Nature unrelated behaviours in natural settings

Nature areas commonly provide a setting for harmless or constructive nature-unrelated behaviours. The four activities which were most frequently reported in natural urban landscapes were walking, dog walking, bringing the children to play and using the area as a through route (Millward & Mostyn, op. cit., p.58). All these behaviours would seem to be nature-unrelated in the sense that the person's engagement with the natural phenomena would not appear to be the primary motive for the activity. (In the case of walking this is perhaps less clear. While walking may be construed as primarily a physical exercise, it could equally be merely a "vehicle" for nature observation. However, the fact that enjoying the scenery, which was the fifth most frequent activity, was only mentioned by a small percentage of people would speak against this, especially since the percentage figures suggest that the activities were not taken to be mutually exclusive.)

These studies are somewhat better documented than are loitering or altruistic behaviour but they have apparently not yet been studied with regard to their concomitant psychological experiences (e.g. does it make a difference to dog walkers' psychological well being whether they take their walks in natural or built environments, how do they respond to natural landscapes and their opportunities and limitations etc.).

Even though such behaviours are apparently nature-unrelated, the location where they occur appears not to be entirely fortuitous but may be influenced by the characteristics of the natural environment. This is suggested by a study of two large urban parks in Boston and Hartford, Connecticut, in which the visitors' recreational activities were related to the vegetation of the sites (More, 1985; cited by Smardon, 1988, p.89). Grass was found to correlate positively with sleeping, indulging and eating and furthermore in Boston with play and in Hartford with reading. Shrubs correlated negatively with most activities which was attributed to the fact that their presence reduces the space available for activity. The effects of trees varied with their number and size. The number of trees correlated positively with many activities but especially with sleeping and reading, and in Boston only with conversing, eating, play, music/dance, feeding and indulging. The size of the trees was important in

that large trees were associated with conversing, play, reading and sleeping, and in Boston only with feeding, indulging, eating and music/dance. Of course the differences seen may be purely functional - for example grass is the only 'comfortable' surface available for sleeping in many towns, whilst the shade that trees provide was considered to be the variable of primary importance for encouraging the respective behaviours and the need for shade is obviously related to the climate of different areas.

Nevertheless even nature-unrelated positive behaviours are likely to be influenced by the "stimulus characteristics" of the natural features which provide the setting for them. (There is no reason to assume that this does not also apply to anti-social behaviour, but there do not seem to be any studies which have examined this.) The knowledge of such influences can be usefully employed in the design and management of natural sites. It enables the designer/manager to exert a modicum of control over visitor behaviour, for example in the endeavour to protect wildlife from disturbance without having to resort to measures which would be perceived as controlling by the users. Further research into these relationships is desirable, especially also of the "action" type, i.e. the cyclic monitoring of the effects of specific design features and their modification in the light of the research results with the view of improving the "user friendliness" of natural areas for both humans and wildlife.

Implications for the design of natural areas

The importance of the research referred to above is underlined by a finding on a non-natural design feature in a natural urban landscape (Millward & Mostyn, op. cit.). In one of the three sites which were examined with regard to their use by people a fence had been erected around a pond area in order to prevent dogs from disturbing the wildlife there. The investigation showed that the fence acted not only as a barrier for dogs but also for people, even though it had a gate which could be easily opened. Modifications on the basis of this finding and further monitoring of the effects would presumably have eventually produced a solution to the problem of protecting the wildlife from the dogs without discouraging the people from using the area.

It is intriguing to speculate about the reason why the fence acted as a "psychological barrier", as the researchers called it (ibid, p.95). Fences are, of course, powerful symbols of ownership and signify exclusion from access. Nevertheless one might have expected that people would at least have explored the possibility of access and then found the gate to be open, particularly since the pond was "generally considered the most attractive features of the site" (ibid.). However, fences are not only symbols of ownership, they are also symbols of overt external control. This is itself may make the aversive, especially in a natural environment. It may then have been the aversiveness of the fence as an instrument of control which dissuaded people from approaching it.

Whether visitors of the natural urban landscape refrained from using the pond area because they interpreted the fence as a symbol of ownership or of external control, or indeed for any other reason, remains an issue for empirical investigation. It is likely though that many people would be intolerant of, or disappointed by, signs of external control in a leisure environment. Such settings are no doubt visited by people with the expectation of deriving a positive experience and research has shown that for some people it is a prerequisite for having a positive experience that they perceive themselves to be in control (Burger & Cooper, 1979).

The importance of spatial and behavioural control

The importance of 'control' in nature pursuits, as indeed in leisure behaviour in general, has been underlined by various authors (e.g. Knopf, 1987, pp.787-788; and Francis, 1989). With regard to psychological well-being it would appear to act as a mediator variable as already suggested in the case of "soft fascination" and adventurous behaviour. In the case of cognitive freedom, it was the control over one's thoughts which enabled a sense of mastery and hence self-esteem to emerge (see above), while in the case of adventurous behaviour it was the control over one's behavioural goals with the resulting high probability of success which fostered self-esteem.

Nature-unrelated behaviours in natural settings are also likely to enhance self-esteem since they are largely self-controlled and thus provide the person with

the opportunity to exercise mastery and increase her/his competency and/or set achievable goals. Moreover they are likely to be pleasurable or, alternatively, reduce displeasure because otherwise the person would presumably not engage in them. Thus they would not only contribute to her/his subjective well-being through augmenting self-esteem but would also foster her/his affective well-being by increasing positive mood.

The behavioural control people can exert in nature area may not only contribute to their self-esteem, it may also allow them to achieve other desired psychological conditions such as for example "self-regulation" (Korpela, 1992) and "optimalization" (Knopf, 1983). These would presumably have some connection with well-being. However, variables such as these are little researched both in relation to nature contact and states of psychological well-being and it would therefore not be appropriate to discuss them here. Nevertheless they are interesting constructs and invite investigation. Just as was found in the case of the emotional and cognitive effects of nature exposure, research into the beneficial influences of contact with nature on human behaviour and their consequences for well-being is evidently only just beginning. It is likely that other variables besides the ones mentioned here remain to be identified and investigated.

It may be worthwhile to point out that the variable of control is considered to be important in nature pursuits not only with regard to behavioural choice but also with regard to special command. Visitors are said to exert a certain amount of spatial control over public spaces including natural areas (c.f. Francis, op. cit., p.157). This is particularly true for regular users but others may also feel a sense of control over open spaces such as neighbourhood parks and community gardens. It has been alleged that spatial control (or its absence) has strong psychological consequences, such as contributing to anxiety, satisfaction and pride (Lynch, 1981; cited by Francis, op. cit., p.158) and psychological well-being could presumably be another one. However, all these relationships remain to be empirically investigated.

Spatial control is of course related to behavioural control although the two are not synonymous. Thus a person who possesses the former tends to be able to exercise the latter. Furthermore, by exercising the latter, the former may be

gained. There appear to be some behaviours which are particularly powerful in creating a sense of control. Amongst these is caring for a site, as is suggested by reports of users of urban natural landscapes. Those who participated in a wildlife project and were involved in conservation work made the site apparently "part of (their) own territory", while those who did not have the opportunity to do so showed "less personal identification with the area" (Mostyn, op. cit., p.8).

Issues surrounding spatial control and, linked with it, behavioural control, are not only relevant to human well-being but they may have a direct influence on the very existence of natural landscapes. This is indicated by the study into local residents' reactions to the development proposal already cited (Burgess et al, 1991). One of the factors which seems to have contributed to the lack of desire or even active hostility for the conservation of the site which the residents expressed was the resentment they felt apparently against the conservationists who, in their view, had illegitimately claimed control over their neighbourhood site. They felt evidently "spatially disenfranchised" by the conservationists as much as by the motorbike riders who used the area as a practice ground. They saw in development a means of regaining access to and control over a site which they felt ought to belong to them and give them pleasure.

These findings underline the need to respect and be sensitive to people's evident desire for spatial and behavioural control. Where "institutional" control is required, for example in the interest of vulnerable vegetation or wildlife, an attempt ought to be made to guide users' spatial and other conduct subtly without offending or undermining their sense of control. In order to be able to exercise such subtlety and sensitivity more research is needed, not only into the complex issues of users' behaviours and perceptions but also into "co-users'" behaviours and perceptions, and "providers'" motives and behaviours and all the interconnections.

Nature in control

A related area which it would be of particular interest to examine is the relationship which may exist between people's sense of control and their

appreciation of nature's control. If to some people find it disagreeable that others have control how do they react to the evidence that nature is in charge?

It seems that many people may not like this either unless they are "ardent conservationists". Thus in the development study the residents who were neutral or in favour of development saw in the area a valueless wasteland and rubbish tip (Burgess et al, op. cit., p.513). Furthermore the studies on landscape preferences have shown that, though people prefer natural over built views, they do like them to show evidence of some human influence (c.f. R. Kaplan, 1983 p138).

Conclusions

Practically all aspects of exploratory behaviour of nature remain to be studied (e.g. which parts and/or kinds of nature trigger it, under which conditions, with what outcomes etc.), and so does the relationship to human well being.

Natural urban landscapes may be particularly good sites for studying people's spontaneous behaviour with nature because the sites are often small and would provide the researcher with a "captive population of subjects. Attention ought to be paid in such research also to nature-elicited, nature involving behaviour which is destructive rather than constructive such as vandalism or disturbance of wildlife or the vegetation. There may be relationships with exploratory and/or adventurous behaviour, and this might give some hints as to how people could be discouraged from engaging in such destructive activities.

A topic, which may be of particular importance with regard to behaviour in nature settings and which also requires much more investigation, is that of control. There are other types of control apart from behavioural control (e.g. spatial, cognitive etc.), and many mechanisms whereby it can be exercised. Therefore research into issues of control needs to be multifaceted; longitudinal as well as cross sectional studies may be particularly relevant (e.g. how a pattern of control developed).

3.3.4 Developmental effects

The development of children

When considering the ways in which nature can influence the development of human beings, children are the obvious population to study but development is of course an ongoing process which occurs all through life. There is no reason to assume that, if exposure to nature can have positive developmental effects, these would be limited to a specific stage in life. Similarly the advantages which contact with nature may have for people's behaviour and the development or enhancement of a sense of mastery and self-esteem, which were discussed in the previous section, may be particularly emphasised in relation to children and young people, but they are equally relevant to adults.

