Introduction

There is increasing interest among countryside, land use and government planning agencies charged with maintaining, managing and providing access to natural surroundings and the countryside in establishing whether their contribution to the provision of public goods and services includes ‘health benefits’. It follows shortly after a report from the Countryside Agency (2000) that suggested ways of promoting the countryside as a contributor to good mental health.

This paper, which is based on research funded by the Forestry Commission, considers the evidence – both theoretical and empirical – of links between the environment and health, and draws out policy recommendations. It has drawn from a wide range of health and social science disciplines and topic areas, and puts in place a schema for identifying the various pathways connecting the environment with illness, health and healing.

The approaches and interventions considered have a wide span that includes the need to focus on the biological causes of disease; on how people experience health and illness; and the various psychosocial issues that can enable people to develop coping and resilience. The schema gives considerable emphasis to the complex mix of physical, social and cultural aspects of people’s surroundings, since these need to be fully taken into account in any attempts to understand and intervene in the processes of illness, health and healing.
The relationship between environment and health

In discussions about how to conceptualise health and illness, and how best to approach healthcare, it is commonplace to at least initially counterpose medical and environmental approaches to health and disease (see eg Williams, 1994; Stroebe, 2000). Commentators who have criticised over-reliance on the medical model of health have had a range of concerns – about, for example, social inequalities in health associated with the effects of poverty; the way socio-structural, economic and power relations operate in the provision and regulation of healthcare; social stigmatisation and marginalisation of the ill and disabled; and how social support to people, carers and families of people who are physically or mentally ill might be improved.

Most of these concerns are not directly about ‘environmental risks’ at all in the most obvious sense of physical factors outside the person (eg radiation, chemical toxins, poor air quality), other forms of environmental pollution (such as noise and overcrowding), and natural hazards (such as extremes of temperature and global climate change), although some of these risks are covered in some writings in social psychiatry (Freeman, 1984), medical geography/epidemiology (Catalano and Pickett, 2000) and environmental psychology (Gallagher, 1993; Williams, 1994). However, the importance of treating such environmental considerations alongside a whole range of other ‘socio-cultural influences’ that shape human health is that it avoids inadvertently reducing the effects of environmental risks to isolated and disparate effects of external physical causal agents on the biological functioning of the human organism.

Ecology and public health

Environmental scientists often adopt an ‘ecological’ model that is concerned with embracing the totality of interdependent relationships involving human beings and their local and global environments. So the impact of climate and global environment change on human health is a concern for many environmental and ecological scientists, as much as for those who work in medicine and health. In future planning of research strategies consideration should be given to including input from the ‘ecological health’ agenda of the environmental sciences.

The message that humans and their environments are locked together in a network of ecological relationships has become the driving force behind the work of some medical professionals in public health (see eg Chivian et al., 1993). The take up of the ecological world view is not surprising as the origin of the field of public health lies in having to deal with the problem of respiratory and infectious diseases reaching epidemic proportions in recently urbanised populations in the early days of the Industrial Revolution.

Making the case in favour of a form of ‘ecological’ or ‘environmental medicine’ the group Physicians for Social Responsibility (Chivian et al., 1993) sets out the following orienting ideas:

- The physical environment, our habitat, is the most important determinant of human health
- Protection of the environment and preservation of ecosystems are, in public health terms, the most fundamental steps in preventing human illness
- Physicians should be the health officials most knowledgeable about the environmental factors that cause disease, and should be prominent spokespersons in communicating with the public about environmental hazards.

However, by concentrating only on the medical threats posed to ecological sustainability by the toxicological effects of environmental pollution, and by environmental degradation, the group fails to locate these legitimate concerns in a sufficiently broad public and individual health promotion agenda. It is fortunate, then, that ways of locking such medical-ecological concerns into such a wider agenda exist. One of these draws on developments in research on how best to conceptualise, manage and communicate environmental/health risks.

Environmental and health risk

For Chivian et al. (1993) the problem is a lack of medical training and hence awareness and knowledge among practising physicians of environmental risks to human health, resulting in a lack of communication about such risks by them to the public. However, an even more intractable problem is deepened if too much emphasis is placed on the role of physicians in ‘educating the public’ about environmental pollution and degradation and the
risks they pose. In contemporary ‘risk society’ (Beck, 1992) the problem is not just one of providing the public with new and ever increasing scientific knowledge and expertise so that they are armed to protect themselves. Rather, what is needed are ways of acknowledging and dealing with the precariousness and uncertainties associated with life in ‘post-modern’ societies.

An important feature of the literature on environmental safety and health risk is that it provides a set of insights into why society cannot simply rely on the injection of factual and technical expertise to promote individual and public health. It usefully questions the assumption that objective risks to human/environmental health and safety can be treated as in some way superordinate concerns to what individuals and the public perceive or understand to make life of value (Pidgeon and Beattie, 1997). For those agencies charged with making decisions about land use and environmental planning this means they must take account of how such decisions and practices are perceived by a public actively engaged in judging what is personally and socially of value, rather than relying on purely objective, scientific calculations of ‘actual’ risk.

Environmental and countryside agencies can learn a good deal about promoting the potential health benefits of the goods and amenities they are able to offer from human risk and safety research. First and foremost, these benefits must be placed within a broader health protection and promotion agenda that takes account of the perception of health as one among other personal and social goods, and of how people subjectively apprehend and make sense of the qualities and balance of risks which, in turn, influences their likely reactions to them.

