

Socio-cultural and Spatial Approaches to Environmental Health in Urban Contexts

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Introduction

Human health is largely determined by the environment in which people live (Glass *et al.* 2006). In contemporary global society there are serious environmental health problems such as indoor air pollution from the burning of biomass fuels, contaminated drinking water, waste disposal, poor housing conditions and environment related stress (Black 2000; Schwartz & Martin 2006). However, the links between human health and the environment are complex (Corvalan *et al.* 1991). Glass *et al.* (2006:454) make it clear in their research that people are exposed to a multitude of influences such as toxic chemicals, physical hazards and pollutants that impact on people's health and their quality of life. These impacts can be direct or indirect, for example, inhaling polluted air or indirect through the consumption of polluted water or unprocessed contaminated food. Due to population growth, industrialisation and urbanisation, environmental hazards are becoming increasingly evident, especially in developing countries (Glass *et al.* 2006). Informal settlements and slum areas pervade cities of developing countries. The author's research in three informal settlements in the Durban Metropolitan area indicated that people live in poor, crowded housing and unsanitary conditions, without access to basic needs such as portable water, sanitation, refuse removal and generally unsatisfactory residential environments that cause risks to people's health. The problem is compounded by people's low socio-economic status. Poor people living in these conditions do not have the power to control nor do they have the inclination to change their living or residential environments, thus increasing

the risk of disease and ill health (Moodley 2002). The magnitude of environmental risk factors is significant as demonstrated by Caincross *et al.* (2003:2) who state that environmental risk factors account for 21% of the overall burden of disease worldwide. Moreover, they assert that about 1.7 million children die each year from diarrhoea associated with inadequate supplies of water, sanitation and hygiene.

To understand the socio-cultural, spatial and environmental influences on people's health, this article utilises a geographical perspective. The adoption of this approach is based on the premise that 'all science tries to make a logical, linguistic reconstruction of reality. This reconstruction is always made in terms of an existing scientific language and within a major (disciplinary) frame of reference' (Lafaille 1993:2). Lafaille (1993:2) goes on to state: 'there is no one reconstruction of reality and similar observations can generate an endless series of interpretations or conversely theoretical interpretations and models can generate their own observations in relation to time, place and context'. Within the disciplinary approach used, this paper is embedded in numerous related contexts such as the spatial, social and the natural environment. Generally though, the most important context is spatial that is, where people are located and how they interact with the environment. Secondly, there is a social context in which health and health care is seen in relation to the nature of society. Finally, the natural environmental context and its healing powers and properties are discussed. These different contexts will assist in describing and explaining health and health care in contemporary society.

Within the geographical perspective, the focus is on the sub-discipline Medical Geography, where, in recent years, there has been a growth in interest in geographical aspects of disease, nutrition and health care systems. The result has been an introduction of competing concepts and definitions to Medical Geography leading to an epistemological debate. Barrett (1986:24) contributes to this debate by asking a fundamental question: 'What is Medical Geography?' By examining various propositions Barrett (1986) concludes that the place of Medical Geography in Geography as a discipline is characterised by the notion of location factors and the environment's influence on health. Therefore, it is easy to establish, according to Barrett (1986:25), that Medical Geography has a place in Geography due to the fact that the primary cause of disease is not found in

the host itself, but the cause of disease is found in the environment as will be elaborated below.

Medical Geography

Numerous lucid statements have been made describing the nature of Medical Geography as a discipline. Emphasis is placed on the basic concept that disease may be regarded as the interaction between agent, host and the environment (Dubos 1965; May 1960). However, Akhtar and Hunter (1991:6) state:

The discipline of geography does not claim that such dynamic or relational analysis is its exclusive preserve, but what is geography if it is not a discipline that focuses on the analysis of man (human)-environment interactions?

The field of Medical Geography is usually defined as ‘the application of geographical concepts and techniques to health related problems’ (Akhtar & Hunter 1991:7). Medical Geography studies the geography of health care, the geography of disease and also the geography of nutrition. Studies focus on the lack of health care, the consequences of disease and the attempts to create systems that may restore lost health. There is no direct study of health, but instead, ‘meaningful associations are made between health, the quality of health care systems and the environment’ (Barrett 1986:26). Reliance is placed on systems related analyses of human-environment interactions through time and over space. Geography is broad ranging and committed to interdisciplinary activities in concept, content and techniques (Philips 1981; Akhtar & Hunter 1991).

Medical Geography is largely an applied and empirical sub-discipline which has developed over several decades (Jones & Moon 1987). A common theme in Medical Geographical studies is the need for dynamic equilibrium between people and their total environment. Here the interactions between physical and socio-cultural factors become vitally important. The way in which humans adapt their behaviour to the changing environment can disrupt the balance and result in the emergence of new diseases or health patterns (Akhtar & Hunter 1991). Stilgoe (2001:243)

reminds us that from the early 1970s geographers such as Yi-Fu Tuan have paid attention to the changing human interactions with the natural and built environments.