Children, though, are often alleged to have a special relationship with nature in that they react to it more spontaneously. In section 2.2.2 it was reported that they appear to have particularly strong feelings toward nature, although this may be part of their generally more intense emotional experiences rather than a reflection of any specific affinity with nature. Nevertheless their receptivity might be expected to make them particularly open to any wholesome influences from nature. This assumption appears to underly statements which stress the importance of children's access to nature. For example nature areas in towns such as residential woods and wild spaces are alleged to extend greatly "the children's range of exploration, experience and play - all of which contribute to personality development" (Tartaglia-Kershaw, 1982, p. 25), and regret is expressed at the limited availability to children of such sites and the threat to them due to development (cf. Harrison et al., 1987, p. 358).

Despite the marked emphasis given to children's relationship with nature there appears to be very little empirical research in this area. Therefore it is particularly welcome that an organisation such as "Learning through Landscape" has amongst its objectives a research focus. In a study which it commissioned children were asked about the meaning of landscape features in their school grounds such as trees, flowers, water, animals, dens, seating arrangements, tarmac, litter, etc. (Titman, pers comm). It is not necessary to

go into the details of the findings here (which are due to be published shortly), but what is of interest is that children associate evidently with the landscape features very precise, though rich meanings (e.g. weeds have very little prestige, they are good for wildlife but not pretty), and natural settings are used by them in varied ways, i.e. they give rise not only to a single activity but to a multitude (e.g. playing, thinking, feeling, etc.).

Thus nature is very meaningful and stimulating to children. Does contact with it also enhance their well-being? This question does not seem to have been addressed as yet and in order to do so researchers would first have to define what well-being means in relation to children. In the case of adults it is now generally taken to be a subjective state identified by the adult her/himself (see above, section 3.1), but in the case of children this concept may not be sufficient because of their marked developmental needs and limited autonomy.

One could speculate that these developmental needs may be particularly well met by natural environments because of the rich stimulation they provide. However this in itself is not enough. It is interesting to remember an account given by Margaret Mead of the childhood of the Manus children of the Admirality Islands (cited by Tuan, 1978, pp. 12-13). These children, who are cared for by their parents with much attention but minimal schooling, live in a natural environment full of potentially enticing objects such as palm leaves, rattan bark, coconut shells etc. yet "unaided by the rich hints for play which children of other societies take from the admired adult traditions, they have a dull and uninteresting child life". Accepting that there may be a Western bias in the anthropologist's assessment of the children's situation, it nevertheless would seem to point at the fact that children's developmental requirements ought to be taken into consideration in defining their well-being. Moreover it is merely a common assumption that natural environments are more stimulating than man-made ones, as Tuan has pointed out (ibid. p. 12).

Still, whether or not natural environments are superior to man-made ones in catering for children's need for stimulation there is little doubt that they are an abundant source of such stimulation, and children acknowledge this as Titman's findings show. The same is suggested by a study which examined childhood memories of, and children's current attitudes to, outdoor

environments (Sebba, 1991). The researches wanted to find out whether adult memories of childhood places are factual recollections or interpretations. Furthermore, she hoped to identify the main factors which contributed to the respective landscapes having been committed to memory.

Both adults and children participated in the study. The adults were from various backgrounds, some of them having grown up in urban and some in rural areas. About half were architecture students, and the rest were teachers, nursery school teachers and school principals. The children who participated in the study were between the ages 8 to 11 years. Over half lived in urban areas.

The adults were asked the question "which place was the most significant for you in your childhood?" The replies were in the form of written descriptions and drawings and referred spontaneously to the age range from 4 to 10 years. They indicated that, regardless of personal characteristics (age, sex, and other background variables) for 96.5% of the subjects, the outdoors had been the most significant environment. Moreover, in 97% of the sketches and in 84% of the writings elements of nature appeared (e.g. bushes, rocks, trees, sand etc.). The author pointed out that this predominance of natural phenomena was consistent with the results of other studies into environmental memories, where nature was also found to be the foremost feature in the recollections (ibid., p. 401).

The children were asked the question "what is your favourite place?" An analysis of the answers showed that they were very different from the adult recollections. Their preferences varied depending on gender and settlement background, and overall only 46% of them preferred the outdoors. Gender exerted a significant effect in that the majority of the boys preferred the outdoors, while the majority of the girls preferred the indoors; and type of settlement was important in that the outdoors was more preferred by rural children. The factors interacted in that rural girls still preferred the indoors; and of the urban boys only just over half preferred the outdoors, while very few of the rural boys preferred the indoors (ibid., p. 402). These results suggested that adult memories may be largely interpretations rather than reproductions of real occurrences.

A further analysis was then carried out on the children's responses in order to establish the type of outdoor experiences they were having. As in the case of the adults, it was found that references were overwhelmingly to natural phenomena, so that for children too the 'outdoors' evidently represents primarily nature. Furthermore, although not all of them preferred the outdoors, the great majority showed a positive attitude towards it.

Their responses indicated that they related to natural surroundings in a wide variety of ways. These were categorized into activities, feeling, perception and imagining. Activities were those also identified in other studies, such as walking, running, playing hide and seek, climbing trees etc. Feeling referred to sensory experiences such as feeling space and openness, as well as to those connected with individual and social needs such as feeling free and independent, and to those related directly to nature such as feeling close to, and wonderment about it. Perception included the sensitive attending to one's bodily organs as they transmitted the information provided by the surroundings. Imagining involved the attempts to complete patterns suggested by the environment through fantasy, like imagining shapes in clouds or tree barks etc. Thus nature evidently stimulates the children's whole being in that it arouses their senses, feelings, actions, and imagination.

In a second part of the study a small group of adults were asked about what it was about the outdoor experience which engraved it in their memory? The answers showed that it was first and foremost the perceptual experience, and that this was recalled as being intense but diffuse with all the senses being involved.

This prominence of the perceptual aspect of nature experience in adults' childhood recollections would seem to be at odds with children's broadly-faceted responses. However, the researcher did not discuss this. Instead she related the adults' recalled experience to the construct of "undirected cognition" proposed by Mussen et al. (1979), evidently on the basis that both occur in response to outdoor stimuli in familiar settings (Sebba, op. cit., p. 406). This line of argument would seem to be somewhat dubious, as does her subsequent conclusion that there is "a unique relationship between children

and their surroundings" (ibid., p. 410), since neither follow directly from her data.

Notwithstanding this, Sebba's discussion of the importance of children's experience of the natural world for their development is very relevant and informative. Studies on the development of the nervous system have indicated that children's sensory integration develops until the 10th year. It is suggested that this process occurs through children's active interaction with the environment (Ayres, 1979). According to Sebba, natural environments are particularly valuable in this respect because of their specific characteristics which distinguish them from man-made ones. Thus "the stimuli of the natural environment simultaneously assault the senses at an uncontrolled strength" (ibid., p. 416), which means that an adaptational effort is required which engages awareness. Furthermore in the natural environment stimuli occur over a relatively large range and their changes are continual over time or space, which gives rise to a refinement of the perceptual analysis and is alleged to foster behavioural control. In contrast the stimuli of man-made environments tend to be static or change occurs through discreet progression.

Compared to the built environment, the natural environment is therefore characterised by instability. This triggers not only alertness and attention and captures the senses but also encourages thought and imagination. Also natural shapes are usually soft and rounded, and mostly ambiguous and infinitely varied, which allows for endless projection and interpretation. The lines of the man-made environment, on the other hand, are clearly defined and tend to be simple and repetitive. Finally, life springs from the natural environment and it causes inanimate objects to move, which gives the child a feeling that s/he is in contact with living elements which have force and meaning and to which s/he cannot be indifferent.

Thus the natural environment has many characteristics which may make it ideally suited to foster children's perceptual integration and perhaps other areas of development. However, the importance of this nature contact remains to be ascertained empirically. There are no doubt many children, especially in inner urban areas, who have very little experience of natural environments. Does this mean that their perceptual integration is incomplete or retarded, or

is it perhaps merely shaped differently so that different sensibilities result? This would seem to be an interesting area of investigation, although perhaps a difficult one because of the problems researchers would face in attempting to control confounding variables.

Intense perceptual experiences of the senses were seen by the adults of the study as the hallmark of childhood. This is consistent with psychologists' models of children's intellectual development, which is construed as progressing from a dependence on sensory experience with its associated close contact with the physical environment to an increasing ability to reach conclusions based on partial sensory information. According to Piaget (1923) the child proceeds gradually from a stage where perception conducts thought to a stage where it obeys it (cited in Sebba, op. cit, pp. 412-413). Together with this occurs an essential change in the child's conception of the word, which changes from an adaptive and sympathetic to an analytical and critical attitude. This "development away from perceptual pre-eminence seems 'universal', occurring in all countries at all times", according to Bower (1977, p. 52), but Sebba, referring to Levi-Strauss (1962), suggested that it may at least be more pronounced in, if not unique to, Western culture (ibid., p. 414).

The restoration of 'childlike' intense sensory experience in adults

There would appear to be a nostalgia for the intense sensory experiences of childhood, which is suggested by statements such as "It has been argued that we would be happier and healthier if we stayed closer to the world of our senses" (Bower, op. cit., p. 52). It is intriguing to think about the reasons for this nostalgia. There is no doubt great pleasure attached to "that original, that primal seeing" (Bialik, 1938/39, p. 44), which may be one of the reasons for the longing to re-experience it).

Furthermore it would seem that moments of intense sensory experience are moments of liberation, where all the 'cultural ballast' is thrown off. This is obvious in childhood, where the 'ballast' has not yet been acquired. "The child's individual, multidimensional world" has not yet become "a scientific one - identical to that of his/her friends" (Sebba, op. cit., p. 414). For the adult this liberation results in a heightened sense of being alive - perhaps

because the awareness of one's own death is part of the 'cultural ballast' or perhaps because the sympathetic, adaptive attitude which seems to accompany cognitively unmediated sensory experience (see above) allows one to become part of the living natural environment.

There may be other reasons why adults are nostalgic for the intense sensory experiences of childhood but it is not the place here to pursue these speculations. What is of interest is that there appears to be a parallel between this nostalgia and the preoccupation of writers from diverse fields (e.g. aesthetics, philosophy, psychology) with what might be called a higher form of perception central to which is an intense sensory experience. Such perception has been variously called "allocentric" (Schachtel, 1959) "percipience" (Osborne, 1970) or "Being-cognition" (Maslow, 1968). It requires openness, receptivity, and a "full turning toward the object" (Schachtel, op. cit., p. 179). It is characterised by a complete absorption in the perceived object without conceptualisation, analysis, imaginational embellishment or any other type of relating (Osborne, op. cit.). Processes of comparing and evaluation are suspended, and the object of the perception is seen independently from human needs and purposes as an end in itself (Maslow, op. cit.; cf. Leff, op. cit., pp. 141-142).

