Voluntary care embraces a variety of organisational forms. At one level lies both the highly structured and professionally managed associations organised on a national basis but with a local or regional presence (though, inevitably, a substantial bureaucracy) and the relatively impersonal types of care such as telephone advice services and alarm call services. At another level altogether are to be found the less professionally administered types of organisation such as good neighbour schemes which have a rather loose structure and which seek to involve the somewhat ad hoc services of people living in the same area as those requiring care.

The special contribution of voluntary organisations, as identified by Anthea Tinker [40], would seem to lie in their abilities in six key directions. These are: firstly to bridge the gaps between statutory and informal care provision, secondly to give consumers a wider choice, thirdly to engage with relative freedom in experimentation and innovation, fourthly to mobilise individual and community enthusiasms, fifthly to act as pressure groups and finally to provide disinterested advice.

Self-help groups deserve special attention in providing personal services to the individual at home and community services outside the home which include advice and information, education and research and publicity about available services. In addition, David Hobman, Director of Age Concern [41] gives special recognition to the important role they can play in providing training to voluntary workers, not least through the organisation of courses and conferences.

Formal Care

In contrast to those care activities which take place within the informal sector, interventions from organisations within the formal sector - and these may be taken to embrace most forms of private as well as statutory care in the field of health, housing, social security and income support - are prescribed in terms of rigorous standards and procedures.

Commercially provided care is care delivered through the market-place on a for-profit basis. Private care agencies may have a developing role to play in the fields of residential and nursing care for the elderly, domiciliary care, care and repair and financial advice and health screening. It is argued that the encouragement of a vigorous private sector will increase levels of choice and independence for elderly people.

Whilst the resources and expertise of formal care agencies are properly valued, the disadvantages of the formal services are frequently those associated with large bureaucratic organisations, characterised by Qureshi and Walker [42] as rigidity of approach, lack of flexibility, slowness in response, the centralisation of decision making and the disenfranchisement of the consumer.

Caregiver Burden

A carer is defined as a person who is looking after or providing some regular service for a sick, handicapped or elderly person living in their own or another household. Whilst support for the concept of care in the community and by the community is widespread, the economic, physical and emotional costs which may be extracted from informal carers may be considerable and no elderly person cannot truly be defined as wholly healthy if their state of well being and life-satisfaction is sustainable only through the imposition of an excessive burden on their carer or carers.

The current role of informal carers in the community is the subject of Hazel Green's supplement to the 1986 General Household Survey, entitled Informal Care [43] which revealed that one adult in seven was providing some form of informal care with the greatest burden falling on women. Altogether some 3.5 million women and 2.5 million men were shown to be acting as carers across some 19% of British households. Of these 6.0 million adult carers, some 1.7 million were providing care for someone in the same household.

Whilst 5% of all adults were looking after parents, another 4% were caring for friends and neighbours. The peak age for caring was between 45 and 64. Some 1.4 million adults devoted at least 20 hours per week to caring whilst 3.7 million carried the main responsibility for caring in the sense of spending more time with the dependent than anyone else. About one half of carers had dependents aged 75 and over. Over two-thirds were looking after female dependents. The same proportion looked after elderly people with a physical disability.

The most common form of help carers gave to their dependents was practical help with household tasks (82%) and generally keeping an eye on them (72%). Where carers lived with dependents, about one-half helped with personal care. Only around one half of carers had dependents who received regular visits from health or social services or from voluntary groups. It is well documented, for example by Parker [44], that for principal carers - women and often women with children - caring and tending the elderly can involve considerable costs. The cost of the work done by an estimated one million family carers of dependents and elderly relatives is put at between £3.7 billion and £5.3 billion. The average daily amount of care provided has been estimated by Nissel and Bonnerjea [45] at not less than three hours and that for a more dependent relative at nearer to five hours. A survey in 1985 by Jones and Vetter [46] found that 40% of carers whose elderly dependents had severe memory impairment had not had a week's holiday in five years. 67% had not had a weeks holiday in the year up to the survey. Only 10% had ever received respite care.

The General Household Survey of 1986 found one adult in seven provided "informal care" in the form of looking after a sick, handicapped or elderly person. The survey showed that 2.5 million of carers are men compared with 3.5 million women. Nearly half of those spending at least 20 hours per week caring for someone were in paid employment [47].

The expectation must be that the burden of care is itself such as to induce health or mental problems amongst many carers. One reason is surely that those individuals whose parents or other relatives need care are faced with appalling choices. If carers give up work and look after their dependents they can expect little outside help and can themselves be plunged into poverty. If they pay for help they will often be condemned as privileged and uncaring. The acute loneliness and the grinding burden of detail involved in daily care under conditions of extreme dependence can be overwhelming. Every aspect of daily living has to be planned and managed and the consequences can be isolation, frustration and resignation - the almost universal attributes of the long term carer.

Carers need emergency and extended leave opportunities. They need advice and links to community and voluntary organisations to provide them with support and flexibility of choice. Without change of policy the burden is likely to get greater and more acute. The 1989 OCPS Survey of Disability in Great Britain reported that 30% of disabled adults - many of them elderly - living in private households lived alone. 19% of disabled adults had an informal carer, a proportion which rose to 86% amongst the most severely disabled. Some 40% of carers were themselves aged 65 or over [48].

An extensive literature now exists on the topic of caregiver burden including a comprehensive review by Gallagher [49]. The emerging evidence is that caring for, in particular, a dementing relative exhibiting symptoms of repetitiveness, obsessive behaviour and aggression can produce increased levels of anxiety, embarrassment, guilt, low morale and depression with studies, such as that by Levin and colleagues [50] reporting that only a third of informal carers of the elderly mentally infirm rated their health as good whilst half reported disabilities which limited their activities. More recent figures recently provided by Cameron [51] confirm that two-thirds of carers are estimated to be in poor health and one half are thought to be at risk of psychiatric illness. Fatigue, exhaustion, backache and psychosomatic complaints have all been identified as consequences of caregiving [52]. What is less clear at the present time is the prevalence of diagnosable psychiatric disorders and the long term psychiatric effects of caregiving burden upon long time carers though significant disturbance might reasonably be expected. A contributory factor to emotional stress is likely to be the social restrictions on time and personal freedom imposed by the responsibilities of care-giving. In all 80% of carers for people with long term mental illness receive no assistance or support.

The high levels of ill health in caregivers can be associated with the relative age of the carers themselves which predisposes them to disease and disability, the physical exertions of caring and the difficulty of obtaining respite.

Caregiving must inevitably place financial strains on carers and their families. The hidden costs of caregiving include those imposed by the requirement on carers to give up work altogether or to significantly reduce their hours of work in order to fulfil their caring responsibilities. Further costs are incurred by the consequence of an almost inevitable loss of ability to perform effectively amongst those who retain employment.

The income of people who care for elderly and disabled relatives is often so low that they are forced to live off the social security benefit of their dependents. A report commissioned by Opportunities for Women in 1989 found that half of carers not in employment would work if adequate support facilities were made available and if employers were far sighted enough to introduce more flexible work programmes.

Community Care Policy

Contemporary trends in social policy in the fields of health, housing and social services must be understood as part of a much wider social movement which has, in concept at least, gained almost universal support from politicians, planners, care professionals and a wide range of pressure groups in Great Britain in the period since the second world war. The concept of "community care" or "care in the community" has become a dominant social policy objective of all British governments and can now, in the authoritative views of Alan Walker [53] and Malcolm Wicks [54], be considered as the central guiding principle in development in the health and social services and, in particular, to be the cornerstone of contemporary social policy towards the elderly.

Definitions

At a basic level, some initial understanding of what is meant by the idea of community care can be gained from phrases such as "returning to the community" and "remaining in the community" [55]. At the root of the concept is the aim of reducing to a minimum the number of people in long term institutional care.

This relatively recent transfer of emphasis away from in-patient care of the sick, disabled and elderly towards caring for them within a "community setting" is seen by Phillipson and Walker [56] to require reversal of social policies which have, in combination and over the course of the second half of twentieth century, had the effect if not the intent of increasing dependency on the state. Conditions in which care can occur are determined by state policies in spheres other than the health and personal social services. Increased relative poverty, the generation of poorer health standards among low income groups, higher unemployment, a decline in prosperity in inner city areas, the disruption of family and community life through housing and development policies, have all had an adverse impact on the informal caring capacity of the community.

At the same time, public expenditure policies have reduced the resources available for formal care. Against such a background the notion of community care can be, in Tinker's words, a "treacherously seductive phrase which creates a warm glow like roses round a cottage door" [57]. What precisely is meant by community care, whom it is supposed to benefit and how it will be accomplished, evaluated and paid for?

From the outset, difficulties with the concept arise over the question of definitions. It has been noted previously that there is no fully agreed definition of "community" among sociologists, social workers or makers of policy. As a sociological concept the term defined by Clegg relates to "a small population in a defined geographical area whose social relationships are distinguished by the fact that they share a common culture which has emerged over a long period of time" [58].

The Seebohm Committee on Local Authority and Allied Personal Social Services defined community as "the common identity of interest of a group of people, implying the existence of a network of reciprocal social relationships which among other things ensure mutual aid and give those who experience it a sense of well being" [59].

The Barclay Report accepted as a definition of community "the network or networks of informal relationships between people connected by kinship, common interest, geographical proximity, friendship, occupation or the giving and receiving of services which possesses the capacity to mobilise individual and collective resources available to people in adversity, including that imposed by the condition of old age" [60].

Pendreigh [61] has attempted to give some quantitative basis to community by identifying three levels of social planning (i) the central or national level, involving populations of 5 million or more (ii) the regional level, of 1 million upwards and (iii) the neighbourhood or community level of up to 50,000.

The Development of Community Care Policy

Whilst, according to Walker [62], the precise origin of the term "community care" is unclear, Bulmer [63] has suggested that the earliest official use appears to have been in the area of mental health at a time of developing awareness of the adverse consequences of containing patients within institutions for long periods.

In 1957 the Royal Commission on Law Relating to Mental Illness and Mental Deficiency recommended a shift in emphasis away from hospital or institutional care towards "community care" for the mentally ill and mentally deficient through an expansion of local authority services [66]. Two years later, the Mental Health Act of 1959 sought to establish a comprehensive community care service to meet the needs of those mentally disordered patients not requiring hospital treatment.

The Younghusband Working Party on Social Workers in the Local Authority and Welfare Services supported this growing movement towards community care.[65] The Hospital Plan of 1962 gave further endorsement to the "essential" expansion of community care services and reflected the change in social policy which took place in the 1960s and early 1970s, especially in relation to the mentally ill, as recognition grew that many people who did not need to be in hospital had nevertheless been confined to long-stay hospitals for years [66].

The resultant pressure for more humane, community-based services and treatment for the mentally ill and handicapped underlay the creation in 1968 of the Department of Health and Social Security (DHSS) under a secretary of state for social services, and the recommendation, made in the same year by the Seebohm Committee, for the setting up of local authority social services departments with responsibilities to enable people to remain in the community. The concept of community care had by now been extended to dependent groups other than the mentally ill and handicapped and was taken to include frail and immobile elderly living in their own homes.

Over the next decade the DHSS produced a series of responsive and influential consultative and discussion documents and policy statements.

Early publications included Better Services for the Mentally Handicapped [67] in 1971 and Better Services for the Mentally Ill [68] in 1975. The later Priorities for Health and Personal Social Services in England [69] reinforced the state's explicit commitment to community care services "which aim to help people live an independent life in their own homes as long as possible" and gave priority to a more efficient use of hospital and residential resources and to maintaining or restoring the capacity of elderly people to live independent lives at home. Priorities called for a new coordinating structure and procedure to ensure greater collaborative effort amongst the various services at all levels in health, social services, housing and voluntary organisations.

The Consultative Document The Way Forward [70] defined community care in the broadest possible terms to cover a whole range of provision, including hospitals, hostels, day hospitals, residential homes, day centres and domiciliary support. Defined in this way, community care embraces primary health care and all the above services whether provided by health authorities, independent contractors, voluntary bodies, community self-help groups or family and friends.

The discussion document A Happier Old Age [71], stated that the objective of policy should be "to enable old people to maintain independent lives in the community for as long as possible" whilst in 1980 the Social Services Committee [72] gave official recognition to the fact that "the personal social services provide only a small part of the totality of care in the community, for the elderly, the old and frail, the physically handicapped and mentally ill". Here acknowledgement was being given, by implication, to the fact that an effective community care policy was dependent upon growth in and support for the informal sector of care and, in particular, the elements of voluntary care, neighbourhood care and of self-help.

During the 1980s increasing attention was drawn to the need to change existing "cinderella" services for mental health, for the elderly and for the physically handicapped to priority services through the transfer of resources from health services to social services. The policy document Care in Action [73] confirmed that the general aim of community care policies was to maintain a person's link with family and friends and normal life and to offer the support needed to meet his or her particular needs whilst Care in the Community [74] concluded that "most people who need long-term care can and should be looked after in the community".

Five main motives - hidden or explicit - can be identified with the developing official interest in community care policy and with its primary objective in relation to old people of enabling them to remain independent in the community for as long as possible. The first, and perhaps most critical, is to reduce the pressure on the social services occasioned by the actual and projected demographic changes (ageing of population, reduced pool of potential carers resulting from the decline in the birth rate, delayed parenthood, increased divorce rate, greater geographical mobility, increased single-parent families and growth in labour market activity amongst women) The second, is to meet the growing political demands for greater cost effectiveness in service policy and planning, as expressed by Davies [75]. The third motive is to reduce the escalating costs of residential care. The fourth, and politically most sensitive, is to respond to the growing chorus of damning public criticism, given voice respectively by Townsend [76] and Jaehnig [77], of the quality and efficacy of residential institutions and the existing policies for the care and treatment of the mentally ill and handicapped. The final motive is clearly to reduce the burden of costs on the National Health Service following official fears about the rising cost of hospital provisions for the chronically sick.

Whilst the motives may be clear, the effectiveness of the development of community care policy has been seriously compromised, in the view of Willmott [78], by confusion over terms, aims and objectives. Many researchers and critics, amongst them Bayley [79] and Tinker [80] have drawn attention to the fundamental ambiguities present in official policy statements. The 1968 Seebohm Report, for example, identifies the formal interpretation of community care by health and local authority personal social services with the treatment and care outside of hospitals or residential homes by means of domiciliary services (that is care in the community as opposed to in institutions). Seebohm itself, however, conceived of the community as provider as well as recipient of social services to the elderly and other vulnerable groups. In 1981, the White Paper, Growing Older, was now stating unequivocally that "care in the community must increasingly mean care by the community". This latter directs attention to the social support which people may receive from others on an essentially informal basis - families, friends and neighbours as well as organised voluntary groups with a local presence and local accountability. Overall, the term "community care" has variously been used to describe non-institutional living, the provision of statutory domiciliary services, the development of informal support networks and the weaving together of statutory and voluntary care.

Whilst confusion has persisted at the official level and whilst, as Anthea Tinker has wryly observed [81], community care has often meant whatever people have wanted it to mean, a substantial measure of consensus over the general principles of community care has now emerged amongst social service professionals, planners and the independent care agencies. It is now more fully recognised, as Bulmer agrees [82], that the concept of community care serves to give explicit recognition to the nature and range of existing provision and must be associated with both an enhanced role for voluntary and private sectors. In this sense, community care clearly depends upon the continued ability and willingness of kin - particularly female kin - to provide care to dependent members of their family. Furthermore any effective community care policy must be based on a close examination of needs and the establishment of partnerships between formal and informal care networks. Community care is now seen as just one element of social care and as distinguishable from other forms of social care such as institutional care, institutional treatment and community treatment. Community care comprises help, support and protection given to individuals including children, people with disabilities and elderly people in non-institutional domestic and occupational settings. Abrams [83] argues that such care may be provided with equal validity by informal networks, quasi-formal networks, formal organisations or by a combination of all three.

Policy makers have taken an increasingly broad and diversified view of resources "in the community" with informal contributions taking an ever more central place in official thinking. Willmott [84] argues that what is needed is some alternative form of social organisation which emphasises and supports the role of informal carers. The policy of promoting community care is then dependent upon the development of community-based options for those vulnerable groups - the mentally ill, the mentally handicapped, the physically handicapped and the elderly - who have previously had no alternative to a placement in institutional care. The emphasis must then be upon re-integrating or maintaining these priority groups in the community on the basis of their individual needs whilst, to be fully effective, Cheeseman and colleagues [85] have argued that a genuinely local community care service must be both responsive to the individual and be able to gain access to a full and well developed range of community-based resources. There is almost universally wide support for the policy objective that people should be cared for in their own homes for as long as possible, living with or near family and friends and supported as necessary by health and social services.

Such support, however, is not unqualified. Anne Yanetta [86], for instance, with others, argues that the effectiveness of such a policy depends on the provision of the right environment for care; the procurement of appropriate housing; planned, designed and managed with community care in mind. Thus housing providers, including in particular the housing associations as developers and managers of major social housing, must be seen as partners with health boards and social work in determining strategic care plans for an area.

Implicit in much initial official enthusiasm for the concept, was the idea that community care might provide some sort of cheap alternative to residential care and hence reduce the burden on the Exchequer. More mature consideration shows such a belief to be wholly misconceived once, as Brotherston points out, proper account is taken of the quality of care provided, of the cost of accommodation, of the real costs of the services offered by the family and of all other social costs [87]. In practice, it is clear that "care in the community" requires not only careful and coordinated planning but a vast investment of resources in the form of both money and people.

