Zed Titles on Sustainable Development

Too often sustainable development is regarded as an issue primarily of relevance to developing countries. In a range of books, Zed Books has sought to combat this notion and to contribute to the debate – at the level of shifts in paradigm as well as changes in policy – on the necessity of transforming our present economic and industrial model in order to create systems and institutions in genuine long-term harmony with the environment in the North as well as in the South. Recent titles include:

Arthur Dahl, *The Eco Principle: Ecology and Economics in Symbiosis*
J. Debeir et al., *In the Servitude of Power: Energy and Civilization through the Ages*
Group of Green Economists, *Ecological Economics: A Practical Programme for Global Reform*
Paul de Jongh with Sean Captain, *Our Common Journey: A Pioneering Approach to Cooperative Environmental Management*
Serge Latouche, *In the Wake of the Affluent Society: An Exploration of Post-Development*
Patrick McCully, *Silenced Rivers: The Ecology and Politics of Large Dams*
Klaus Nürnberger, *Prosperity, Poverty and Pollution: Managing the Approaching Crisis*
John Overton and Regina Scheyvens (eds), *Strategies for Sustainable Development: Experiences from the Pacific*
Carla Ravaioli, *Economists and the Environment: A Diverse Dialogue*
Peter Read, *Responding to Global Warming: The Technology, Economics and Politics of Sustainable Energy*
Wolfgang Sachs et al., *Greening the North: A Post-Industrial Blueprint for Ecology and Equity*
Saral Sarkar, *Eco-Socialism or Eco-Capitalism? A Critical Analysis of Humanity's Fundamental Choices*
Peter Stone (ed.), *State of the World's Mountains: A Global Report*
Ted Trainer, *The Conserver Society: Alternatives for Sustainability*
Ernst von Weizsacker, *Earth Politics*
Ernst von Weizsacker et al., *Ecological Tax Reform: A Policy Proposal for Sustainable Development*

For full details about these titles and Zed's general and subject catalogues, please write to the Marketing Department, Zed Books, 7 Cynthia Street, London N1 9JF, UK or e-mail: sales@zedbooks.deman.co.uk

Visit our website at: http://www.zedbooks.demon.co.uk.

SUSTAINABILITY AND THE SOCIAL SCIENCES

A cross-disciplinary approach to integrating environmental considerations into theoretical reorientation

EDITED BY
EGON BECKER AND
THOMAS JAHN

MOST

UNESCO
PARIS

ISOE
FRANKFURT AM MAIN

Zed Books
LONDON • NEW YORK

1999

TWELVE

Psychological Perspectives on Sustainability

CAROL M. WERNER

This contribution reviews literature by psychologists on the general subject of environmental sustainability, that is, conservation of resources, conservation of ecosystems, and concerns about quality of life for humans and other species. A key assumption is that sustainability will not be achieved until humans accept more responsibility for the environmental consequences of their reproductive and consumptive behaviours. The chapter reviews literature on how to effect changes in values, attitudes and behaviours. It ends with ideas about how psychology might fit with other disciplines to help societies reach sustainability. A general theme in this chapter is that psychologists should take more active roles in devising strategies for determining and implementing environmental policies. Too much psychological research provides passive descriptions of how things are, rather than exploring how to empower people to create sustainable communities.

Relevant Topics in Environmental Psychology

Environmental psychology is typically defined as the study of human–environment relationships, where 'environment' includes both the built environment and nature. The present review focuses on research using psychological principles to reduce consumption and stabilize population growth while maintaining a positive quality of life. Topics relevant to the conference themes can be broken into two broad groups: (1) everyday life and (2) resource use. Examples of the first group are: how people use and experience cities; housing policies; and environmental stressors such as noise and toxic waste. Examples of the second group include: resource use and conservation; relations between city form and resource use, especially energy and water; waste reduction and recycling; environmental preservation and restoration; and population and crowding.

This is not intended as a comprehensive review. My personal urgency

about sustainability leads me to prefer some styles of research over others: I prefer research that is 'action-oriented' – that is, research that measures actual behaviours and shows how to effect positive change in behaviours. I prefer change strategies that lead to long-term, internalized, self-sustaining behaviour change. Furthermore, I prefer strategies that involve grass-roots participation and decision-making over strategies that are simply imposed by technological or policy experts; the former are more democratic and usually more enduring. I also prefer strategies that are holistic – that address multiple points in a system, anticipate reverberations among system elements, and put in place mechanisms to support long-term change. And finally, the review is limited in generalizability: the behaviour change strategies have been developed in the US, and should be used only experimentally in other societies.

Psychological Research on Sustainability

BEHAVIOUR CHANGE: SOCIAL MILIEU, MOTIVATION, MEMORY, OPPORTUNITY AND SKILLS An effective, psychologically based intervention programme can include a myriad of elements, each one contributing in different ways to the programme's success. There are five basic factors:

- social awareness and concern about the problem;
- knowledge about and motivation to engage in behavioural solution(s);
- memory or situational prompts to make the motivation salient;
- opportunities to follow through with the behaviour(s);
- and skills/perceived competence to do the behaviour(s) correctly.

Each of the five can be achieved through a variety of interventions, and can target individuals or groups. These five factors are not completely independent, but can be mutually influencing and supportive. For example, strong messages in the social milieu may influence individual motivations or attitudes; a manipulation designed to change attitudes might also serve as a memory prompt; an exercise for building behavioural skills may strengthen the attitude. This level of complexity is a necessary reality in a holistic, dynamic system. As an additional complexity, group members can enhance or detract from a treatment at any step in the process, if they encourage or discourage each other's behaviour change. So although for convenience and clarity each factor is discussed separately below, they function in co-ordinated ways.