Perception of this kind has an important function in Maslow's model of human motivation and development (1968, 1970). It is associated with an and tends to facilitate "peak experiences". These are moments of overwhelming joy or profound experiences of unity and understanding (as in mystical experience). Such experiences tend to occur more often in self-actualising people (Cofer and Appley, op. cit., p. 672).

Before turning to the concept of self-actualisation and its possible relationship with nature experience, it may be worth pointing out that, though there is a parallel btween the intense sensory perception of childhood and the "phenomenological" or "allocentric" perception of adulthood, they are not the same. The former occurs spontaneously as part of the original functioning of the child without her/his contribution. The latter, on the other hand, arises out of a consciously adopted attitude and has to be learnt. One might speculate that those adults who feel nostalgia for the former are those who have not yet

reached the level which would allow them to experience the latter, this being the majority of us if theorists such as Fromm or Maslow are to be believed.

Self-actualisation

The concept of self-actualisation (or kindred ones) has been put forward by writers of various backgrounds such as existential philosophers (Jaspers, 1965), sociologists (Riesman, 1950), neurologists (Goldstein, 1939), and psychologists of psychoanalytical (Fromm, 1941), existential (May, 1953), client-centred (Rogers, 1951) and humanistic orientation (Maslow, 1954). It is the latter's model which has become most widely popularised, and has also found entry into the field of nature research.

According to Maslow (e.g. 1968) human motives are hierarchical in that the lower needs must be more or less satisfied before the higher ones can emerge. The hierarchy consists of five levels, which are

- physiological needs, i.e. needs to maintain various homeostatic bodily conditions (like hunger, thirst, etc.)

- safety needs, i.e. needs for security, order, freedom from anxiety and fear, and stability

- belongingness and love needs, i.e. needs for friendship, companionship, and intimate relations with other human beings

- esteem needs, i.e. needs for accomplishment, self-respect, independence, and the esteem of other people

- need for self-actualisation, i.e. the desire to realise one's potential as a human being (cf. Leff, op. cit., p. 44).

The first four levels of motivation are regarded as "deficiency" (D) needs, whose satisfaction is necessary and will result in the absence of feelings of deficiency and prevent illness. However, fulfilment, B-love (i.e. love which is characterised by enjoyment, admiration, delight, and appreciation rather

than use which is part of D-love), creativity and the enhancement of health come only with the striving for self-actualisation, which is a "Being" (B) need.

Self-actualising people are those who are fully functional and they realise what is best and possible in human nature (the basic assumption being that human nature is good). They are accepting of themselves and others, and are autonomous in that they are independent of the culture and environment which surround them. They seek solitude and privacy to a high degree but are problem-oriented rather than ego-centred. They are spontaneous and continue to have a freshness of perception and appreciation, which goes hand in hand with more comfortable relations with reality. Therefore they tend to live closer to reality and to nature than most people do (Maslow, 1987, pp. 128-145).

Self-actualising people have other important characteristics, such as a basic unpredictability of behaviour (they are "postdictable"), which results from their ability to "respond fully to the uniqueness of the particular constellation of external and internal stimuli operative at any moment" (cf. Cofer and Appley, op. cit., p. 679) and is not to be confused with a lack of dependability. These details need not be of concern here because the main interest is in the contribution which contact with nature might make to human beings reaching this 'height of development', rather than with the details of the constituent components of this developmental stage.

It was already mentioned that self-actualising people are alleged to live closer to nature than others. Furthermore, they are said to have peak experiences more frequently, or more intensely or more perfectly than other people. In peak experiences B-cognition prevails, i.e. cognition of being rather than cognition which is organised by deficiency needs (D-cognition). In B-cognition perception is concrete, rich and absolute, and the nature of the percept is seen more directly, in a receptive, passive manner. It is an experience which is an end in itself and is always a good one which triggers emotional reactions of wonder and awe. Peak experiences can occur in various contexts such as in B-love, aesthetic perception, mystic contemplation, some forms of athletic fulfilment, etc. They can also be nature experiences (Maslow, 1959, cited by Cofer & Appley op. cit. p.672).

Does contact with nature help people to become self-actualising?

It would appear that nature may be important for self-actualising people in at least two ways; firstly, because they are close to it, and secondly because it can provide them with peak experiences. It does not seem to be clear from Maslow's writings whether closeness to nature and peak nature experiences can actually foster self-actualisation or whether they are simply concomitant to or result from it. According to Scott (1974) the former is the case. He suggested that people such as John Muir and Henry Thoreau have used their peak experiences in wildernesses to further their psychological growth. However, his account is purely speculative and subsequent empirical investigations which have examined the relationship between wilderness and self-actualisation directly have generally not born it out.

A study which has lent at least some support to the nation that there may be a link between wilderness experience and self-actualisation is that carried out by Young and Crandall (1984). Three hypotheses were formulated. It was proposed, firstly, that persons who select wilderness as a form of outdoor recreation are more self-actualised than those who have not visited wildernesses, and, secondly, that amongst the non-users those who intend to visit a wilderness are more self-actualised than those who have no such intention. Thirdly, it was hypothesised that, amongst the people who do visit wildernesses, those who do so frequently are more self-actualised than those who are less frequent users. Two ancillary hypotheses were that self-actalised people hold a more favourable general attitude towards wilderness, and that they are more committed to undisturbed wilderness than are the non self-actualised.

Two groups of subjects participated, one taken from the general public and the other of wilderness users. The former were selected as a random sample on the basis of their telephone numbers and interviewed by telephone. The latter were users of Boundary Waters Canoe Area Wilderness in Minnesota to whom questionnaires were mailed. The interviews and questionnaires contained the same questions. The main questionnaire was a shortened version of the Personal Orientation Inventory (POI) by Shostrom (1974), which is the best validated measure of self-actualisation based on Maslow's ideas.

Furthermore, a scale for measuring a general wilderness attitude was devised and this was used with the scale measuring commitment to wilderness developed by Stankey (1972).

The results showed that, in accordance with the first hypothesis, the wilderness users scored significantly higher on the self-actualisation scale than the non wilderness users. However, neither the second nor the third hypothesis were supported by the data. The subsidiary hypotheses appeared to receive some support in that a significant relationship was found between self-actualisation and a general positive wilderness attitude, and also between self-actualisation and Stankey's wilderness 'purism'. However, the correlations were extremely small and the significance was considered to be a result mainly of the large sample size.

The authors concluded from their results that "self-actualisation has only a slight positive relationship to wilderness participation and attitudes in larger population groups", and suggested that what may be more important than participation in wilderness activity is the meaning given to it, which may be related to self-actualisation in some people. According to them "self-actualisation may cause wilderness use either directly or through moderating variables" (Young & Crandel op. cit., pp. 158-159).

This conclusion would seem to be compatible with the results of another investigation which set out to examine directly whether wilderness exposure increases self-actualisation (Lambert et al., 1978). Four groups of student subjects participated in the study. Two of the groups were subjected to a wilderness experience, while the other two served as controls. The first group took part in a survival course whose purpose it was "to provide intense and sustained physical and mental challenges" and which lasted for 30 days, 28 of which were in a desert. The second group attended an applied sociology course (entitled Creative Learning through the Application of Social Principles), which comprised among other experiences a 10-day wilderness trip involving encounter groups and other human relations exercises. The third group participated in an 8-week personal adjustment course, which consisted mainly of lectures but involved also some small-group structured learning experiences. This group was considered to be a "pseudo treatment" control.

The fourth group attended a social psychology course which had "strictly intellectual" goals. It served as a "no treatment" control group.

Two measurement instruments were used, the Personal Orientation Inventory by Shostrom (op. cit.), which measures self-actualisation, and the Tennessee Self-Concept Scale by Fitts (1965). The questionnaires were administered to all the subjects at the beginning and end of their respective courses, which mean that the survival course subjects were retested after 30 days and the other subjects after 60 days. No significant differences were found between the groups in the self-actualisation scores. However, the results indicated significant differences between the groups for the self-concept measure. Both the survival and the sociology group reported increases in their self-concept which exceeded those of the no-treatment control group; and the survival group also showed increases which were greater than those of the pseudo-treatment control group.

Thus contact with nature in a wilderness setting in the context of a survival training (or a course aimed at personal growth) did not enhance self-actualisation, although it did heighten self-esteem, as was also found in other studies (see above, section 3.3.3). This would seem to be consistent with Young and Crandall's results that more frequent wilderness use was not found to be related to greater self-actualisation and therefore did not directly cause it.

The link between self-actualisation and wilderness participation would then appear to be due to self-selection, i.e. self-actualising people seeking some closeness with nature in the form of wilderness activities (though these do not have to be numerous, as was indicated by the lack of connection between frequency of wilderness use and self-actualisation).

There is some evidence that the study by Lambert et al. may, in fact, not have been an appropriate test of the hypothesis that nature contact enhances self-actualisation because the subjects were students. According to Maslow (1987, p. 126), who was able to identify only one self-actualising subject amongst 3,000 college students who were screened, self-actualisation is "perhaps not possible in our society for young, developing people".

How useful and testable is Maslow's model of self-actualisation?

The studies cited are obviously merely a beginning in the attempt to elucidate the possible relationship between nature contact and self-actualisation. Wilderness activities are only one form of such contact, and not a very common one at that. This would suggest that investigation ought to be extended to other nature settings.

One may also wonder whether one questionnaire is sufficient to assess a construct such as self-actualisation, however well validated. (Lambert et al. admitted actually that their abbreviated version of the POI required further investigation.) Self-actualisation is, in fact, a rather vague construct, as Cofer and Appley have pointed out (op. cit., p. 692), and as such could presumably be defined in a way which makes it amenable to observation and measurement in a variety of ways. It is of course also a concept whose grounding in reality may be questioned. Maslow's model is a speculative one which was developed on the basis of scant and uncertain empirical evidence (it rests mainly on personal observations of acquaintances and friends, and public and historical figures; Maslow, 1987, p. 126). While it has received some support from empirical research (cf. Leff's discussion of Herzberg's work; op. cit., pp. 47-48), several aspects remain highly dubious (such as its "pseudo-biologist" orientation, for example, which was not described here).

However, whether or not Maslow's model is valid in parts or as a whole need actually not be of major concern. The concept of self-actualisation is an important one, regardless of whether it is linked to a hierarchical model of human needs or whether it is conceived as a separate variable within a general framework of human development and functioning, as has been done by the other theorists mentioned above. (Their accounts are no less speculative than Maslow's, and it has to be admitted that the belief in the essential goodness of human nature, on which they are ultimately based, may seem to be questionable to some.)