In summary, the policy of care in the community involves the provision of social support both in and by the community and variously from all or any of the full spectrum of statutory, commercial, voluntary and informal care sources. Community care seeks to establish a balance which is in favour of resources which lie outside the formal institutional structures though there must, at the same time, be a proper emphasis upon effective partnerships between the various services, whether these be formal or informal. The primary policy objective is that, where possible, individuals should remain integrated with their own families, friends and neighbours and be cared for outside of institutions through the delivery of various domiciliary services. A major component of care should be provided within normal, non-institutional settings by informal networks and voluntary care organisations. There should be effective preventive measures to prevent the breakdown of family care provision. The policy gives public recognition to the importance of the family, acknowledges the role of the elderly as givers as well as recipient, values the contribution of friends and neighbours and accepts that there remains a necessary and continuing role for a limited provision of institutional care as part of the community care spectrum. At the same time, recognition is given to the importance of joint care planning between the different services.

The Audit Commission for Local Authorities in England and Wales in its report Making a Reality of Community Care in 1986, sets out perhaps the clearest official statement of what community care policy should be:

Community care is about changing the balance of services and funding the most suitable placement of people from a wide range of options [88].

In the Audit Commission's judgement, the essential features of successful care in the community programmes are:

(1) development of a wide range of services in a variety of settings (2) movement of health services out of hospitals into more local domestic settings (3) bringing of services to people rather than people to services (4) provision of the minimum amount of intervention necessary to allow people to live their lives as independently as possible but the provision of sufficient care to ensure effective support [89].

The Report concludes that to create the right context for community care involves a change of approach, to an enabling service with care provided only where it is really needed.

Critique of Community Care Policy

The Audit Commission Report, having clearly and authoritatively identified the principles upon which it believed care in the community should be based, aligned itself with the many social commentators who, like Evers [90], have argued that there were serious confusions and deficiencies in the existing care structures and systems which militate against the effective implementation of community care policies. The Report found that:

The present management arrangements do not promote the essential services and operational planning. In particular (1) the structure of local community based services is confused, with responsibility and accountability for elements of the service fragmented between different tiers of the NHS and within local government (ii) as a result, the joint planning arrangements need to be complex and are particularly time-consuming to operate adequate liaison between all the various interests involved (iii) the difficulties posed by the confused structure and complex planning arrangements are compounded by the lack of incentives and by differences in the organisational styles of the agencies concerned. Each of these problems might be solved in isolation; but, together they make it extraordinarily difficult to manage the transition to community-based care at the local level [91].

The Audit Commission further argued that effective provision was being seriously compromised by the present conditions and were pessimistic about complex joint planning arrangements between health, housing and social services.

The Commission suggested that:

The objectives of any change should be to create an environment in which locally integrated community care can flourish. The present statutory framework constitutes a barrier ... for care of the elderly in the community, a single budget in an area should be established by contributions from the NHS and local authorities. The budget should be under the control of a single manager who will purchase from whichever public or private agency he sees fit the appropriate services for elderly people in the community in the areas for which he is responsible ... Staff are the key resource for community care ... Sound manpower planning and effective training are thus essential ... Both appear conspicuous by their absence as far as community care is concerned [92].

Perhaps the most significant concern amongst observers and workers in the field of community care has been that relating to the complexity of the structural interactions between services particularly health, housing and social service. Tensions created within the structure have tended to prevent or inhibit the essential interprofessional cooperation and inter-agency collaboration and innovation [93]. What has been revealed in particular is a serious negative imbalance in the relationship between formal and informal care, the relationship characteristically being one of colonisation or domination of the latter by the former. What is clear is that the degree of present confusion and fragmentation of responsibility is wholly unacceptable as a basis for effective care provision in community settings and places at risk many elderly people.

In Scotland, a survey conducted on behalf of the Scottish Working Party on Community Care by Mary Kohls [94] found that, at a strategic level, joint planning on community care between health boards, local authorities, housing agencies and voluntary groups had hardly begun and that there was clear evidence of lack of collaboration and agreement between agencies even on basic objectives. She identified uncertainty over availability, function and adequacy of funding which she argued led to delay and inaction.

The White Paper "Caring for People"

The Conservative Government introduced its White Paper Caring for People: Community Care in the Next Decade and Beyond in November 1989 [114].

The White Paper represented the Government's response to the influential Griffiths Report Agenda for Action, presented in February 1988 [95]. Both were presented against the background of slow and uncertain progress towards community care policy objectives in Great Britain, emanating from a combined lack of clear political direction and resources, but also of the spiralling costs to the exchequer of providing care for elderly people in residential and nursing homes. Whilst separate sections deal with Scotland and Wales, the White Paper presents essentially uniform proposals for the whole of Great Britain.

In the White Paper, "community care" is defined as:

Providing the services and support which people who are affected by problems of ageing, mental illness, mental handicap or physical or sensory disability need to be able to live as independently as possible in their own homes or in homely settings in the community [96].

The broad aim for the development of community care as set out in the Scottish Office Circular, Community Care in Scotland: Housing and Community Care, in March 1991 is to establish a more coordinated and comprehensive approach to care in the community, both for people who live in institutional care and for those who are continuing to live in the community with appropriate support. There is particular concern to ensure that people can live in homes of their own wherever this is consistent with their needs and capabilities and through the provision of suitable housing and domiciliary services. Special emphasis attaches to the proposed role of housing associations [97].

The following key policy objectives are defined:

- * to promote the development of domiciliary, day and respite services to enable people to live in their own homes wherever feasible and sensible
- * to ensure that service providers make practical support for carers a high priority
- * to make proper assessment of need and good case management the cornerstone of high quality care
- * to promote the development of a flourishing independent sector alongside good quality public services
- * to clarify the responsibilities of agencies and so make it easier to hold them to account for their performance
- * to secure better value for taxpayers money by introducing a new funding structure for social care [98].

The key policy changes proposed to meet these objectives are as follows:

- * local authority are to be responsible, in collaboration with other agencies for assessing individual needs, designing care arrangements and securing their delivery. Local social service departments must appoint care managers who will produce care packages
- * local authorities should produce and publish plans for the development of community care services
- * local authorities will be expected to make maximum use of the independent sector
- * there will be a new funding structure for those seeking public support for residential or nursing homes. Local authorities will be responsible for funding the "care" element for people in private or independent homes
- * the same general levels of Income Support and Housing Benefit will be available irrespective of whether applicant's live in their own home or independent residential or nursing care
- * local authorities will be required to establish arm length inspection and registration units whose responsibilities will cover both their own and independent homes
- * there will be a new specific grant to promote social care for seriously mentally ill people [99].

Local authorities are to be the principal route by which resources will be allocated to those in need of care whilst removing the present perverse incentive in favour of private nursing home care. Local authority Social Work Departments will have the key role in assessing needs, planning and monitoring services and acting as "gatekeepers" to these services. Their role, however, will be that of planning and enabling agencies rather than direct providers of services. The local authorities will be required to work closely with housing authorities, housing associations and other providers of housing and to provide support for local "care and repair" and "staying put" schemes. They are further required to make much greater use of the voluntary and private sectors to actually deliver social care services by exploring ways of stimulating private and voluntary provision in the field.

The independent sector will be encouraged to promote and finance a much wider range of domiciliary, day-care and respite services. Carers will have rights of access to services. The provision of respite care and daily help is intended to encourage more people to devote themselves to a caring role as the ageing population increases. Helping carers to maintain their valuable contribution to the spectrum of care is seen by the White Paper as a right and a sound investment. It will be the duty of local authorities to do all they can to assist and support carers. The gateway to care packages will be a co-ordinated assessment which will be the responsibility of Social Services Departments but they are expected to involve any agency pertinent to the care and rehabilitation of the client.

The White Paper puts special emphasis upon the process of assessment for disabled and elderly people as a means of achieving individualised packages which will promote independent living or care in the community. The stated objective is to determine the best way to help the individual not to merely assess their suitability for a particular existing service. The first priority is seen as providing the most appropriate setting for care. In most cases care should be home-based with the provision of sheltered housing to be considered as an option before residential or nursing homes places. The client's and carers wishes have to be taken into account when assessing needs as well as the carers ability to continue caring and, where possible all decisions should include their active participation. The vital importance of training is recognised and will involve significant changes in the way professional workers are expected to operate.

Planning and collaboration are seen as key elements of the new policy. Griffiths' distinction between social and health care is accepted but there will be ample scope for the voluntary and sector to offer mixed health and social care packages. The mixed economy of care is to be the principle of service delivery.

The White Paper outlines a phased transfer of resources from the Department of Social Services to local authorities to finance the care costs in the independent sector whilst rejecting Griffiths' proposals to "ring fence" central grants for community care. Funds transferred in this way will not be identified separately in the Revenue Support Grant Allocation. Nor will there be identifiable commitments of Health Board funds for the development of community care.

Under the evolving community care policy - and at a time when investment in public housing provision is at a low level - housing associations are to have a major role, with the aid of Housing Association Grant (HAG), topped up by private sources of loan finance as well as support from local authorities for funding capital care projects.

Overall the benefits of "Caring for People" are assumed to include a wider range of choice for the individual, more flexible and innovative services and better value for money arising from competition [100]. The community care plans, originally intended to be fully implemented in April 1991, will now be introduced in phases, with a final introduction date of April 1993

The emphasis throughout this study on the idea of environment as alternatively stressor or supporter establishes the importance of providing the right physical settings for care and creates the vital link between social and environmental policy. This latter is the subject of the next chapter.

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CHAPTER 8

ASPECTS OF ENVIRONMENTAL POLICY

In this final chapter of Part Three, recent and projected policy developments in the areas of energy and environment which have particular and acute relevance to the whole health needs of the elderly are critically reviewed. Environmental policy is seen to impact upon each of physical health, economic health, social health and environmental health. In the latter case energy policy in the domestic sector is of special significance. The review is undertaken against the background not only of contemporary United Kingdom national policy developments on energy and the environment but that of increasingly influential European Community policy initiatives and of actual and potential international agreements on major issues, such as transboundary pollution and global warming which have both long-term and long-range significance. The sections of the chapter which are headed respectively "International Policy on the Environment", the "European Community Policy on the Environment", the "European Community Energy Policy", the "UK National Environmental Policy" and "Domestic Sector Energy Policy" are essentially short summaries of official policy, derived mainly from a select number of key publications. A wider perspective is then provided by a brief and necessarily sketched outline of some alternative policy options and prescriptions which may, in the short or longer term future, receive serious consideration as items for inclusion on the rapidly evolving national, European and international environmental agenda.

Overall, the review highlights potential conflicts between effectiveness and equity in energy and environmental policy. In the context of the perceived ecological imperative, the emerging global dimension to policy development, implicit in the extract from a communique of the OECD Environment Committee issued in January 1991, which accepts that "[global] economic growth, energy security and environmental protection can all be advanced through sustained progress in improving energy efficiency and conservation, developing cleaner fuels, promoting alternative and renewable energy sources and modifying energy pricing structures" [1] is both essential and, in the right circumstances, to be welcomed.

Explicit recognition must be given, however, to the very real danger that the pursuit of energy effectiveness on the large scale may lead to the adoption of supra-national, centralist-type, planning strategies which might seem justified by the urgency of impending environmental disaster but which create profound conflicts with the principles of individual freedom and equity. Those most likely to be compromised by such a conflict will be the poor and the elderly.

International Policy on the Environment

Global Warming

Expectations that the environment would, in the words of British Prime Minister John Major, "feature strongly" at the July 1991 G7 Economic Summit in London and lead to an important policy breakthrough in advance of the 1992 United Nations Conference on Environment and Development (UNCED) in Brazil were not realised [2].

Instead, present indications are that the United States, which is responsible for some 23% of the world's carbon dioxide emissions - the major contributory factor to global warming - will refuse to agree firm targets and timetables for carbon dioxide reduction but instead want to "double count" cuts in ozone-depleting CFC emissions already agreed under the terms of the 1987 Montreal Protocol to the 1985 Vienna Convention on the Protection of the Ozone Layer. In any event, without a genuine commitment from the USA to a tough programme of energy conservation there seems little hope of achieving an effective international convention on climate change at UNCED [3,4]

Following the report on global warming and its effects, presented by the Intergovernmental Panel on Climate Change (IPCC) to the Second World Climate Conference in Geneva in 1990, and reviewed in Chapter 1, UNCED - sometimes referred to as the Earth Summit or Eco 92 - has been signalled, by the UK National Committee for the United Nations Environment Programme (UNEP) and many other bodies, as the potentially most significant conference of the decade for addressing the key issues of both the ecology of poverty and affluence, with major implications for the future environmental and public health for the developing and industrialised nations of the world.

Failure of the developed economies to accept the major share of responsibility for reducing fossil fuel consumption will, as indicated in Chapter 1, make it extremely difficult if not impossible for the less developed countries such as China, Brazil and India to implement policies which may be environmentally essential but which carry enormous social, political and economic costs.. These countries have called for per capita equal emission rights, new technology and massive funding to help them to adapt to change [5].

In the absence of international agreement in Brazil, the prospect is of chaos and confusion and a stall of any concerted programme of action on global warming.

Particular uncertainty in policy terms now attaches to developments in Eastern Europe and most especially in the fragmented USSR which, by virtue of its size, its industrial base and its vast mineral and energy resources must inevitably have a major impact on the global environment.

Though far-sighted politicians within the former USSR have recognised that environmental problems are the greatest long term priority facing the new republics, there remains the danger inherent in proposed policy initiatives such as any new form of Marshall aid that priority will in fact be given to stimulating rapid, all-out economic growth without adequate attention being given simultaneously to environmental protection. Such a policy would simply be repeating the mistake made by the Western developed economies with potentially disastrous results for the rest of the world.

Macro-Economics and the Environment

The economic policies of the Council of the General Agreement Tariffs and Trade (Gatt) have profound environmental implications. At the present time the interpretation of Gatt policies make it impossible to address environmental concerns within the context of international trade; trade liberalisation being the only objective that appears to matter. Where international disputes occur they are settled with wholly inadequate reference to the consequent impacts on the environment or to the legislation established to protect it. A concentration on methods of production brings conflict with, for example, the Montreal Protocol and means that the Gatt may be irreconcilable with much existing domestic and international environmental legislation, with the 1987 Brundtland Report and with the thrust of much EC and OECD environmental policy.

Recent Gatt judgements that environmental concerns cannot be a factor in restricting a country's imports casts uncertainty on a whole series of existing or proposed environmental laws and international agreements which have been passed with the intention of protecting the individual and species from health risks and over exploitation. In particular it threatens to compromise the 1992 Earth Summit on Environment and Development (UNCED) which is intended to be the focus for international agreements on energy conservation, biodiversity and toxic waste management. Suspicions have again been aroused that such actions by Gatt has been encouraged by the USA both as a "hidden" instrument of protectionism and as a means of stalling progress towards agreement of carbon dioxide emission targets [6].

Environment and Health

A warm, comfortable, secure domestic environment has been identified as one of the principal supports for good health and independence [7] and this is reflected in the World Health Organisation global strategy Health for All, which in seeking a worldwide reduction in health inequality of 25% by the year 2000 [8]. The themes of the strategy have been identified as the addition of years to life, the addition of health to life and the addition of life to years. The strategy sets the specific target of providing everyone with a decent home by the end of the century. It was emphasised in Chapter 5 that, in the case of the elderly whose relative immobility confines them to a domestic setting for a very high proportion of time, the quality of the indoor home environment takes on special significance.

European Community Policy on the Environment

In recent years the European Community (EC) has tended to set the agenda on environmental policy issues affecting the United Kingdom, adopting some 200 legislative texts concerning the environment since 1973.

In this time the European Community has become the catalyst for new and stricter environmental legislation through the issue of a series of Directives to which national governments are obliged to give appropriate effect. European Community environmental policy has several key principles which may be summarised as follows [9,10,11,12,13]:

- * The polluter must pay (This implies a market-based approach which employs fiscal measures to place a price on the pollution associated with products and services)
- * Any environmental damage created by economic activity should be rectified at source
- * Preventative action should be taken to avoid waste and effective waste management procedures should be introduced where prevention is not possible.
- * Exploitation of natural resources which causes significant damage to the ecological balance should be avoided.
- * The effects of environmental policy in the member states must take account of the interests of the developing countries

- * Environmental protection requirements shall be a component of Community policies in other sectors and activities
- * There should be a focus on the provision and dissemination of information relating to the environmental performance of institutions and organisations

Since 1973, some key EC Directives have related to the following elements of environmental management :

- * Bathing and drinking water (1975 and 1980)
- * Waste disposal (1975 and 1978)
- * Control of industrial pollution 1984
- * Environmental impact assessments (EIA) 1985
- * Vehicle emissions of certain pollutants from new cars to be reduced by 80% by 1992 (following other directives in 1987 and 1989)
- * Reduction of pollution from large combustion plants (1988), designed to cut emissions from power stations and large industrial plants of the main acid gases sulphur dioxide and nitrogen oxide. Commits United Kingdom to a 60% reduction in sulphur emissions by 2003.

The EC is developing its air-quality policy further by seeking agreement another directive to curb emissions from medium sized industrial plants through the use of fuel quality standards.

In addition, important new EC proposals exist for:

- * Severe restrictions to be imposed on the movement and export of hazardous wastes
- * A total ban on disposal of sewage effluent into the sea
- * Harmonised standards for all construction materials
- * A "Safety Action Programme" embracing a variety of health requirements.
- * The establishment of a European Environment Agency to provide an objective source of information about the environment throughout the Community
- * A public right of access to information about the environment held by public authorities.

- * A major revision of existing directives on the collection, transport, storage and disposal of waste
- * Plans for a system of civil liability for those who cause environmental damage or personal injury with industrial waste.
- * More effective management of landfill waste
- * More effective treatment of plastic waste
- * The introduction of a "carbon tax", embodying the EC Environment Council's proposals for green taxes to implement environmental policy at Community level and to encourage "green behaviour".
- * The introduction of a system of "eco-labelling" of consumer goods and products.