According to the stalwarts of Medical Geography (Learmonth 1988, 1991; Verhasselt 1981), the discipline developed methodologically from pure disease mapping to an ecological approach and to spatial analysis. The scope of geographic contributions to health and disease is enormous. Geographers and medical scientists and health professionals differ in their approaches. For example, epidemiologists concern themselves mainly with groups that suffer from particular diseases as epidemiology is the study of the occurrence and distribution of disease usually restricted to epidemic and endemic diseases (Learmonth 1988, 1991; Verhasselt 1981). On the other hand, Medical Geographers concentrate on the region where people are seen in the context of spatial or regional patterns. They tend to look at ground patterns for data extraction and to make inferences. This is called disease ecology and defined by Akhtar and Hunter (1991:4) as 'regional variation in environmental conditions related to disease incidence and prevalence'. The discipline also 'describes, understands and explains spatial variations in health, disease and health care' (Learmonth 1991:51). Attempts are then made to address spatial health problems, define solutions and measure the effects of actions to improve health (Akhtar & Hunter 1991; Singleton 1994).

Since disease and illness vary geographically, Foster (1992:427) is of the opinion that geographers can make a major contribution to reducing suffering and increasing life chances. This is possible if they are able to establish the causal links between specific diseases and the environment. It involves geographers finding marked similarities or differences between a disease pattern and a suspected geographical causal variable. To understand clearly the nature of these dynamics, there is a need clarify some key concepts such as health, public health and environmental health. This is undertaken in the section below.

Some Key Health Concepts

The definition of health is problematic. The traditional way of defining health by the World Health Organisation (WHO) was the absence of disease

or illness. This was a very negative and limited definition that did not indicate what health is. The focus was on physical health issues with little attention being paid to mental, behavioural and social health. To meet these criticisms a broader definition was adopted. In this revised definition, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The WHO also recognised that a high standard of health is 'a fundamental human right regardless of social or economic conditions, religion, race or political affiliation' (WHO 1983:11).

The broadened definition not only stressed the absence of disease but also included non-physical aspects of the quality of life. It includes a tripartite conceptualisation which entails the ability of a person to function in an environment, that is, the mental, physical and social dimensions of health (Kronenfeld 1993). The importance of WHO's definition lies in its conceptualisation of health as a social phenomenon as opposed to the outcome of medical care. The effects of social inequalities on health are also of great importance. For example, in South Africa the highest standard of health care was not attainable by all because political, economic and social inequalities stratified South African society. This determined and still determines illness, disease patterns and health care in the country.

The concept of public health also needs some clarification. The Research Unit in Health and Behavioural Change (RUHBC) (1989:22) considers public health 'as a concept and as an activity as wide ranging'. It is an organised response to the protection and promotion of human health. Concern is with the environment, disease control, the provision of health care, health education and health promotion. The medical model places the individual at the centre of intervention whilst public health focuses on changing individual behaviour to prevent health problems and in this way make improvements. Most current health initiatives emphasise individuals as agents of their own health. This approach is deemed to be ineffective in reducing disease because it draws attention away from social, economic and environmental conditions which create vulnerability to illness and disease. Health promotion is broader as it includes professional practice, policy-making and socio-environmental issues (RUHBC 1989). However, the view that dominated both professional and lay views of reality is clinically orientated and seeks explanation in disease specific models. The majority of disease and the highest causes of mortality are found disproportionately

amongst the least affluent members of society and tend to cluster in areas of deprivation and disadvantage. Trying to change the habits of people in these areas, even if it were successful, would do little to change overall levels of health. The conditions that give rise to health problems would remain the same (RUHBC 1989).

There are three types of individual health behaviour (viz. health enhancing, health maintaining and health damaging behaviour). Health enhancing behaviours are those that are consciously undertaken by individuals to improve health. Health maintaining behaviours are those considered by professionals as behaviour related to prevention. These are independent of the formal medical system, for example, the use of vitamins or self-care. Health damaging behaviours are negative health behaviour such as smoking or drug abuse. These definitions are 'individually based and cannot be applied to collective behaviour but are properties of social systems' (RUHBC 1989:24).

An empirical policy related aspect of Medical Geography (Eyles 1997) which also needs clarification is environmental health. Last (1987:131) defines and helps frame the concept as an:

Aspect of public health concerned with all the factors, circumstances and conditions in the environment or surrounding of humans that can exert an influence on human health and well-being.

According to Margot *et al.* (2003:669), environmental health is the theory and practice of assessing and controlling factors in the environment that can affect the health of people. Traditionally, the basis of environmental health was the natural and physical sciences such as medicine, chemistry and ecology. Thus practitioners concerned themselves more with the biophysical effects on human health. Environmental health is also 'an essential component of health services as it includes disease prevention, health promotion and health care' (Gordon 1991:5).