Concepts like self-actualisation are rather unfashionable nowadays, where the possibility of knowing reality is questioned by post-modern theorists (cf. Best and Kellner, 1991, p. 9), and post-structuralists reject the notion of an

unchanging human nature (whether good or bad), contending that meaning is produced not in a stable, referential relation between subject and object but only within the infinite, intertextual play of signifiers (ibid., pp. 20-21). Nevertheless the term embodies some personal characteristics which clearly exist in some people and which are desirable in many more. It is the 'self-actualising' person with her/his non-utilitarian, non-exploitative, existential approach to life who can presumably live in harmony with nature and find sustainable solutions to the world's difficulties by virtue of her/his creativity. Arguably there is a need to subscribe to the concept of self-actualisation and help it to develop a basis in reality, even if it does not already exist.

If it is correct that self-actualising people are more likely to be able to respond constructively to the human and environmental problems facing the world, then the question as to how people come to strive for self-actualisation, and perhaps could be encouraged to do so, becomes urgent and ought to be addressed by research. Theorists such as Fromm have suggested that modern society actually impedes a person's attempt to seek to become authentically her/himself through rejection, ridicule and punishment. These barriers make a task which in itself is not easy, extremely difficult. This ideas surely hold true today, since there is little doubt that self-actualising people are not ideal candidates for a consumer-oriented marked economy, which substitutes "life style" for authenticity.

How could nature aid self actualisation?

Systematic attempts at helping people to become more self-actualising have so far been made mainly in psychotherapy, the orientation most closely associated with this being Rogerian client-centred therapy. Even if this were an effective method (which has been questioned by some), it is hardly feasible - nor indeed desirable - to treat the whole world with psychotherapy. Therefore the idea that contact with nature might foster self-actualisation would seem to be an attractive one. It would also appear to be intuitively plausible despite the fact that the two investigations which have so far tested it failed to support it.

In nature there is little external pressure to conform, and therefore the person can perhaps confront "the world" and her/himself more immediately and directly than in any other setting. One might speculate that this would encourage a self-actualising attitude to life. Accordingly it would seem to be worthwhile to study this area further, and a transactional approach (see above, section 2.1) might be most fruitful.

In this context it might be worthwhile to point out that, if self-actualisation is a desired goal, and if it is the absence of pressure for conformity and the immediacy of experience which may contribute to nature providing an ideal setting for encouraging it, then a pre-occupation with the overt design and even management of natural areas may be misguided. Design and management can be construed as interpolations between nature and human beings, thus making it more difficult for the latter to encounter the former in an existential manner. It would appear then that different aspects of psychological well-being may require different approaches.

Peak experiences in nature

Just as it would seem to be worthwhile to investigate the relationship between nature contact and self-actualisation further, so it would be desirable to study "peak experiences" in nature empirically, since these appear to be significant moments in people's lives even if the reasons for this remain to be explored. There do not seem to be any studies at all on nature-induced "peak experiences", but one might speculate that a great number of people have them at one time or another in their life. The majority of us may have only "moderate peak experiences", as compared to the intense and profound experiences of the "transcenders" (Maslow, 1987). Nevertheless they are memorable and important, as is indicated by the way in which they are related to other people. Thus a jogger may tell of his unexpected encounter with a fox in the local park on his morning jog, or a tourist may relate with great animation yet thoughtfulness her experience with a sea lion who emerged from the sea in front of her boat.

It would be intriguing to find out what makes these experiences so special, and what meaning - if any - they have for the person's general development

and/or psychological well-being. Can they foster a striving for self-actualisation, as Scott alleged? They do seem to be "existential moments", which induce a heightened sense of being alive. Is their impact related to their unexpectedness and rareness, or is it a function of the immediacy with which nature is revealing itself at that point in time? Are city dwellers more susceptible to them even though - or perhaps precisely because - their chances for having them are presumably reduced compared with rural dwellers? It has been suggested that nature experience derives its psychological significance for the majority of people nowadays because of its distinction with the more commonplace settings in which we live i.e. it is "determined by the experiences of every day built environments" (Hartig and Evans, 1993, p. 429, p. 427).

Anecdotal evidence would suggest that the impact of such peak nature experiences is not necessarily limited to the moment when they occur but may influence subsequent interests and behaviours. Thus "seeing an oyster catcher close up for the first time converted city-bred Alan Alcock into a nature lover", and led to subsequent twenty years of bird watching as well as latterly to volunteering as a guide at a local hole for watching harriers (Forest Enterprise, 1993, p. 3). Accordingly, a peak nature experience can evidently have important psychological repercussions for the person to whom it has occurred, whether it encourages her/him to strive for self-actualisation or not.

Of course such experiences are moments of "existential encounters", which, by definition, cannot be planned and/or supplied as can consumer goods. This is not to say that attempts ought not to be made to create (or just let be) a setting which might foster the emergence of peak nature experiences. At the present time though, too little is known about them even to begin to understand what aspect of a nature site, if any, might contribute to their appearance. In any case, the very unpredictability of peak nature experiences will always make planning and/or designing for them difficult. This is also supported by research into environmental biographies (e.g. Wyman, 1985), which has shown that significant nature experiences can occur anywhere and are certainly not necessarily restricted to areas where nature may be officially located by planners (e.g. wildernesses, parks or even wastelands). Very often, despite their unexpectedness, they arise as parts of people's everyday lives "in

the context of what is known and familiar" (ibid., p. 181), involving phenomena such as light and shade, sunshine, fresh air, storms, the seasons etc. which are not bound to specific environmental settings.

Nevertheless, it would seem that people do consider experiences similar to those described by the term "peak experience" as important benefits of visits to nature areas, and that they may also associate them with personal growth. This is suggested by a study carried out by Rossman and Ulehla (1977). A questionnaire was constructed on the basis of field interviews with wilderness users about the rewards they derived from visiting such areas. Thirty wilderness benefits were included in the questionnaire, which had to be rated for their importance on 6-point scales. In a separate questionnaire the same 30 items had to be rated with regard to how likely they would be in five settings: wilderness, improved mountain country, outdoor urban recreation area, indoor urban recreation area, and home. Two more questionnaires were included, one asking for information about how much time the testee actually spent or would like to spend in the respective settings, and one in which s/he was asked for demographic data.

The questionnaires were administered to students who had a varied background with regard to wilderness use. A factor analysis of the data of the main questionnaire furnished five factors. The first one, which accounted for the largest proportion of variance (26%), was interpreted by the researchers as reflecting wilderness benefits which were associated with a "renewed and expanded self-identity" (ibid., p. 51). Amongst the items which contributed to it, the two which received the highest overall importance ratings were "enhances your self-identity" and "chance for personal growth". Four of the six remaining items are reminiscent of the components of peak experiences such as "chance for spiritually uplifting experience" and "encounter views that enlarge the spirit of Man". Similarly "feel part of nature" and "feel part of the life cycle" would seem to reflect the receptive, passive manner in which the environment is perceived in peak experiences (see above). The remaining two factor items "opportunity to communicate with nature" and "chance to work in cooperation with nature" are more reminiscent of the sympathetic, adaptive attitude which is assumed to accompany children's intense sensual experiences of nature (see above).

It would appear then that people attribute considerable importance to the experiential and developmental benefits that contact with nature might provide. The data indicated that the subjects expected to derive them most from visits to a wilderness, followed by the improved mountain country setting, and then the outdoor urban recreation areas. This led the authors to point out that "inclusion of primitive environments in one's orbit enables one to obtain valued rewards unavailable in developed settings" (ibid., p. 62). The subjects indicated that the time they would spend in such settings would more than double if money were no object, and would triple if distance were no object. Applied to "wildernesses" in urban areas, this may suggest that their use might increase considerably compared with what has been observed so far (e.g. Millward and Mostyn, op. cit.) if their "expectational image" could be made to approach that of "real" wildernesses, although there would be obvious problems of scale.

The remaining four factors, which were identified, reflected benefits which arose from facing the more challenging and unsupportive aspects of a natural setting (factor 2), the opportunity to get away from socialising and pressures for social conformity (factor 3), the aesthetic pleasure natural environments provide (factor 4), and the chance to escape from the city and the day-to-day environment (factor 5). Individual items which received the highest importance ratings were "experience nice combination of adventure and tranquility", "break from hectic pace of urban life", and "tranquility" (all received a rating of 5.14). The fact that it is not just "tranquility" but also the combination of "adventure and tranquility" which was considered to be most important would seem to support the notion (section 3.3.1) that people look for excitement in nature as well as for peacefulness.

The benefits of wilderness experience which Rossman and Ulehla studied were hypothetical in that the subjects did not actually visit a wilderness, although they had originally been identified in a wilderness setting (see above). Therefore the relationship between nature contact and strengthened self-identity, which the data suggested, awaits empirical validation, as does the relationship between nature exposure and self-actualisation. It is highly probable that the two variables are actually related.

Nature and 'self-identity'

That nature experience can enhance a person's self-identity has also been suggested in quite a different context. It is alleged that for old people familiar plants can act as reminders of childhood experiences, and that these recollections can help persons in institutions to regain a sense of identity and with it a sense of purpose and a desire for self-control and action (Grahn (undated) p. 214). The importance of nature's capacity to provide a link with the past has not only been underlined for the elderly. It was also identified by residents in a survey as one of the benefits of a woodland in the vicinity of their residential area (Tartaglia-Kershaw, op. cit., p. 25). The "historical continuity" which the wood provided for the residents through childhood memories was thought to have led to an identification with the place and the community, which was reflected in the wish of a very large percentage of people (85%) to stay in the area. Accordingly, it would seem that contact with nature can not only help one to increase or re-establish one's identity with one's own self, but also that with one's social and physical surroundings.

Conclusions

Based on the foregoing discussion, it would appear that exposure to nature can have benefits for human beings which may enhance their well-being at all stages through the life cycle - childhood, adulthood and old age. However, although this conclusion is based on some empirical evidence, the scarcity of the latter makes it rather tentative.

There is a great need for research in this area, and the few studies which have been carried out so far merely serve to raise the expectation that important relationships may be revealed by further investigation. There would seem to be some urgency about such research considering that destructive responses to nature can occur early in life and may perhaps be equally significant as apparently are constructive ones. Thus Titman (op. cit.) reported that in one of the schools which were included in her study, during the course of her investigations a squirrel was stoned to death by the children in their schoolground. It may be no less important to examine the determinants of such pernicious experiences and their implications for children's development

- and indeed their future behaviour vis a vis the natural world; as it is to investigate those of life-enhancing encounters, though the latter are perhaps more in danger of being overlooked.