Extensive outdoor spaces such as parkland, wooded areas and nature reserves not only give people opportunities for physical activity but are also desirable or valuable places to visit for other reasons. Therefore communications with the public about the health benefits of physical activity in such settings can be combined with messages about the appeal of other benefits and attractions such as aesthetic appeal of natural scenery, value of experiencing the outdoors, a setting where families can share physical recreation via walking or cycling etc.

In this way, people who are sceptical about messages promoting the value of physical activity, or who do not identify with the images of lifestyle presented by other exercise settings, such as gyms, can be offered help in living well.

The appeal of outdoor activities does not demand any prior concern for the environment and sustainability. Nevertheless, efforts made to attract the public to spend recreational time in outdoor settings could produce opportunities for disseminating information about the longer term environmental health issues that environmental scientists and some environmentally minded medical practitioners wish to bring to wider public attention.

A number of current projects aim to increase the health benefits of activities in the outdoor environment through organised schemes to promote walking (eg the Thames Valley and Sonning Common Heath Walk schemes) and using conservation work to increase levels of physical activity – an approach known as ‘green gyms’ (Bird, 1999). A wider range of other schemes aim to promote health and wellbeing, but not necessarily or exclusively by promoting physical activity. In these schemes people are encouraged to enjoy the psychological benefits that can be afforded by ‘green spaces’ (Elers Koch, 2000), or communities enabled to thrive through projects that take a holistic rather than a medical approach to people and health by promoting participation in art and learning in ways that often focus on the value of local environmental amenities, spaces and landscapes (eg Rigler and Campbell, 1996).

As the evidence builds to support the claims for putting such schemes in place, the demand for accessible woodlands and other outdoor spaces as settings for them is likely to increase (Bird, 1999). Original research and systematic reviews of research will then be needed to appraise these schemes for their health benefits across the full range of actual and potential users. To conduct such reviews successfully, existing theoretical frameworks and the different kinds of evidence they promote, and which are rendered intelligible within them, would first have to be considered. The next section considers both the reasons behind, and supporting evidence for, expecting links between such human-environment activities and health outcomes.
The socio-environmental perspective on the causation and promotion of health

The label ‘socio-environmental’ model does not refer to a single, uniform kind of approach, once concern for the narrowness of the medical model is left behind. Discussions of socio-environmental risk factors, for example, can be within a highly material frame where they are treated as levels of exposure to physical or chemical vectors whose distribution varies with social, geographic and economic factors. Alternatively, socio-environmental risks can be discussed in terms of values established in the course of people and populations appraising their meanings, together with the possibilities for choice of action conveyed by those meanings. The matter of how an explicit concern for issues of symbolism and meaning can further illuminate the socio-environmental context of health and illness is discussed in the section on people’s perceptions of and attachments to the localities or places where they live and via the concept of ‘therapeutic landscapes’ – see p9.

According to some of the most influential ideas making up the socio-environmental approach, ‘exposure’ to health-determining risks in the social-physical environment is deemed to be filtered, buffered or mediated by a range of more or less effective health protective ‘resources’. At the heart of the ‘exposure-resource model’ (Siegrist, 2000) is the concept of ‘environmental stress’: whether a population or an individual will tend to fall ill or remain healthy depends on the resources available to them to respond to the inevitable demands of the social and environmental conditions in which they live their lives. Within this generic model the range of environmental exposures can include specific toxins, chronic stressors in people’s physical surroundings (noise, crowding etc), major life events, and forms of degraded social organisation. Likewise, there is an equivalent range of illness-deflecting and health-promoting resources. These can be physical/immunological (is the body’s biological capacity to defend against assaults such as from viral and infective agents intact or compromised?), psychological (does the person have a sufficient range of cognitive skills and enough emotional resistance to cope with stress?), or social (are the available social supports and participatory networks sufficient to ameliorate excessive environmental demands?).

Evidence supporting the various elements of the exposure-resource model is now very extensive, and some of the main areas are addressed in the next section. They illustrate the range of research and identify areas that are likely to be of most interest to countryside agencies.

The biological pathway between socio-environmental stress and illness

The classic work on the biological aspect of the stress pathway is that of Selye (1976), who investigated how the body responds to noxious physical stimuli (such as extremes of temperature, injection of toxic fluids, surgical injury). This work identified a non-specific bodily response whatever the stressor: shrinkage of the adrenal cortex (which is involved in hormone secretion) and of the thymus and lymph glands (organs playing a role in regulating the immune response), together with ulceration of the stomach and duodenum – signaling a general mobilisation of the organism to defend against or cope with the stressor agent. As biological organisms cannot remain in a heightened state of arousal, activation inevitably subsides as the organism adjusts to a stressor’s influence. However, in circumstances where activation by the same stimulus or an accumulation of stressors is repeatedly called for, and the organism cannot overcome the threat, exhaustion of its adaptive capacity is said to result. Selye called this ‘breakdown of adaptation’, but it is often articulated today as the compromising or suppression of the immune system (Kaplan, 1991).