The early ideas on present environmental health emerged from the work of Winslow (1920 cited in Eyles 1997:16). According to Winslow (1920), public health is characterised by the science and art of preventing disease, prolonging life, promoting health and well-being through organised community effort for the sanitation of the environment, control of

communicable infections, organisation of medical and nursing services for the early diagnosis and prevention of disease, education of individuals in personal health, and the development of social machinery to assure a standard of living adequate for the maintenance or improvement of health. Environmental health is, therefore, about the prevention of disease and the promotion of health in environments or geographically-defined populations. This includes not only disease prevention and health promotion but also the monitoring of particular environments for adverse impacts on human health (Eyles 1997). Eyles (1997) also demonstrates the importance of traditional applied environmental health practices, especially in urban areas. Housing and neighbourhoods have become significant elements of traditional public health as it impacts on a person's social well-being. Poor neighbourhoods with none or inadequate services and facilities will negatively influence people's health. For example, poor water supply and sanitation may lead to diarrhoea or poor unhealthy living conditions to respiratory infections. In this respect, more and more attention is being placed on sanitation, crowding, zoning, undesirable neighbours and facilities, and people's impacts on the environment. Open fires, home heating, incineration, rubbish dumps, for example, affect residential environments but have different impacts on individual and community health and the general quality of life or well-being of people. The situation becomes even more complex when one analyses the terms health and the environment as discussed below.

The definition of the terms health and environment have sometimes become problematic. Health is often used synonymously with the term quality of life and well-being. Health needs to be seen as a positive state and not only as something which has the potential to improve the quality of life. There is a need for the 'complete physical, social and mental well-being of people' for their effective functioning in society (Eyles 1997:2). The environment has also broadened in scope with emphasis being placed on the relationship between society and the environment. It informs on such issues as the nature of existence, truth and beauty. These worldviews act as partial ideologies that provide an existential orientation to society's members (Dickens 1992). Lynch (1981) suggests three normative theories: cosmic, machine and organic. The cosmic comprises of magical and mystical relations between the environment and the Gods to ensure order and harmony in the cosmos. The machine focuses on the interdependence and

repairable parts whilst the organic rejects the standardisation of the machine and argues for a dynamic, self-regulatory entity. In the organic theory, a balance between diverse elements determines health. This enables the extension of worldviews to include the natural world that is viewed as an ecosystem through which humans could be understood by their relations and impacts on the natural world (Lynch 1981). To understand the dynamic links between the socio-economic circumstances of households, environmental influences, and health and wellbeing of people, there is need to turn to some conceptual models. A review of the literature has drawn attention to numerous conceptual models, the most relevant of these will be briefly explored in the next section.

Conceptual Model of Environment and Health

Placing health issues in relation to environmental influences stands in contrast to the conventional biomedical approach that tends to focus on 'physical health outcomes in relation to access to western medicine' (Beck 1993:41). The environmental health perspective encourages an in-depth understanding of the influence on health of a household's socio-economic context: the socio-economic realities of specific households and communities mediate the interaction of people with their physical environment and health care systems. This relationship is clarified by Songsore and McGranahan (1993:12) who state:

Household's socio-economic circumstances help determine their members' access to environmental services, exposure to environmental hazards, hygiene behaviour, and capacity to undertake protective measures. Often, it is changes in households' socio-economic status that holds out the best hope for improvements in their environment and health.

Songsore and McGranahan (1993:17) also provide a conceptual model based on the work done by Beck (1993) and Blacker (1991) that elucidates the linkages between the environment, wealth and health. The conceptual logic of this model is that differentials in the population are a function of the interaction of environmental risk factors and socio-economic factors in

specific locations. The rationale is that urban environments are highly contested as different groups and individuals compete for resources and space. In this model, urban spaces are made up of two main aspects:

- the ecological context that is a product of both natural and human created or influenced factors; and
- the prevalence of vectors, pathogens and other hazards that arise from the ecological environment.

The ecological environment includes natural factors such as climate, geology and topology, naturally occurring toxic chemicals, and natural disasters such as floods and earthquakes. The anthropogenic factors include housing type, population dynamics (linked to crowding), adequacy of water and sanitation services, waste disposal methods employed and energy/fuel use (Songsore & McGranahan 1993). Focus is also on the role of social, cultural and economic development as forces which drive ecosystem change at all scales from the local to the global. Attempts are made to link 'health patterns with population growth, resource depletion, environmental deterioration and the cultural and social changes that are the outcomes of globalisation' (Margot *et al.* 2003:671). It is also argued by Songsore and McGranahan (1993:17) that human-beings are both 'biological agents of disease transmission and social agents of stress, violence and substance abuse'. Environmental risk factors are therefore linked to human as well as natural influences that determine levels of exposure to conditions causing ill health.

It is therefore evident that the complexity and magnitude of health issues in cities require the adoption of an integrated approach which considers the wider socio-economic and environmental factors affecting health. Social processes are often of even greater importance in determining the health status of individuals and communities. The political and legal organisation of the policy-making processes can be identified as the major determinant of urban health due to its role in creating possibilities for participation as well as its influence on the content of public policies and distribution of resources (Montiel & Barten 1999).

As early as 1992, world leaders recognised the importance of health and the environment for sustainable development and improvement in the

quality of life. This is reflected in the adoption of the principles of the Rio Declaration and Agenda 21. The central aspect of sustainable development was human health (Corvalan *et al.* 1999). According to Corvalan *et al.* (1999:656), quoting Principle One of the Rio Declaration, 'human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'. Various other international conventions followed which also focused on alleviating poverty and improving health. For example, the Millennium Development Goals (MDGs) adopted by the international community in 2000 focused on alleviating rural poverty. It was recognised by the international community that the foundation of rural livelihoods was the ecosystem which played 'a central role in the health, nutrition and sanitation of rural populations' (World Resource Institute [WRI] 2005:1). Progress towards the key MDGs will be accelerated through improved environmental health conditions, in particular, 'the goal for improved child health, access to water and sanitation and environmental sustainability' (Caincross *et al.* 2003:2).