Longitudinal research is particularly important for unveiling the benefits which contact with nature may have for human development. Yet there appear to be hardly any longitudinal studies in this area. An exception is the phenomenological investigation into the formation of a relationship between children and animals by Margadant-van Arcken (op. cit. cited in section 2.1), which was carried out over a one year period. It did not deal with the children's development though (which was one of the reasons why it was not reported under section 3.3.4), but it is likely that the fusion of the horizons of the child's and the animal's worlds would have constituted an enrichment for the child and that this would have had developmental implications.

In the case of children, interaction with the natural environment is supposed to aid sensory integration by virtue of the kind of stimulation which it provides (see above). Children, though, do not use natural "objects" only as sources of sensory experiences but rather relate to them with all their modalities (i.e. emotion, cognition, behaviour, etc.). The contribution which contact with nature may make to the development of these spheres of functioning remain to be investigated. Even in the field of sensory integration, the benefits of nature stimulation still need to be demonstrated as they remain largely conjectural.

For assessing the contribution which urban natural landscapes might make to children's development, it might be of relevance to remember that one study showed that relatively few urban children prefer the outdoors. If natural sites are to exert their beneficial developmental effects - assuming these can be established - the children would have to be somehow enticed into visiting them. This may be particularly difficult in the case of the girls, hardly any of whom preferred the outdoors.

Children's generally positive attitude towards nature might provide a basis for devising "strategies of enticement". Parents would also have to be agreeable to such visits. Such permission may be hard to obtain especially for girls, as

parents restrict their daughters spatially very much more than their sons (Moore and Young, 1978, p. 100). Research into the developmental effects of natural landscapes ought to include the question as to how city children - and indeed their parents - could be encouraged to use them.

Investigation of the developmental effects of nature contact in adulthood also ought to be extended to other variables. An obvious one, which is known to be related to well being, is self esteem, but there may be others which still need to be identified. Thus participation in work at urban natural sites appears to foster community involvement and political awareness, for example (cf. Mostyn, op. cit), which are likely to have an impact on aspects of a person's development especially social participation (Section 3.1).

Natural urban landscapes may be particularly suited to studying peak nature experiences because the juxtaposition between the built and the natural might heighten people's sensitivity to the latter. Alternatively, of course, the city could have a dulling effect on people's sensibilities towards nature. These are all issues which deserve to be investigated, especially because there might be a relationship between peak experiences in nature and attitudinal and behavioural change towards it. The importance of a change in human beings' approach to nature was pointed out in section 2.3.

With old age a development may occur which threatens the person's psychological integrity and therefore presumably her/his well being. In some elderly people an erosion of their self identity can be observed accompanied by such debilitating symptoms as apathy and self neglect etc. Contact with nature in the form of familiar plants is alleged to help such people to connect with their past and thereby recapture their sense of self and with it a notion of purpose and self care. The reports in the literature of these effects, though evidently based on observation (see section 3.3.4), are only anecdotal so far.

This would seem to be an important area for investigation, since with the increased life expectancy in developed countries difficulties in old age have become more common. The role which urban natural landscapes could play in such a process of helping elderly people to regain or strengthen their identity would have to be examined. Such research might point at the need for

example to create appropriate landscapes around institutional housing for the elderly, but these would need to be focused to trigger the images and associations most meaningful to that group.

Old age is not necessarily a time of negative development, and research into the psychological benefits of urban natural landscapes for elderly people ought to examine the way that nature contact might contribute to their continued psychological growth. Besides the positive influences which nature itself might have, such landscapes may provide settings for the elderly where they can make a contribution, for example through their local knowledge etc. This may provide them with rewarding experiences, which would be expected to enhance their self esteem and accordingly their well being. Thus, as in the case of the other two major stages of the life cycle, childhood and adulthood, there are many aspects of the relationship which may exist in old age between contact with natural nature and developmental gains. Research is needed in the whole field of the psychological benefits of urban nature on city dwellers' development - right across the life span.

3.3.5 Social effects

Are self-actualising people social?

It was suggested in the previous section that self-actualising people may have the capacity and will to attempt to solve the human and environmental difficulties which confront the world. With its emphasis on independence and autonomy, self-actualisation is an intensely individualistic concept and it has come under attack for this. Thus it has been contended (Nuber, 1993) that the preoccupation with self-actualisation, which dominated the '70s and '80s, has led to a society of egotistic individuals who are concerned only with the fulfilment of their own needs and have abandoned any regard for the welfare of others. Self-actualising people may be highly egocentric, and think only about themselves and their material possessions (ibid., pp. 20-22), although this suggestion is in stark contrast to the notion proposed by Maslow, that in a nation of self-actualisers there would be a strong sense of community where everybody would have empathy for everybody else.

While one might agree that Maslow's idealistic expectations of the self-actualising society were perhaps rather fanciful, the criticism would seem to be misguided. What was practiced under the banner of this term in encounter and other psycho-groups was a depraved (or, one could say, consumerised or commodified) version of the search for self-actualisation, which is not "makable", or planable, nor can be brought about in weekly discussion groups. Nevertheless the criticism points at an important issue, which is that in striving for individual well-being, social well-being must not be ignored.

Nature as a social setting

Nature can apparently provide a setting for the establishment and maintenance of both close social ties and relations with the wider community. The former is suggested by the fact that nature areas are seldom visited by people on their own, and the latter by reports on the beneficial effects on people's community spirit of participation in projects such as conservation schemes or community parks and gardens. If it is accepted that social ties and caring are good for people as well as the society at large, the question becomes of relevance as to whether nature acts merely as a background or actually contributes something to the social processes which take place in its presence.

As was already mentioned, very few people who visit a nature site come on their own. It is a popular notion, which visitors themselves may endorse, that people turn to nature "to get away from it all". Urban dwellers in particular, who are exposed to "an environment of dense, demanding humanity" (Greenbie, 1981, p. 261), are assumed to have a great need for solitude. However, while there can be little doubt that "at least for some people solitude is not antisocial but a prerequisite for sane companionship" (ibid.), observations of visitors to nature sites do not indicate that solitude is their main aim.

Thus it was found that 96% of visitors to areas such as parts, benches, rivers, and lakes came as a member of a group (Cheek and Burch, 1976, p. 24), and even among wilderness visitors only 2% were alone (Lee, 1977). Furthermore, campers who expressed a preference for campsites which offered visual seclusion from other campers did not actually choose such sites in a study in

which the screening was experimentally manipulated (Hancock, 1973). Also, wilderness users who stated a preference for privacy were not found to even attempt to avoid encountering strangers or to withdraw from them (Lee, op. cit.). This led Hammitt (op. cit., p. 490) to conclude that "the solitude wilderness users seek seems to be a withdrawal from complex social environments where they have little control over with whom and to what extent they must interact and communicate, rather than complete withdrawal from all people".

The fact that much contact with nature takes place in the presence of others has prompted environmental sociologists to claim that "the outdoor experience is clearly a group experience" (cf. Knopf, 1987, p. 793). According to them the physical setting may be important, but it is so primarily because it offers an arena for social interaction, reinforcement, and bonding (Cheek and Burch, op. cit., p. 167). It is suggested that consistent with this is the fact that a person's behaviour at a site will change according to the social group with whom she/he is visiting. Depending on whether she/he is part of a family or a group of friends for example, the same person will engage in completely different activities. Furthermore, it is alleged that the group behaviour which develops is distinguishable from the behavioural tendencies of the individual members. For example the frequency of visits to national parks is higher in middle class than in working class communities, but working class people who live in a predominantly middle class area visit national parks more frequently than do working class people from working class areas. This is taken to indicate "that the social group causes behaviour to emerge that may not coincide with the personal dispositon of the individual" (Kelley, 1979, cited by Knopf, 1983, pp. 220-222).

It is questionable whether this conclusion is necessarily correct. It was found in a study on park users, for example, that of those who visited the park because of social obligation more than half also actually wanted to go there themselves (Cheek and Burch, op. cit., pp. 164-165). Similarly one may doubt whether the fact that the activities people perform in nature settings change according to their company, indicates that the group is all-important and overrides all influences of the individuals' wishes and the setting. For investigating any effects of the setting, which is the main concern here, one

would have to compare different settings rather than different groups. If the interest is in possible influences of nature contact, as here, then the comparison ought to include a non-nature setting.

The latter comparison is missing in a study which is also cited in support of the notion that, regardless of the characteristics of the outdoor environment, the social processes are the same and/or depend primarily on the group characteristics rather than anything else. In a comparison of sparsely visited wilderness areas and populated beaches it was found that people's social exchange patterns were very similar both in terms of style and intensity (Lee, 1974; cited by Knopf, 1987, p. 803). However, while the two settings were obviously very different, contact with nature would still have been a part of both and therefore the results cannot answer the question of whether it has an influence on social processes.

One study which did include a non-natural outdoor environment and which would seem to suggest that nature areas such as local parks may in fact constitute settings where the social processes are somewhat different from elsewhere (Cheek and Burch, op. cit., pp. 159-165). Comparing activities which respondents had engaged in when walking down a street and in a local park, it was found that the patterns of behaviour were quite different and some activities occurred in one locale but not the others (e.g. "just sitting and relaxing", "eating or picnicking", and "just doing what I want" was reported only for the park, while "helping someone in trouble", "being annoyed at litter on ground", "remembering childhood experience" and "being alone and thinking" happened only in the street).

Moreover the social processes resulting in the park visit appeared to be distinct. Asked about who suggested going to the park, irrespective of their sex, the respondents indicated that most often someone else had been the decision maker. The authors pointed out that this contrasts with other settings where leadership is often gender linked. Furthermore the suggestion to visit the park had frequently come from a child. Thus there was a remarkable receptivity not only across gender but also across age. This led the authors to suggest that "it may be that this apparent openness engenders the development of social bonds across age grades and among sexes and fosters an appreciation

for individuals and their behaviour in ways seldom occurring in other situations" (ibid., p. 163).

Natural settings may encourage receptivity and social bonding

It would be of great interest to find out why and/or how nature settings can trigger such an apparently egalitarian attitude, and also whether it is maintained during the actual visit to the park or occurs only prior to it in the decision-making process. The former may be related to the freedom from social roles which people appear to experience in nature areas, as is reflected in statements such as "just doing what I want". Taken one step further, one could imagine that an abandoning, or dissolution of social roles may lead to role reversals and confusions, a theme which has been associated with nature at least as far back as the Elizabethan times (see section 2.2.1).