Social milieu 'Social milieu' refers to general social awareness about a problem or a need for collective action. The social milieu could reflect sustainability values, but with current advertising and social pressure for materialism and conspicuous consumption, sustainability is not a strong part of our social milieus. Thus, I write from our point of origin, with an emphasis on changing the milieu. The importance of milieu is not based on extensive empirical evidence but is rather based in broad social psychological analyses of social

change and innovation diffusion (e.g. Jaccard et al., 1990b). The fundamental idea is that widespread awareness of a problem may be necessary before people decide to take action about it. Why should they decide to conserve water, reduce automobile emissions, decide to remain childfree, or engage in a myriad of other environmental behaviours unless they are convinced it is important? Public awareness has been cited as a component of involvement in environmental behaviours (e.g. L. T. White et al., 1984), and may be responsible for variable responses to the same psychological treatment (e.g. see Seligman and Finegan's, 1990; and Geller et al.'s, 1982, descriptions of programmes with impact that seems to vary with milieu). Social awareness sets the stage for persuasion, but does not necessarily itself result in persuasion.

Cross-cultural analyses suggest that social milieus can differ because of deep, underlying and historically based differences in values and ways of thinking. For example, Erickson (1987) conducted extensive interviews with residents of two small towns, one in the US and the other in Sweden. Underlying different energy conservation behaviours were two distinct sets of cultural values (social milieus). In the US, people treated energy consumption as a consumer's individual right, whereas in Sweden, use of energy was moderated by people's concern for the communal good, especially the national economy. 'Energy and resource use is tempered by the [cultural] code [of] one's "fair share" of the common resources' (Erickson, 1987: 224).

Even within a society, interest in and concern about the presence and seriousness of environmental problems can be variable, as evidenced by responses to opinion surveys (e.g. Mohai and Twight, 1987; Van Liere and Dunlap, 1980; Vining and Ebreo, 1992). We need to understand how groups reach a common understanding, that is, how a common social milieu is created (see P. Brown, 1992). Sometimes awareness and consensus occur because of highly visible problems, such as long petrol queues during the US energy crisis of the 1970s (Kempton et al., 1992), the odours and appearances of polluted rivers and airborne effluents from chemical plants (Berger, 1985). Fawcett and Khoo (1980) argued that, in Singapore, rapid reductions in fertility had been due in part to the visibility of population pressures: 'The pressure of population on resources is visible to the naked eye ... and is reinforced by frequent references to this problem in the press and in government policy announcements' (p. 551). Research is needed to determine how best to make all resource problems visible and convincing if we are to achieve sustainability (see Stern and Aronson, 1984). Kempton et al. (1992) agree that widespread awareness is an important base for change. They suggested that policy-makers should take advantage of even short-term shortages, when the political will for change is strong. At such times, restrictive policies can be enacted and people are willing to pay for more expensive but permanent, effective technological remedies.

Some problems are visible but not noticed because degradation has

occurred slowly, over the years, and people accept the situation as normal (several authors use the analogy of the frog in hot water, which immediately recognizes danger and jumps out, but would stew slowly in water heated gradually to the same temperature). Russell (1993) noted that cattle ranchers were less aware of degraded riparian areas than range managers who were newly arrived on the scene. Individuals who can compare the current situation with original healthy conditions may have particular credibility in raising widespread concern and stimulating others to action (Berger, 1985).

News reports and publicity events can increase awareness of problems and create a common social milieu. News media are credited with keeping environmental issues active, but are also criticized for contributing to an 'issue-attention cycle' (Downs, 1972, quoted in Kempton et al., 1992) when reporters move on to other issues and no other mechanism keeps the environmental problem salient. However achieved, widespread awareness of an environmental issue sets the stage for motive interventions, the next topic.

INTERNAL MOTIVATION The second factor in the holistic model is 'knowledge and internal motivation'. Knowledge refers to education, and it is important for people to have accurate understandings of nature and their impact on it. Internal motivation is a complex psychological concept, and more difficult to influence. I use the word 'motivation' loosely to refer to three kinds of psychological processes, (1) fundamental values, (2) attitudes and self-concepts, and (3) social incentives, norms and other internalized responses to social pressures. In the previous section I described the social milieu as what people hear in the world around them, their perceptions of what others think. In contrast, personal motivators are their personally held values, norms, attitudes and other concepts in this section. Clearly, for some people, these are connected: personal motivators represent the translation of social milieu down to the individual level. For others, local friendships and personal experiences may be important mediators between what they hear in the media and their individual values, attitudes and social concerns.

Internal motivations to behave sustainably represent long-term, underlying bases for behaviour. Internal motivations can take a long time to develop, but they can also change with time and experience. In many cases, they are trained directly by parents, peers and opinion leaders. Transmission can also occur indirectly, as children observe the rewards their role models receive for engaging in certain behaviours; modelling can occur without a specific reward if children assume a behaviour is intrinsically rewarding (Bandura, 1965). A few examples should illustrate how each kind of motivator can lead to environmentally favourable behaviours.

Fundamental values A simple definition of values is that they define 'beliefs about what is important', and 'beliefs about how things should be' (see Magraw and Nikel, 1990; Newton and Dillingham, 1994; and Scherer, 1990a, b, for discussions of environmental values; and Seidenberg and Snadowsky, 1976, for discussion of general value/attitude relationships). Values assign preferences to a variety of outcomes; they enable us to articulate which are most important to us (Schwartz, 1992). A single value can inform a variety of separate attitudes. A person who holds a value that human welfare is the most important outcome would form different attitudes towards resource conservation from those of a person who holds a value that protecting the biosphere is the most important outcome. This essentially defines the difference between anthropocentric and ecocentric value systems (Nash, 1988/1990; DeVall and Sessions, 1985). Anthropocentric values lead a person to be interested in preserving rare plants because of their use to humans, such as whether the plants have components that could help cure human diseases. Ecocentric values lead to preservation because the plant is integral and essential to the health of an ecosystem. Knowing a person's fundamental values should allow one to predict their attitudes towards a variety of separate issues.