Caincross *et al.* (2003:2) further state that 'good health is both an end and a means of sustainable livelihoods'. For poor households, health is an essential asset in the pursuit of their livelihoods. However, their home and work environments often threaten their health. 'Improving environmental conditions is therefore basic to the creation of sustainable livelihoods and the elimination of poverty' (Caincross *et al.* 2003:2). The WRI (2005) commenting on the publication, World Resource (2005), states that income from ecosystems can act as a stepping-stone in the economic empowerment of the rural poor. The poor must be able to manage the ecosystem. However, they must be given the power to manage resources that they do not presently have (WRI 2005:1).

There has thus been a major focus on the relationship between development processes and health. Pick *et al.* (2000) show that in developing countries the weakening of economic opportunities and income flows, especially intra-family income flows. This is often accompanied by a weakening of the health status of individuals and families as well as an increase in poverty. Studies pertaining to the impact of HIV/AIDS on individuals and households indicate that changes in the health status can dramatically impact on people's quality of life, including their ability to participate in and benefit from development activities and processes (Bond

1999; Dorrington 2000; Gray 2000). This is because one's health status can influence one's ability to access resources and skills in the development process.

In South Africa, as in the rest of the world, poverty and poor health affect people from different backgrounds including race, gender, age, sexual orientation, location and ethnic differences. However, the extent and nature of poverty and disparity between and among these groups differ considerably. For example, studies show that Africans are disproportionately impacted by poor health and poverty more generally (Bradshaw & Buthelezi 1996; Bond 1999; Curtis and Taket 1996; WHO 2000). A glaring disparity in the South African context is the vast differences between urban and rural areas. Furthermore, research indicates that experiences of poverty and development (including the provision of and access to health care) are highly gendered (Bob 1999).

Werna *et al.* (1999) show that the beneficiaries of health projects where poor and illiterate people are involved are typically characterised by limited participation. They are extremely vulnerable and have limited access to information because of the lack of accountability. Broadly speaking, development initiatives have gone a long way to raise awareness of health issues and place health on the development agenda. However, development initiatives operate within specific social and economic contexts that are not static but constantly changing. According to Doyal and Pennell (1983), capitalist development has meant that the living conditions of people have improved and to some extent ameliorated the physical health of people. Doyal and Pennell (1983) also illustrate that the same process has tended to have negative consequences on the health of populations in developing countries. In both developed and developing countries marginalised groups tend to be the most vulnerable. Additionally, they show that new hazards have been created in developed countries with large scale social, technological and economic changes in its developmental path. Birley (1995: 11-12) provides some excellent examples of the linkages between health and development in the transport, mining, energy, agriculture, public service and manufacture and trade sectors. For example, communicable disease such as HIV and malaria may be transferred along transport routes. Also, lung damage to miners caused by dust and air-borne pollutants through the burning of fossil fuels affects the health of individuals in confined spaces

and crowded cities. It is also evident that many people are still dying prematurely in society and this is related to social and economic conditions. People sometimes cannot adapt to new environmental conditions. Because changes have occurred in the relationship between humans and their natural world, rapid biological adaptation is difficult (Doyal & Pennell 1983).

Health conditions are also rooted in the social conditions of a society. In developed countries, there are two important measures that promote health, that is, improved nutrition and environmental hygiene (Aston 1992). Environmental hygiene comprises of improved water supplies and sanitation to reduce faecally transmitted diseases. In the control of epidemic and vector borne diseases, striking advances can be made as evidenced in China and Cuba (Bradshaw *et al.* 1996). In these countries, environmental improvements clearly show the interconnectedness of health promotion, the political process and the reversal of underdevelopment.

Most people are not aware of the need nor do they have the means to interrupt disease. They are not encouraged to participate in collective activity. People should be encouraged to co-operate in case-finding and treatment to improve environmental sanitation (Gwatkin & Guillot 2000). For example, people should be educated on personal hygiene and ways to treat contaminated water to make it safe for drinking. They should also be taught how to dispose of excreta and other waste safely. They should be conscious of the reasons for undertaking these activities and convinced that it is in their collective interests (Leahy 1996). Another concern identified by Gwatkin and Guillot (2000) is that health care systems tend to be dominated by the State, the medical profession and business interests. These structures and institutions assist in maintaining the system that perpetuates underdevelopment and ill-health. There is an urgent need to change the nature of the medical contribution and create a situation in which health care is no longer a commodity owned by the medical profession. This can only be established by an economic system other than the capitalist system. Only in a few countries has the capitalist system been overthrown and an economic system been implemented to service social need (Sanders & Carver 1985). Changes in health follow rather than precede fundamental social change. However, recent changes and problems in Eastern Europe, for example, illustrate that socialist transitions are highly complex and differential. Furthermore, the impact on health care and general health of populations is

not necessarily better in socialist as compared to capitalist countries. Variations exist between countries with similar political and socio-economic orientations and within countries in relation to individual health, environments and access to health (Sanders & Carver 1985).