The European Community's Energy Policy

According to A Continuing Policy for Energy Efficiency in the Community, published by the European Commission in 1988, the fundamental objective of the Community Energy Policy is to secure for the Community adequate energy supplies at acceptable cost levels, security of supplies and levels of environmental impact. Energy policy is seen as an important contribution to the social and economic cohesion of the Community.

The policy statement argues that improving the efficiency of energy use within the Community by just 15% per year over the decade would achieve the following goals:

- * to reduce sulphur oxides by 125,000 tonnes a year
- * to reduce nitrogen oxides by 200,000 tonnes a year
- * to lower substantially atmospheric emissions of carbon dioxide [14]

A significant policy feature is seen as the introduction of an internal energy market within the Community in 1993. Against a background in which the majority of member states have reduced or even abolished their programmes which directly support energy-efficiency, the European Commission SAVE (Specific Actions for Vigorous Energy Efficiency) Programme has been introduced to provide a constructive background for renewed national initiatives [15].

The Programme is divided into three parts, categorised as consumer behaviour, improving the performance of equipment and financial instruments. SAVE embraces proposals relating to:

- * performance requirements and annual inspection of boilers
- * minimum insulation levels for buildings for the various climatic zones of the community
- * improvement of energy efficiency of domestic appliances
- * mandatory employment of energy managers and compulsory energy audits for large users
- * mandatory energy certification on all houses by 1992
- * higher energy taxes to encourage investment in energy efficiency

Estimates are that, even without complimentary national programmes, SAVE could reduce EC energy use by 12% and lower carbon dioxide emissions by 5%.

Of special relevance in the present context is the fact that a stated target of the Community energy policy is a higher quality of life for the elderly in Europe. In particular both European and National programmes of Research & Development related to energy efficiency measures and renewables can be expected to have major significance for the elderly not least because of occupancy patterns, amenity requirements and the importance of keeping costs of heating and lighting as low as possible [16].

UK National Environmental Policy

Whilst the expectation must be that, under the influence of international agreements and European Community policy initiatives, environmental law in the United Kingdom will undergo extensive development in the 1990's, the current framework for United Kingdom environmental policy for the 1990s is provided by the White Paper, This Common Inheritance, published in September 1990.

The White Paper provides, in the view of the Government, a comprehensive statement of Government policy on the environment ranging from, in the words of the then Secretary of State for the Environment, Chris Patten, "street corner to stratosphere", and covering issues from recycling to global warming.

Key objectives of environmental policy are defined as:

- * protecting the physical environment through planning systems, other controls and incentives
- * using resources prudently; increasing energy efficiency and recycling and reducing waste
- * controlling pollution through effective inspectorates and clear standards
- * encourage greater public involvement and make information more readily available [17].

The environmental White Paper contains altogether more than 350 actions and proposals and is intended to be a "starting point for action and further debate rather than any definitive statement of intentions". Following the structure of a useful summary of the White Paper recently provided in Environmental Briefing Notes by management consultants Peat Marwick McLintock [18], the principal proposals can be organised under a number of key headings as follows (with White Paper section references where appropriate):

The Restructuring of Government

Proposals include:

- * The retention of a Ministerial Committee [19] to coordinate approaches to environmental issues (18.3)
- * The nomination of a Minister in each government department to be responsible for the environmental implications of its policies and programmes (18.4)
- * The production of guidelines for civil servants who will be involved in the appraisal of policies with environmental implications (18.6)
- * Consideration of expansion of the role of Her Majesty's Inspectorate of Pollution (HMIP) in the regulation of waste disposal (18.17)
- * Improvements in communication processes on environmental issues between central government, local government, business and the independent sector.
- * An annual progress report by the Secretary of State for the Environment.

In the first such report, in September 1991, the Environment Secretary claimed that of the 350 promises made in the White Paper, some 200 has been met whilst a further 100 were in progress. Positive developments on the promotion of environmental skills in Eastern Europe, and on European agreements on catalytic convertors for cars, CFCs and nitrate pollution were highlighted. Britain's backing of the UN Conference on Environment and Development in Brazil in 1992 was reinforced though no clear agreement between Ministries had been reached on priorities for meeting the Government's commitment to reduced carbon dioxide emission targets for 2005. Britain's qualified support for the European Community proposal for a carbon tax "in principle" was confirmed, providing that British industry was protected.

Subsequent to the publication of the White Paper, the Prime Minister has announced the setting up of an Environmental Protection Agency (EPA); an umbrella body which will bring together the HMIP and the National Rivers Authorities (NRA) though the final form of the new agency has, in August 1991, yet to be decided. In September 1991, the Secretary of State for Scotland, Ian Lang, announced that a Scottish environmental protection agency was to be established "in three years" with a staff of 500 and a budget of £20 million.

Pollution Control

Proposals include:

- * Reinforcement of the provisions of the Environmental Protection Bill (EPB), which itself adds to the list of landmark legislation introduced over a hundred and fifty years [20].
- * Following other significant legislation over the past twenty years such as the Control of Pollution Act 1974 (amended 1989), the Health and Safety at Work Act 1974, the Water Act of 1989 which established the National Rivers Authority, and the Control of Substances Hazardous to Health Regulations (COSHH) 1980, the Government has, with phased effect from 1990, introduced the Environmental Protection Act which incorporates a system of Integrated Pollution Control (IPC) covering emissions to air, land and water [21,22].

The system of Integrated Pollution Control will regulate highly polluting complex (schedule A) processes with responsibility for the control of industrial pollution invested in Her Majesty's Inspectorate of Pollution, formed in 1987, through the amalgamation of the Industrial Air Pollution Inspectorate, the Radioactive Inspectorate and the Hazardous Waste Inspectorate. Air Pollution Processes will regulate less complex (schedule B) processes.

The legislation acknowledges that environment is an integrated whole whereas, traditionally, each environmental sector had its own laws regarding discharge of pollutants.

The Environmental Protection Act has 8 sections, namely:

- * Industrial Pollution Control
- * Waste management
- * Statutory nuisance
- * Control of litter
- * Radioactive substances
- * Genetically modified organisms
- * Nature conservation
- * Miscellaneous

The Environmental Protection Act differs slightly in its application to Scotland and to England and Wales but, when fully implemented, will generally impose a cradle to grave duty of care on all producers of waste (save private householders) and everyone who handles it until final disposal to prevent its unauthorised deposit, treatment or disposal and extends liability through a clear definition of harm to the environment.

In particular the Act applies the "polluter must pay" principle through which the government will recover up to 75% of the costs of regulation from those who are regulated. The idea is that polluters should not be subsidised to enable them to meet pollution control costs nor are costs of dealing with polluting emissions from known sources to be borne by the public purse.

The possibility exists that the principle may in the future be extended to some type of "green tax" perhaps in the form of increased VAT for goods and services which harm the environment.

The Act further embodies the concepts of "Best Practicable Environmental Option"(BPEO) and "Best Available Technology not Entailing Excessive Cost" (BATNEEC) and covers discharges into water, dangerous chemicals, radioactive substances and contaminated land. A new system of air quality standards will be introduced.

Energy Efficiency

Proposals include:

- * The establishment of an energy efficiency ministerial committee chaired by the Energy Secretary (5.32)
- * Increasing the budget of the Energy Efficiency Office (EEO) and the development of EEO activities (5.30). A principal feature of EEO activity is the implementation of the Best Practice Programme of which there are four elements:
 - the identification of suitable areas for projects
 - the estimation of the costs to Government of implementation
 - the estimation of the potential benefits in terms of energy savings from stimulation of energy saving measures
 - the making of recommendations for action.

The objective of the programme is to advance and spread good practice in energy efficiency and the programme covers each of design, operation, management, training and development.

The emphasis of EEO is to be switched from providing basic education of consumers to making the connections directly between customers and contractors with special energy skills. More resources are promised for local promotion and for improved access to Regional Energy Efficiency Offices (REEO).

Two particular areas of EEO activity will be given particular emphasis:

- (1) the domestic market and the improvement generally of energy efficiency in housing
- (2) development of strategies for low income housing and support for community and draught stripping projects including provision of start-up costs [23].

A strategy document on meeting the needs of the low-income household sector has been produced. An advisory group comprising representatives from organisations on both the supply and demand side and including groups such as the National Federation of Housing Associations (NFHA), (the Scottish Federation of Housing Associations in the case of Scotland, the Tenants Participation Advisory Service and Neighbourhood Energy Action (NEA) will provide guidance during the implementation of the strategy.

The strategy seeks to:

- * motivate landlords, developers, designers and builders to take appropriate action
 - * provide guidance and exemplars to help them
 - * offer demonstration projects
 - * provide information for housing professionals and tenant groups involved in housing management, design, rehabilitation, construction and maintenance.
- * Implementation of a five-year programme to cut the energy bill of the government's own estate by 15% (5.31)
 - * Encouraging more energy efficiency at local authority level. The Audit Commission has projected a possible saving of £100m per year in this sector (5.33)
 - * The prospect of the introduction of tighter Building Regulations to ensure higher thermal insulation values for buildings which use half of Britain's total energy (5.31).

The high proportion of total energy use consumed in buildings gives special focus to efforts for the improvement of energy efficiency and the provision of independent and authoritative advice to owners, occupiers, and building professionals. It should be noted in passing that, whilst "improved" Building Regulations tend to reduce energy in use they may actually increase embodied energy as more energy intensive materials are used to achieve higher thermal performance [24].

- * Removal of barriers to the introduction of high efficiency lamps.
- * The introduction of campaigns to encourage home owners to save energy as effectively as possible.
- * The promotion of the development of renewable sources of energy through research and development and demonstration. Generally a complementing range of national and EC-supported research and development programmes is to be promoted.
- * The setting of a target of a tenfold increase in renewable energy installed capacity by the century to a total of 1000 MW (5.40) At the opening of Britain's first shoreline wave energy project at Islay in July 1991, the Energy Minister further declared the government's strong support for the development of renewable energy technologies. In the summer of 1991 the Government launched a full scale review of renewable energy set against the newly established electricity market and growing worries about global warming. In November 1991 the Government showed a growing commitment to alternative power by more than doubling its renewable energy targets and approving 120 new wind, wave and other projects to generate electricity from natural source. This year the second tranche of renewable schemes under the NFFO (Non Fossil Fuel Obligation) - the mechanism which obliges electricity to take nuclear and renewable power - is to be agreed. A target of a further 100-200 megawatts has been set for 91/92 against an overall target of 700 megawatts by 1998 when the NFFO expires. The absence of an NNFO in the case of Scotland at this time presents a serious barrier to the development of renewable energy sources in a part of the British Isles where their potential contribution is greatest. Bodies such as Friends of the Earth call for one third of primary energy use by 2020 to be renewable. The consensus is that renewables could supply around one-fifth of Britain's energy needs (given appropriate investment) and perhaps half or three quarters by 2050 [25].

- * The introduction of energy use labels for buildings and appliances (14.39 and C.16)
- * Increasing power station efficiency by raising installed combined heat and power capacity by 2000 MW by the year 2000 thus promoting the wider use of waste heat from electricity generation (5.30 and C.12)
- * The introduction of competition among electricity generators to give a strong incentive to efficient electricity generation
- * Further development of nuclear industry to be dependent on the achievement of greater cost effectiveness and high levels of safety and environmental protection (15.8)
- * Fitting of flue-gas desulphurisation equipment and a switch to cleaner gas-fired power plants (11.36)

Land Use and Planning

- * There will be a duty on electricity suppliers and generators to do what they can to lessen the effects on natural beauty when building power stations and other structures. The Energy Secretary will have an extra duty to take into account environmental matters when considering planning applications.
- * Local authorities will be required to keep a "contaminated land" register (6.63)

Environmental Labelling

Proposals include:

- * Encouragement for a European Community scheme for energy efficiency information on electrical appliances (3.15)
- * Pressure for a European labelling scheme for environmentally friendly products (3.24)
- * Introduction of an environmental labelling scheme to take account of the recycled content and recyclability of products (14.39)
- * Consideration of an eco-labelling scheme for building products (17.32)

Air Quality

Proposals include:

- * Priority to be given to ensuring that statutory air quality standards to protect public health are met throughout Britain (11.3) There are at present three statutory air quality standards in Britain which are also the subject of EC Directives. These cover smoke and sulphur dioxide, lead in air and nitrogen dioxide. Support is given for the development of a further Directive setting guidelines for ground level ozone concentrations. The World Health Organisation provides guidelines for a substantially larger number of pollutants. The Government will establish an expert panel to advise on air quality standards. Action to be taken to improve air quality standards in new buildings through future building regulations and to inform people of risks of build up of pollutants in closed environments (11.63 and 11.67).

Action on Global Warming

Proposals include:

- * The Government has agreed to set a target which will return emissions of carbon dioxide to 1990 levels by the year 2005, "if other countries take similar action".
- * Energy efficiency initiatives in four principal areas:
 - (a) electricity generation and supply through the 1989 Electricity Act
 - (b) industry and commerce, through the Best Practice Programme
 - (c) buildings, through the Best Practice Programme and other measures
 - (d) the European Community, through movement towards common energy labelling schemes and minimum standards.
- * Individual consumer responsibility for reducing energy consumption and minimising environmental impact is recognised.
- * In the particular case of Scotland, the Scottish Regional Energy Study will assess the future energy needs of Scotland and consider their future impact on the environment. The Study is funded by EC with support from the private sector including power companies. The study will examine the potential for energy savings in homes and transport.

It is estimated that £700 m of Scotland's annual £4 bn energy bill could be saved through energy efficiency. The study follows similar studies carried out in other parts of the UK and is to be completed by December 1991.

Against a background in which agreement exists within the environmental White Paper, the House of Commons Select Committee on Energy and the House of Lords Science and Technology Committee that energy efficiency measures are the most cost effective and quickest way of reducing carbon dioxide emissions as the means of combatting global warming and in which the Government accepts that, without an increase in levels of investment in energy conservation, carbon dioxide emissions will increase some 34% over the next 15 years, the official policy response nevertheless continues to be a reliance on market forces and increased efficiency through the privatisation of the energy production and distribution industries, rather than the employment of financial incentives reinforced by tax changes and statutory regulations. Interventionist policies have been restricted to constraining demand through fuel price rises and have not operated equally on both demand and supply sides [26]. There is a furthermore a fiscal bias against energy conservation because of the imposition of VAT which is not levied on fuel [27]. What shift in policy has occurred has been away from the assumption that measure to save energy in buildings must be justified solely on grounds of cost effectiveness towards a concern for absolute targets of energy saving based on intelligent identification and assessments of energy saving potentials.

The stated intention of the Government has been to make Britain the most energy efficient nation in the world - measured by the International Energy Agency in terms of ratio of energy consumption to GDP. At the present time Britain is in sixth place in the energy efficiency league. It is claimed that the UK energy conservation programme has produced savings of over £500 million a year, a total in excess of half a billion pounds. Official figures show that Britain now uses less energy to produce a quarter more goods and services than the country did at the end of the 1970s. The official estimate, however, is that Britain is still wasting £8 bn a year through inefficient use of energy [28]. The further target is to achieve a reduction of 20% in the 1983 levels of energy consumption by mid-1990s with projected savings of between £7bn and 12 bn per year producing simultaneous cuts in greenhouse emissions of 30% whilst allowing the economy to grow by 2.5% a year. The requirement, in the view of Friends of the Earth and other non-government organisations is for an massive programme of investment in energy efficiency [29].

The Government has set a six point challenge for policy, namely:

- * to ensure that there is variety of carefully tailored marketing initiatives targeted at specific groups of energy consumers.
- * to produce range of information for consumers
- * to improve energy management skills and techniques
- * to help low income householders
- * to encourage R&D
- * to maintain a balance between regulation and working of the market [30].

Measured against these good intentions, progress towards improved energy efficiency in Britain lags seriously behind other European countries with investment in energy conservation in decline despite its key role in combatting global warming. Sales of insulation and efficient heating systems fell by an average of 28% over the past two years. In addition there has been a 50% reduction in the budget of the Energy Efficiency Office since 1986 whilst Britain has some of lowest energy conservation standards for new buildings. The 1990 revisions to the thermal regulations brought the standard insulation levels up to those current in Sweden some 50 years ago. Scope exists for a 60% improvement in the energy efficiency of the housing stock [31].

A great deal of generating plant is inefficient and causes damage to the environment whilst poor housing contributes to a growing environmental and socio-economic crisis. Though the Government is now directing more attention to energy efficiency programmes for low income families, social service provision is manifestly inadequate even though the Social Security Act 1990 introduced provisions for grants to be made for energy efficiency measures, including improvements to insulation levels and efficiency of heating systems in low income households, Jonathan Porritt argues that this poor record on energy efficiency may be due to (1) psychological blocks due to the association of energy conservation with poor thermal comfort conditions (2) an information block and (3) an institutional, structural and financial block which can only be removed by legislation or at least a strong steer from Government [32].

Paradoxically, the strongest pressure for a "greener", more energy efficient Britain may come from the business community who are increasingly recognising that environmental considerations are not necessarily impediments to profit but are actually the driving force behind new industrial opportunities [33,34,35].

Domestic Sector Energy Policy

Within the general framework of United Kingdom environmental policy, special significance attaches to energy efficiency programmes in the domestic sector. An effective policy for improving domestic energy efficiency would have the major benefits of reducing energy bills, increasing comfort and health and lessening the carbon dioxide burden on the environment.

In the present context, relevant elements of current policy in this area include the following initiatives [36].

* The Energy Efficiency Office Best Practice Programme will support projects which meet strategic plans to develop new house designs and refurbishment packages which make better use of energy, which are cheaper to heat and which consequently help limit emissions of carbon dioxide. The Best Practice Programme also supports production of impartial information and advice to householders, house designers, house builders and housing managers.

* In the case of local authority housing, some £3.5 billion is spent annually in England alone on repairing and maintaining the local authority housing stock. About a quarter of this total sum is directed towards improvements in energy efficiency in homes which have poor standards of insulation and inefficient, uneconomical heating systems.