Another example of how values inform attitudes comes from Sax's (1980) analysis of conflicts over the use of national parks in the US. He argued that the issue represented a fundamental difference in values about the symbolic meaning of parks. On one side were people who believed the parks should provide only the opportunity for contemplative experience of nature. On the other side were people who believed the parks should provide a myriad of outdoor and recreation experiences. As an example, Sax pointed out that people who opposed motor boats on the Colorado River in Grand Canyon National Park, Arizona, opposed them on value differences, not practical impact:

> In fact, motorized boats don't intrude upon those who want to go down the river in oar-powered boats. Reduced to essentials, the preservationist claim is simply that motors don't belong in this remote and wild place; that they betray the idea of man immersed in nature and bring industrialization to a place whose meaning inheres in its isolation from, and contrast to, life in society (Sax, 1980: 12–13).

Another example of the relationship between values and attitudes comes from analyses of 'pronatalism'. Peck and Senderowitz (1974a, b) explored the origins and manifestations of pronatal values in Europe and the US. Their argument was that societies had developed positive values about child-bearing when children were needed – during times of high infant and childhood mortality and short adult life-spans. These positive values and related societal pressures were needed to assure a critical population mass, but this is no longer the case. Their comments echoed Hollingworth's (1916/1974) discussion of social pressures impelling women to have children. Hollingworth added that large numbers of citizens might simply be needed to provide a nation with an army, labourers or enough people to populate

and protect remote geographic regions. Were Hollingworth writing today, she might add that children are desirable as 'little consumers' who help drive a nation's economic engine by creating demand for products (see Belk, 1987; Durning, 1992).

Although it is generally accepted that values are broad constructs that underlie or guide attitudes, there is little research on how connections are made from one to the other. Because values are more fundamental and inform multiple attitudes, they should be more difficult to change, but have more extensive impact if change occurs.

Attitudes, self-concepts and intrinsic motivation Attitudes define how positively or negatively one feels about something, such as natural areas, conservation behaviours or contraception. Self-concepts are the qualities individuals believe they have, including physical and psychological qualities. And finally, intrinsically motivated behaviours are those that occur in the absence of any external pressures or incentives.

Attitudes: Although researchers agree that attitudes can be measured with some accuracy and many believe that attitudes guide behaviour (see Fazio, 1986), there is no substantial body of research showing a simple, clear and strong relationship between attitudes and environmental behaviours. More common are studies showing that attitudes are related to self-reported behaviour, and studies showing that attitudes predict self-reported behaviour when combined with other factors, such as norms, situational cues and so on (Guagano et al., 1995; McCarty and Shrum, 1994; Oskamp et al., 1991; Smith et al., 1994; Stern et al., 1993).

One of the most common uses of attitude measurement is to understand why people do or do not conserve. In theory, if we can understand why they are not conserving, we can change the situation or change their attitudes in ways that increase conservation. And if we can understand why one group conserves and another does not, we can use that information to influence other groups. For example, Becker, Seligman, Fazio and Darley (1981) measured a variety of energy-related attitudes to determine which predicted energy use. Desire for comfort (men and women), concerns that colder homes were unhealthy (men only), and belief that technology could solve the energy crisis (men and women) all predicted higher winter energy consumption. Other attitudes were unrelated to winter energy overuse (such as feeling financially comfortable, low individual responsibility to conserve). Attitudes that predicted consumption in winter were somewhat different from those predicting consumption in summer (Seligman et al., 1979), probably because energy needs differed at those two times of the year (Becker et al., 1981). This pattern suggests that persuasion campaigns might vary with time of year and include only the attitudes that predict overuse. Research in other populations might begin with the entire set of attitudes, replicating the process of identifying key attitudes and adapting the persuasion campaign to that group's profile.

Although it might seem more efficient to try to change a general attitude about conservation than to change attitudes towards each separate behaviour, this is not the case. One fairly steady finding is that specific attitudes are the best predictors of specific behaviours. Attitudes towards recycling are better predictors of recycling than general environmental attitudes (Oskamp et al., 1991; Vining and Ebreo, 1992); attitudes towards a particular contraceptive are the best predictors of its use (Fishbein and Jaccard, 1973); and attitudes towards using lead-free petrols are better predictors of that behaviour than general environmental attitude (Heberlein and Black, 1976).

General measures of attitudes should show that people do have coherent, integrated views about an array of environmental issues. One model gaining increased interest is Dunlap and Van Liere's (1978, 1984) 'new environmental paradigm', which examines the extent to which people reject traditional economic and political models in favour of a more environmentally centred one. In describing this model, Stern et al. (1993) said: 'Much of this work has emphasized the emergence of a new world view, or paradigm, associated with environmentalism ... [which] like other "new social movements", aims not at redistributing resources, but rather at a different and in many ways more fundamental restructuring of society ...' (Stern et al., 1993: 323). Most of the research flowing from this new orientation uses self-reports or behavioural intentions, so it is not clear that this new measure will be useful for predicting actual behaviour.

In contrast to studies of attitude measurement are studies of persuasion to effect attitude and behaviour change. Extensive analyses of energy conservation programmes indicate that advertising campaigns may influence attitudes but have little impact on behaviour (Condelli et al., 1984; Stern and Aronson, 1984; L. T. White et al., 1984). A more promising approach is to tailor the message to the individual. Howenstine (1993) made the intriguing suggestion that researchers use surveys to identify people 'on the verge' of recycling, determine what their particular impediments were, and use education and persuasive campaigns to overcome the impediments. For people interested in recycling but unaware of a drop-off point, increase information about the programme; for people lacking role models, develop an advertising and promotion campaign using relevant models (see also Kok and Siero, 1985; and Werner and Makela, 1998, for additional examples of overcoming impediments).