The concept of health and illness are complex products of social groups in which they develop. Many factors such as location, political, economic, cultural and phenomenological issues must be taken into account in the social construction of health and illness at micro and macro levels. Variables such as occupation, social class, race, age, gender and ethnicity effect health. The way these factors are mediated through cultural norms and acquire meaning at the individual level have practical implications for health and illness (RUHBC 1989). The reality that is constructed is through human action and cannot exist independently of it. Children learn to see, structure and organise their world from their parents, teachers, the media and the general social environment. The attitudes and judgments that are acquired are not personal and individual but derived from the societal viewpoint (Jones & Moon 1987). An individual's interpretation of his/her bodily state may be related to the search for purpose and meaning generally. It is a form of cosmology in all societies. This worldview extends far beyond the biomedical explanation, that is, only one view of reality (Herzlich & Pierret 1986; Jones and Moon 1987). All members may not accept one worldview. Therefore, the social construction of health and illness takes place with competing cosmologies. Fundamental social change and the alteration of the worldview dominant in a society will be followed by a change in the conceptualisation of health and illness. In addition, certain groups within a society may have the power to determine the dominant form of medical conceptualisation (Unschuld 1986). This is clear in developed countries where the biomedical perspective dominates. Critics such as Illich (1975) and Navarro (1976) claim that scientific medicine has extended to include the social life of people. Illich (1975) calls this process the medicalisation of society resulting in people defining their health problems in medical terms. Navarro (1976) viewed the power of medical groups as emanating from societal forces. Although scientific medicine influences the decisions about human lives, he argues that medicine is dominated by the capitalist system. According to Clarke *et al.* (2003:161), a further shift has taken place in the organisation and practices of biomedicine. This has occurred through the

'integration of technoscientific innovations' which they call 'biomedicalisation'. They state that biomedicalisation 'describes the increasingly complex, multisided, multidirectional processes of medicalisation, both extended and reconstructed through the new social forms of highly technoscientific biomedicine' (Clarke *et al.* 2003:161). With this change health and the management of chronic diseases are individual moral responsibilities that can be fulfilled through such aspects as improved access to knowledge, self surveillance, prevention and self-help. Technoscience also produces new individual and collective identities, for example, DNA profile and high risk profiles (Clarke *et al.* 2003:162). It is important to underscore that this approach does not adequately incorporate environmental concerns and is likely to widen the gap between the haves and have not in relation to health. The latter is because the approach places emphasis on individual rights and responsibilities but does not consider that much of what is expected at the individual level depends on access to resources and information which are highly skewed in society. In relation to nature per se, this approach centralises control over nature and exploitation of natural resources primarily for profit.

As mentioned above, health and illness are affected by cultural factors. Culture involves beliefs and customs that a society develops and it is embodied in language as the primary means of communication (Donovan 1986). Anthropologists have a long tradition in studying the medical beliefs and practices of non-western societies using descriptive and qualitative methods. Work undertaken by medical anthropologists focus on indigenous explanations of health and illness, epidemiology and medical ecology (RUHBC 1989). Medical sociologists have used qualitative and observational methods to a large extent. The main trend in this type of work has been survey research and quantitative methods within the biomedical model (Fabrega & Manning 1979; Friedson 1970; Kearns 1993). A classic study is that of Fabrega (1974) who attempted to develop a theory of human disease that includes the criteria by which social groups defined a particular disease, their understanding of disease, behavioural and social effects and the way the disease was expressed socially. He also considered structural factors that were developed to deal with the disease. These included institutions, changes in medical orientation over time and the success of dominant groups in controlling the disease. The cultural complexity of

everyday behaviour also has implications for health and illness, for example, eating habits, diets and nutrition. Different social groups vary in their ideas on food, appropriate food for different ages and the circumstances of members. Generally, social groups also have ideas on the effects of food on health (Eckstein 1980). In the same way, Degefie and Aseffa (2001) show that boiling water from a contaminated water supply is deemed problematic in some contexts because of basic beliefs and customs on water consumption. Boiled water has meaning attached to it. Some people associate it with sickness and do not boil water if they are well. In addition, ideas about domestic cleanliness in relation to sharing food and drink may be influenced by social norms rather than any theory of germs and contagion (RUHBC 1989).