Matching levels of funding are available through the Estate's Action programme which was introduced in 1985 to encourage investment in energy saving measures within housing restoration and maintenance projects.

* In the independent housing sector the Housing Corporation and the National Federation of Housing Associations are to be encouraged to consider the scope for the implementation of further energy efficiency measures - including the introduction of energy auditing schemes - by housing associations within their own stock.

* In the case of low income households, the EEO's Buildings Directorate has launched the Home Energy Efficiency Scheme (HEES) which provides a new government grant specifically for people on Income Support, Housing Benefit, Family Credit or Community Charge Benefit. Grant will be available for energy efficiency works less a specific client contribution.

Grants will also be available for providing advice on energy efficiency. HEES will complement work already being done by local authorities to improve standards of insulation for both home-owners and tenants. The main purpose of HEES is to increase take up of basic insulation measures by low income households. Granted work will be limited to loft, tank and pipe insulation, draughtproofing plus general energy advice. The scheme is open to owner occupiers, leaseholders and tenants whether private or local authority. Eligibility will depend upon the receipt of benefit. Householders will be able to choose whether they wish to do the work themselves or to use a contractor. Grants will be available via three routes:

- (i) via the householder him or herself, in which case grants will be limited to materials only,
- (ii) via Community Insulation Projects (CIPs) or network installers,
- (iii) to private contractors.

In the latter two cases granting will extend to labour. Three quarters of a million low-income households have already been treated under the Community Insulation Programme through the network of community energy action projects coordinated by Neighbourhood Energy Action and others. The Scheme will allow for the formation of Community Businesses by CIPs and others. Standards will be subject to inspection. The administration of the Scheme will be carried out on behalf of the Department of Energy by outside agencies. Local authorities will administer the parallel Home Renovation Grant (in England and Wales) [27].

- * Enabling powers exist within Section 10 of the 1990 Social Security Bill to provide for improvements to heating systems as well as comprehensive insulation measures.
- * In the autumn of 1991, a £1 million publicity campaign, jointly funded by the EEO and Department of Energy, is to be launched with the objective of promoting the more efficient use of energy in British homes. The Campaign will explain how families can use energy wisely and will aim to improve understanding of the greenhouse effect, global warming and the impact of energy use on the environment through the emission of carbon dioxide. The promotion will involve consultation with a wide range of organisations including voluntary groups, and local authorities.

- * The introduction of home energy rating schemes. The National House Energy Rating (NHER), based on the Building Research Establishment Domestic Energy Model (BREDEM) and launched by the National Energy Foundation provides a measure of a house's energy efficiency and estimated energy running costs. The rating is to be used to assess the most cost effective energy saving measures and is intended to raise awareness about energy efficiency and scope for energy saving. The NHER scheme takes account of the dwelling fabric, heating system, lights, appliances, occupancy patterns and regional location.

The National Energy Foundation is an independent charitable trust launched to promote energy awareness and its efficient use through education, demonstration and research and brings together a wide range of consumer, environmental and social action groups.

The alternative MVM Starpoint scheme is based on a five point rating and deals mainly with heating system and dwelling fabric. According to MVM the average rating of UK domestic housing stock (21 million homes) is just two stars out of five. They estimate that upgrading by one star would reduce carbon dioxide emission levels by up to 1 tonne per house per year or 16,000,000 tonnes a year (about 10% of present levels). Selected building societies are making funds available for investment specifically in energy efficiency. Attempts are underway to find agreement for a single scheme.

In 1991/92 the National Federation of Housing Associations is to launch their own energy labelling initiative using the national home energy rating system, with the support of the Housing Corporation. Equivalent bodies in Scotland are the Scottish Federation of Housing Associations and Scottish Homes. The objectives are:

- * to achieve higher levels of thermal efficiency in houses provided by the voluntary housing movement
- * to demonstrate ways in which those higher levels of thermal efficiency can be achieved at either no extra capital costs or at minimal extra costs which are exceeded by the costs in use savings to tenants or occupiers. Tenants with lower fuel bills should find it easier to pay the rent, with direct benefits accruing to the housing associations.

Conflict can be recognised between government policies relating to energy pricing and the social objective of ensuring a warm healthy comfortable home for all, especially the vulnerable, the housebound and the elderly. Policies which seek to respond to the threat of global warming by increasing the price of energy generated from fossil fuels must recognise the social costs of high energy prices measured both in terms of financial hardship and physical distress. A logical response to the ecological imperative might be a major programme of capital investment targetted towards the substantial improvement of the energy efficiency of the housing stock. It is not at all clear, however, that in such circumstances the problems of fuel poverty in low income housing would be a high priority. "Ethical" pressure for higher thermal standards in poorer households must almost inevitably result in increased energy consumption and, in the short term at least, higher carbon dioxide emissions. The need for effective socio-environmental policies which seek to resolve such conflicts is clearly demonstrated.

The problem of "old and cold" is particularly acute in severe winters for those elderly living in poor housing and caught in the poverty trap. The present benefit system does little to support those many elderly who do not receive Income Support.

Special social fund payments to vulnerable people are activated when the average temperature measured by the weather station for the area has been 0°C or below for seven successive days. To be eligible people must have been on Income Support for at least one of the seven days; must have savings of less than £1000 and must be in one of a number of vulnerable categories including disability or pensioner.

In the cold winter of 1987 the Government had to relax the then stricter rules and this was again the case in Feb 1991 when rules were relaxed to allow increased payments to be made to old and vulnerable people under conditions of exceptional cold which nevertheless fell outside the criteria laid down. The claims procedure is, in any event, complex.

The failings of statutory policy in relation to those groups of poor and elderly suffering the effects of fuel poverty has placed greater stress on the role of the voluntary sector in this field. Important examples include the establishment of a National Right to Warmth Campaign Group which is an independent organisation committed to tackling the problems of cold, damp, mouldy housing which, it is estimated, affects a quarter of all households in Scotland [37].

The objectives of Right to Warmth are to promote:

- * access for all to adequate and affordable heating
- * energy efficiency improvements to housing
- * prevention of hypothermia deaths and cold or damp-related illness
- * fair policies for low income consumers from the fuel suppliers

Other groups involved include Right to Fuel, Energy Action Scotland and Heatwise Glasgow which is the largest of the local energy projects offering energy advice, draughtproofing, and loft insulation to those at risk of fuel poverty. Heatwise is dependent on mixed funding from variety of sources and requires those on low incomes to finance 10% of the work. The umbrella body National Energy Action (NEA) is a national charity working towards a permanent solution to fuel poverty through energy efficiency in housing. NEA works with both central and local government and the private and voluntary sectors to ensure that the social consequences of energy use form part of any policy debate. NEA work involves wide range of practical energy efficiency initiatives including a national programme of home insulation.

The overall picture is one of continuing contradictions and shortcomings in the United Kingdom Government's energy and environment policies particularly in relation to the needs of vulnerable sections of the population. This is a situation further exposed by a Department of Energy Report [38] published in April 1991 which, nearly twenty years after the energy crises of the early seventies and with the prospect of imminent ecological catastrophe on a global scale draws acute attention to the confusion still felt by many people about how to save energy in their homes and about the effect of their consumption on the environment.

Alternative Policy Options and Prescriptions

Growing public concern with the global issues of pollution and climate change, with the depletion of non-renewable energy sources, and with local issues such as fuel poverty has stimulated a great deal of creative thinking outside of government about the causes and cures. This "alternative" policy agenda represents an important extension of, and counterbalance to, the development of official policy. In this section, a brief outline of a selected range of policy options and prescriptions for improving energy efficiency and reducing carbon dioxide emissions, advanced by non-government organisations and individuals and with particular relevance to the domestic sector, is presented at three levels: **macro** (strategic planning), **meso** (intermediate) and **micro** (tactical).

Macro Level Policy Options and Prescriptions:

At the macro level a key concept underlying environmental and economic policy is that of sustainable development. The idea of sustainable development gained widespread recognition following the publication of the Brundtland Report [39] which called for a new form of growth which was sustainable, environmentally-aware, more equitable in its impacts and which brought the development process into closer harmony with people's needs and with the need to maintain ecological balance by integrating economic and social development. The concept assumes that development and environmental issues cannot be separated. It means that environmental considerations must be fully integrated into economic decision making and that economic development must be managed to maintain or improve the resource base.

The argument is that development without a concern for the environment can only be development for the short term. In the long term it can only proceed at the cost of enormous human suffering, increased poverty and oppression. Inappropriate development adversely affects the environment which undermines health which slows development which further impacts on the environment, generating a downward spiral. Sustainable development improves the environment which encourages development which improves health which maintains sustainable development. Sustainable development thus creates an upward spiral, a more stable economy and helps to create a healthier resource base and a healthier, more active population

Advocates of sustainable development maintain that zero growth is not an option. Policies which advocate zero growth do not recognise that poverty is the root cause of much environmental degradation and that people's standards of living must be improved if they are to avoid falling back upon scarce natural resources.

Critical issues of sustainable development, identified in the White Paper This Common Inheritance include:

- (1) how to resolve conflicts between pressure for development and conservation of the environment
- (2) how to maintain economic growth without making excessive demands on natural resources
- (3) how to combat dangers of pollution without jeopardising economic growth [40].

Based on the Brundtland Report, William Adams has identified the requirements of an ecologically realistic strategy for sustainable development as:

- (1) a political system that secures effective citizen participation in decision making,
- (2) an economic system that is able to generate surpluses and technical knowledge on a self reliant and self-sustained basis,
- (3) a social system that provides for effective and sensitive solutions to the attendant socio-economic consequences of disharmonious development,
- (4) a production system that reduces consumption of natural resources and respects the obligation to preserve the ecological basis for development,
- (5) a technological system that can search continuously for new solutions,
- (6) an international system that fosters sustainable patterns of trade and finance and ensures effective international cooperation and regulation,
- (7) an administrative system that is flexible and has the capacity for self correction [41].

The concept of sustainable development is not unquestioned. Paul Ekins, for example, challenges a prevailing view that economic growth provides the conditions in which protection of the environment can best be achieved believing that this neglects the fact that the agents of economic growth - principally energy use - are themselves the mechanisms by which the planet is being devastated [42]. Whilst acknowledging that the environmental impact of these processes can be improved, he argues that projected economic growth forecasts imply the necessity of a four-fold increase in environmental performance over the next fifty years just to keep environmental impact constant at today's unacceptable levels - levels which already point to future environmental catastrophe. Ekins - like Illich [43] - sees a divided humanity competing for a growing but always insufficient pool of resources, the environmental impact of which progressively makes the planet uninhabitable, unless ways are found to uncouple sustainability from economic growth. Whilst sustainability will probably generate and permit modest growth, Ekins argues that the emphasis on growth will simply intensify unsustainability. With the emphasis placed instead on sustainability society must humanely handle the amount of growth that is possible and take measures to protect the most vulnerable from short and medium term effects. The important distinction is made between growth, which means quantitatively more and development, which means qualitatively more.

Specific macro level proposals include:

- * Realistic energy pricing to reflect true environmental costs; identification of external costs (externalities) which energy bears over and above market price. An externality is the residual environmental impact associated with a resource which remains after compliance with environmental standards and includes damage to people, property and habitats. External costs should be internalised in the price of goods and services [44, 45].
- * Proper economic assessment of all energy investment options on both the supply and demand side
- * Introduction of performance standards for all energy related services with special protection for low income groups. Linked to the idea of "environmental citizenship" and a citizen's charter.
- * Removal of imperfections in the energy market which prejudice investment in energy conservation rather than energy supply.
- * Tax changes to give incentives for investment in energy efficiency [46].
- * VAT on fuel and other forms of environmental taxation to encourage moves away from environmentally damaging options. The basics of the energy tax is that non-renewable energy sources which produce higher levels of carbon dioxide and sulphur dioxide when converted into energy will attract higher levels of taxation than cleaner and greener energy sources. The phasing in of carbon taxes over number of years would trigger investment in energy efficiency and anti-pollution measures. VAT reductions on energy efficiency measures would offset inflationary pressures and protect the most vulnerable [47].
- * Integrated energy and transport policy; designing communities for more efficient movements of people and goods.
- * Extension of non-fossil fuel obligation to further stimulate development of renewable energy sources.
- * Financial inducements for insulation retrofit programmes for existing buildings and replacement of inefficient plant. Environmental subsidies should ensure that users benefit from avoiding environmental damage.
- * Adoption of least cost planning approach to allow energy companies to invest in energy efficiency rather than in further supply capacity [48].
- * Redefinition of utilities as energy service industries.

- * A major campaign of education, debate and public participation on the environment.
- * Greater investment in energy research and development and greater networking of research.
- * A national commitment to major capital expenditure programme to improve energy efficiency of low income households, funded through flexible arrangements involving combination of public and private sources. A target figure of 500,000 low income homes per year has been suggested at total cost of around £1.25 billion per year which compares with mortgage relief currently at £5.5 billion annually. The total cost of bringing building stock up to current standards would be approximately £40-£45 billion, which is around the United Kingdom's total energy consumed in one year. Estimate is that such a programme could save as much as 10% of total energy consumption. Recognition of wider cost benefits in terms of energy investment such as limitation of long term revenue commitments by state, employment potential, improved population health (lower NHS costs) and reduced carbon dioxide emissions [49].
- * Third party financing, under which system a third party pays for energy efficiency measures; the repayment being at a rate lower than the amount saved through energy conservation, to the benefit of both parties.
- * Creation of a national "pensioners heating account". People over retirement age could opt to pay their bills monthly through this account at a standard rate all round the year. A account could then be boosted by public money otherwise set aside for severe weather payments etc. to allow for major investment in energy efficiency.
- * Linkage of mortgage relief to building energy performance.
- * Eco-labelling and minimum efficiency standards for buildings and appliances. The development of a national home energy audit scheme.
- * Building regulations to incorporate air infiltration/ventilation standards for houses linked to standards on air quality.
- * Building regulations to distinguish between regions on basis of climatic severity [50].
- * Introduction of a simplified system of legal remedies for tenants suffering from dampness and disrepair.

Meso Level Policy Options and Prescriptions:

Specific meso level proposals include:

- * Energy and environmental education to be part of standard training for care, housing and social support staff in local authorities, housing associations etc as well as in medical education
- * Improved training of building design community to increase understanding of environmental impact of design decisions; embodied energy, life-time costing, consumption of non-renewables, hazardous materials, waste management, positive environmental auditing. Improved professional codes. An enhanced role for architects and other design consultants. The provision of a resource base for developing countries
- * Preparation by local authorities and other service providers (including housing associations) of environmental charters. Useful examples are provided by Richmond, Fife, Cardiff, Glasgow and others, following a model charter prepared by Friends of the Earth.
- * Development by such organisations of a mission statement, an energy policy, recycling policy, strategy for monitoring and minimising pollution, environmental protection and enhancement policies, public health and safety policies, policies for preservation of natural habitats etc
- * Involvement of local individuals and groups, as of right, in planning for environmental and ecological improvements, so that decisions are made with people rather than for people. Adoption of the principles of partnership, proactivity and participation. The World Health Organisation Healthy Cities Project embraces the principles of public participation and empowerment, cooperation amongst agencies, equity and the development of positive health services at a local level.
- * Decentralised regional energy authorities to administer local energy programmes. Locally active energy groups with own budgets, receptive to local needs.
- * Domestic energy efficiency and environmental protection measures to be conceived as integral part of "care in the community" programmes for special needs groups, including elderly and involving a partnership of formal, informal and independent sectors. The establishment of a register of environmental care needs.

- * The establishment of local environmental action teams, linking health and environmental issues. (See the concept of "eco-care" in Chapter 9).
- * Mandatory employment of energy managers by larger housing organisations
- * In the case of housing associations and other large housing managers, energy management and housing management to be fully integrated. Energy management as part of total resource management.
- * A wider dissemination of energy management skills.
- * The "marketing" of energy management services by housing associations to wider client group.
- * Extended use of monitoring and targetting systems with energy targets set with reference to best practice
- * Environmental audits of housing stock by principal managers; local authorities, housing associations etc. Environmental auditing to be recognised and applied as important tool of management
- * Introduction of a "cost of warmth" index to assess the extent of need for warmth in low income households; to quantify affordability; to identify fuel poverty sufferers and to cost extent of their deprivation [51]
- * Introduction of concept of affordable warmth: reasonable indoor temperature for reasonable consumption of energy [52]
- * Energy and environmental advice schemes for tenants, low income households etc - linked where appropriate to community insulation and estate action projects to optimise benefits of investment [53]
- * Motivation for landlords, developers, builders to invest in energy efficiency and ecologically sound buildings
- * Demonstration projects; model specifications
- * Wider access to technical support and advice organisations
- * The establishment of an independent national energy design advisory service and a national centre of excellence for energy efficiency in housing. The creation of a national energy database.
- * Advice on energy investment potential. Value for money and environmental impact assessments. Energy surveys. Advice to elderly on heating controls etc.

- * Improved channels of communication between householders and energy and environmental professionals.
- * Local co-generation (combined heat and power) programmes.
- * Replacement of coal fired power stations by gas fired turbine stations.
- * Recycling of land, buildings, building materials and household waste.
- * Differentiation of local plans so that occupied spaces receive solar gains whilst storage buildings, roads, parking etc receive less.