One of the most established programmes of research investigating whether there are physiological ‘stress responses’ mediating correlations between impoverished living circumstances and poor health is the Whitehall Studies I and II, which have investigated over a 40-year period a wide range of physiological correlates of occupational grade (used as an index of socio-economic status) and health status in the British Civil Service (see eg Brunner, 1996).

In phase II additional physiological measures were taken (blood lipids, clotting factors, and glucose tolerance/insulin) as well as the established predictors of coronary heart disease (smoking, blood pressure, obesity, high levels of serum cholesterol). Findings provided
strong evidence of social gradients in all three additional measures, which could often not be accounted for by health related behaviours (such as smoking, alcohol consumption, diet and exercise), but which did seem to be correlated with various psychosocial measures of job strain (in terms of lack of variety of tasks and low level of skill use), self-rated feelings of hostility and financial problems (all of which were at higher levels for lower employment grades).

The conclusion reached in this research is that there is a ‘psychoendocrine pathway’ whereby people with relatively low income who experience monotony in/lack of control over their work not only suffer an excess of psychiatric illness such as depression (as was known before – see Dohrenwend, 1990) but also an excess of coronary heart disease.

The explanation proposed is of a pathway linking the chronic stress response originally described by Selye, and now known to involve the production of elevated levels of corticosteroids that are involved in immune suppression, with a characteristic set of factors making up a disturbance of carbohydrate and lipid metabolism (insulin resistance, poor lipid profile, an increased tendency for blood to clot, central obesity).

Although the reasons for the associations between the stress/immune response and the carbohydrate/lipid metabolism systems are not fully understood, further evidence from the research literature suggests the involvement both of the autonomic system and neuroendocrine systems to produce a patterned response to stress. For example, research using a drug that mimics the effect of the hormone adrenaline in raising the level of corticosteroids has shown that another drug emulating the effect of blood lipoproteins can block the rising level of corticosteroids. It is pointed out that ‘these findings are consistent with the protective effect of wellbeing, induced, for example by exercise, which limits the adverse effects of stress’ (Brunner, 1996, p293).

Brunner (1996) concludes that while it may be impossible to completely eradicate the inequities which cause social and occupational gradients in cardiovascular risk, the research does suggest that their effects as mediated by the psychoendocrine stress pathway do need to be reduced. As part of its public health strategy, Saving Lives: Our Healthier Nation (Department of Health, 1999) the government has identified the promotion of physical activity as an important priority along with other important behavioural and lifestyle factors (such as stopping smoking, improving nutrition, enhancing mental wellbeing), and increasing levels of physical activity features as a particularly important element in its National Service Framework for coronary heart disease (Department of Health, 2000).

Discussion of biological gradients associated with social inequalities in health would seem, therefore, to offer further support to a possibly significant role for the countryside agencies in promoting their sites and amenities as settings that can help people take physical exercise as part of already desirable forms of leisure activity – principally for aesthetic enjoyment and pleasure at contact with nature or being outdoors.

Countryside agencies could also claim that they could address the health needs of the entire population irrespective of socio-economic background if direct costs of gaining entry to such settings and amenities were minimal or free. However, any appeal to the public suggesting that there are special benefits from taking physical exercise outdoors could not be sustained on present knowledge from research. The general review of the links between the environment and health conducted for the Forestry Commission study has produced no evidence from original research studies on whether there may be special benefits to physical health of taking exercise outdoors.

The stress-health pathway: psychosocial stress and coping

Today, medical professionals as well as psychologists and other social scientists have begun to express the concern that much of the harm that is done to people by chronic stress may be mediated not just by the direct effects of physiological events but by people’s experience of poor psychological wellbeing – ranging from its milder forms (such as mood suppression) to ones that involve extreme emotional suffering, distress or pain. There is also a widening appreciation, backed up by extensive research evidence, of the possibilities for ameliorating the effects of such psychological and emotional ‘disturbance’ through the
provision of social support either in the form of the understanding and direct help received from friends and family or, at the community level of analysis, the benefits provided by social cohesion (accruing from ‘social capital’). The possibilities for people to take action individually or as part of communities to ameliorate threats to their own and other people’s health as mediated through the ‘psychosocial stress’ pathway are sometimes known as ways of ‘coping’.

Evidence that chronic psychosocial stress both at work or in connection with major life experiences and events (social disruption, relationships breakdown or death of a family member, being a victim of crime, being made homeless, various other kinds of trauma) plays a role in the aetiology of poor mental health is overwhelming, and has already led to many established frameworks for understanding and intervening socially and psycho-therapeutically to aid coping and hence bolster and promote physical, social and mental health (Siegrist, 2000).

A basic model of how psychosocial stress can lead to (poor) health would depict a pathway starting with factors such as crime, unemployment and a poor environment leading to chronic anxiety, insecurity, low self-esteem and social isolation, thence to chronic distress, whose outcome is depression, diabetes and high blood pressure. Although providing only a skeletal framework, this kind of model has facilitated the identification of many, more specific, psychosocial pathways and suggested a range of different ways of intervening to promote health and prevent the descent into illness and disease. One area for investigation with the potential to take forward our knowledge of psychosocial aspects of the stress pathway is one that began in attempts to consider the effects of chronic environmental stressors by comparing urban and rural differences in health, and that today investigates the thesis that contact with the natural environment can have a salutary influence on health.