Lay concepts provide important information to understand social construction of health and illness. These concepts are embedded in everyday social life, some of which are not directly health related. This reflects the pluralistic nature of health systems despite the dominance of the biomedical perspective. It is also necessary to break away from biomedical assumptions and adopt a socially-based approach to explore alternate rationalities used by people in their everyday lives (Crawford 1984). All cultures have systems of healing to explain and treat ill-health. Early systems were religious with biomedical systems developing alongside. According to (Gopel 1993:28), the biomedical model is becoming inadequate and 'a variety of new and formerly repressed patterns of explanation, offering a more appropriate approach to human suffering, are making their (re)appearance'. In primitive societies, there is no distinction between humans and the environment. Everything was considered to have a living soul and an inexplicable force determined those who lived. All natural phenomena influenced life and individual spirits harmed humans causing illness. With cultural development, illness was associated with a higher objective by the Gods. Gods punished those who were bad and rewarded those who were good. In order to avoid illness, people had to ask the Gods for mercy, or please the spirits that caused disease by offering sacrifices. Magic was also used to identify and exploit natural phenomena for healing purposes. Remedies to cure illness came from animals, plants, fruits, stones or metals which possessed special powers. Star watching was used to assess the potential impact on people's fortunes and on phenomena such as famines, epidemics,

illness and death (Gopel 1993). Moreover, ‘... humans and nature are part of a divinely inspired cosmic harmony’ (Gopel 1993:33). To restore harmony, healing draws from these natural and cosmic laws. The basic elements of the cosmos are air, water, fire and earth. These elements operate in both humans and nature. Treatment was aimed at restoring the balance between humans and nature.

Frumkin (2001) suggests that nature has the power to heal and also threaten people’s health. As Frumkin (2001:234) states, ‘contact with the natural world may be directly beneficial to health’. Landscapes that have healing properties include open spaces, grassy vegetation, scattered trees or groups of trees and water. Frumkin (2001) identifies four domains of contact with nature. These are animals, plants, landscapes and wilderness experience. Using various examples from case studies he shows that there is a link between animals and human life and health. Similarly, he contends that plants and natural landscapes make people feel good. He states that ‘people react most positively to savannah-like settings, with moderate to high depth or openness, relatively smooth or uniform-length grassy vegetation or ground surfaces, scattered trees or small groupings of trees, and water’ (Frumkin 2001:237). Moreover, the natural landscapes he describes decrease fear and anger and increase mental alertness. Attention and cognitive performance also improves. Additionally, wilderness areas have a therapeutic effect. Emotions such as self-awareness, humility and appreciation are brought out from individuals. Frumkin (2001:234) asserts that people ‘find tranquillity in certain natural environments—a soothing, restorative, and even a healing sense. If so, contact with nature might be an important component of well-being’. The basis for Frumkin’s conclusion is that human biology has been part of the natural environment for a large part of human existence. The idea that nature impacts on human health, he states, has a long history in philosophy, art and popular culture beginning from the time of ancient Greece (Frumkin 2001:235).

Commenting on Frumkin’s work, Wilson (2001:241) states that he ‘reminds us that other animal species are adapted to the environment in which they evolved...’ and humans ‘feel an innate preference for the natural environment that cradled us’. According to Stilgoe (2001:243), the work of Frumkin (2001) ‘does a great service to many disciplines beyond medicine by emphasising the extent to which humans may have evolved in response to

natural systems and the way such systems promote health'. It is clearly evident from the work of Frumkin (2001) that nature has enormous healing properties. This was recognised from ancient times by people using natural phenomena for healing purposes.

Conclusion

Changes in thinking on health and health care are not a national or local phenomenon. Debates by social scientists at an international level indicate that there has been a shift from medical to health concerns (Kearns 1997; Moon 1995). This is illustrated succinctly by Kearns (1997: 271) who states that:

As citizens and geographers we are both participants in, and observers of, turbulent times. In the health sector, we witness people disillusioned with a commercial re-orientation, which sees patients re-cast as customers. In modest ways, we witness a striving to reclaim health as a quality rather than a commodity, something less medicalised and more connected to everyday experiences.

There is also an increasing need to be more connected to nature. The determinants of health are multi-factorial because health problems have a political, social, cultural and economic as well as biophysical dimension. It cannot simply be described as the provision of hospital and medical services. Like most complex phenomena involving human-beings, health problems defy compartmentalised thinking and segmented solutions. This is due to the product of myriad interactions within the total environment (Bowling 1997; Hunter 1974). Hence, the need for a holistic approach that takes account of the different factors that influence health. Due to the varying degrees of health care, coupled with various social dimensions (gender, location, class, religion, and ethnicity) that impact on health and health care there is need for transformation of geographies and landscapes linked to health. An endeavour to solve health and health care problems will require innovative and creative solutions. A holistic approach should consider not only the biomedical perspective, but also lay views of people, and the healing properties of nature. Health and environmental concerns should also be part

of sustainable development. There is a dire need to link the physical environment to public health. Public health should be based on equity, efficiency, quality and accessibility with users having a say in and control over the type of services provided (Davies & Kelly 1993; Kaplan *et al.* 1995). Generally, there is a lack of a clearly articulated vision to address inequalities within health care programmes. Problems in implementation, monitoring and budgetary matters are also becoming increasingly apparent. Health policy-makers sometimes tend to ignore environmental data and this leads to a failure to solve public health problems. There is therefore a need to link the physical environment with public health (Black 2000), using the numerous perspectives available to social and natural scientists.