Micro Level Policy Options and Prescriptions:

Specific micro level proposals include:

- * Shifting of energy and environmental management control and responsibility towards recipients of domestic services
- * Development of domestic energy and environmental monitoring systems which would provide user with feedback information on environmental quality, fuel consumption and energy costs. Conception of better informed individual user as personal energy manager. Promoted by linkage with personal health care. Some vulnerable some may need support of intermediary. Role for e.g. housing associations; disseminating energy management skills, monitoring and targeting, auditing, troubleshooting, assessing investment potential. preparation of energy efficiency checklists.
- * Improved zonal and time controls on domestic heating systems as standard
- * Expansion of comfort envelope through clothing, control of air movement etc.
- * Controlled ventilation
- * Thermal storage systems for smaller dwellings
- * Condensation boilers as standard; replacement of conventional boilers during retrofit programmes
- * Maximising solar gains through orientation and layout
- * Greater investment in renewable energy sources
- * Bigger investment in high efficiency lighting
- * Use of natural materials which do not give off toxic materials; timber only from sustainable sources

- * Phasing out of electrical space heating.
- * Maximise advantage of unobstructed daylight .
- * Application of microclimatic design principles to reduce climatic stress, provide sheltered access etc.
- * Use selected spaces as buffer zones.
- * Eliminate cold surfaces and draughts to permit lower air temperatures with consequent energy saving.
- * Wider application of mechanical ventilation systems and heat recovery systems where cost effective.

Social and Environmental Policy: Consolidation and Interpretation

From the identification of interdependent demographic and ecological imperatives, and from the recognition that environment and whole health are inextricably linked, it can be implied that (i) environmental policy initiatives taken in response to the ecological imperative will have profound social consequences and (ii) social programmes implemented in response to the demographic imperative will impact critically upon the environment. The further implication is that a unified approach to social and environmental policy is therefore essential. In Part Three a critical review of aspects of contemporary social and environmental policy relevant to the care of the elderly within the community has confirmed the lack of a rational, unified framework which would allow both the social impacts of environmental and energy policies, and the environmental impacts of social policies, to be systematically assessed. Without such a framework the formulation and implementation of an effective unified socio-environmental policy is impossible. The argument for an integrated approach is reinforced by the following specific examples which expose the inadequacies of the present reductionist approach to contemporary social and environmental policy.

A combination of failings in both housing policy and income support policy condemns many elderly to live in the poorest, least well maintained housing employing the least efficient heating systems and utilising the most environmentally damaging fuels. Failures of social and health policies may compound the problems by inducing a loss of both role and mobility, leading to social isolation and forcing an elderly person to spend more time at home.

Immobility, general poor health leading to deterioration of the temperature regulating mechanisms and lack of an adequately nutritious diet may all lead to demands for higher room temperature for the maintenance of comfort.

The consequence of such policy failings is fuel poverty for many elderly. The fuel poor may spend a greater share of their smaller incomes on fuel but their homes are still colder than those of better-off families. Seen in isolation, the problem of fuel poverty amongst the elderly might logically be addressed by increasing their income through raising benefit or allowance levels and providing cheaper forms of heating.

But in practice this simply transfers the problem instead of solving it. An individual elderly person suffering from fuel poverty may, in absolute terms, use less energy than the average, but relative to the levels of comfort they enjoy the elderly population as a whole are already major and disproportionate contributors to environmental degradation first because of the large number of pensioner households and secondly because so many are forced to use what energy they do very inefficiently with a consequent high rate of emission of environmentally harmful carbon dioxide. Increasing income levels without a commensurate improvement in efficiency levels means that while they may be warmer so will the global climate. By way of example, an additional expenditure on fuel of an average of £3 per week on each of 6 million elderly households would increase carbon dioxide emissions by up to 15 million tonnes per year [54]

Significant improvements in domestic energy efficiency requires substantial capital investment. Notwithstanding the partial grants available to low income households in both public and private sector housing through the newly introduced Home Energy Efficiency Scheme (HEES), the failure of social policy to provide adequate income support for many elderly makes it impossible for them to invest properly in such necessary energy efficiency measures as higher levels of insulation, draughtproofing, double glazing and central heating. Such investment would not only ensure greater thermal comfort, improve their health and alleviate suffering from fuel poverty, it would also allow them to reduce their energy consumption and hence the emission of greenhouse gases though, in practice, a proportion of potential savings may well be taken up in achieving higher thermal standards. This is a case where particular social policies lead to limited short term benefits in alleviating fuel poverty but to long term environmental costs. The converse is that the wrong environmental policies may protect ecological health but at a social cost to the elderly.

An apparently logical solution to the problem of global warming would be to raise fuel prices in order to reduce consumption. But unless some compensating mechanism were to be introduced to protect the poorer sections of society, such an approach would increase further the incidence and effects of fuel poverty.

Furthermore, increased fuel costs with a supposed environmental benefit lead to higher transport costs and contribute to a loss of mobility which forces more elderly to spend more time at home imposing not only a social cost but - since they will use more energy as a consequence - an environmental cost as well.

More generally the inelasticity of energy demand to price rises means that, in practice, users tend to end up paying more for energy needs. The use of the price mechanism as an instrument of policy is inequitable on the lowest income groups. These groups, including the elderly, spend disproportionately more of their income on fuel, have the least resources to protect themselves against price rises by investing in energy efficiency improvements and are denied the option to reduce energy consumption without still further degrading their already poor quality of life.

In the absence of effective policies for change the social costs of high energy prices will be borne by the poor and vulnerable in terms of financial hardship, discomfort and ill health. The principle of equity limits available policy options because failure to address the needs of the poor and elderly simultaneously with those of the environment may result in policy proposals which solve one problem but aggravate the other; a cleaner environment achieved at the expense of colder, less healthy homes or warmer homes leading to a polluted environment. Policies which involve only market forces are in any event unlikely to be sufficient to effect the necessary changes in social attitudes and behaviour which will bring about essential improvements in energy efficiency. Prevention of global warming is not one of the purposes of the market and argues rather for a more interventionist role from government. Effective socio-environmental responses will in practice be those which avoid the conflict between energy and social policy and which enable the resource-poor to improve their health and quality of life without imposing further stress on the environment through a massive increase in fossil fuel consumption.

Indications of the advantages of a more integrated approach to social and environmental policy can be gained from the recognition that easing the social problems of the elderly by enabling them to enjoy a higher standard of whole health for a lower consumption of domestic energy at a lower cost may have a triple environmental benefit.

Firstly the quality of the environment is directly improved by reductions in greenhouse gas emissions. Secondly, measures to reduce inequity within populations are shown to lead to a general improvement in population health and this to can lead to healthier environments both local and global. Finally, preventive programmes to improve the whole health of the elderly may release resources which can be redirected to environmental protection.

Socially and environmentally, both problems and their solutions cost money but in the long term integrated, preventative measures - measures designed to protect the whole health of elderly populations and simultaneously to protect the health of the environment - must represent a more cost effective use of resources than policy approaches which treat the symptoms of ill health without addressing the fundamental causes.

Such arguments emphasise still further the perceived need for:

- (i) a rational basis upon which decision-takers in the fields of health care, social support, building design, energy management and environmental protection can evaluate different policy options in terms of their respective social and environmental impacts, and
- (ii) a unifying framework for the integration of social and environmental policy in terms of which social support for the elderly, health care, energy management and environmental protection can all be brought together as mutually reinforcing elements of a common service for the elderly to which the term "eco-care" might be applied.

By definition, the role of eco-care is the promotion and maintenance of whole health. A key element of eco-care is the belief that equitable social policies will help to secure and enhance the health of the planet whilst sound environmental policies will enhance the well-being of populations.

Eco-care is founded in the perception of the elderly as active individuals with unique and diverse needs and possessing the capacity to make decisions affecting their own lives and those of their environment rather than as passive, dependent members of a homogeneous problem group whose needs can only be (cost) effectively addressed by centralised planning decisions.

In the final part of the study, a set of principles of eco-care, abstracted from the collected conclusions of Part One, Part Two and Part Three, will be proposed.. The argument presented in this study is that such principles should serve to include rather than marginalise the elderly in the face of the ecological imperative and protect their rights to exercise choice against the counter tendency to concentrate environmental decision-making in the centre in the supposed interests of efficiency but whose real effect - if not purpose - is to subjugate rather than liberate. These principles are the principles of whole health.

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PART FOUR

**AGE, HEALTH AND THE ENVIRONMENT:
A FRAMEWORK FOR SYNTHESIS**

CHAPTER 9

THE CONCEPT OF ECO-CARE

A Summary of Conclusions

In this final chapter, the consolidations and interpretations of the findings presented at each stage of the study, are now assembled and restated as a summary of final conclusions which provide confirmation of the fundamental hypotheses proposed in the Introduction and which justify the central belief that a unified approach to the problems of age, health and environment is both necessary and possible.

A viable future for mankind depends upon (i) the maintenance of essential ecological processes (ii) the preservation of genetic diversity and (iii) the sustainable development of species and ecosystems. Present forms of human development are unsustainable and are leading, progressively and critically, to ecological stress and environmental degradation. The result is an adverse transformation of nature on a biospheric scale, with consequences that threaten imminent catastrophe for the planet and its populations. The principal threats are identified as global warming, destabilisation of world climate, the pollution of the earth's air, water and land resources and irreversible damage to the world's natural cycles, resulting specifically from the burning of non-renewable fossil fuels and the resultant emission of greenhouse gases. Both poverty and affluence are recognised as the primary causes of pending ecological disaster.

The common cause of ecological damage is ignorance: a lack of proper understanding of (a) the relationship between environment and development under conditions of accelerating social and economic change (b) the interdependence of all the parts of global ecosystems and (c) the risk of a catastrophic recoil of these natural systems under the pressure of human populations.

Only now is new thinking on public health leading to the recognition that states of physical, psychological, social and economic well-being of populations are major determinants of ecological health and that inequity in health is itself a cause of poor public health and hence a contributory factor in environmental degradation.

The impacts of global pollution and adverse climatic change are not just local and regional but global, thus converging the interests of both developed and developing countries. The impacts are not just environmental but economic, political and social. Environmental degradation is identified as a prime cause of social stress, exacerbating existing social divisions and inequities.

Environment and health are inextricably linked. The health of populations worldwide are put at risk by global pollution and environmental degradation. As well as direct effects on health, crisis management measures to solve environmental problems can damage public health indirectly by taking resources away from social, food-aid and health care programmes.

Without radical action to promote the development of human management systems which are ecologically and socially sustainable, it may soon be too late for mankind to adjust to a changing global climate without facing potentially catastrophic environmental, social and economic consequences. The necessary action will have to be taken in the main by the richer nations of the world because the developing countries are least able to afford the more expensive, cleaner methods of energy production and the essential means of environmental protection. The industrialised economies will have to be prepared to take a greater share of the burden involved in meeting global targets for reducing fossil fuel consumption and associated pollution and to invest vast resources and knowledge in transferring clean technologies and management methods to the developing world.

The above findings translate into an ecological imperative. The implications for the social and environmental policy agendas of the developed countries are profound. What is being projected is the need for a radical reshaping of society and in particular of the way society thinks about and uses energy. Whilst energy is the driving force of economic growth and human development and the key to the raising of living standards in the developing world, energy derived from fossil fuels is also the principal cause of global warming and biospheric pollution. The present dependency of the developed economies on unsustainable forms of energy constitutes an overwhelming challenge to human society and contains the seeds of its own destruction.

Changed attitudes towards energy use, dramatic improvements in energy efficiency, the development of alternative, renewable and clean forms of energy and the progressive phasing out of fossil fuels are critical factors in responding to the demands of the ecological imperative. Of special significance in policy terms is the energy use associated with the design, construction, occupation and management of buildings which is now clearly identified as the major single source of the world-wide enhanced greenhouse gas emissions which are degrading the global environment and which are the primary cause of life-threatening climate change.

Both the problem - global warming , biospheric pollution and environmental degradation - and the solution - reductions in per capita energy use - will have profound effects on all populations. The impact of adverse ecological change will, however, inevitably be greatest on populations and on sections of populations who are in poorest health, are most susceptible to environmental stress, are least able to adapt to adverse change and whose personal and material resources afford them the least protection. Principal amongst such groups in Britain - indeed universally - are the elderly.

Recognition of the linkage between environment and development takes the argument beyond that of an ecological imperative alone. Social dislocation and stress is generated by the acute failure of populations to satisfy even the most basic needs of their populations for food, shelter and health care in the face of chronic overcrowding, poverty, disease and inequity, and support in particular the demand from developing countries for action which will improve the overall living standards of their populations and eradicate inequalities in health and opportunity. These findings translate into a health-equity imperative.

Social justice is itself a factor in determining the health status of populations and, as a consequence of both social and environmental factors, divisive and ultimately unsustainable inequalities in health are discovered within all populations as well as between populations, thus effectively excluding the poor and the unhealthy from the mainstream of their society. Principal amongst the environmental factors affecting health and equity is global pollution which affects most adversely those vulnerable sections of populations already living precarious existences and least able to protect themselves or to adapt to environmental pressures. The reciprocal relationship between environment and health is clearly identified.

Environmental concerns are frequently derived from an ethical base. Human beings have become a major force for ecological change, able to transform the biosphere radically but lacking the knowledge to control it properly and this imposes an ethical as well as an environmental management imperative on the maintenance of ecosystems, the preservation of genetic diversity and the sustainable utilisation of renewable resources. The acceptance of an ethical component to the ecological imperative implies that there are moral and humanitarian as well as pragmatic limits to the policy options available to mankind in addressing the profound environmental problems that confront him.

Whilst there is a clear ethical dimension implicit also in that health-equity imperative which demands improvements in the quality of life of the most deprived populations, there are also overwhelming pragmatic reasons for reassessing the priority which the industrial world attaches to solving the problems of global poverty and inequality. At a direct level, poverty has been identified as a prime cause of environmental degradation on a world scale. At an indirect level, the vast resources which are being poured into aid for developing countries in order to treat the symptoms of over-population, famine, drought, disease and social dislocation continually divert essential means away from environmental programmes.

Major improvements in the health-equity standards of developing countries cannot realistically be achieved without a huge increase in their per capita energy consumption. When coupled with huge projected population growth in the third world this translates into vast extra energy and pollution load which threatens to swamp the present efforts of the industrial economies to meet environmental protection targets. A future of greater equity will require that the developed world take compensatory measures, particularly in the field of energy consumption, and severs the traditional link between affluence and environmental degradation. Short term economic growth in the third world on the existing model offered by the richer industrial nations could only be at the expense of longer term environmental despoilation, with even more disastrous global consequences.

Environmental degradation, poor health and inequity form a classic vicious circle of mutual cause and effect. In general, the poorest and least developed countries experience the greatest difficulty in breaking out of the vicious circle of poverty, ill health and environmental degradation. The greatest poverty creates the worst environmental pollution. The poorest are affected most by the adverse impact of human activity and population growth on the environment.

The ecological imperative can only be fully resolved by resolving the health-equity imperative and effective health policies will be those which serve to sustain local and global ecosystems. Conversely, the health-equity imperative can only be fully resolved by resolving the ecological imperative because environmental quality is a major determinant of human health. Furthermore, social justice and ecological health are mutually supportive.

"Solutions" to socio-environmental problems which do not seek to redress the inequities present in the whole health status of vulnerable groups such as the poor and the elderly are not solutions at all. The pursuit of health and of equity on the global scale must be a key element of both social and environmental policy.

Arguments for improving man's environment are thus arguments for improving his health and well-being as well as for achieving great equity within and between populations. The ecological and health-equity imperatives are interdependent and in order to ensure a sustainable future for human kind, environmental policy - concerned with the protecting the ecosystems - must address issues of public health whilst social policy - concerned with the well being of populations and most especially that of the most vulnerable groups within those populations - must equally address the issue of ecological health.

Appropriate policy responses to the ecological imperative will be those which address both social and environmental issues in an informed, coherent and unified way; which seek to combine protection of the environment with social equity; which acknowledge the key role of buildings and energy and which are based upon a clear conceptualisation of health. Effective policy development is critically determined by the particular health model adopted, which must be meaningful, appropriate, relevant in the socio-environmental context to which it is to be applied and must provide a valid and reliable measure of the health status of individuals and populations.

The measurement of health status is the essential precursor of the assessment of the effectiveness of health interventions and of the quality of care and is the basis upon which a necessary understanding of inequities in health between and within populations can be gained. A concept of health must be adopted which explicitly acknowledges the interconnectedness of ecosystems and health systems. In particular the preservation of human health demands effective adaptation to a totality of social and environmental stressors. Health is thus associated with the idea of wholeness where wholeness implies a state of complete well-being.

A goal of human development is the creation of environments which can support a full quality of life thus social and environmental policies must be mutually consistent with achieving and maintaining an acceptable quality of life for all through processes which involve the active participation of individuals and communities in decisions that affect their health and that of their environment and which recognise dignity, identity and self determination as essential preconditions of sustained health.

Conventional medical and functional models provide inappropriate bases for the development of integrated socio-environmental policies. Instead a new variant of the holistic model of health - whole health - is proposed which describes health in terms of needs, of adaptation, of stressors, of supporters and of the intricate linkage established between ecological and personal well-being. Such a conceptualisation of health sets the biological and physiological aspects of the human condition properly and essentially in the context of a broader social, psychological, financial, environmental and cultural framework and explicitly embraces a unified perspective of environment and health. Whole health is identified as a multi-dimensional concept. An individual is said to be able to maintain whole health only if he or she can resist the effects of socio-environmental stress along each and any of seven defined dimensions by employing a combination of personal and material resources or supporters. Failure of social and environmental policies are then perceived as sources of stress upon whole health. Successful policies are those which generate the right kind and level of support. Health - whole health - is thereby recognised as a key factor on both social and environmental policy agendas. The adoption of a whole health model has profound implications for the way health status is assessed and for the evolution of systems and procedures of health promotion and health care. In particular the concept of holistic health explicitly acknowledges - in a way which medical and functional models do not - that the freedom of an individual to exercise personal choice, to be directly involved in the decision-making process regarding both the definition and expression of their well-being and the nature of the health treatment and care they receive, is a fundamental and essential requirement of health itself.

Given the vital linkage which exists between environment and health, the fact that people spend some 90% of their time within indoor environments means that the relationship between buildings and health assumes major importance and that the subject of health in buildings should be a priority issue on any health care agenda.