A very effective persuasion strategy is to use a 'block leader' to deliver the persuasive message (Burn, 1991; Everett and Peirce, 1991–92; Hopper and Nielsen, 1991; Nielsen and Ellington, 1983). This approach is based on both persuasion and normative influence theories. To enhance credibility, the 'leader' is a neighbour with some degree of similarity and familiarity to the people being persuaded. The leader uses one-on-one persuasion and answers questions. The leader also checks up on people to see if there are problems, and acts as a neighbourhood 'booster' to develop group cohesion and

enthusiasm for the project over the long term. This person can either be an existing neighbourhood leader (Everett and Peirce, 1991–92; Katzev et al., 1993) or someone chosen at random (Burn, 1991). The 'block leader' approach is probably particularly effective with public behaviours, such as kerbside recycling and office paper recycling, where each individual's recycling container is visible evidence of participation. Block leader approaches need to be extended to other behaviours besides recycling.

Another encouraging example from the energy conservation literature is a programme by Gonzales et al. (1988). They suggested that highly vivid messages that allowed homeowners to visualize or vicariously experience their home's heat loss would be most effective at inducing heat conserving behaviours (adding expensive insulation and caulking windows and doors). Consultants were trained to talk about homes having 'naked' (and therefore very cold) attics, and to speak visually about the total area needing caulking (e.g. 'the cracks add up to an area the size of a basketball') instead of being abstract (vague statements such as 'you're losing a lot of heat through these cracks'). They also emphasized 'loss' ('it's like having a hole in your pocket') rather than 'saving', on the grounds that people are more influenced by thoughts of losing rather than saving money. These authors reported dramatic improvements in homeowner follow-through compared with power companies' typical education programmes.

Self-concept, commitment and minimal justification The second internal motivator that has received some attention in the environmental community is the goal of *positive self-regard*. The general idea is that people endeavour to behave and think about themselves in ways that highlight their positive qualities (Steele, 1988). In an early study, Steele (1975) illustrated the dynamic qualities of self-regard. He called residents on the telephone and either insulted them or made neutral comments. Then, in an ostensibly unrelated call approximately one week later, residents were contacted again and asked to participate in a lengthy and tedious but community-oriented and helpful project. Those who had been insulted were significantly more likely to participate than were those who had not been insulted. Steele suggested that after hearing the insult, people were motivated to restore their positive self-regard. Participating in the tedious but pro-social activity enabled them to focus on positive aspects of themselves. Steele pointed out that the second activity had not been relevant to the original insult, so people were able to restore self-regard without addressing that original message.

Environmental psychologists have taken advantage of the fact that people maintain self-regard by living up to their promises. They have utilized positive self-regard as a motivator, albeit not explicitly. Numerous studies use notions of self-consistency to induce long-term environmental behaviour change. The predominant strategy uses minimum justification techniques to elicit a behavioural commitment. In his comparison of persuasion strategies, Cialdini (1993) argued that commitment is an effective behaviour-change agent because it sets in motion desires to be consistent – to live up to one's word.

Commitment has been the most effective behaviour change agent in the environmental field, especially with respect to long-term behaviour change (Dwyer et al., 1993; Katzev and Johnson, 1987). People who made commitments were most likely to continue an environmental behaviour (energy conservation, recycling, bus use) long after others had ceased. Commitment must be manipulated; people must be induced to promise to engage in a behaviour rather than simply being asked how committed they are to the behaviour (Katzev and Johnson, 1987). Cialdini (1993) stressed that not all commitments would engage the self-image. He suggested that people using this technique needed to make sure that commitments were 'active, public, effortful, and freely-chosen' (p. 64) for maximum effectiveness. Indeed, there is general agreement that it is the commitment that stimulates the drive for consistency that leads to sustained behaviour (e.g. Cialdini, 1993; Steele, 1988).

Social incentives and *normative behaviour:* Social incentives and norms are a third broad category of internal motivators. Norms are the socially defined 'oughts': our beliefs about how we should behave. 'Personal norms' are individuals' internalized 'oughts' whereas 'cultural norms' are beliefs about what behaviours are thought to be socially appropriate. (Self-concept and commitment, discussed above, are one type of normative influence.) Social incentives (public praise or recognition) and disincentives (public censure or disapproval) can be more effective motivators than financial rewards.

These types of internal motivation are based on people's desires to be responsible citizens, to be accepted and respected by others, and generally to behave in ways that are consistent with group/societal norms or that will garner group/societal praise. This is a major source of the pressure for conspicuous consumption – the desire to impress others. An advantage to motivating sustainability via social concern is that all behaviour is grounded in a social context: this context can be utilized to effect change and support it over the long term. These pressures contribute to excessive consumption; they can help reduce it.

Cook and Berrenberg (1981) proposed that conservation behaviour could be increased with social incentives and disincentives, as long as people believed that conservation was a desired group goal. In one study, families receiving a 'we are saving oil' sticker along with feedback about their energy use did indeed use less oil than feedback-only and control groups (Seaver and Patterson, 1976, quoted in Cook and Berrenberg, 1981). In the other study, social recognition (a public chart showing miles per gallon and verbal praise from supervisors) was used to induce truck drivers to conserve fuel through better driving (Runnion et al., 1978, reported in Cook and Berrenberg, 1981).

Hopper and Nielsen (1991) drew on Schwartz's (1977) social-psychological model of altruistic behaviour to understand environmental behaviours. Schwartz's model presumes that people must personalize norms before they

influence behaviour. In addition, personal norms derive their motivating properties from desires to maintain positive self-concepts: 'To violate a personal norm engenders guilt, and to uphold a personal norm engenders pride' (Schwartz, 1977: 200). Personal norms will not guide behaviour unless (a) people are aware that their action or inaction will result in consequences to the environment and (b) they accept responsibility for those consequences. Hopper and Nielsen found that people who were aware of the benefits of recycling and who had stronger personal norms were somewhat more likely to recycle.

Norms and social approval have also figured strongly in how middle-class people respond to energy conservation campaigns. In a fascinating analysis, Wilk and Wilhite (1987) conducted in-depth interviews with middle-class homeowners to ascertain their reasons for not 'weatherizing' (not weather-stripping and caulking their homes) as suggested by an energy audit. They learned that the respondents' norms required glamorous and visible 'home improvements' they could show off to friends and neighbours (such as an expensive wood stove). Weatherstripping was categorized as a repair job which had no social benefits and was even a little embarrassing.