References

- Akhtar, R & JM Hunter 1991. The Challenge of Medical Geography. *Environment and Health* 4-35.
- Ashton, J 1992. *Healthy Cities*. Milton Keynes: Open University Press.
- Barrett, AM 1986. Medical Geography: Concept and Definition. In Pacione, M (ed): *Medical Geography: Progress and Prospect* Guildford: Biddles.
- Beck, EJ 1993. Urban-rural Population Research: A Town like Alice. In L M Schell et al (ed): *Urban Ecology and Health in the Third World*. London: Cambridge University Press.
- Birley, M 1995. *The Health Impact Assessment of Development Projects*. London: HMSO.
- Black, H 2000. Environment and Public Health: Pulling the Pieces Together. *Environmental Health Perspective* 108,11:512-515.
- Blacker, JGC 1991. Infant and Child Mortality: Development, Environment and Custom. In RG Feachem & DT Jamison (eds): *Disease and Mortality in Sub-Saharan Africa*. Oxford: Oxford University Press.
- Bob, U 1999. Engendering Geography Education in South Africa: The Need to Put Women on the Map. *South African Geographical Journal* 81,1:60-65.
- Bond, P 1999. Globalisation, Pharmaceutical Pricing and South African Policy: Managing Confrontation with U.S. Firms and Politicians. *Int. Journal of Health Services* 29,4:765-792.

- Bowling, A 1997. *Research Methods in Health*. Buckingham: Open University Press.
- Bradshaw, D & G Buthelezi 1996. Health Status and Determinants. In *South African Health Review 2000: 23-72*, South Africa: Health Systems Trust.
- Caincross, S, D O'Neil, A McCoy & D Sethi 2003. *Health, Environment and the Burden of Disease: A Guidance Note*. Department for International Development (DFID), DFID, London.
- Clarke, AE, JK Shim, L Mamo, JR Fosket, & JR Fishman 2003. Biomedicalisation: Technoscientific Transformations of Health, Illness, and US Biomedicine. *American Sociological Review* 68,2:161-194.
- Corvalan, CF, T Kjellstrom & KR Smith 1999. Health, Environment and Sustainable Development: Identifying Links and Indicators to Promote Action. *Epidemiology* 10,5:656-660.
- Crawford, R 1984. A Cultural Account of Health: Control, Release and the Social Body, In McKinlay, JB (ed): *Issues in the Political Economy of Health Care*. London: Tavistock.
- Curtis, C & A Taket 1996. *Health and Society: Changing Perspectives*. London: Holder Headline Group.
- Davies, JK & MP Kelly 1993. Healthy Cities: Research and Practice. In Davies, J & MP Kelly (eds): *Healthy Cities*. London: Routledge.
- Degeffie, T & F Aseffa 2001. Public Health Issues in a Therapeutic Feeding Centre: Problems Encountered and Lessons Learnt. *Ethiopian Journal of Health Development* 15,1:51-53.
- Dickens, P 1992. *Society and Nature*. Temple: Philadelphia.
- Donovan, J 1986. *We don't Buy Sickness, it Just Comes*. Aldershot: Gower.
- Dorrington, RE 2000. The Demographic Impact of HIV/ AIDS in South Africa. *AIDS 2000 Conference*, Durban.
- Doyal, L & I Pennell 1983. *The Political Economy of Health*. Boston: South End Press.
- Dubos, R 1965. *Man Adapting*. New Haven: Yale University Press.
- Eckstein, EF 1980. *Food, People and Nutrition*. Westport: AVI Publication.
- Eyles, J 1997. Environmental Health Research: Setting an Agenda by Spinning our Wheels or Climbing the Mountain? *Health and Place* 3,1:1-3.

- Fabrega, H (Jr) 1974. *Disease and Social Behaviour*. Boston: MIT Press.
- Fabrega, H (Jr) & PK Manning 1979. Illness Episodes, Illness Severity and Treatment Options in a Pluralistic Setting. *Social Science and Medicine* 13B:41-51.
- Foster, DH 1992. *Health, Disease and the Environment*. London: Belhaven Press.
- Friedson, E 1970. *The Profession of Medicine: A Study of the Sociology of Applied Knowledge*. New York: Dodd Mead.
- Frumkin, H 2001. Human Health and the Natural Environment. *American Journal of Preventative Medicine* 20,3:234-239.
- Glass, RI, K Bridbord, J Rosenthal & C Luz 2006. Guest Editorial: Global Perspective on Environmental Health. *Environmental Health Perspective* 114,8:454-455.
- Gordon, LJ 1991. Reaching the Environmental Health Objectives. *Journal of Public Health Policy* 12,1:5-9.
- Gopel, E 1993. Human Health and Philosophies of Life. In Lafaille, R & S Fulder (eds): *Towards a New Science of Health*. London and New York: Routledge.
- Gray, A 2000. An Essential Response to the Issue of Access to Drugs *AIDS Bulletin* 2000 9,1:4-6.
- Gwatkin, DR & M Guillot 2000. *The Burden of Disease Among Global Poor: Current Situation, Future Trends and Implications for Strategy*. Washington: The International Bank for Reconstruction and Development, World Bank.
- Herzlich, C & J Pierret 1986. Illness: From Causes to Meaning. In Curren, C & M Stacey (eds): *Concepts of Health, Illness and Disease*. New York: Berg Publications.
- Hunter, JM 1974. The Challenge of Medical Geography. In Hunter, JM (ed): *The Geography of Health and Disease*. Chapel Hill, North Carolina: Studies in Geography No. 6, Department of Geography, University of North Carolina.
- Illich, I 1975. *Medical Nemesis*. London: Calder and Boyars.
- Jones, K & G Moon 1987. *Health, Disease and Society: An Introduction to Medical Geography*. London: Routledge and Kegan Paul.
- Kaplan, S, B Gandek, S Greenfield, W Rogers & J Ware 1995. Patient and Visit Characteristics Related to Physicians' Participatory Decision-