Urban-rural comparisons in chronic life stressors

The general psychosocial stress models fully recognise the role of chronic ‘environmental stressors’ such as noise, congestion/crowding/population density, speed of movement/commuting, and air pollution as an important (if relatively underdeveloped) research issue.

A number of disciplines provide access to relevant research literature, the main ones being medical/social geography, environmental psychology, social epidemiology and social psychiatry. To a significant extent, the background prompting the concerns of these disciplines is the effects of industrialisation and urbanisation, initially in the so-called ‘developed’ westernised nations and now taking place at great pace in the ‘developing’ world.

With slum clearance and the creation of new towns to replace old neighbourhoods came the eradication of the socio-physical embodiments of communities in their built environments: places, localities and neighbourhoods with which people identified and that gave them a sense of belonging were displaced into socio-historically empty environments (Freeman, 1984; Walter, 1988). This prompted the realisation among some (social) psychiatrists that social science conceptualisations of notions such as ‘community’ and ‘place’, that seek to address not only physical and spatial ‘environmental factors’ but also socio-psychological dimensions of geographical locality and space, can be central to understanding the effects of environmental change on health (Freeman, 1984).

Unfortunately, these questions began to be asked too late for research to be conducted on the major urban renewal efforts in the mid-20th century (Freeman, 1984). Moreover, the quite extensive research that has occurred into the health effects of potentially important environmental stressors has been hindered by reliance upon ill-considered urban-rural comparisons which have tended to pathologise urban environments while being influenced by powerful social myths and icons of the idyllic nature of pastoral settings and ‘country life’ (Verdheij, 1996; Webb, 1984).
The importance of nature in environmental perceptions and stress recovery

In recent years, recognition of the misleading avenues followed in environmental stress research has been interpreted as justifying some changes in research directions. For example, it has been suggested that rather than focus on the effects on modern life of environmental degradation, important though that may be, new opportunities for understanding could be opened up by asking questions about how people may benefit from their interactions or relationships with the physical or natural world (Frumkin, 2001).

The evidence is already extensive on how contact with and appreciation of nature can contribute to people's wellbeing and health. Frumkin (2001) usefully draws together the evidence on the role played by animals, plants, landscape and wilderness. These studies use various data gathering and analytic methodologies as well as a wide range of more medical, psychological and social health ‘end points’.

For example, questionnaire studies surveying people's views of plants, their importance, and their effects on people have suggested substantial levels of agreement, with statements asserting that flowers and plants provide a reason for visiting and enjoying recreational sites, that local greenery and landscapes are important contributors to satisfaction with place of residence, and that plants are calming and relaxing (Butterfield and Relf, 1992; Browne, 1992; Randall et al., 1992). Studies taking advantage of natural experiments in prisons (Moore, 1981) and hospitals (Ulrich, 1984) have found that views of green fields and trees rather than a courtyard or brick wall predict fewer sickness episodes (among the prisoners) and shorter periods of hospitalisation, reduced need for pain and anxiety medications, the occurrence of fewer complications and fewer reported complaints in nurses’ notes (in the hospital study).

There are also many studies reporting the positive (mainly mental health) benefits of wilderness experience where people enter a landscape rather than just view it. Frumkin reports that psychiatric patients (Cumes, 1998; Jerstead and Stelzer 1973), emotionally disturbed children and adolescents (Witman, 1987; Berman and Anton, 1988; Marx, 1988), bereaved persons (Moyer, 1988), rape and incest survivors (Levine, 1994), and patients with cancer (Pearson, 1989), end stage renal disease (Warady, 1994), post-traumatic stress syndrome PTSD (Hyer et al., 1996), addiction disorders (Bennet et al., 1998; Kennedy and Minami, 1993) and other ailments (Easley et al., 1990) can benefit in ways that range from reporting renewed sense of vigour and energy, self-awareness, feelings of awe and comfort at connection with nature, improved sense of coping and ability to assert personal control.

As with all research caution is required, because of the bias against publishing non-significant findings and methodological weaknesses in specific studies. Nevertheless, the number and variety of accounts of people benefiting in different ways from contact with nature suggest that such experiences can bolster mental health especially, at least in the short term, and that these benefits span illness recovery and the more general project of promoting public health (Frumkin, 2001).

The term ‘biophilia’ (Wilson, 1984; see also White and Heerwagen, 1998) has been coined to capture the possibility that there may be some primeval, instinctual, or genetically encoded preference for nature and natural scenes. However, if this term is to continue to be used in landscape perception/environmental valuation research it needs to be restricted to the many and varied affordances, including salutogenic ones, offered by contact with, liking for and identification with the natural world. There is already a good example of how a related term – topophilia (Tuan, 1974) – can be used with effect to connote complex ideas in a simple way. Topophilia has come to mean ‘the emotional content that gives places (which may be landscapes, natural or built environments) their power to move people’ together with the tastes, values, preferences and self-identities such places come to symbolise (Langenbach, 1984).

Can this research on the salutary effects of nature on health inform understanding and decision making about the actual and potential individual and public health benefits afforded by rural land areas, forests and the countryside? Clearly it is no more than a hopeful starting point to say that the weight of research evidence shows that 'contact with nature is good for you'. The research claims that have been made have to be dissected in more detail to give direction to individual and public health
promotion efforts in such settings. In particular, there is a risk that if such sweeping claims are made expectations set up about visits to parks and open spaces will inevitably lead to disappointment (Burgess et al., 1988).