Internal vs. external motivators: It is important to distinguish internal from external motivators. External motivators are situational influences such as financial incentives or strong interpersonal control efforts. Many studies attest to the power of external incentives to control behaviour. If people are 'paid' to recycle or conserve energy, they will do so (Geller et al., 1982). Use of incentives is based on an economic model; people seek rewards and avoid costs. One problem with incentive programmes is that they have rarely been cost-effective: providing rewards usually costs more than the value of recycled goods or the energy conserved (Geller et al., 1982). Furthermore, the behaviour change is totally dependent on the external contingency. People do not develop internal reasons for continuing the behaviour. Once the reward or cost is removed, behaviour ends.

Not only do rewards and punishments not result in long-term behaviour change, strong external rewards can actually undermine natural interest. Many studies on work tasks or play activities reveal that students who show initial spontaneous interest will lose interest and stop working or playing if they receive praise or other rewards for their performance (e.g. Deci, 1992). This idea is often difficult to accept, perhaps because using financial incentives to control behaviour is so common. Although one might think that incentives can be used early on, to get people interested in a behaviour, extensive research in many areas of psychology indicate this is not the case. Contingencies are very effective at controlling behaviour, but only while the contingencies are in place.

Comparison among the motivators (attitudes, norms, and self-concepts): These three kinds of internal motivators are very similar in that they represent cognitive structures with the ability to motivate action. They differ in the nature of

that motivation, with definitions of attitudes emphasizing positive/negative evaluations, norms emphasizing 'oughts', and self-concepts emphasizing ego-involvement and positive self-regard. There is some overlap, especially where positive self-regard is derived from adhering to norms.

MEMORY AND SITUATIONAL PROMPTS Memory enhancers, the third factor, provide support for behaviour by reminding people of their attitudes or intended behaviours. Habits are often difficult to break, so even if an individual decides to conserve or recycle a resource, he or she will need reminders until the new behaviour is well entrenched.

There is strong evidence for the role of 'prompts' and feedback in guiding behaviour. For example, brochures and instructional signs (prompts) have been used to increase newspaper recycling in neighbourhoods (Jacobs and Bailey, 1982–83; Jacobs et al., 1984). Feedback about energy consumption has been a primary way of reducing household energy use. The feedback sometimes reminds people to engage in a behaviour, such as a light that alerts homeowners to turn off the air conditioning (Becker, 1978). And sometimes feedback is a monthly report of energy consumption so people know how much energy they have been using and can adjust down as needed.

For maximum effectiveness, feedback needs to be provided to people who care about receiving it (i.e. have attitudes favouring conservation or seek the economic advantage of saving money), and it needs to be provided in a way that has clear behavioural implications (Kempton et al., 1992). For example, Becker's air-conditioning light provided effective feedback because it signalled a simple behaviour at a particular point in time. In contrast, monthly feedback about energy usage is less effective because the consumer has so many possible behaviours, and the simplest to do (e.g. turn off the lights) often have the least impact on conservation (e.g. compared with adding insulation or buying energy-efficient appliances) (Condelli et al., 1984; Kempton et al., 1992; Stern and Aronson, 1984).

With respect to maximizing the impact of prompts, Stern and Oskamp (1987) reviewed numerous studies that used prompts. They concluded that the best prompts would: (a) suggest behaviours that are easy or convenient; (b) be highly specific and communicate exactly what should or should not be done; and (c) be placed close to where the behaviour should occur. Thus, both feedback and prompts can be used effectively as part of a total, holistic intervention.

Except for feedback and prompts, there is not a lot of environmental research on interventions that serve to activate attitudes. One promising area is schema-theory, or the idea that an individual's behaviour is guided by integrated sets of information held in memory. Werner (1996) suggested that environmental stimuli could evoke one schema instead of others. For example, one could increase adherence to park signs (signs indicating acceptable and unacceptable behaviours) by using multiple cues to elicit environment-

protecting instead of environment-destroying cognitions. A sign that welcomes people to a park, emphasizes the specialness of the place, and explains how regulations protect the setting should evoke more positive cognitions and have more impact than a sign that simply states the rules.

Schema theory has also been used (implicitly) in family planning education. One technique for empowering adolescents to use contraception is role-playing, which has the long-term effect of strengthening attitudes and making them more accessible. In health education settings, young people imagine themselves in a romantic situation. They practise negotiating whether to engage in sex and – if so – they practise different ways of convincing a partner that contraception should be used (including barrier methods for protection against AIDS and other sexually transmitted diseases). By role-playing these experiences, adolescents build a repertoire of scripted behaviours that are evoked by and can guide actions during their real-world sexual experiences. The better education programmes include specific skills training, another significant factor in a holistic approach (Barth et al., 1992; DeRidder, 1993).

OPPORTUNITY Providing behavioural opportunities is an essential component of a holistic, long-term behaviour change programme. Psychological programmes often focus on attitude or behaviour change without providing a supportive context which can help sustain the change. There are several ways of providing a supportive context, such as convenience and ease of action (e.g. Geller et al., 1982). Convincing employees that they should recycle office paper does little good if the task of recycling is made extremely difficult. City-wide recycling programmes are typically more successful when kerbside pick-up is provided (compared with distant neighbourhood dumpsters). Recycling is more successful when it is made an integral part of cooking and clean-up (Hormuth et al., 1991). Effective family planning clinics in high schools provide students with convenient access to contraceptive and sexual hygiene information (DeRidder, 1993). The key idea is that at both individual and societal levels, we need to put in place clear behavioural opportunities.