This would seem to be a fascinating area of study, which may also provide helpful insights into how human beings could find a way of shaking off the stultifying aspects of contemporary socialisation but nevertheless maintain and even strengthen a social bonding which would protect them from destructive transgressions. Nature with its evident capacity to induce people to transcend social roles could perhaps provide human beings with a setting where they can develop the "decentred identity" (or "patchwork-identity") which, according to post-modern social psychologists (e.g. Keupp, 1993), is a prerequisite for dealing constructively with the socio-economic politico-ecology crisis which is a result of modernism. Contrary to the goal of modernity, which is ultimately certainly (to be achieved through mathematical exactness, systematic logic, universal principle etc.), post-modern theorists contend that what is required is an acceptance of ambivalence, a celebration of an unplanned but real pluralism of forms of thinking and living.

Nature might foster such an attitude in human beings quite "naturally", but this would have to be empirically corroborated. In any case, these issues go perhaps somewhat beyond the scope of the present discussion. It is interesting though, that the metaphor which has been used for modernity is that of a gardener who forces nature into his artificial order (Bauman, 1992; cited by Keupp, op. cit., p. 54). The metaphor for post-modernism could then

presumably be the conservationist who allows natural landscapes in urban areas to develop their unique and sometimes quite novel compositions (cf. Barker, 1993) without imposing upon them traditional ideas of "natural" - or universal - succession.

Cheek and Burch (op. cit.) did not mention whether the egalitarianism which led to the decision to visit the park was extended to the stay there. Their report that "the social group of kinsmen and friends who go to parks may or may not remain physically together once they actually enter the park" (ibid., p. 164) would suggest that there may also be considerable openness to accommodate the group members' inclinations once in the park. This is further born out by casual observation. Thus one can often see, for example children taking the lead in showing parents or other adults things of interest such as insects, flowers, stones etc. It still remains to be investigated empirically whether the relations between visiting group members are more egalitarian in nature than in other settings. If this were found to be the case, this egalitarianism - where a person is appreciated as an individual in her/his own right rather than for the social role which she/he enacts - may be another mechanism whereby nature contact enhances self-esteem.

Is the egalitarianism all-embracing?

It is doubtful whether the receptivity of a group visiting a nature area is extended to people outside the group. Research on wilderness settings has repeatedly shown that, although very few visitors seek individual solitude, they do want "intimacy", i.e. interpersonal privacy with close others free of interference from outsiders (cf. Stankey, 1989, p. 288). Other groups are accepted, and contact with them may even be welcomed, but only to the extent that they share norms for the respective nature setting. If they do not, they are avoided through spatial or temporal segregation.

Thus nature's apparent influence on interpersonal relations does not seem to extend to breaching the divides between groups with different socio-cultural norms. This is also suggested by observations in local neighbourhood parks. It was found, for example, that a recreation site with a playground, which was situated in an intermediate space between a white middle income residential

neighbourhood and an area of low income black residents living in mainly public housing, was primarily used by the children from the latter neighbourhood. The reason for this was that the middle income parents thought that the recreation ground was managed for the low income families and therefore did not encourage their children to visit it. This was thought to be related to the kind of "sense of belonging" which is allegedly typical for middle class people for whom ownership is linked to own property, while working class people's "sense of belonging" is supposed to depend on a knowledge of local inhabitants, events, and situations which may lead to a greater readiness to accept public spaces as common property (Cheek et al., 1976, pp. 36-37).

The middle income type of "sense of belonging" results in an occupancy of "selective" space, in which "the boundary between the dwelling unit and the immediate environs is quite sharp and minimally penetrable" (Fried and Gleicher, 1962, cited by Cheek et al., ibid., p. 38) Public space is perceived as belonging to "no one", being merely used as pathways between individualised significant places. The lower income type of "sense of belonging", on the other hand, is alleged to result in "territorial" or locally bounded use of space. It is suggested that these different attitudes are reflected in people's behaviour in district parks, for example, where groups who share the former tend to select for their activities micro-spaces in a pleasant setting, while groups with the latter tend to gather in larger communities and define a common territory. Thus "modes of spatial behaviour typical of the neighbourhood park are transferred to the district park and are used to identify it as a place where others with a similar sociocultural background are welcome" (ibid., p. 41), and, one might add, those who do not share this background are avoided.

Most of this research has been carried out in the United States. It would be important to investigate whether these relationships hold in other countries and whether they apply also to other nature settings, such as urban natural landscapes, especially since they appear to have management implications with regard to such issues as safety. Thus people with a middle income perception of public places would favour formal control in nature areas such as park wardens or police, while those with a low income perception would

react with suspicion to such agents and would favour informal control, for example through encouraging active use (ibid., p. 41).

It is likely that, irrespective of location, the majority of people would be found to hold fast to their respective group norms or conventions (it is suggested that the latter term is more appropriate than the former for understanding social behaviour at nature recreation sites; Heywood, 1993, p. 50). Accordingly contact with nature, while perhaps blurring the divides within the groups and fostering bonding, could not be expected to have the same effect on between-group relations. Therefore, if integration rather than segregation of different socio-cultural groups were to be a desired objective for a nature setting, as might well be the case for an inner urban area which is meant to serve as an asset to a multi-cultural population, it could not be expected that the contact with nature in itself would necessarily be sufficient to soften boundaries between the groups.

Social bonding amongst groups that are not initially connected

An indication as to what else may be required, apart from nature exposure, to bring about a permeation of socio-cultural barriers between groups may come from conservation projects. It would appear that the membership of conservation groups is often very varied in its background in terms of socio-economic status and other demographic and personality variables (cf. Mostyn, op. cit., pp. 11-12). In their common work at nature sites the members seem to develop group norms which foster bonding and transcends the usual socio-cultural boundaries.

It would be of interest to examine whether such groups are more open and welcoming to other groups which do not share their conservationists' norms or conventions than are the kinship and friendship visitor groups discussed above. Comments upon the friendly and accepting atmosphere in conservation work parties are not uncommon (e.g. Mostyn, ibid., pp. 40-43) but it is unclear as to whether these attitudes are also extended to "others", i.e. to those who are "different". In any case, the fact that customary socio-cultural differences become irrelevant in the joint endeavour to protect and improve nature sites would seem to be encouraging. The dynamics within

such groups may be similar to those in visitors groups, as there would also appear to be a dissolution of "traditional" social roles, for example with youngsters taking on responsibilities they would not necessarily be given elsewhere.

Thus it would appear that, where groups do not share kinship or original friendship ties, nature-centred work can act as the bonding agent. Further support for this notion comes from another setting, although the evidence is also only anecdotal. Common work of patients and staff of a psychiatric unit in a horticultural section led to the abandoning of the patient-staff divide and a confusion and reversal of roles (pers comm. Dr. M. Cordero Unit Head). The ideology of the psychiatric unit, which was geared towards the rehabilitation of the patients, was egalitarian. (It was in Chile during the period of the left-wing Allende government.) However, the implementation of these ideas was extraordinarily aided by the work in the horticulture section which was run as a productive enterprise, selling horticultural produce to the local community.

External signs of the role dissolution were that the doctors and other staff abandoned their white coats because they were impractical for tasks such as digging etc. Some patients found them useful though for protecting their clothes doing other jobs. Visitors to the hospital would then come to address the patients in the white coats as staff. A reversal of roles also resulted from the greater expertise which many patients, especially those from rural backgrounds, had in horticultural matters compared to the staff. This put them in a position of "knowing", which is a state normally reserved to the staff. These processes carried over into other hospital settings such as the dining room and other therapeutic areas.

It could be argued to be a reflection of the "subversive" potential of nature that customary social roles become irrelevant in its presence, and new (some may say true) social bands are created. If "subversive" is too powerful or frightening a word, one might say that it is the informality of the nature setting which allows people with a common goal to discard that societal "straightjackets" and relate to each other in a spontaneous and immediate way.

The wider impact of changing social roles

This results of this "subversion" of usual social roles are usually constructive and may extend beyond the boundaries of the nature setting. Thus children and teenagers felt more grown up and responsible because of their conservation work (Mostyn, op. cit., p. 47), and adults and youngsters alike felt it had motivated them to take a greater interest in the community at large (ibid., p. 61), which in the case of one man had led to an involvement in local politics (ibid., p. 63). The dissolution of the patient-staff roles in the Chilean hospital appears to have had similar results in that it released the psychiatric patients from their customary passivity and induced them to take on responsibility for their behaviour first in the hospital and later in the community.

Such wider influences on people's lives have been reported by other authors involving still different kinds of nature work. Thus, having observed the effects of tree planting programmes in inner-city areas in which the residents of the respective localities participated, Ames (1980, p. 137) commented that the urban forestry experiment had "an impact for beyond the trees themselves, because it promote(d) a community of interest, social organisation, and participation in activities consistent with American values of success". Lewis (1992) stated that tenant gardening programmes around public housing "started to produce unexpected results" in that the gardening tenants joined together and saw to it that the surrounding sites were kept clean and neat. A heightened level of care was evident in the wide area, and vandalism was reduced inside and outside the buildings. "These activities were spontaneous, not part of the program" but they seemed to be inspired by it (ibid., pp. 59-60). Similarly Titman (op. cit.) related that "something else" was going on in the schools where nature areas were being created in the grounds, which was difficult to define but which affected the whole school.

Thus it would appear that work with nature in whichever context may generate within and amongst the participants processes which encourage them to take on responsibilities not only for their own actions but also for the well-being of the community around them. It is not clear whether these processes are the same in the various settings, or indeed what exactly they consist of,

since there are apparently no studies yet which have examined them empirically. According to Ames a central factor is a raising of the participants' level of self-esteem which emboldens them to make other contributions to their community (op. cit., p. 137). It was already suggested above that the heightening of self-esteem may be a result of the informality which is associated with nature settings and conservation work, and that it is this which leads people to accept others as persons in their own rights rather than as social role carriers. In the case of conservation work additional factors may be the confidence which is likely to result from the exercise of a skill, and the pride which this may generate especially as it happens in the presence of appreciative others.

It is an intriguing question as to whether nature settings and nature work are unique in producing these effects. Considering that a concept like sustainability of the use of natural resources requires for its implementation a sense of responsibility not only towards contemporary fellow human beings but also future generations (cf. Catton, 1983), any setting and/or activity which can nurture such a "social consciousness" would obviously merit great attention.