The health benefits of nature – explanatory frameworks

Despite the consistently made but unsupported claim that health benefits follow inevitably from contact with nature because of the innate human state of biophilia, some potentially fruitful discussions of explanatory frameworks have emerged out of the core research (largely in environmental psychology) on environmental perceptions and valuing of nature (see e.g. Bonnes and Secchiarioli, 1995). These attempts to make wider sense of people's liking for natural scenes and contact with nature need not be reduced to supposition about nature's physical properties being intrinsically preferable or essential to species survival.

Robert Ulrich (1979, 1983; Ulrich et al., 1991) is often credited with making the earliest explicit statement that the importance of nature to people's lives is because it provides a setting where solace and refuge can be taken from the pressures of life and environmental stress. In his account, salutary health effects occur because experiencing and viewing natural scenes immediately initiates the physiological and psychological responses that underpin recovery from stress. Hence his thesis is known as the 'stress recovery' or 'stress restoration' theory.

An alternative paradigm, attention restoration theory (Kaplan and Kaplan, 1989; 1995), views the antecedent of the restorative effects of contact with nature (and also other favourite places - see e.g. Korpela and Hartig, 1996) not so much in the experience of immediate threat or danger but in prolonged mental effort that requires the constant exercise of the inhibitory mechanisms identified in information processing research as making directed attention possible. The consequence is mental fatigue whose harmful psychological effects have been described as follows: irritability, inability to plan, reduced sensitivity to other people in one's personal and social interactions, and increased likelihood of performance error.

Within this model four aspects of people's engagement with nature can lead to restoration. The first is ‘getting away’ or putting psychological and perhaps geographical distance between oneself and where one usually becomes mentally fatigued in pursuit of one's daily goals (e.g. work). The second is ‘fascination’ or release from one's usual efforts at inhibiting distraction – this relaxation is said to enable restoration of ‘directed attention’. The third is immersion in a coherent physical and conceptual environment that is sufficiently encompassing (has sufficient scope or ‘extent’) to support exploration and interpretation. The fourth is ‘compatibility’, which refers to a match between the person's goals and purposes and the constraints and opportunities offered by the environmental setting.

Ulrich's theory provides an account of how changes in emotion and arousal are the immediate psychological benefits of contact with scenes and environments that are interpreted as providing refuge from danger and harm. Kaplan and Kaplan's theory provides a route into the longer term effects of restoration when engagement with nature occurs at multiple emotional and psychological levels, from ‘clearing the head’ (to recover ‘directed attention’) to ‘reflecting upon one's pursuits and goals in life’ (by exploring and making sense of compatibilities between oneself and chosen respite environments).

There are many barriers to evaluating and interpreting the evidence supporting the restorative environment thesis as a route between the environment and health. These arise from the preoccupation with ‘proving’ psychobiological evolutionary theory. Nevertheless, some insights can be salvaged from stress recovery research for countryside agencies interested in identifying and furthering the contributions of their services and amenities to individual and public health. In particular, analytic work articulating the restorativeness of interactions between people and natural or favourite places provides a way of focusing attention on how to protect or promote the design of open and natural spaces so that people can appreciate the contrast with stressful day-to-day environments. Ulrich's work suggests that effort in this regard would be well directed along the axis of freedom from immediate harm or danger. Kaplan and Kaplan's suggests that relaxation from prolonged mental efforts to maintain directed attention is critical.

In these days of implementing multi-functional approaches to forestry, and given the importance of
encouraging people to take the opportunity to undertake physical exercise in wide open spaces, both of these principles – of facilitating respite from danger and relaxation from the demands of maintaining directed attention – reinforce the priority that must be placed on keeping green spaces free from day-to-day stress (eg from speeding traffic, excessive distractions etc). This argues for sustaining efforts to ensure that groups using the countryside for different purposes do not prevent others from being able to benefit from their goals and purposes in visiting – either in terms of promoting physical health or seeking ways of protecting and enhancing psychological and social wellbeing.

In selecting these two points of guidance from the work on stress recovery and restorative environments there is no intention to negate the importance of other facets of this research. In particular the issue of the sensuous pleasures that people can enjoy from contact with nature should not be minimised (the sights, smells, sense of passing of the seasons etc). In research on public perceptions of what they find valuable about contact with nature this is almost invariably raised as an issue, and some writers on nature and healing seek to develop the implications of this theme for how we should best use our open spaces. For example, providing areas for direct contact with the physical and natural world has been identified as making an important contribution – both to children's motor and intellectual development and to future adult mental wellbeing (Olds, 1989).

Another issue that has been identified in past forestry values research, and that may need to receive further attention, is the importance that people can attach to participating in public spaces as a confirmation of the value of experiencing ‘togetherness’ as an expression of shared communal identities and values. The importance of this has been suggested more recently in research that has explicitly sought to accommodate cultural diversity and difference (Burgess et al., 1988), and it articulates very closely with the current emphasis on the importance of cultural capital and the provision of social support as a mediator of good mental and physical health (see ‘The stress-health pathway: psychosocial stress and coping’, p6). The next section covers ‘cognate areas’ of research that have the scope to extend this account of ways of conceptualising the psychosocial pathway to health and healing.