SKILLS The final factor in this holistic approach refers to whether people have – or believe they have – the necessary skills for the environmental task. Lack of skill is a frequent explanation for failures of conservation programmes. For example, with respect to recycling, common impediments have been too many containers, so that recycling is confusing (Katzev et al., 1993), and lack of space to organize recyclables in the home (Werner and Makela, 1998). In the domain of energy conservation, energy researchers argue that persuasive messages should emphasize behavioural skills, not abstractions (Kempton et al., 1992; Stern and Aronson, 1984). Wilk and Wilhite (1987) interviewed homeowners who had failed to follow an energy auditor's advice to weatherize. They found that a perceived lack of 'handyman' skills was the key to many residents' lack of follow-through.

Similarly, with respect to contraception and family planning, both lack of knowledge and lack of skills contribute to at-risk behaviours. Key problems are uncertainty about how the partner will feel about condom use and the lack of skills to negotiate acceptance (Barth et al., 1992; Boyd and Wandersman, 1991; Jaccard et al., 1990a; Pleck et al., 1990), concerns about being embarrassed when buying condoms (Pleck et al. 1990), and general fears that awkwardness with contraception will reduce romance or sexual pleasure (Boyd and Wandersman, 1991; Pleck et al., 1990). All of these are skill-related problems that can be addressed in interventions. For example, Barth et al. (1992) developed graduated role-playing activities to enable students to gain interpersonal skills step by step. At first, students read prepared scripts in which they negotiated abstinence or convinced a partner to use a condom. These experiences were designed to give practice in effective interpersonal skills. The next role-play activities were unscripted and required innovations by students. The scenarios became more and more specific and contained more and more pressure for unprotected intercourse. Students developed skills for dealing with these situations gradually, in a structured safe setting, with support from peers. This level of structure is probably not needed in neighbourhood resource conservation programmes, but the general ideas of role-playing, skill development and peer support are worth considering in any behaviour change intervention. Some support for the importance of perceived skills comes from work on Ajzen's Theory of Planned Behaviour, which includes questions about respondents' ability to perform intended actions (e.g. see Godin et al., 1996, on condom use).

How do people develop skills? And what maintains their ongoing interest in continuing their new behaviours? First, we assume that people want to feel competent and successful – to have 'agency'. Indeed, competency motivation has been described as a fundamental human need (White, 1959), and it is central in Bandura's (1986) self-efficacy model of psychological well-being, and in educators' research on eagerness to learn (e.g. see Deci, 1992; Lepper and Greene, 1978; Renninger et al., 1992). A promising application of this idea comes from research by Sansone and Harackiewicz (1996), who suggested that if people have a reason to persist at a behaviour, they can figure out how to do it effectively and how to make it interesting or fun. Consistent with this view, Werner and Makela (1998) found that people who had pro-recycling attitudes (reason to persist) were more likely to find interesting features in recycling and to manage it well.

SUMMARY This section called for intervention programmes that draw on the five factors of social milieu, internal motivations, memory, opportunity and skills. Each factor was examined separately primarily because that is how psychologists study them. Unfortunately, interventions that use only one aspect of the total system have yielded limited success. It is time to begin using more holistic interventions so that behaviour change at the individual

and family level is grounded in and supported by local neighbourhoods and the larger socio-political system. The next section examines programmes and activities using this more holistic style.

Holistic Programmes

Holistic programmes are difficult and costly to implement. Merely mounting the publicity or advertising campaign necessary to create a change in social milieu can be a monumental task. And complementing that with all of the other aspects of a successful programme can be overwhelming. One strategy for avoiding this initial cost is to take advantage of the public awareness that follows from major events and disasters (such as oilspills, catastrophic forest fires, animal extinctions), perhaps documenting this awareness with public opinion surveys. Examples of holistic programmes in two domains can illustrate the problems and prospects. One kind of programme is adolescent sex education for reproductive control; the other programmes aim to protect wild birds and wild bird habitats in small (and therefore more 'intervention-friendly') areas.

DeRidder (1993) reviewed an array of comprehensive sex education programmes developed for junior high school students in the US. He criticized typical sex education programmes for being vague and disconnected from students' everyday lives, and concluded that the programmes 'have had little or no impact on reducing teenage pregnancy' (p. 102). Only one style of programme could demonstrate success with clear data (reductions in adolescent pregnancy and increases in males' use of contraceptives), and that was the 'school-linked clinic'. In these two programmes, sex education is provided in regular health courses and students have access to family planning information, contraceptives, pregnancy testing and so on in the adjacent clinic. DeRidder's analysis addressed most of the factors laid out in the present holistic model. He noted that one of the main contributors to adolescent pregnancy was the social milieu of 'a society that emphasizes sex in all forms of communication and that exhibits promiscuous and risk-taking sexual norms' (p. 103). The successful programmes combated this by creating their own social milieu of openness about sexuality and an awareness of the negative consequences of sexually transmitted diseases and adolescent pregnancy (consequences typically ignored in mass media portrayals of sexuality). Students were motivated to care about pregnancy and STDs with information about pregnancy and disease risk and a sense of responsibility for avoiding these outcomes. Social norms were established that sexuality was okay and that open discussion without embarrassment or ridicule was expected. The effective programmes emphasized learning and memory, being certain that students acquired and retained accurate contraceptive information, and could apply it to their own experiences and future plans. Opportunity for action was available at the adjacent clinic for students who decided to become sexually

active. And behavioural skills were often taught through role-playing and other means of ensuring that partners would discuss and act on contraception. These programmes were designed to span several years so that students could acquire information at appropriate stages in their cognitive and social development. The programmes are very comprehensive, costly and time-consuming, but they work. One feature that might be added is to ground the new attitudes and behaviours in the student's family relationships (Barth et al., 1992).