It is probably unlikely that there is only one way - or one type of setting - whereby these desirable and necessary social processes can be set in motion. Nevertheless, natural areas do seem to have something unique about them. Their informality is apparently not easily matched by manmade non-nature environments. Even in the informal setting of the home, for example role enactment such as gender-linked behaviour is seen to be particularly appropriate (Rossman and Ulehla, op. cit., p. 100).

How much do people value nature areas and parks as social settings?

The informality which nature settings offer, combined with the opportunity to engage in active pursuits, which do not necessarily have to be nature-related, is highly valued by young people. This is suggested by an investigation into the recreational benefits of a part situated adjacent to students residences on a university campus (Ulrich and Addoms, op. cit.). The part of the study which is of relevance in the present context involved the administration of a

questionnaire which listed various benefits of park use. The questionnaire comprised of three subsections. In the main section the respondents were asked to rate the items with regard to the importance the ascribed to them. Several of the items referred to other settings than the park. These included the dormitory lounge, the dormitory corridor, the dining hall, the Study Centre, and the campus sports building and ice arena. Some items referred to problems rather than benefits such as litter and disturbing noise etc.

A factor analysis was carried out on the data which yielded seven factors, four relating exclusively to the park and three to the other settings. Three factors were identified as reflecting social interactions. One was a park factor called Recreation/Social, and two were factors connected with the other settings called Social-Study Centre and Dormitory Dining Hall, and Social-Dormitory Corridor. The park factor combined exercise and sports variables with social interaction. This distinguished it from the other two social factors in which the activity component was absent. It also distinguished the social park factor from the Serious Exercise factor (the third non-park factor identified), on which hardly any socialising items were incorporated except for one related to the tennis courts.

The social variables which received the highest ratings in relation to the park were "informal group sports" and "recreation with the opposite sex". The significance of the activity as part of the socialising which took place in the park was also born out by behavioural observations which the researchers carried out there and which revealed that more than twice as many people engaged in social sports than in comparatively passive social activities such as talking in seated groups.

The most important location for the social factors was the Dormitory Corridor factor but the park was second followed by the Study Centre and Dining Hall. Thus students attribute evidently greatest importance to the social opportunities which arise in the corridors of their residences but the park has also very considerable importance to them for their social life, and it would appear that this is related to the possibility it provides for informal joint activity. (The park has even more importance to them as a place for enjoying

nature and than as a social setting and as much importance as a setting for for serious exercise but this is not of relevance in the present context.)

Thus the park with its informality and scope for active group recreation provides apparently a special social setting which is well appreciated by the people who have access to it. However a student population is perhaps not the ideal group for investigating phenomena such as role dissolution and socio-cultural diffusion, as it is likely to be fairly homogenous with regard to such variables. As we have seen, such homogenity is normally quite uncommon amongst people who visit nature settings and/or participate in nature work (Dwyer et al. (1991 p. 282, for example, commented on the many multi-generational groups which took part in city tree plantings) and as a result natural areas such as parks have been recommended as "strategic research site(s) for the investigation of...social bonding" and, one might add, other social processes exactly because they are frequented by groups of such varied composition (Cheek and Burch, op. cit., p. 162-163).

Nature areas therefore appear to be important not only objectively because of the beneficial social processes which they can apparently evoke, but because they are also seen to be so subjectively by the people who use them as social settings. An indication of the subjective desirability of nature for facilitating a very different kind of social interaction than that occurring in parks comes from a study which examines the role of flowers in the bereavement process (Shoemaker et al., 1992). Questionnaire answers by funeral directors suggested that the flowers, which are an integral part of Western funeral ceremonies, do not only provide comfort to the bereaved and the sender, but they also serve a functional social role in the funeral ritual. They are looked at, touched, smelled, and talked about, and thus provide a focus other than the deceased.

The importance of this functional role of the flowers in funerals was also revealed in a second part of the study, which consisted of group interviews with people who had experienced the death of a loved person. Analyses of the transcripts of the interviewers had not been completed but, preliminary results corroborated the findings from the funeral directors' survey. The implication appears to be that this social function of the flowers aids the

ritualisation - or socialisation -of bereavement. One of the very painful experiences of bereaved people is that others tend to avoid them which makes them feel isolated. At a funeral such avoidance could not easily be spatial but would express itself perhaps more readily in a verbal isolation, i.e. in an exclusion of the bereaved person from the general conversation. The flowers may then provide a bridge by offering a topic of conversation which is relevant to the bereaved but does not touch upon her/his grief directly.

Thus nature, in the form of flowers, may enable the participants in funerals to transcend the divide between the bereaved and the non-bereaved, just like it was suggested above that it could help bridge other differences such as those of age, role and socio-cultural background.

Conclusions

It was suggested above that an important factor in the process of equalisation is the informality which attaches to nature. Even designed "natural" landscapes can possess the informality of nature to a high degree. However there may be a danger of interfering with nature's informality through "presenting" it in a certain way by means of excessive design and/or management. Urban nature sites, by virtue of their size, may also be limited in the extent to which they can provide groups with control over their interactions with others, although people do in fact find ways of maintaining their intergroup intimacy in nature settings even under very densely populated conditions by adjusting their social contact conventions. All of these processes deserve to be studied.

In the case where natural urban areas are intended to be used for educational purposes, it would seem to be particularly important to understand and take account of them, because it is unlikely that people will open themselves to educational activities if these clash with their other aims for the visit to the sites such as the experience of intimacy and egalitarianism.

As well as nature's informality, it may be its functional characteristic as a "neutral" but certainly not meaningless topic for conversation and/or concern,

which helps people to bridge the social barriers of their backgrounds and step outside the constraints of their social roles.

It has to be admitted that it is largely conjectural that nature can have such powerful influences on social processes but there would appear to be sufficient empirical evidence to suggest that the processes may have a basis in reality, and that research into these relationships would therefore be very worthwhile.

As in the case of the other spheres of influence which were discussed above, i.e. the emotions, cognitions, behaviour and development, it is particularly research into the processes which is sorely lacking, although even the outcomes of such processes have hardly been studied empirically.

In a society in which, on the one hand, social tensions are high (as evidenced, for example, by a steadily rising crime rate) and, on the other hand, there seems to be a reluctance or inability on the part of citizens to concern themselves and/or get involved in community matters and wider environmental and political issues (see section 3.1), mechanisms whereby these phenomena might be influenced ought to be of great interest. It might be rather over optimistic to assume, on the basis of the apparently more egalitarian relationships in "nature groups" and the willingness of their members to take on individual and social responsibilities, that contact with nature can help ease some of the tensions in our society and at the same time empower people to attempt to do something constructive about them. Nevertheless it would seem to be well worth investigating the proposed relationships empirically. natural urban landscapes are particularly important in this context because cities tend to be societal "nodes" (i.e. centres not only of population but also of power etc.) and thus places where influences on societal processes can presumably be brought to bear most effectively.

4. IMPLICATIONS FOR THE MANAGEMENT OR CREATION OF NATURAL AREAS IN TOWNS

The review in the previous chapters of this report has raised many issues of potentially great significance for urban nature conservation. Obviously the ideal would be for these to be translated into practical guidance for improving the way in which the natural world is integrated into urban settings. However it is also apparent that research into the psychological importance and benefits of contact with nature is still in its very earliest stages. Many relationships have only been tenuously demonstrated, and certainly the mechanisms involved are at best speculative.

Even where beneficial effects have been replicated sufficiently often for some confidence to be established, there is still a great deal of work to be done to determine the ways in which the findings should be translated into practical advice - nuances and details of how to optimise possible positive influences are far from clear and any interpretation must remain tentative. There are also many gaps in the research that has been carried out to date, and the current level of understanding is far too disjointed to be put forward as a framework for developing management stratgies.

However a summary of the possible applications of different findings and theoretical concepts identified in the psychological review may at least help to cast some light on the successes or failures of different sites, to allow the attitudes of users to be more clearly understood, and perhaps to point towards developments that will improve or reinforce the public response.

One aspect of research that will certainly be avoided in this section is the mire of what is termed 'landscape preference' studies. There are huge volumes of such data, much of it unsatisfactory or even apparently contradictory, and it would be an impossible task to attempt to rationalise or summarise it here. In addition the methodology of preference studies, often based on the use of photographs, can be so far removed from the actual experiences of natural areas (the full bleak exposure of a treeless grass plain for example, or the possible sense of oppression that may arise from too dense undergrowth) that it would be folly to rely too heavily on the findings.

It is not appropriate for this report to provide an extensive review of the techniques and options available for management or design of natural areas in towns. Interpretation of the findings will therefore be brief and will point towards general concepts only. In practice many

of the research findings seem to do little more than support the, often intuitive, understanding that site managers already have about the best way to integrate human beings and wildlife. To a certain extent however this helps to lend weight to the psychological research findings or theories, and hopefully a proper iterative process can develop which will encourage researchers to focus on those areas of most importance or with most scope for practical application.

One of the most obvious issues to have emerged from the review is that there is a complex range of benefits that may arise from contact with nature. Many of these are likely to require different environmental cues and different settings in order to be optimised. Serving some goals is likely to undermine the likelihood that others can be achieved.

It is also obvious that people differ in their response; indeed it can be argued that there is evidence for a fundamental and basic dichotomy of reaction in that some people see nature ultimately as spritually good, a thing to be cherished, others as symbolic of 'anti-civilisation' and a thing to be feared. Although such extremes are rare, and we probably all have complex attitudes towards different componants of the natural world, it is always worth remembering that differences exist and they may perhaps develop from cultural and ethnic origin, from gender, from age and from mood as well as from personality.

There is clearly a need for the urban green fabric to provide for a range of different experiences. If possible there needs to be formal and highly managed parks through to areas which represent true wildness. Ideally each of these should be available to all users, and everyone should have the chance to follow their own preference when it comes to recreation. Such ideals are of course impractical; there are limited resources, limited areas of land, and ultimately someone often has to make a decision about the style that should dominate any one particular area. Perhaps the greatest difficulty arises with 'incidental' green space such as road verges or pathways or patches of land surrounding houses, as people often have no chance to avoid these or choose an alternative when walking or looking out of their windows.

If nothing else, urban conservationists should, from time to time, remind themselves that other people may see the world very differently, that 'horticultural' designs have a legitimate place in new landscapes and that by arguing too strongly for natural treatments to land there is a risk of 'disenfranchising' others from their surroundings. At worst this may lead to a negative reaction,a lack of public support or even opposition when it really matters (c.f. Rainham marshes). It is inevitable that people who work with a site, even voluntarily, will develop a

heightened sense of 'ownership and control'. However it is important not to exercise this sense of apparent control un-necessarily.