The critical linkage between public and environmental health endows buildings and energy with special significance. On one side of the link, buildings are principal contributors to ecological degradation generally, and to global warming in particular, as a consequence of those carbon dioxide emissions resulting from the combustion of fossil fuels for building-related purposes. Policy responses to protect the global environment must then address, as a priority, the issue of energy use in buildings. On the other side, indoor air quality, dampness, cold and fuel poverty are amongst the most critical known stressors on health. For the old and vulnerable, adequate and affordable housing is virtually a precondition of health.

A more general concern with the health needs, status and condition of old people has elevated the issue of care for the elderly to the very top of the social policy agenda in Britain as a consequence of the major and rapid changes that have taken place in the age structure of the population. There has been a huge increase in the number of people of pensionable age and a rapid relative rise in the number of the very old - the largest per capita consumers of health and social services resources. The contingent massive shift of economic resources towards the care of the elderly has resulted in ever greater interest in the physical and psychosocial health of the old and very old. The growing challenge of ageing populations faces developed and developing countries alike, as a subset of the more universal health-equity challenge. So great are the social and economic implications of the changes in the absolute numbers of elderly people worldwide and in the shifts in the balance of societies, that a point of crisis is rapidly being reached.

The care of the elderly is perhaps the single most important social issue confronting the developed economies today. But, as has been argued, the most relevant aspects of ageing are not those associated with age as such, but rather with the way in which society both manages the process of ageing and with the way in which it reconciles the ethical and pragmatic dimensions of the demographic imperative.

Against a global background of profound social, environmental and technological change - in populations, in energy supply, in methods of production, in social and political structures, in institutions and in means of communication - this recognition has been shown to give the problems of caring for Britain's elderly population - and the solutions to those problems - a more universal relevance.

A measure of the problem of ageing within the context of the United Kingdom is that, notwithstanding the major allocation of resources to the care of the elderly population, their health is both relatively and absolutely poor when measured along each of the seven dimensions of whole health. Detailed assessment of the status and condition of the elderly in society has shown that, whilst many elderly people live apparently secure and fulfilled lives within the community, sharing common needs with the rest of the population, need is strongly age-related phenomenon, with the frequency and severity of both acute and chronic health problems increasing with the increasing age of the subject. A profile of the elderly population of Britain emerges which confirms that (i) their whole health status is absolutely poor in that it is generally below accepted standards for the populations of the developed economies and (ii) major inequities exist between the health status of the elderly and that of the rest of the population which tend to marginalise the elderly rather than include them within the mainstream of society.

Many of the problems experienced by the elderly, however, are found not to be the result of old age per se but to be consequent upon extrinsic factors such as low income, poor housing, unemployment, ill health, disability, loss of mobility etc. A unique combination of biological, social and environmental factors places the elderly in a peculiarly vulnerable and dependent condition.

Old age brings special disadvantages in that not only is ageing characterised by a decline of the body's adaptive systems but age brings with it: handicaps and frailties which limit activity; a gradual loss or deterioration of general health drawing heavily upon reserves of strength and endurance; greatly reduced incomes with little capital raising potential; poor housing conditions and inefficient heating equipment; the greater probability of bereavement and separation from families and of chilling loneliness. Such factors impose both acute and chronic socio-environmental stresses on many elderly people and constitute a serious drain upon their personal and material resources which may lead to a withdrawal from social participation and a loss of community warmth; a tendency which can only be reinforced by the "ageism" which is pervasive and entrenched within society. In such a context, ageing must be understood, in phenomenological terms, not simply as a biological process but as a socio-environmentally determined condition whose essential defining characteristic is that of a seemingly inevitable intensification of environmental and social stressors associated with age, paralleled by an equally inevitable diminution or actual loss of the ageing individual's capacity to adapt to or compensate for the increased levels of stress without the right forms and levels of emotional and physical support.

The result is that, in practice, almost all elderly people need some form of social support to maintain whole health and this may be substantial in the case of the very old and frail. The elderly generally thus represent the most vulnerable sector of all societies, being disadvantaged simultaneously by each of age, environment and social condition and being the least well adapted to socio-environmental stresses. Their consequent need for social and economic support is correspondingly greatest of all.

A situation which is manageable when numbers are relatively small becomes a crisis when populations age. This is the nature of the defined demographic imperative. Alone it presents a major challenge to both the developed and developing countries of the world, demanding of urgent solutions through effective policy responses. The present study now offers a new perspective on the problems of ageing populations by recognising the demographic imperative as a subset of the more universal health-equity imperative and by setting them both within the context of a global ecological imperative with which they are interdependent. Such a perspective adds a new and vital dimension to the urgent search for solutions to both the demographic and ecological challenges.

The convergence of demographic and ecological imperatives has the most profound social and environmental implications which demand radical shifts in socio-political attitudes, priorities and approaches. Without comprehensive, well-informed, well-conceived and properly resourced policy revisions, the social and environmental stresses contingent upon projected ecological change will have the most adverse and inequitable impact on the whole health of the elderly. The promotion, restoration and maintenance of an acceptably high state of health amongst elderly populations must be the acid test of socio-environmental policy.

The deprived condition and low health status of the elderly points to serious deficiencies in both contemporary social and environmental policy. In particular, social policies relating to the care of the elderly fail adequately to address emerging environmental concerns whilst existing and proposed environmental policies lack a necessary social dimension and fail to account adequately for the needs of vulnerable groups such as the old and the poor. Contemporary developments in social and environmental policy relating to the enhancement of each of ecological and public health have, in substantial measure, taken place piecemeal with the lack of a coherent framework for integration being mainly responsible for the policy failures in these two critical areas. Future policy developments must achieve the right balance of effectiveness and equity.

The combined force of the demographic and ecological imperatives thus presents a potent argument for fundamental change in a new direction: that of the rational integration of social and environmental policies conceived on the unifying basis offered by the concept of whole.health. Only an holistic concept of health provides the coherent framework around which effective and balanced socio-environmental policies appropriate to the needs of the elderly can be evolved whilst buildings and energy provide the most critical and significant link of all between social and environmental policy.

The formulation and implementation of an effective integrated socio-environmental policy is not possible without a rational basis for making reasoned choices between different policy options. It is argued that no wholly adequate and rational basis upon which a proper and comprehensive assessment of (a) the environmental impacts of social policy options or (b) the social impacts of environmental and energy policy can be made, presently exists. The essential purpose of the research has been to provide a strategic framework for the integration of social and environmental policy in terms of which social support for the elderly, health care, energy management and environmental protection can all be brought together as mutually reinforcing elements of a common, community-based care service for the elderly to which the term "eco-care" is applied.

In the last section of the thesis, the conclusions of the research are given practical expression in the form of a set of principles for eco-care derived from the explorations of the interface of age, health and environment undertaken in Part One, Part Two and Part Three of the study. Effective socio-environmental policy responses will be those which:

- (i) recognise the interdependence of ecological health and human health,
- (ii) address social and environmental issues in a coherent and integrated way; being informed by - and impacting upon - all aspects of life; social, political, economic, technological and environmental,
- (iii) combine concern with the protection of the environment - the maintenance of essential ecological processes and the conservation and enhancement of the resource base - with that of social equity,
- (iv) are based upon the unifying principles of whole health,
- (v) give special priority to measures which affect radical change in the management of the built environment and, in particular in the dependence upon fossil fuels for maintaining health, comfort and hygiene standards within and around buildings.

The primary instrument of policy relating to the health of the elderly is care. The provision of care in the context of social policy is firmly based upon the presumption that forms of social support are beneficial to health and well-being in moderating the negative effects of socio-environmental stress which are recognised as disruptive forces in the lives on many elderly. Social support is then held to act either by direct effect or by buffering the individual against the negative impact of stress, The efficacy of any given level of social support is recognised as depending in a complex way upon the subject's individual circumstances and upon the social and environmental context in which the support is provided and received.

An extended definition of care has been proposed. This is any structured act, duty or function which operates in one of two complementary ways, attenuation or alleviation. In the case of attenuation, care can be defined as any mechanism which, in the interest of an individual, acts directly to attenuate (that is, reduce the force of) those socio-environmental stressors which contribute to a loss of whole health status. In the case of alleviation, care can be defined as any action or service which provides help, support and protection to vulnerable members of society and which, in so doing, serves to alleviate (that is, relieve or lessen) the deleterious effects of social and environmental stress and thus to promote, maintain or restore whole health. From such a perspective, care is conceived as having a direct correspondence with and influence on whole health, from which it follows that the provision of effective care must meet two essential conditions. **First**, forms of care must be provided across a spectrum of need which reflects the multi-dimensional nature of whole health. **Second**, and critically, the quality of care provision itself must be judged against a set of fundamental principles implicit in the adoption of the concept of whole-health.

With reference to the dimensions of whole health identified in Chapter 4, the spectrum of care provision for the elderly can be classified under the following headings:

(i) **Physical health care:**

Examples include health maintenance aids, nursing aids and requisites, medicines, day hospitals, nursing homes, day clinics, night care, health screening, preventive and post-treatment checkups, convalescence, rehabilitation and resettlement services, meals-on-wheels, dental services, sight and hearing tests, supportive devices, prostheses, incontinence aids.

(ii) **Functional health care:**

Examples, related to mobility and the effective performance of activities of daily living, include domiciliary services, home helps, disability aids, transportation, occupational therapy, remedial training, physiotherapy, chiropody services, lifters, wheelchairs, personal care such as help with dressing, bathing, grooming, getting into and out of bed, eating, shopping, meal preparation, collecting prescriptions, laundry services.

(iii) **Mental health care:**

Examples include psychiatric services, counselling, pastoral care, library services, reading services, educational services, health education, advice and information services, security services to alleviate fear of crime, vandalism etc., mutual support services

(iv) **Social health care:**

Examples include social services, day centres, visiting, transportation to social clubs etc., holiday arrangements, escort services, recreational services, lunch clubs, publicity, legal aid, radio and television facilities, pet-care, good neighbour schemes, warden services, advocacy services.

(v) **Economic health care:**

In most case economic health is a precondition of social, physical and environmental health. Examples of economic health care include income support, retirement and supplementary pensions, housing benefits, attendance allowances, invalid care allowances, rent and community charge rebates, death grants, free prescriptions, hospital fares, assistance with administration and financial fares, social fund, jobs-finding schemes, workshop and sheltered employment schemes.

(vi) **Environmental health care:**

The provision of an effective environment for care has become a key issue of social policy. Domestic environments in particular must be of a quality that permits a life of dignity and well being. Environmental policy must be consistent with achieving and maintaining this quality of life for all. For that majority of the elderly population who wish to have the opportunity to lead healthy, independent lives within the community, suitable housing is an essential need. Adequate and affordable housing is a critical precondition of public health.

At a basic level, good housing for the elderly can be equated with the provision of shelter, security, warmth, accessibility, adaptability, manageability and economy and - on this definition - suitable housing is probably the finest preventive whole-health measure available to the elderly. The corollary to this is that unsuitable housing can be a major contributory factor to ill-health and to isolation amongst the old. There must be a wider recognition of the need to apply effective environmental management techniques to the design and operation of the built environment and in particular to the use of fossil fuels. In the long term the replacement of fossil fuels with clean sustainable energy sources represents an essential requirement of the maintenance of healthy, equitable living environments for the elderly. A priority must be to convince individuals and organisations of the significance of buildings and health and of the importance to both public and ecological health of the provision of a cleaner, safer, more comfortable built environment. Relevant examples of environmental health care are thus mechanisms for improving energy efficiency in the home, reducing dependence on fossil fuels, avoiding the use of hazardous and pollution-generating materials, maintaining high levels of air quality, preventing dampness, condensation, cold and mould growth and ensuring thermal comfort standards.

Specific measures might include energy and environmental audits, home insulation and draught-proofing schemes, installation of energy management systems, energy advice services including fuel selection and help in the installation, operation and maintenance of heating systems, hot water systems ventilation systems, energy controls, lighting systems, etc.

Priority measures will be those which successfully promote the whole health of the individual whilst minimising the extra stress on the environment by adding to atmospheric pollution generally and greenhouse gas emissions in particular.

Further example of environmental health care include supported accommodation such as sheltered, amenity and care housing, adaptations, alarm systems, home maintenance, repairs and decoration, care and repair schemes, window cleaning, plumbing, electrical work, carpet and upholstery cleaning, gardening, plant care etc. etc.

The Principles of Eco-Care

Perspectives on age, health and the environment has led to the concept of a unified form of socio-environmental support which explicitly embraces whole health care, energy management and environmental protection as mutually interconnecting and reinforcing parts of a common care service whose objective is to enable elderly people to live independent, sustained, healthy and equitable lives within the community and, wherever possible, in a domestic setting. In referring to such a form of care, the term "eco-care" has been suggested, reflecting and emphasising both the social and environmental dimensions of care.

In this final section of the thesis, the research findings - and in particular those derived from the study of whole health - are consolidated into a set of **principles for eco-care**, with two primary objectives. The first is to offer a unified framework for the integration of social and environmental policies within the context of each of a demographic and an ecological imperative; with special emphasis on the key role of buildings and energy as determinants of whole health. The second, is to provide decision-takers with a rational and equitable basis for deciding - in particular and different cases - on the most appropriate policy options to be adopted for the provision of healthy physical settings for care and for its management. Amongst such options should be included those policies and prescriptions critically reviewed in Part Three and, in particular, the building-related environmental and energy strategies outlined in Chapter 8.

Without implying any direct or simplistic equivalence, the identification of the demographic imperative as a subset of the more universal health-equity imperative may suggest that the study of the problems of ageing populations within the context of an ecological imperative could have a more general relevance, significance and application to the problems of the developing world. In this sense we might usefully think of the study of age, health and environment not only as critically important in its own right but also as a "test bed" for working out new ideas, evolving strategic frameworks, deriving vital principles, evaluating prescriptions and initiating and informing a debate which raises political, professional and public awareness of the issues and imperatives involved. In particular the study may be seen as offering a significant learning experience for "eco-care" professionals - care providers, energy managers, building designers etc - whose accumulated knowledge, skill and understanding may then constitute a major resource base for the developing world.

The following **principles of eco-care**, arranged for reference under a series of key headings in alphabetical order, are now proposed:

.Adaptation:

The extent of need satisfaction enjoyed by individuals - and hence their state of whole health - is ultimately determined by the degree of success with which they are themselves able to adapt to the effects of multidimensional socio-environmental stress by processes of resistance, adjustment, accommodation and compensation. In other words, a person's whole health status is determined by - and measurable against - the individual's capacity to achieve a wholeness of body and mind through an accommodation to varied forms of stress which might include disease, disability, loss of function, isolation, loss of companionship, lack of family support, low income and poor housing. Adaptation itself is taken to be contingent upon the satisfaction of some fundamental psychological needs such as independence, self-determination, freedom of choice, respect, dignity, individuality and privacy and, more generally, the adaptation process can be accomplished fully and effectively only if the individual has access to - and the support of - an equivalent "wholeness" of appropriate resources. independent domestic living requires the maintenance of an effective balance between socio-environmental stressors and supporters.

Alleviation of Care Burden:

The provision of care for the elderly - whose problems can be multiple, chronic and complex - can be challenging, frustrating and stressful. A crucial principle of any system of care provision is that care-burden must be recognised as an important extra dimension of whole-health. Special value must then be given to those forms of care which acknowledge the limitations of carers and which reduce the stress which inadequately supported caring can place upon families and friends of elderly people. Carers should have no lesser rights than those they care for and, in particular, should expect to be fully involved in the decision-making process. Inevitable conflicts must arise between the principle of seeking, wherever possible, to care for elderly people within their own home and that of avoiding the imposition of excessive care-burden on others. Reconciliation lies with the adequate resourcing of the care and support services generally.

Alleviation of Care Burden (Continued):

Failure to thus support the caring activities of families, including the provision of respite care, reduces the element of choice and increases the likelihood of tension between relatives and of the eventual breakdown of carers.

Allowable Risk:

A vital principle is that care provision should not aim to eliminate the element of risk in an old person's life altogether but should preserve what is an important source of feedback, exercising essential control over relationships with the environment. The right of the elderly to refuse to accept services under certain conditions must be respected even where, from the perspective of the provider, this appears to lead to a loss of quality of life.

Assessment:

Social support of any kind can only be effective if individual needs are correctly and fully assessed. The basis of care services for the elderly must therefore be the creation of an effective and adaptable system of monitoring, detection, diagnosis and health screening. The operation of such a system would allow care needs to be assessed, capabilities evaluated, priorities set, decisions to be taken about the level of intervention required and the most appropriate form of care made available in the right way at the right time. A specific function of assessment is the ascertainment of unrecognised or unreported need amongst the elderly which is identified as an outstanding social problem justifying calls for a national audit of the care needs of the elderly.

Choice:

A principle of social care policy must be to increase choice and extend opportunity. Real choice exists and is meaningful only if the elderly are able to decide, in an informed and positive way and without distortion, between a varied and extensive range of acceptable care options which suit a wide range of individual circumstances, conditions and lifestyles and if they can exercise real control over the support services they choose. Special value should attach to forms of care which are planned as a response to the actual needs of individuals, which recognise the right of individuals to self-determination and independence; which allow individuals to have control over their own lives whilst receiving the social and environmental support they require when they are no longer able to manage on their own.

Choice (Continued):

Some elderly may wish to exercise the choice to opt out of decision-making. Their needs may be extensive, their resources limited and their capacity to exercise full control over their own affairs may be limited. Some individuals may indeed define satisfaction in terms of not having to make major decisions but simply to be in a position to live comfortably and without too many day-to-day concerns. But the decision to opt out must be a decision of the individual not something imposed from outside. That said, the assumption of a healthy society is that the majority of its citizens, regardless of age, will wish to opt-in to decision-making and take a role in the social processes which affect their lives. Opting to exercise choice is meaningless unless the weight of decision-making is shifted towards the individual and away from the centre.