Further research into the psychosocial pathways to health and healing: therapeutic landscapes; place, identity and health; symbolism and meaning

So far the evidence presented in this paper has supported the biopsychosocial model of health and healing that views people as ‘responding’ at many levels to environmental stressors and ‘coping’ with different environmental conditions by drawing upon the biological, psychological and social resources available to them.

But not all the complexities that have been discussed about how to conceptualise psychosocial pathways to health and illness are necessarily included within the environmental stress and health model. In particular one has to look to more broadly based social theorising about personhood, nature and health (see eg Macnaghten and Urry, 1998; Walter, 1982; Walter, 1988) to bring out a different range of concepts. This section addresses just two related aspects of this far more extensive area – ‘therapeutic landscapes’ and ‘place and identity’ - both of which include the need to address ‘personal, social and cultural meanings, values and symbolism’.

**Therapeutic landscapes**

The notion of ‘therapeutic landscapes’ (Gesler, 1992) has appeared in research identifying the cultural context of health, prompted by the need to address limitations with the concept of the ‘environment’. This notion of ‘the environment’ is believed to itself encode the idea that individuals’ health status, health professionals’ practices, and societal health policies are necessarily determined, or should overwhelmingly be guided by, paying attention to the objective properties of a physical world that exists entirely external to them – a view that of course fails to articulate with the importance of psychosocial issues in health.

Within human geography, and medical anthropology/sociology, a cultural view of landscape (see eg Hirsch and Hanlon, 1995) is proposed to counter this form of encoding. This draws upon humanistic and structuralist social science concepts to prime investigations into the socio-structural processes, symbolic systems, cultural values and meanings that give content, form and structure to (that is ‘construct’) people’s experienced ‘worlds’. Gesler (1992) lists some of

Use of the term ‘landscape’ clearly signifies that these socially organised, culturally embedded and personally experienced processes are not geographically or spatially free floating but are inextricably bound up with locality, space or place. Moreover, as landscapes are not fixed and static but historically changing, time is an important part of these processes too. The various settings, situations, locales, and milieus where the processes involved in health and healing can occur are referred to collectively by the term ‘therapeutic landscapes’. The intention of conducting research into such therapeutic landscapes is to promote understanding of the therapeutic processes that can occur in various settings.

Within these various therapeutic landscapes one of the means by which health and healing is said to occur is ‘along a symbolic pathway of words, feelings, values, expectations, beliefs, and the like which connect (cultural) events and forms with affective and physiological processes’ (Kleinman, cited in Gesler, 1992) – the pathway giving rise to Gesler’s category of ‘symbolic landscapes’. An exemplary case is the way that culture-specific stories, symbols and myths can be used in all kinds of societies to promote particular ways of experiencing and understanding health, and the need to undertake (perhaps painful) treatment for illness.

The concept of therapeutic landscapes is a useful one for countryside agencies interested in establishing the implications for health of the locations, places or spaces they oversee by further enforcing the credibility of the idea that the health we experience and the places we inhabit or live in are linked. In particular it makes clearer the breadth of evidence that can be drawn upon to evaluate claims about the ‘restorative’ effects of the places and spaces that people express affinity for and that cultures generally value. The cultural landscapes work makes it clear that the evidence encompasses more than studies taking individual measures of environmental appreciation and health outcomes (eg in terms of reported mental wellbeing or illness recovery). Studies can also be accessed about the ways in which health and medical beliefs and practices can themselves contribute to and have consequences for the organisation of society and culture and how the latter can, in turn, be successfully analysed for its relevance to health (as is known, for example, from the research on social capital and health) (see eg Blane et al., 1997b).

Investigations into the cultural and social processes that make places of therapeutic value also usefully acknowledge culturally accepted beliefs about the health benefits traditionally associated with natural, bucolic settings (such as mountain retreats, mineral spas, and woodland refuges). Researchers interested in therapeutic landscapes include such landscapes and beliefs as central to their concerns, but research into contemporary healthcare settings is also considered of equal importance, and often entails looking at indoor settings and built environments. As the analytic focus is to seek to understand how the beliefs and/or processes being examined in particular settings operate to social and cultural effect, how they impact on people and landscapes, and how aspects of health and healing might be affected, the research is not encumbered by the assumption of a rural-urban difference.

When particular interest has been expressed in the way that ‘natural’ landscapes can be invested with what has been called ‘sacred’ meaning, the analyses specifically avoid the straightforward assumption that this means they are especially blessed in terms of affording people good spiritual health and mental wellbeing (Walters, 1982). The implication is rather that it can be beneficial, even essential, for good mental health for people to be able to locate themselves in, or associate themselves with, places that they can relate to or feel at home in – two further important dimensions of what it is about places and landscapes that people appreciate or value. This leads into a second topic, ‘place and identity’, that also presents a new conceptual vocabulary for specifying how symbolic, social and cultural pathways mediate between locality and health.

**Place and identity**

A good deal of effort has been made since the second half of the 20th century to investigate the question ‘why is it that places can become of such value to people?’ Of interest at this point are the many, interrelated concepts that have been proposed to explain this issue, and which commonly suggest that it is possible for places to become a part of people’s inner worlds, daily practices,
meaning systems and self-identities. ‘Sense of place’ is the most general concept that tends to be used to connote the idea that particular places can have this level of significance for people. The concept of the ‘lifeworld’ or taken for granted world of everyday living, as developed within humanistic and phenomenological philosophy, conveys a more particular way of explaining people’s sense of place (Gesler, 1992, p738).