The roots of negative reactions to the natural world have not been explored in depth in this review; the emphasis has been to look for evidence of positive effects. However a major, but not inevitable, conflict seems to exist between the provision of an atmosphere which is perceived as safe and the creation or preservation of those qualities which allow the maximum sense of 'wilderness' or even of the creation of areas that people find mostly attractive. The evidence is that sometimes a sense of safety and a sense of wilderness can co-exist, but it is not clear what environmental cues are needed.

Denying the ability for people to immerse themselves within an environment that they perceive as entirely natural may interfere with at least some of the potential psychological influences. For example developing a sense of 'mystery' in the landscape may be the key to some cognitive benefits, but must at the same time increase the scope for feelings of anxiety to develop.

A similar dichotomy may exist where formally maintained areas adjoin on to wilder places. It is almost a cliché of urban nature park design that close mown edges and paths should be provided around taller grass, in order to prevent a sense of abandonment and to emphasise that the site is being deliberately managed. This concession is most important for those people who are perhaps initially unsympathetic to 'wildness' and are prone to interpret such areas as derelict or an invitation for abuses such as fly tipping. However by providing this overt message of human influence, will the potential value of the site be reduced for those people who are most likely to interpret human influence as an intrusion?

Some benefits of contact with nature seem to be derived from even relatively brief contact or even just a view through a window. There is an argument therefore for planning a range of small, dispersed natural areas throughout the urban fabric. This will also have benefits for some wildlife. However there will also be species which would be better served by providing larger single areas, and the same is true of some psychological effects, which may be more likely where people have the chance to immerse themselves fully into the experience of the natural world. There must be some doubt as to whether this experience is possible in urban settings, at least without making an environment that many others may see as unsafe.

Conflicting visual cues, such as too much sign of human influence, buildings etc., are obviously more likely in small sites. Even if these are effectively screened there will still be more likelihood of noise pollution, dusts and fumes etc. It may be that in some cases screening prevents the advantages that can be gained from a sense of human presence, notably greater perceived safety, and also makes the noise more alien by divorcing it from its origins.

People in urban areas may conform to norms of behaviour and attitudes which are unconventional and more open to misinterpretation as threatening or harmful. The site manager needs to avoid challenging these or imposing too rigid a behavioural code, as this may undermine some of the benefits that the natural area can provide. However the range of behaviours that may be encountered may contribute to the sense of anxiety and distrust of strangers that is sometimes felt by people in towns.

Some of the important aspects of a natural setting may only emerge if the environment is perceived as non-judgemental and unrestrained. Some areas must allow people to interact with the landscape and to undertake exploratory behaviour. Social interaction between some social groups may also be made easier, and certain environments could be designed to encourage this. However there is a risk that if the site becomes associated with certain groups exhibiting certain social norms it will become less attractive to other users.

Many people associate nature with the ability to develop a sense of freedom and lack of restriction. Fences and 'rules' must undermine this perception. (In German city parks it is now common to see signs instructing people to keep off of meadows, whilst 'horticultural' grass is free to be walked on!)

Some other points of interest are worth briefly re-emphasising:

Some benefits that arise from contact with nature may have their roots in experiences which are seen as so uncommon or exhilirating that they force a greater intensity of perception and emotion. Not all contacts with nature are therefore 'better' through being made more commonplace.

It is overly simplistic to assume that people find natural areas 'relaxing'; often people seem to value natural areas because they find them more exhilirating and exciting than as refuges from urban activity.

People value the chance to develop a sense of 'intimacy', within their own social groups, without being intruded upon by others. A limited number of bystanders may not detract from the ability to enjoy wildlife, however crowding is not a function of the numbers of people and their density so much as a conflict with what we perceive as acceptable densities in any given situation. Design techniques are well understood, for example dividing sites into smaller spaces, which can increase their visual carrying capacity and reduce a sense of crowding. However it is also worth considering the degree to which subtler aspects of site design, such as creating areas that are reminiscent of rural settings or wildernesses, may alter the extent to which people will accept or object to the presence of others.

The use of sculpture and community art should be further explored as a means of reinforcing and building upon the symbolic influences that natural areas may carry. Water is also a powerful componant that can enhance the value of many settings.

One of the most important benefits of contact with nature may be a sense of continuity - it may therefore be important to work with and build upon the characteristics that a certain region has had historically. This may be particularly useful in gaining the support of older residents in the area. Of course this approach also makes good sense in nature conservation terms as well.

If first time visitors to a nature park have a poor image of what to expect, (perhaps fostered by images gained from other sources such as TV) then there can be a negative impact on their concern for nature.

Modelling and reinforced behaviour are probably far more effective as mechanisms for encouraging support for nature than the impartation of information. This must have profound implications for the effectiveness of interpretation.

Interpretation is often more successful if nature is presented as 'fun' or as part of everyone's daily life. An important aspect that may be worth promoting is the sense of 'permanence despite change' and 'sustainable dependability' that nature may evoke.

Conversely challenging people's assumptions about the permanence of nature may seem necessary for environmental education, but this may have unquantifiable psychological effects as a consequence. The incorporation of images of 'death' in the landscape may need to be

carefully handled, putting emphasis on dead trees as habitat for example and basing interpretation on renewal and rebirth.

Nature in a health care setting

Investigations into the curative aspects of nature ought to be extended to exposing ill people not only visually, but with all their senses to nature. Such practices were, of course, part of traditional medicine (e.g. in sanatoria for respiratory diseases etc.) until they were displaced by "high tech" medicine.

The obvious setting for exploring relationships which manifest as influences on physical health or recovery would be hospitals. If findings such as Ulrich's (1984) could be corroborated, an obvious implication would seem to be that nature areas ought to be provided for hospitals and other health care institutions. The need for hospital gardens and landscaping has already been accepted by the Department of Health (Warner and Baron, 1993, p. 1081). It might be suggested that this enlightened attitude ought to be extended to arguing for a natural style landscapes.

In fact the Health Service administers a huge land estate, often this was a historical legacy that came with the purchase of properties large enough to be adapted to serve as hospitals. They may also have been obtained through the inheritance of Victorian properties which utilised their grounds as a componant of the healing programme albeit in a more authoritarian way than would be contemplated today (Kendle & Thoday, 1983). Today this estate is usually seen purely as a costly overhead devoid of any potential benefit, but it may represent some of the largest and most important fragments of natural landscape to be found within towns.

Creating, or encouraging the positive recognition of, natural landscapes around hospitals, which would be accessible to patients both visually and - if their condition permits this - physically, might not only be beneficial to their recovery and also to the staff's well-being, it could furnish an important setting for teaching people something about nature and its conservation. Patients are often bored in hospital, especially when they are no longer so ill that all their energy and attention is absorbed by their physical discomfort. This may make them ready to be "entertained" by or taught about (preferably both) nature conservation. Moreover, it is likely that their special psychological, physical and social circumstances makes them more open to the pleasures and interests of nature. Under such circumstances they may

be more receptive than other adult populations to information about the important issues of nature conservation.

Providing people with access to natural nature in a health care environment, and using the opportunity to enhance their awareness of ecological issues (although see Section 3.2.1 re the importance of maintaining a sense of coherence), would open up a whole new area of research. Not only would this yield further insights into the relationship between nature contact and human health but it might also reveal some of the determinants of attitude change toward nature conservation.

Conclusion

Research on the psychological impact of nature on human beings, though still very scanty, suggests that people may derive considerable benefits from contact with nature.

Nevertheless the superficially obvious usage of natural open spaces in urban areas is often low, as an investigation of three such sites has demonstrated (Millward and Mostyn, 1989, summary, p. 10). It is important to investigate empirically the reasons for this apparent contradiction, not just because underuse may make such sites more vulnerable to development but also because it is regrettable that people do not avail themselves of a resource which could evidently be of great psychological benefit to them. Of course 'use' can often be underestimated. People may use a site passively as well as actively; they may obtain great benefit or pleasure (or improved well-being) from simply looking at it when passing. In the extreme it is possible for people to derive pleasure form simply knowing of the 'existence' of a habitat or of wildlife site, without ever even visiting it themself (see above).

It has been suggested that one of the ways in which the use of natural areas could be increased is by publicising them more (ibid.). It is intriguing to speculate about the kind of message which might influence people's judgements of natural sites positively, and entice them to visit them. One aspect of nature experience which people desire, as the present review of the literature has indicated, is the excitement and exhilaration it can induce. This is not commonly mentioned in connection with nature sites, which are often depicted primarily as relaxing and restorative. Yet the three "popular values" which Harrison, Limb and Burgess (1987) identified in their discussion groups with urban dwellers were that "wildlife is fun", a "desire for adventure", and a "search for variety".

It has been suggested that one of the reasons for the non-use of parks is that the recreation offered there is self-oriented as opposed to the fantasy oriented recreation which is provided by movies, television and spectator sports. People spend much more of their time engaged in fantasy oriented activities, which are exciting, than in self oriented pursuits, which are wholesome and encourage self improvement and self expression (Gold, 1972, p. 373). Accordingly it would seem to be unlikely that messages based on the latter types of benefits would attract people to natural areas, while those which can convey excitement and exhilaration might be more successful. People tend not to do the things which are good for them but rather those which appeal to them for other reasons, as is also shown by "the inordinate difficulties and, by and large, failures of health education based on a cognitive approach" (Antonovsky, op. cit. p. 108).

It should be easier to describe natural urban landscapes to the public as imbued with excitement and exhilaration than it would be to do the same for example for formal urban parks. However, it has to be remembered that for those who are not yet familiar with the excitements which "natural" nature can provide they may be difficult to see, and it may require special skills to convey them. This is another area which requires investigation.

Urban natural landscapes may hold more excitement and exhilaration than other urban areas, which may help to present them to the public as attractive places to visit. However, their "image" may be tarnished by the fact that they are frequently "left over" sites and sometimes temporary in nature. It is possible that nature areas, which are located in places which nobody else wants for the moment, are seen to be of little value and hardly worth the effort of a visit. The fact that so far our society has banished, or tolerated, natural landscapes in such locations could carry a message regarding the importance it attributes to them which may be picked up by some people. Promotions which emphasise the 'forgotten' nature of some sites are not uncommon, but these may enforce such perceptions.

Arguably the profile of "natural" landscapes should be raised to become a part of the urban environment in locations where they are easily accessible to city dwellers and can form a permanent feature of their neighbourhoods. Human beings need to make contact with nature in the course of their normal daily lives, and no special effort (or journey) ought to be required for obtaining it.

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