Commitment:

The setting of clear care objectives, and the unanimous commitment of all parties to such objectives, is especially important in situations where intervention is likely to lead to significant social change for the recipient and where interweaving of formal and informal sources of care is involved.

Community Care:

A prime need is for the integration of the elderly into normal community life. It remains a generally accepted principle of care provision that most elderly people who need care can and should be looked after in the community and either by the community or with appropriate levels of formal care. Support for the acceptance of such a principle lies in three central premises: (i) that with the right kind of social support even the housebound, frail elderly can be enabled to live on their own within the community and maintain their social competence (ii) that this is what the majority of the elderly want for themselves and (iii) it is what those responsible for providing care believe to be best. The principle of maintaining the maximum possible degree of independence for elderly people through the provision of care not only in the community but by the community is now an officially accepted policy objective and commands wide support amongst all caring agencies. Such a principle demands that a high priority be given to the development of domiciliary services with a range of facilities and flexible packages of care which can support a wide variety of people within a community setting by meeting their special needs.

Community Care (Continued):

The principle of community care may be interpreted as meaning that the role of public authorities is to sustain - and where necessary develop - but never displace the support and care provided within and by the community. On the basis of this principle the whole community should share responsibility and be involved in the care of the elderly.

Continuum of Care:

Intervention is conceived as a progressive and graduated process which must be responsive to changing need, with the balance between different forms of care provision varying dynamically. The implication of such a graduated response is that resources too must follow need. The concept of a continuum is based on the recognition that elderly need different services at different stages in the ageing process as health conditions vary and that intervention may vary at different times from simple, minimal support for active and largely independent individuals living in their own home to complex, long-term, full-time total care in a hospital or home. The objective of a continuum of care should be to keep as many elderly as possible out of the institutions and in the community. It should not be interpreted as a "conveyor belt" which assumes that the elderly will move on to ever increasingly protected environments when they display increasing dependency. On the other hand, continuity demands that a whole range of care options must be available including long-term, institutional support as and when this is necessary.

Decentralisation:

Whole health demands the devolution of greater choice and decision-making responsibility to the recipients of care - including responsibility for resource management, which implies real control over resources. There is a large and still growing consensus that care provision should be flexible and accountable at a local level. The argument is against a centralised system of welfare and care provision and, instead, in favour of more informal and receptive local systems of care with locally based and accountable management and support services. The difference is between centralised, top-down bureaucratic planning and a more open, democratic, decentralised style with power and responsibility devolving downwards and outwards. The need is for an organisational system that is flexible and has the capacity for self correction.

Decentralisation (Continued):

One application of this principle of this is what has become known as "patch planning" in which a clear local neighbourhood focus is established as the context for managed change. In any event all intervention must be sensitive to the complexities and variations of social structure implicit in the concepts of community, neighbourhood and networks.

Diversity:

Effective care directed towards preserving an optimum level of physical, psychological and social functioning must recognise the dynamic nature of whole health and the resultant diversity of need which exists not only between individuals but at different stages of the ageing process for any one individual, as personal, social and environmental conditions change.

Ecocentrism:

"A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise" - Leopold's principle of eco-centrism. Ecocentrism is based on a belief that social relations cannot be disconnected from man-environment relations.

Education:

Education for the elderly in matters of health care, energy management and environmental protection should be available as part of the preparation for retirement and should emphasise the importance of safe, clean, adequately lit and heated environments, of nutritious diet, of exercise, and of stimulating activity. Educational programmes should promote good health habits and discourage bad habits. Education about the elderly and about the responsibility that the whole community has for caring for them should begin in the schools and should involve the elderly themselves as educators. If an ideal form of care might be defined as one which combines professional competence with the elements of humanity and compassion characteristic of close family relationships then special attention needs to be focused upon the education and training of informal carers to enable them to achieve the right balance of efficiency and effectiveness.

Effectiveness:

The efficacy of any given level of social support is recognised as depending in a complex way upon the subject's individual circumstances and upon the social and environmental context in which the support is provided and received. Effectiveness of policy depends upon: (a) the degree of interweaving and cooperation in the interest of mutually agreed objectives that is promoted between different care agencies in each of the formal and informal sectors (b) the existence of a coordinated structural framework for care operating towards clear and consistent goals and (c) the extent to which true decision-making is decentralised towards the point of care delivery.

Efficiency:

A priority of practical care management for the elderly is the most efficient use of scarce resources, with sensitivity, imagination and innovation being employed to compensate for resource limitations. Efficient care provision under such conditions can depend upon the provision of an appropriate infrastructure and the discovery and exploitation of new resources, effectively interwoven with existing care systems. Whatever form of care is involved, and however large or small the budget, resources must be administered rationally and efficiently.

Empowerment:

The principle of empowerment involves the redistribution of the decision load, the information base and the control of resources so that more real power is transferred towards recipients of social services. The principle is promoted by the vision of a future society in which far more real power is invested in the hands of communities and away from the centre.

Equity:

Includes the principle of equitable distribution of essential resources to meet basic needs. In particular an adequate supply of fuel should be an absolute right for every individual and should not be relative to the ability to pay. More generally, the principle of equity is taken to imply not the pursuit of uniformity - in the sense of giving everyone the same - but of allowing everyone an equal chance to determine for themselves how their basic health needs should be met within the context of a more responsive and pluralistic social and economic system.

Flexibility:

Ageing is a variable process in which periods of stability may be interrupted by acute episodes of dysfunction. There must therefore be a continuum of flexible, adaptable and appropriate care options, providing continuity of service for the individual within a variety of settings. Flexibility is required since needs vary with time. In practice the further principle of choice - allowing diverse individual housing needs amongst the elderly to be met - can only be satisfied if there is flexibility and integration between different forms of provision with closer liaison between the various agencies and organisations responsible for care services. The emphasis then should be upon a flexible provision of services rather than on the replication of standardised forms of provision.

Function:

The objective of care should be effective health and the improvement of functional performance. Old age is almost inevitably associated with a tendency towards progressive functional decline which may lead to a departure between the actual and the potential levels of effective health. In practice, much loss of function and social competence is unnecessary and the proper emphasis of care should be upon slowing down the rate of any such decline and upon maintaining, restoring or improving an individual's capacity to function as normally as possible within everyday environments. Whilst such care may properly embody specific treatment for those suffering from chronic disability as the means of restoring the individual to effective health, there must be recognition that the provision of appropriate forms of supplementary support can improve functional performance even when a full cure is not achievable. Care provision should thus be conceived as an enabling function, allowing all elderly to reach their maximum functional potential.

Identity:

A fundamental characteristic of care policy should be a respect for the full rights and dignity of the individual, irrespective of physical or mental health or levels of skill and functional capacity, together with the recognition that the elderly are a heterogeneous group made up of unique individuals, possessing different expectations, different attitudes, different preferences and different needs which may in turn vary over time. Some elderly may, indeed, have no special needs at all - for housing or for any other purpose.

Identity (Continued):

The elderly, a term embracing individuals with an age span of at least 30 years, should not be too readily categorised into particular groups with too easily defined characteristics and needs. A sign of health for a person over retirement age is that they should identify themselves first of all with membership of some social grouping other than that of the elderly.

Independence:

Special value should attach to those forms of health care and support services which promote an elderly person's independence and which serve to maintain such independence at the highest possible level. The elderly do not give up their independence easily and are most usually found to be the reluctant subjects of caring and dependency. It is through independence that an individual gains a sense of personal identity and concept of "self" and, whilst valuing the love and support of their family, the characteristic desire of most elderly would seem to be "intimacy at a distance". Independence is likely to be maximised in situations where individuals' functional capacity can be maintained in such a way as to enable them to remain in their own home and within their own community, integrated within their own network of families, friends and neighbours in an healthy, active, mobile, self-supporting and outward-looking condition. There is, indeed, overwhelming evidence that, where the elderly are offered a range of housing options, they will, wherever practicable, choose to remain in their own homes. There is, furthermore, an effectively universal consensus amongst care agencies - including ministries, local authorities, health boards and voluntary organisations - in favour of a key social policy objective which seeks to enable old people to live as full and independent a life as possible for as long as is possible within own homes and within their own communities and to reduce the number of individuals in long-term institutional care to an absolute minimum. The conclusion is that, in whatever of its forms, independence is highly valued by the elderly as a precondition of a good quality of life and is justifiably identified as a primary objective of social policy. The establishment of independence, within a secure environment, provides an important base from which elderly people should be able to take a full in part in - and contribute creatively to - the normal social life of their community. There is a strong correlation between states of happiness and levels of social activity amongst the elderly.

Informality:

Where supplementary support is necessary there is virtually unanimous support for the principle that, wherever possible, this should be supplied by the individual's own network of family, neighbours and friends. There are limits to informal care which are set by that which can be provided within the community by the family. Where social support is provided it may be confined to measures which prevent family breakdown and which may include (a) measures to slow an elderly person's rate of decline and (b) measures to provide support and relief for family carers.

Information:

Effective policy formulation and decision-making in the field of care provision is critically dependent upon the quality of the information and feedback that can be obtained from the users of services. The systematic recording and dissemination of levels and types of care need in specific locations can provide care managers with a comparative data base which can be used to identify the range of services required and the agencies most suited to their delivery. Overall much more needs to be known about the expectations which older persons have of care provision, of their levels of satisfaction with services, of the true costs of services and of impact upon carers. Information brings empowerment. The information and communication revolution offers the opportunity for the percentage of people who are excluded from social, organisational and political decision making to be reduced. There is here a special role for mediating groups who have the knowledge, skill and motivation to structure and focus that information in the interest of the elderly. Examples include housing associations and the building design professions. The demand is for (i) better informed and better trained care providers, able to make the best use of information services to gain a sound and comprehensive knowledge of the total care needs of the elderly, of the resources available, of their relative costs and of methods of financial management and (ii) better informed recipients, fully aware of the forms of care available to them and of the sources of supplementary help and advice.

Integration:

An integration of the component parts of the social support system - diagnostic, preventive, educative, therapeutic, rehabilitative, maintenance, monitoring and review services - offers the promise of more effective care delivery and the more efficient use of available resources. The precondition is an effective "interweaving" of care agencies, both formal and informal, working in collaboration towards common objectives, on the basis of commonly agreed principles. Interweaving demands of the participating agencies the minimum of demarcation between disciplines, greater imagination, shared accountability, co-terminosity of care boundaries, a willingness to adapt to changing attitudes and expectations, respect for the individual roles and responsibilities of each of the members and a reorientation of professional values.

Interdependence:

Healthy community involvement by the elderly must inevitably place them in a state of interdependence with other members of society. The balance between independence and interdependence can, however, be a precarious one and conflicts may arise between a person's need to remain an independent being and their need for fellowship and to feel needed.

Internalisation:

All goods and services involved in care provision for the elderly should be accounted for in such a way as to reflect the true environmental costs. Thus, for example, energy pricing should identify the external costs (externalities) which energy bears over and above market price. An externality is the residual environmental impact associated with a resource which remains after compliance with environmental standards and includes damage to people, property and habitats. External costs should be internalised in the price of goods and services.

Linkage:

The principle which links health with environment and health care with domestic energy management and environmental protection. These latter processes are then, for the first time, conceived as integral parts of care in the community for the elderly.

Linkage (Continued):

Linkage may be given practical significance through the innovation of local eco-care teams whose support function would be to enable the elderly to enjoy whole health. As such their responsibilities would extend to all of health care energy management and environmental action. The linkage of welfare and environmental concerns as part of a unified approach to the problems of care presents the challenge of reorientation, for care providers and managers. The implication is that energy and environmental education should become part of the standard training for care, housing and social support staff in local authorities and housing associations etc as well as in medical education. Further, measures to improve energy efficiency and environmental performance should be fully integrated within regular care and housing management systems.

Managed Change:

The more diverse or differentiated society becomes the faster social changes occur. Population growth, poverty and economic activity accelerate environmental change. Society needs to formulate a new policy response and to fashion a new framework of legislative and administrative practice which is concerned not simply with maintaining the elderly but with helping them to manage change and, where appropriate, with assisting the process whereby the elderly may find for themselves a new life. Recognition of the value to an ageing person of allowing the process of growing old to progress in a natural way which recognises change as normal, not necessarily to be feared or resisted. Successful adjustment and a painless transition from one life situation to another is often possible, however, only if the right forms of physical, environmental and emotional supports are available which, in particular, allow an individual to maintain existing abilities and regain lost skills.

Matched Support:

The principle that support should be matched to need within the limits of the principle of minimum intervention. Thus whilst support should never be greater than is needed neither should it be less. Many old people are able to live independent lives with a basic level of support from family and friends.

Matched Support (Continued):

Recognition must be given, however, to the fact that, for substantial numbers of elderly whose whole health status is characterised by a combination of low incomes, poor or inappropriate housing, disability, restricted mobility and isolation, either (i) a viable family-based support network does not exist (ii) the family network is too small, fragile or mobile to provide reliable and consistent levels of support or (iii) the levels of support required to maintain the person within their own home are simply beyond those that can be provided by relatives, friends or neighbours. The very old are, of course, the more likely to require frequent and multiple support from a number of different care sources outside the circle of family and friends. This is especially true when the person becomes housebound or bedfast, with environmental factors then becoming especially significant. The incidence of such cases must inevitably increase as the numbers of the very old and potentially dependent individuals within the population increase and as the numbers of willing or able carers decrease as a result of demographic shifts, economic change and greater population mobility. In the face of a growing care gap occasioned by a contraction in the number of informal carers a vital care role is now emerging for the voluntary, independent sector represented by the housing associations.

Mediation:

Valuable support may be provided to the elderly by mediating agencies operating between the individual and the state. There is here an important emerging role for a "third force" such as independent housing associations able to offer services such as dissemination of energy management skills, monitoring and targeting, environmental auditing, troubleshooting, assessing investment potential, preparation of energy efficiency checklists in addition to conventional roles. Theory and current practice seem for once to be moving in the same direction with increasing control being taken away from central providers such as local authorities and towards the independent sector who may be classed as both knowers and carers.

Minimum Intervention:

In practice, whilst many elderly are able to live alone, and despite their inherent determination and resilience to overcome handicap and functional difficulties, the combined effect of age, social and environmental factors means that complete self-care and self-reliance is an option currently denied to the majority of elderly people and most particularly to the very old and the very frail . On this basis it is more realistic to assess independence in terms of the lowest and simplest level of intervention which is appropriate to a person's needs and by the smallest amount of unobstructive supplementary support needed to maintain stability and preserve privacy, dignity and choice. Experience shows that conflicts can arise between, on one hand, a respect for the elderly person's independence and, on the other, a natural but misconceived desire to intervene in the interests of their comfort and convenience and for "their own good" This latter preoccupation with "intervening on behalf of" is the inevitable consequence of widespread adherence in the care of the elderly to a "medical model" of health. Within the framework of the medical model, cure and containment are given prominence over care and things are done to or for the client who is defined largely in terms of physical malfunctioning. Here the client is perceived simply as the object of treatment, with the control to decide what is provided and when being invested entirely in the provider. The result is to encourage passivity and dependence and to deny the recipient the opportunity to participate in a positive way in their care or treatment.

Multi-Disciplined Approach:

A genuinely multi-disciplinary approach to care may variously involve domiciliary services, neighbourhood and voluntary support services, housing agencies, the private care sector, primary health care services, hospital services, and personal social services. As a coordinated activity, care management may be defined as embracing the roles of problem solver, mediator, resource allocator, data collector, services manager, negotiator, counsellor, consultant and advocate The promotion, restoration and maintenance of whole-health in old age must be perceived as a complex process extending beyond the limits of traditional medicine to include environmentalists, energy managers, sociologists, engineers, architects, economists and educationalists as well as the medical and paramedical professions.

Optimisation:

The elderly are entitled to as full and active a life as their physical and mental condition and capacities will allow. A primary objective of care may be perceived as the provision of such support as is necessary to enable elderly people to maintain an optimum quality of life as they become older and as their capabilities and skills diminish. Continuing life satisfaction for the elderly lies with adjustment or adaptation to change and to the social and environmental stressors associated with ageing. Whilst it is an established fact that, in every category of special need including the elderly, the majority of people do continue to live in their own homes with care provided by a member of their family or other carers, care in the community is not an option open to everyone. Yet even those forced to live in institutional care the principle should remain one of enabling them to maintain maximum contact with family and friends and to take full part in the life of the local community. The primary objective here must be to support the highest quality of life that can be attained in given circumstances and to extract the greatest value that can be obtained from the resources available and employed through the appropriate involvement of each of the relevant agencies. An additional element of the optimisation principle is that of an overall increase in the caring capacity of the community through the effective identification and mobilisation of all available resources including, in particular, those of the fitter and more active elderly.

Participation:

The new public health movement seeks the active participation of individuals and communities in decisions that affect their health and in taking the actions required to make them healthier. People should be conceived as purposeful individuals with aims and desires which guide and direct their attitudes and behaviour. All individuals, irrespective of age and disability, should be conceived as active participants in society rather than passive objects. It follows that human populations must evolve effective and coherent socio-environmental policies which not only enable them to live in equilibrium with the ecosystems for the good of their mutual health - each utilising the support of the other without exceeding the limits of stress - but to do so on the basis of greater social equity. Once the principle of independence has been accepted, then the individual must be valued as an active participant in the care process and not merely as a passive recipient of services, the nature and extent of which is determined by the provider.

Participation (Continued):

The principle of participation, in this sense, thus demands that the subject of care be directly and intimately involved in all decision-making and problem-solving processes which affect the type of care they receive and the manner in which it is provided. The policy implications of such a radical departure from practice established under the "medical model" of care are profound, not least in redefining the roles, responsibilities and relationship of informal caring networks and formal social services. People should be involved, as a matter of right, in the planning and delivery of environmental services so that decisions are made with people rather than for people. Embraces the principles of public participation and empowerment, cooperation amongst agencies, equity, and the development of positive health services at a local level.