The next holistic interventions involve wildlife and wildlife habitat protection. The first is an ongoing, almost twenty-year-old project on Canada's Eastern Coast (Blanchard, 1994; Blanchard and Nettleship, 1992). The programme was developed for cases in which local groups overharvest a resource and use of the resource is integral to local traditions and cultural values. These cultural values – i.e. the social milieu – must be addressed for successful long-term attitude and behaviour change. Resource management plans that emphasize enforcement without changing underlying values will meet only hostility from the local people. A second assumption is that the local system needs to be addressed at multiple levels of functioning and at different points in time. Doomed to fail are isolated interventions or interventions undertaken before the people are ready to consider and accept them (in the present case, 'readiness' included access to commercially produced meats). Blanchard and her colleagues recommend developing campaigns that are specific to the local group in terms of what the behavioural goals are, how the group communicates, who the leaders are, what values drive resource consumption, which values can be incorporated into the intervention, and how the programme's effectiveness can be demonstrated and evaluated.

In the particular intervention utilized in the Gulf of St Lawrence, Blanchard and colleagues capitalized on local norms that one should not harvest more birds than one needed. Thus, they endeavoured to reduce rather than eliminate the take, and they endeavoured to reduce harvesting during the breeding season. Key aspects of the twenty-year programme were (a) education programmes for elementary and older children that involved visits to wildlife sanctuaries; (b) group meetings to discuss seabird population declines and the role of out-of-season harvesting in this decline (these meetings were often run and organized by local residents); (c) plays performed by children that served as devices for educating them about seabird natural history and conservation (children were encouraged to practise their roles at home, thereby involving parents in learning about conservation needs); and (d) hiring local residents (often with a history of poaching) to work as conservation officers; this served simultaneously to re-educate them about seabird conservation and to provide them with a viable income which reduced their need to poach. Face-to-face interviews indicated dramatic changes in attitudes towards hunting of targeted seabird species, changes in perceptions of what percentage of their neighbours were hunting these species, and changes in the numbers of birds individuals expected to harvest.

A similar holistic approach has been developed by another conservation organization. RARE, which is active in the Caribbean, uses eco-marketing strategies to sensitize local citizens to declines in wildlife populations, invoke a protective orientation towards a particular species, and thereby activate citizens to protect that species and its habitat. Protection for that species typically signals protection for the entire ecosystem, so the change in attitude and behaviour has widespread impact.

RARE's strategy emphasizes grass-roots support. First, local citizens select the key species to be protected. That species – typically a particularly beautiful bird – becomes a national symbol, underscoring national pride and uniqueness (the chosen species is always a unique native). Local musicians compose and perform songs about the bird, schoolchildren perform plays about the bird and its natural history, local businesses use that bird in their logos, and local entrepreneurs sell T-shirts displaying their national bird with pride. A totally new social milieu is created in which people take pride in and protect the bird and its habitat. These programmes are introduced only in settings where the government provides a supportive context with opportunities to conserve (such as conservation officers to help with education, and willingness to set aside forest preserves). Memory prompts are provided by the popular songs and through visibility of the species on billboards, bumper stickers and products; national pride motivates people to seek alternative sources of income and food (ideally, employment programmes would provide people with skills needed for alternative life-styles). These programmes are developed slowly, over a two- to five-year period, and are maintained by local efforts. In sum, the RARE programme addresses the system at many levels, over long periods of time and leaves mechanisms in place to sustain the changes.

Community Activism and Empowerment

'Environmental empowerment' occurs when people have 'agency', when they feel effective and take control over environmental events in their community. Psychological research on citizen empowerment has been fuelled by realizations that when authorities make decisions for citizens, the citizens can become psychologically 'helpless' – dependent on others instead of autonomous and self-sufficient (Zimmerman and Perkins, 1995). There are many domains in which citizen empowerment has been studied (fair and decent housing, employment, mental health); it has become a useful framework for understanding effective citizen reactions to environmental hazards (Rich et al., 1995). In the US, there have been numerous examples of environmental hazards requiring citizen activism. Place names such as Love Canal, NY (Gibbs, 1982), Times Beach, MO, Legler, NJ (Edelstein and Wandersman, 1987), Orange County, NY (Rich et al., 1995), Woburn, MA (Brown and Mikkelsen, 1990), and Three Mile Island, NJ (Baum et al., 1983), are symbols of communities disrupted or destroyed by hazardous wastes in the ground, air and/or water.

Ethnographic analyses and case studies have yielded richly detailed information about how these communities organized themselves and the conditions that led to more or less successful outcomes. In Love Canal and Times Beach, citizens successfully campaigned over a period of years to have their neighbourhoods declared disaster areas and their homes bought by the government. Citizens in Woburn brought water problems to the city's attention, shut down that water supply, and mounted a suit against the tanning and chemical firms that had polluted the underground water supply. Citizens in Legler were able to convince the city to shift from individual wells to a city-provided water system. With respect to prevention, citizens in California were successful at preventing offshore oil drilling and its accompanying (potential for) oilspills (Freudenburg and Gramling, 1994; Gramling, 1996).

In a holistic analysis, Rich et al. (1995) suggested that three setting characteristics combine to determine success and community empowerment: (1) citizen characteristics (e.g. knowledge, skill, norms); (2) social institutions (e.g. civic organizations that cultivated organizational skills); and (3) formal institutions (e.g. regulatory agencies and their processes). The authors argued that it is difficult to create the first two components, so it should be incumbent upon the third – government institutions – to create empowering environments. As illustration, they told about citizens in Orange County (New York, USA) who could not stop a proposal for a sod farm to use sludge (including human waste) as fertilizer. The appeals system was designed for expert testimony at the expense of citizen testimony. Rich et al. described the farmers as being demeaned and ignored while the experts were revered and coddled. After the permit was approved, the farmers' concerns were validated. The sludge contained hazards, and the farmers' predictions about flooding and ground water contamination were confirmed. Eventually, after much environmental damage, the permit was revoked. Rich et al. argued that if the system had been designed to weight local input adequately, the problem would never have occurred. Furthermore, with the right combination of circumstances, the citizens would have felt empowered, not disempowered.