Tuan’s (1974) notion of topophilia distinguishes between a sense of ‘rootedness’ and ‘sense of place’. The former depends less on knowing what you value about an environment than habitually living within it, whereas the latter involves awareness of a landscape’s special worth and importance. However, both forms involve emotional ties and symbolic significance being attached to the special place.

Typically, the idea being conveyed in these writings about identity and place is that places can function to supply people and communities with identity and meaning. But, in addition, the relationship between place, identity and meaning has been turned around so that identity is but one of the ways in which place is given meaning:

‘Places provide meaning for people in many different ways: through identity and feelings of security, as setting for family life and employment, as locales for aesthetic experience.’ (Gesler, 1992, p738)

Sometimes work on place and identity moves beyond more humanistic intellectual traditions. Then more complex formulations tend to be offered. One suggestion, for example, is that place is where cultural processes, personal aspects of identity, and landscape change become tied up together in the same ways as time, space and power Pred (1984).

The latter approach has been identified as similar to Gidden’s notion of ‘locale’ (Moon, 1990) that points to spatial boundaries around day-to-day activities, and represents a structural rather than humanistic conception of ‘lifeworld’.

To date, probably some of the clearest evidence of the link between place, identity and health has been gained from research on the effects of ‘placelessness’ or ‘rootlessness’ (the opposite of what happens in settings that promote health and healing by providing a sense of place, expressing self-worth, and symbolising matters of value and meaning). Evidence from social psychiatry and other studies of the aftermath of slum clearance points to the emotional and social devastation accompanying the loss of the physical embodiment of communities and the sense of identity and belonging that has long been signified by it (Freeman, 1984; Walters, 1988).

Another source of suggestive evidence for the role of place and identity in health can be found in some of the far more controlled studies that overlap with the environmental preference research in environmental psychology. Research on people’s self-reported experiences of ‘favourite places’ (Korpela and Hartig, 1996) suggests that they afford people opportunities for regulating their emotions and feelings about themselves and their life goals. Emotional and self-regulation are two of the goals that can be set as outcomes for some forms of psychotherapy that are to be found within clinical psychology.

Research involving larger numbers of members of the public on how they view their local neighbourhood has shown clear evidence of a link between overall perceptions of feeling threatened and dissatisfied with an area and general physical and mental health as measured on standardised health self-report questionnaires. This leads to the conclusion that making improvements not just to the fabric and services but also to public perceptions or evaluations of the ‘ambience’ of some local areas should be a priority in attempts to benefit residents’ health (Sooman and Macintyre, 1995).

Not all of the studies reported here concern themselves with cultural and social processes as mediated through the lenses of values, meanings and symbolism; however, many of them do. Together with the material reviewed on therapeutic landscapes, what they suggest is that social science perspectives sometimes fit in with and sometimes add a different mode of investigation to the medical and environmental exposure-resource models. Currently, there are many projects seeking to promote health by means of community interventions, and it should be possible to evaluate them in relation to the different facets of the psychosocial pathways to health and illness identified in this report. This would lessen the risk of assessing their
effectiveness too narrowly, or only in terms of the most easily taken health outcome measures (e.g., blood pressure tests, days off work due to sickness, questionnaire measures of physical and social function).

It might also be worthwhile to encourage more research on people’s beliefs about health, therapeutic landscapes, place identities, and personal and cultural symbolism. Recently, there has been research into the meanings attached to woods, forests and trees as landscape features in contemporary life and culture (in a devolving Wales) (Henwood and Pidgeon, 1988, 2001), but health was not part of its brief, though this aspect could usefully be developed. There may well be merit in seeking to apply the theoretical schema developed in this paper for linking the environment and health (especially concepts such as stress recovery, therapeutic landscape and place identity) and to analyse it and other data on ‘cultural and landscape beliefs’ further. It might also be fruitful to attempt to develop new projects to explore cultural aspects of place, landscape and health.

Conclusion: the role of countryside agencies in promoting health and preventing illness

In developing strategies for promoting the health benefits of the outdoor places and spaces they oversee, and the amenities and services they provide, countryside agencies need to consider a range of agendas, including those of health professionals, environmental scientists and organisations, members of the public and policy makers. It is not enough to take the view that the best ways to promote health are those which accord with the scientific facts. As research into environmental and health risk has shown, the scale and complexity of risk is now such that matters of competing values, perceptions and goals must be taken fully into account.

The countryside agencies could make contributions in at least four areas:

- **Physical activity**
  - People visit, want to live in, or appreciate areas they consider green, rural or natural for all sorts of reasons. This means that the countryside is today a rich setting in terms of people’s interests, desires and motivation for involvement, contact and knowledge. Accordingly, even if physical activity is not the main reason for people’s interest, it can be encouraged as an additional benefit of other leisure pursuits and interests. The success of encouraging more people to take exercise as part of other activities they would usually undertake, and of making it possible for them to do both more easily, is known to be a major consideration in attempts to reduce health inequalities. However, no evidence was found in the course of the Forestry Commission study of the physical health benefits of taking exercise in outdoor settings specifically. This could be an outstanding matter for policy makers interested in the health benefits of outdoor settings to pursue.