Partnership:

Effective care for the elderly demands a close and flexible partnership between the statutory, private, voluntary and informal divisions of care. Fragmentation of care provision and lack of coordination may be the cause of both confusion and inefficiency and may place the elderly unnecessarily at risk. The effective delivery of appropriate and continuous forms of care for the elderly, with the objective of maintaining or reintegrating potentially dependent elderly people safely within in the community on the basis of their diverse and changing needs, requires collaboration and co-operation between many different care agencies and interests, with different forms of care complementing rather than competing. The essence of effective care management in these circumstances is then the coordination of organisational and administrative effort at a community level and the removal of bureaucratic barriers and divisions.

Prevention:

Care should be predicated upon the assumption that many problems - physical, social and environmental - which beset the elderly and which adversely affect their quality of life in old age are avoidable. Through a combination of both social and environmental measures including, in particular, those designed to promote self-care and to prevent the breakdown of family relationships, loss of fitness can be prevented, independence maintained and admission to residential institutions avoided.

Prevention (Continued):

Health care should be directed towards the prevention of disease and disability and the improvement of environmental quality. A rational and effective care service for the elderly must be built around a concerted programme of preventative action with the following components: (i) an organisational structure which facilitates integration (ii) a clear method for deciding priorities (iii) multiple choices of care (iv) access to hospital services when necessary (v) access to long-term accommodation when appropriate. Three levels of prevention should be recognised. These are primary prevention which involves the direct elimination of those stressors which cause loss of whole health; secondary prevention which involves the identification of subjects with predispositions to illness and dysfunction, and tertiary prevention which involves the early identification and treatment of ill health. Health promotion should involve the population as a whole within the context of their everyday life and should be aimed at active and effective public participation.. Health promotion best enhances health through integrated action directed at all the factors determining health status - economic, social, environmental and personal. The principle of prevention focuses attention upon access to health; to the development of environmental settings conducive to health; to the strengthening of social networks and supports; to increasing knowledge about health and its indicators; to the wider dissemination of information relating to health and to the promotion of positive personal adaptation strategies.

Primacy:

The principle of putting people first within a context in which ecological and health-equity imperatives are seen as interdependent (but see also the principle of ecocentrism). People should be seen as being of greater value than material things and priority given to meeting basic human needs. A unified socio-environmental care policy should start with an assessment of the basic whole-health needs of poor and vulnerable groups and seek to determine what kind of environmental as well as social policies are required to meet the basic needs of sustainability, health and equity. Thus, in particular, energy policy should be developed not simply in terms of energy saving but in terms of resolving pressing human problems arising from excessive fuel bills, dampness, cold and ill health.

Proactivity:

Care for the elderly should be planned and anticipatory rather than reactive, with the establishment of clear guidelines and objectives which focus attention on ends rather than means, which stress action rather than structure and which provide an unambiguous definition of responsibilities to ensure that accountability is clear and that the right care is provided for the right individual at the right time. Effective management of change demands advance intelligence, a comprehensive register of need, openness in communication and effective systems of information handling.

Quality:

A product or service can be termed high quality if it is produced or provided in a way which is not detrimental to the environment. Performance standards and targets should be set for care services which incorporate the principle of quality and involve a recognition that settings for care are made more humane through measures which protect and improve the environment. Conversely, performance standards should be set for all energy related services which promote concern with healthy living conditions; which take account of human biological needs and which ensure special protection for low income groups. A quality care service serves the interests of the whole community as well as those of the individual service user. As a quality service, eco-care (i) recognises that the main purpose of welfare is to promote equality (ii) embraces the concepts of responsiveness i.e that of listening and responding flexibly to the diverse and changing needs of the population and (iii) promotes empowerment, both an end in itself - because a basic welfare goal is to give people more control over their lives - and a means to an end because a more powerful citizenry will insist on higher quality of care. Linked with the idea of environmental citizenship.

Reciprocity:

The principal of reciprocity states that social life is made possible by a three fold obligation - the obligation to give, the obligation to receive and the obligation to reciprocate. The gift exchange does not have to be symmetrical but it does have to occur. The principle of reciprocity introduces the idea of two-way "flows" of caring and the concept of interdependence rather than either independence or dependence.

Relativity:

Recognition must be given to the fact that such concepts as independence, privacy, self-determination, responsibility, choice and the right to live among ordinary people rather than in an institution - whilst the justifiable entitlements of the elderly, irrespective of age, frailty or disability and the essential preconditions of quality of life - are, in practical terms, entirely relative and as such are difficult to either define with precision or evaluate in any absolute sense. Thus, whilst independence is almost invariably seen as desirable by providers of services to the elderly, there are circumstances in which independence may actually make the quality of life worse by increasing isolation or, paradoxically, in leading to increased dependency on others. Interpreted in this way, independence may require the provision of support and patterns of care within the home from a wide range of services presented within a non-institutionalised setting to enable the elderly individual to cope with dysfunction and to prevent their isolation from the community.

Self-Care:

The ultimate measure of independence might be taken to be the degree to which the individual is able to accept responsibility for his or her own self-care. Self-help programmes which involve elements of prevention, detection, education and rehabilitation together with measures to improve performance through stimulation and motivation can enhance a person's sense of dignity and self-respect and make an important contribution to the prevention of loss of function. A specific example is that of the individual as energy manager. The individual can be conceived as an important manager of energy resources as the means of maintaining, comfort, health and amenity. Follows from the idea that environmental conditions are constantly changing within a range and that this variation can be actively regulated by the individual provided they can identify the changes and have the knowledge and understanding necessary to affect necessary and appropriate change. May be associated with home energy audits and the development of domestic energy and environmental monitoring systems which would provide user with feedback information on environmental quality, fuel consumption and energy costs. Concept may be promoted by emphasis of the linkage with personal health care.

Self-Determination:

The notion of whole health implies that not only must basic needs be satisfied but that people must be put in a position where they have a say in how they are satisfied. Fundamental to their self-esteem, social status and well-being is a recognition of their right to make meaningful choices about the way they live their lives and about the things that are done to them and for them. In practice there is an inherent tendency - partly age-related but principally the result of socially-induced factors - to deny and reduce such choices to the elderly. Such a tendency must be countered by the more radical perspective of the elderly as individual members of a purposeful organisation capable of a large measure of self management.

Settings for Care:

Life is given significance through the relationship between an individual and his or her environment and thus great importance attaches to the quality of the environmental setting for care. Appropriate living environments for the elderly individual should offer a safe but positive setting which is warm and domestic in character, encourages social engagement through convenience to shops and other social amenities and services but which affords privacy when required, promotes and supports meaningful activity and provides opportunity for the exercising of choice. Space standards should be such as to allow for a variety of lifestyles between different occupants and over time. Housing environments for the elderly should be accessible, affordable and easy to manage. Environmental design should take positive account of the functional limitations of the elderly, including constraints on climbing, reaching, stretching, bending and gripping and allow for their loss of perceptual acuity, reduced sensitivity and slower reactions. Social support for the elderly in the form of the (a) the provision of appropriate environmental services and facilities and (b) the effective management of their living environments, is of prime importance to their overall health and well-being. Furthermore, in the context of whole-health, a fundamental principle of social support must remain that the response to environmental need should take account of the informed wishes and preferences of the elderly person in question as distinct from their needs as perceived by others. The means of provision must take account of whether needs can actually be best met through physical design or through the provision of appropriate services - either within the person's own home or in purpose- built or adapted accommodation.

Settings for Care (Continued):

The objectives of care management must be to create an environment in which integrated support systems can flourish, based upon a common overall philosophy of care within the context of a problem- rather than a process-orientated approach.

Stability:

A characteristic of life for many elderly people - particularly the very old, living alone and afflicted by chronic ill-health - is the vulnerability and instability that are so frequently associated with a combination of failing physical health, loss of functional capacity, reduced incomes and increased isolation. An elderly person may be able to maintain a state of social equilibrium only with difficulty and this precarious position can be unbalanced by either an sudden, acute breakdown in the provision of care or by a slower, more progressive decline in an individual's social competence and function which is finally triggered into crisis, often by some relatively trivial event. The probability of such an occurrence inevitably increases with increasing age. A truly supportive and compensatory care policy must thus ensure that life changes for an elderly person can be managed in such a way as to maintain stability and reduce such vulnerability. The objective of supportive care must then be to create security and to provide protective social, economic and environmental settings within which the vulnerable individual can live a safe but still challenging and stimulating existence of as high a quality as possible.

Subjectivity:

The principle of giving prominence to the views and preferences of the individual subject of care. If the maintenance of independence is to be respected as a principle objective of care and if participation is to have real meaning then it must logically follow that, where alternatives exist (including always the alternative to do nothing), the wishes and feelings of the recipient should be paramount. The subject's own views of their problems - be these interpreted as physical, social economic or environmental - and of his or her associated care needs should, in the final analysis - and with full regard to resource implications - be given precedence over those of service providers and funders. Only if care services are adapted to individual needs rather than requiring the individual to fit the service can care genuinely be said to maximise the range of choices and options available to the elderly.

Sustainability:

Sustainability is the key to health, equity and, ultimately, survival. The principle of sustainable livelihood security applied to eco-care embraces the ideas of (i) adequate resources to meet basic needs (ii) secure ownership and/or control over those resources by the recipient of care and (iii) the long term maintenance of that ownership or control. Sustainability implies that environmental considerations must be fully integrated into decision making, in the field of health-care and social support. In particular the social system that should provide for solutions to the tensions which arise from disharmonious development.

Symbiosis:

The holistic model of health places the person in a symbiotic relationship with his or her environment and in particular with the ecosystems which collectively constitute the natural environment. Human health interventions should aim as far as possible to work with natural biological systems rather than mechanically imposing themselves on them. The physical, social and economic structures of the communities of which the elderly are a part should reflect and promote diversity and variety in both need and provision. Where artificially created systems exist they should be as closed as possible to ensure sustainable utilisation of resources. Applied to energy management and environmental protection processes this principle would mean that (i) resources should be used as efficiently as possible to ensure the minimisation of socially unacceptable and economically undesirable environmental damage (ii) maximum use should be made of energy from preferably local sources which are dependable, safe and environmentally sound (iii) the best use should be made of human energy potential. (iv) human and solid waste should be recycled locally wherever possible.

Whole-Person Care:

The essence of care is a concern for the complete well-being of others and an attendance to those needs which affect their welfare, quality of life and whole health status. The concept of whole health explicitly assumes satisfaction of the needs of the whole person and thus effective care must be whole-person care, dealing with multi-factorial problems of the individual. In particular the benefits of care should be social and psychological not simply physical.

Whole-Person Care (Continued):

Care provision should be based upon a comprehensive understanding and acceptance of the full range of individual life patterns, needs, aspirations and preferences, and which may be practical, social or emotional in character. In particular, care provision should counteract the emotional and intellectual deprivation, low aspirations and the "depressing poverty of expectation" which can be the consequence of increased levels of dependency, lack of stimulation and limited opportunities for exercising choice and which can lead to a deterioration of quality of life and sense of well-being.

Postscript

In the Introduction to this thesis it was stated that the principal stimulus for the research was provided by an informed belief that both the causes and the effects of accelerating social and ecological change on an unprecedented, global scale would have profoundly adverse, destabilising and inequitable effects on the most marginalised members of populations - the old, the poor and the sick - unless and until a new and unified approach was adopted to the problems of **age**, **health** and the **environment**. From such a perspective, the consequences of any failure to respond to what is understood by the author to be nothing less than an ecological imperative must be seen as environmental degradation, loss of essential habitats, loss of biological and genetic diversity, depletion of finite natural resources, acute global-scale poverty, social dislocation, threats to the health of vulnerable groups and the reinforcement of inequities in health status both between and within populations. At the extreme, what is held to be at risk is nothing less than the survival of the human race itself.

In the supported belief that contemporary social policies relating to the care of the elderly fail adequately to address emerging environmental concerns, and that existing and proposed environmental policies lack a necessary social dimension and fail therefore to account for the needs of vulnerable groups such as the old and the poor, a genuinely sustainable future, in which the whole health needs and rights of the elderly are appropriately identified and satisfied both by and within the community, is assumed to depend upon a fundamental and permanent reshaping of social and environmental policies which would allow progressive and remedial change to be accommodated without endangering further the health of either planet or population.

The notion of whole health as defined explicitly embraces the ideas of equity, independence and of access to - and individual rights of control over - the resources and the means of care required for the maintenance of whole health. The consequent demand is thus for decentralised, participatory systems of care for the elderly which are based upon a unified set of principles derived, firstly, from the assumption of interdependent demographic and ecological imperatives and, secondly, from the adoption of a whole health model of care. Such ideas have been the driving force behind the formulation of the principles of eco-care.

The role of eco-care has been defined as the promotion and maintenance of whole health by providing socio-environmental support and alleviating socio-environmental stress. A key element of eco-care is the belief that equitable social policies will help to secure and enhance the health of the planet whilst sound environmental policies will enhance the well-being of populations. The foundation of eco-care is the perception of the elderly as "active individuals with unique and diverse needs and possessing the capacity to make decisions affecting their own lives and those of their environment rather than as passive, dependent members of a homogeneous problem group whose needs can only be effectively addressed by centralised planning decisions".

In the course of the study the attempt has been made at all times to follow a logical, informed, balanced and reasoned path from initial premise to final conclusion. But at the very end - and precisely because one of the principal outcomes of the study is the advocacy of radical change in the structure and content of social and environmental policy - it is necessary to remember Cromwell, and think it possible that one may be mistaken.

Suppose, most especially, that the essential belief in an ecological imperative proves unfounded. The "uncertainty factor" has been clearly recorded in Chapter 1. In the autumn and winter of 1991 (just six months before the "Earth Summit" in Brazil) the correspondence columns of the weightier British newspapers have reverberated to the clash of environmental opinion-makers disputing the issue of global warming, and variously questioning the diagnosis, the prognosis and the prescription. The debate has become increasingly acrimonious with accusations of "eco-terroism", illiberalism and authoritarianism being levelled at advocates of "green" policies (such as that of sustainable development) as widely dispersed on the political spectrum as Sir James Goldsmith and Jonathan Porritt.

Behind the rhetoric the essential charge seems to be that understandable public concern over issues such as global warming and ozone depletion is being cynically and unjustifiably stimulated and exploited by green/red activists in order to provide the excuse for the imposition of a radical and dogmatic political agenda on society. What is conveniently forgotten is that the real driving force for fundamental change in the face of an accepted environmental threat is coming from world governments of all political persuasions and on both sides of the East/West and North/South divides and, perhaps most surprisingly of all, from the major capitalist industries. As a footnote it should be added that the prescriptions of eco-care advocated in this study embody the principles of equity, independence and decentralised decision-making - the precise antithesis of the supposed "illiberal tendency".

It is not necessary to be certain; not even to believe in the probability of impending ecological disaster, in order to advocate changes which will secure a healthier and sustainable future for all populations and all sections of those populations. It is only necessary to accept the reasonable possibility that overconsumption and overpopulation are contributing substantially to a global ecological imbalance which is being reinforced through negative feedbacks and whose impact is potentially disastrous. It is then only necessary to consider the opportunity costs of not taking the necessary action in time. For many - the author included - the possibility that, by the time certainty exists, it may very well be too late, is a powerful case for taking preventative action now as insurance.

And if the threat turns out to have been illusory, misconceived or misinterpreted? What will have been lost?. The question should rather be what will have been gained. Irrespective of their genesis, the prescriptions of eco-care are prescriptions which carry inherent and profound benefits for the health of human communities. Worldwide there are hundreds of millions of people without the basic human needs of adequate food, shelter, clothing and health services. The elderly are particularly disadvantaged, and are often the poorest and most neglected members of contemporary societies. Irrespective of any threat this poses to the environment this is an intolerable situation in human terms. Inequality in the states of health of people within and between countries should be politically, socially and economically unacceptable whilst, on the positive side, social justice is actually a crucial determinant of health standards throughout society so that the smaller the gap between rich and poor the higher the society's overall standard of health.

As further supporting evidence, it is worthwhile restating the arguments of an earlier section of the study:

Equitable social policies will help to secure the future of the planet whilst sound environmental policies in the fields of energy use, building design, transport, agriculture and land-use will both directly and indirectly enhance the health and well being of populations through improvements in the quality if not the material measures of life. These are benefits which must be properly accounted for when the potential costs of restructuring society and its institutions in response to the ecological imperative are assessed. In the same way the opportunity costs of not taking decisive action - the costs, for example, of impaired human health, increased mortality, higher demands on the health and social services systems, resource depletion and diminution of personal choice - must be included in a full evaluation of profit and loss.

Whatever the scientific uncertainties, the one clear and critical fact is that, with a remarkable and unprecedented degree of consensus, the powerful decision-makers of the world are actually behaving as if there is an ecological imperative and formulating and implementing policy accordingly. What is extraordinary is the rate of change. Just a couple of years ago few people - amongst them the author - would have believed that on Friday the 13th of December, 1991, two days after the European Summit at Maastricht introduced majority voting on environmental policy issues, the Secretary of State for the Environment, Michael Heseltine, would signal, for the first time, that Britain would positively support a European Community initiative to introduce an "energy tax" as part of the drive to cut global carbon-dioxide emissions.

A recurrent argument throughout this study has been precisely that such national, European and international policy initiatives on the environment - welcome in themselves - nevertheless have enormous implications for the whole health and care of the elderly which may be both positive and negative. The conclusions of the research are that, against this background, the protection of the interests of the elderly as well as those of the environment can only be secured through a unified approach to social and environmental policy, embodying the principles of eco-care.

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