- making Style. *Medical Care* 33:1176-1187.
- Kearns, RA 1997. Narrative and Metaphor in Health Geographies. *Progress in Human Geography* 21,2:269-277.
- Kearns, RA 1993. Place and Health: Towards a Reformed Medical Geography. *The Professional Geographer* 45:139-147.
- Kronenfeld, JJ 1993. *Controversial Issues in Health Care Policy*. London: Sage Publications.
- Lafaille, R & S Fulder (eds) 1993. *Towards a New Science of Health*. London and New York: Routledge.
- Lafaille, R 1993. Towards the Foundation of a New Science of Health: Possibilities, Challenges and Pitfalls. In Lafaille, R & S Fulder (eds): *Towards a New Science of Health*. London and New York: Routledge.
- Last, J 1987. *Public Health and Human Ecology*. East Norwalk: Appleton and Lange.
- Leahy, G 1996. Equity and Health in East London. In *Public Health Report: East London and the City*, London E3 2AN: East London and the City Health Authority, TredegarHouse: 97-99 Bow Street.
- Learmonth, A 1991. Geography and Disease Ecology: Beyond Cartography. *Environment and Health*. New Delhi: Ashish Publishing House.
- Learmonth, A 1988. *Disease Ecology: An Introduction*. London: Basil Blackwell.
- Lynch, K 1981. *Good City Form*. Cambridge: MIT Press.
- Margot, P, R Panelli, & P Weinstein 2003. Converging Paradigms for Environmental Health Theory and Practice. *Environmental Health Perspective* 111,5:669-675.
- May, JM 1960. The Ecology of Human Disease. *Academy of Sciences* 84,17:789-794.
- Montiel, RP & F Barten 1999. Urban Governance and Health Department in Leon, Nicaragua. *Environment and Urbanisation* 11,1:11-26.
- Moodley, V 2000. *The Geography of Health in the Durban Metropolitan Area*. Unpublished D Phil Thesis, University of Durban-Westville, KwaZulu-Natal, Durban, South Africa.
- Moon, G 1995. (Re)placing Health and Health Care. *Health and Place* 1:1-4.
- Navarro, V 1976. *Medicine Under Capitalism*. London: Croom Helm.

- Philips, DR 1981. *Contemporary Issues in the Geography of Health Care*. Norwich, Norfolk: Geo Books.
- Pick, WM, KNenhotalu, JT Cornwall & M Masuku 2000. *Human Resources for Health: A Draft National Strategy*. Pretoria: Department of Health.
- Research Unit in Health and Behavioural Change (RUHBC) 1989. *Changing the Public Health*. Chichester: John Wiley and Sons.
- Sanders, D & R Carver 1985. *The Struggle for Health: Medicine and Politics of Underdevelopment*. London: Macmillan.
- Schwartz, DA & WJ Martin II 2006. Focusing on Global Environmental Health. *Environmental Health Perspective* 114,11:630.
- Singleton, P 1994. *Health Havering Project*. Public Health Research Report, No 23, Directorate of Public Health Medicine, The Grange Gubbins Lane, RM3 0 DD: Barking and Havering Health Authority.
- Songsore, J & G McGranahan 1993. Environment, Wealth and Health: Towards an Analysis of Intra-urban Differentials within the Greater Accra Metropolitan Area, Ghana. *Environment and Urbanisation* 5,2:11-34.
- Stilgoe, JR 2001. Gone Barefoot Lately. *American Journal of Preventative Medicine* 20,3:243-244.
- Unschuld, PU 1986. The Conceptualisation of Individual and Collective Experiences of Illness. In Curren, C & M Stacey (eds): *Concepts of Health, Illness and Disease* New York: Berg Publications.
- Verhasselt, Y 1981. The Contribution and Future Development of Spatial Epidemiology. *Social Science and Medicine* 15A:33-38.
- Werna, E, T Harpham, I Blue, & G Goldstein 1999. From Healthy City Projects to Healthy Cities. *Environment and Urbanisation* 11,1:27-39.
- WHO 2000. *World Health Report: Health Systems-improving Performance*. Geneva: World Health Organisation.
- WHO 1983. *Apartheid and Health*. Geneva: World Health Organisation.
- Wilson, EO 2001. Nature Matters. *American Journal of Preventative Medicine* 20,3:241-242.
- Winslow, CA 1920. The Untitled Field of Public Health. *Science* 51:23-28.

World Resource Institute (WRI) 2005. Ecosystems are—or can be—the Wealth of the Poor. http://wri.org/pubs_content_text.cfm?ContentID=3605 Accessed: 28/07/2006.

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