- **Psychological wellbeing**
  - The experience and effects of chronic stress are widely discussed as among the blights of modern life, and there is a body of research evidence to suggest that there may well be benefits to psychological wellbeing (and hence to health) when people are able to experience respite or recovery from it. The lesson from research for countryside agencies wishing to promote opportunities for stress recovery in or by looking at such natural settings is that they should maximise the difference between these settings and the kinds of environments in which people routinely experience chronic stress. Therefore, in maintaining and designing the facilities offered to people who wish to enjoy countryside spaces, places and scenes for reasons of stress recovery, consideration may need to be given to avoiding ‘clashes’ with activities that might be seen as embodying some of the excesses of modern living (racing at high speed, striving for individual achievement, competitiveness etc).

- **Social participation**
  - The influence of the movement to promote health through a whole range of psychosocial (rather than just direct biological) interventions brings a whole range of issues that might not at first sight seem to be health-related to the centre of efforts to protect and promote health and healing. The idea that recovery from stress can be good for health is just one small part of a much
wider jigsaw of ways of enhancing health through the promotion of psychological wellbeing, and through health-enhancing forms of social organisation - one aspect of which is facilitating possibilities for social participation (and hence cohesion). The issue of the psychological benefits that can be engendered through experiencing a ‘sense of place’ needs to be considered further in relation both to the issue of social participation and the sensuous pleasures of contact with nature.

Ecological sustainability
The broad and multifaceted psychosocial model involving numerous different pathways to health can also contain within it a concern for healthy environment-human health relations via the practice of promoting their immediate and long term ecological sustainability. However, the issue of ecological risk is not one that is easily dealt with – as part of either an environmental or health policy agenda. There are many complexities from research in environmental sciences that need to be communicated to the public, and these are multiplied further when consideration is given to what members of the public can do to adopt more sustainable lifestyles.

Countryside agencies are already involved in partnerships with other community organisations in producing information for the public about how issues such as ‘polluted air and ultra-violet solar radiation’ are an integral part of the issue of living ‘healthier lives’ (see eg National Urban Forestry Unity, 1998). This makes clear the benefits of maintaining biodiverse environments, focuses attention on issues such as tree cover and planting and the benefits these can bring to people and communities in urban settings, and usefully considers other kinds of health benefit (including from physical activity, emotional wellbeing, and the amenity value of landscape quality). Bringing together interested environmental and health specialists to discuss taking forward communications with the public on ecological and health science, values and sustainable living might help to make best use of this concisely presented but wide range of collated information.

Research avenues
The material presented in this paper prompts consideration of further ways of developing and/or evaluating research on some of the specific links that have been made between the environment and health. In particular, it could prove useful as a reminder of the need to avoid relying upon an overly limited set of easy measures of health outcomes in evaluations of practical schemes that seek to implement aspects of the psychosocial approach to health promotion with individuals and communities. The area of evaluation of health interventions is one where a desire for ‘precision’ of measurement can sometimes overwhelm the more difficult task of interpreting the meaning or implications of findings. Changes to more intangible aspects of wellbeing (eg sense of comfort, rootedness, restored mental vigour) and to the fabric of communities that are health-sustaining or enhancing are important issues for consideration.

Much interest has been expressed in salutary health outcomes, and this is shared among many distinct areas of research, eg stress recovery, coping through emotional and social support, and social participation and cohesion. Efforts to encourage cross-referencing could bring a number of benefits, including wider recognition of the value of assessing both individual and social manifestations of health antecedents and outcomes. Outstanding research questions could also usefully be answered about the weight of evidence and breadth of theorising that has suggested that fear of danger and threat and mental fatigue are the major psychological principles underpinning stress recovery. Is it possible that other principles might also aid recovery when viewing natural scenes? And do the same principles operate when people take benefit from participation in a range of potentially restorative activities and settings?

The concept of therapeutic landscapes was identified as one that could usefully direct concern to the way structural processes, community values, symbolism and meanings affect social and cultural aspects of health, specifically as these are engendered within locales, settings, spaces or places. This concept enables the health implications of natural scenes and settings to be investigated without reproducing assumptions about the superiority of traditional landscapes to urban ones, while attending to the ways in which such places can become invested with emotional import and symbolic value. Investigations into place and identity might also be a further resource for initiating insights into why particular environments become so important to people, and how
identity can make places of value, and the impact such connections can have on individual and community health.

Recently, there has been research into the personal and cultural symbolism associated with particular places and landscapes. For example, one study by the present author has been conducted into the meanings attached to woods, forests and trees as landscape features in contemporary life and culture in the context of (political devolution in) Wales (Henwood and Pidgeon, 1988; 2001). However, this research did not have a concern for health as part of its brief, and this could usefully be developed. There may well be merit is seeking to apply the theoretical schema on pathways between the environment and health to extend research on perceptions of landscape and culture so that links can be explored between the way people see the surroundings they live, work, and belong in and individual and community health. This could begin with some further analysis of existing ‘cultural and landscape beliefs’ data. But it would also be fruitful to develop new projects to explore cultural aspects of place, landscape and health.

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