Although we need system changes of the sort recommended by Rich et al., we should also develop ways of increasing individual skills so that citizens can function effectively even if the system is flawed. For example, there is a consistent pattern in how corporations and government officials deal with citizens who raise questions about environmental hazards. Citizens are typically ridiculed for over-reacting or being uninformed, and they are often blamed for their situation (Berger, 1985; Edelstein and Wandersman, 1987). Knowing this is a common issue and knowing they can develop social support among their neighbours can help citizens deal effectively to offset such attacks. Edelstein (1988) noted that experts developed the term NIMBY (Not In My Backyard) as a way of shaming people into accepting society's waste. He reviewed alternative terms such as LULU (Locally Unacceptable Land Use) and YIYBY (Yes, In Your Backyard) which give a different 'spin' to the issue

and legitimize citizen resistance. In essence, these terms are part of the social milieu that helps us define and interpret environmental events.

Edelstein's argument is reminiscent of the idea that corporate heads should live next to their factories and next to their waste piles, and that a company's outflow pipe into a river should be upstream from its inflow pipe (the company's effluents then become part of its water supply, and owners are motivated to clean up after themselves). Part of the problem is that citizens often unknowingly use the products that are responsible for creating toxic waste, especially waste produced during manufacturing. So in addition to programmes that help empower citizens to make informed and wise decisions about local land use, we need programmes to increase general knowledge about consumer choices that contribute to environmental problems.

Spanning Disciplinary Boundaries

This chapter has focused on ways in which psychologists can contribute to sustainable development through effective, holistic interventions. It calls for a shift away from passive, descriptive research towards more active efforts to effect cultural and behavioural change, changes that are internalized and long-lasting. Compared with the other chapters, it is narrowly focused on individual and group behaviours and emphasizes reduction in resource use (with most examples drawn from the Northern, high-consuming societies). It contains little about social injustice, rapid modernization pressures, societal metabolism or the other critical factors that, at a global level, are needed for sustainability.

What can psychology bring to this effort, and which of the MOST strategies for interdisciplinary work can psychologists adopt most easily and effectively? In addition to disciplinary barriers there are cultural differences; how can we transcend them in our efforts to solve global environmental problems? As may be evident in the present review, applied psychologies (such as environmental psychology) are already operating in MOST's second mode, with 'problem-oriented interdisciplinarity' (Becker et al., 1997; see also the introduction to this book). We draw freely from concepts and methodologies of other disciplines in our analyses; we have already been changed by these exchanges. On the other hand, we appreciate and benefit from the strengths of psychological constructs and methods, and I doubt whether we are ready to move towards 'self-reflective transdisciplinarity'. The question of cross-cultural relevance is more difficult, and we need to determine how to cross these barriers. Psychology's contributions can include:

- Effecting change in values, attitudes and behaviours. Psychology's great strength is effecting change: showing how to translate policy goals into policy rules that are effective at guiding or changing individual and group behaviour.

- Identifying counterproductive policies. Psychology can help to identify and avoid policies that will have unwanted consequences (such as erroneously using financial incentives) (see p. 232, above).
- Measuring quality of life. We can contribute additional methodologies and conceptual frameworks for defining and measuring quality of life. Becker et al. (1997) provide an excellent list of possible indicators; psychologists can enhance and add to these.
- Motivating with both negative concerns and positive inspirations. Psychology can help construct a better vision of a sustainable future. The present chapter tends to take a 'we must change' approach (albeit in psychologically effective ways) which can engender reactance and fears about quality of life under sustainable practices. Psychologists (and our colleagues in marketing) can help build a better vision of a sustainable life-style.
- An emphasis on value change. There is an urgent need – world-wide – for a change in fundamental values about consumption and reproduction. Any attempt to address the issue of globally sustainable development must address the fundamental questions of why people have children, why we consume resources at often non-sustainable levels, and why we decide to use unsafe technology. Many writers take these as 'givens', stating that people naturally desire children, and people naturally want to achieve and consume. In contrast, social psychologists point to social pressures, mores and values that drive these behaviours. Unless these are changed, it will be very difficult to change birth and consumption rates. Providing women with access to birth control, providing incentives for their use, or couching their use as a way to improve a woman's overall health has little impact if the woman believes that having many children is a sign of God's blessing, or, as many (e.g. Cleland, 1985; Sen, 1994; Sen et al., 1994, especially Section III) have suggested, the woman who desires few or no children is powerless in relation to a strongly pronatal husband or his family. Similarly, trying to persuade people that they should change their consumption style is likely to fail unless we simultaneously change their reasons for consumption, such as the belief that conspicuous consumption is a way of establishing status in society or that high consumption is necessary (Veblen, 1899/1908).
- Changing social systems. A fundamental question is how humans will organize themselves as political, decision-making groups; another is what economic systems will evolve (Beck, 1994). How can people be involved in political and economic decisions that affect themselves, nature and future generations? One way to consider this question is to look at the research on community empowerment summarized above. These show, at a grass-roots level, how people cope with larger social systems. As Blanchard (1994) noted, citizen involvement is more than just holding a hearing and then telling citizens what the government intends to do. It is more than letting people complain about current or proposed conditions. It is

involving them in meaningful ways in the decisions that will affect their lives and the lives of future generations.

Psychological findings mesh nicely with recent work by political scientists and social philosophers on 'social capital' (Putnam, 1993) and 'reflexive modernization' (Beck et al., 1994). There is extensive research on co-operation and competition, on autonomy, conformity and interpersonal influence, and studies of leadership and group relations. Hardin's (1968) Commons Tragedy is often used to frame psychological analyses of sustainability, but this is a mistake because he ignores group processes. In addition, such analyses do not acknowledge the dialectic relatedness of people and groups. A dialectical approach (Werner et al., 1997) presumes that both individual and group goals are equally important and must be satisfied by the social/economic/political system. Historical and anthropological analyses show that societies do provide for individual and group goals by developing holistic systems for commons management (Cox, 1985; Feeny et al., 1990; McCabe, 1990; McCay and Acheson, 1987; Werner et al., 1997). Similarly, laboratory research on commons dilemmas and social traps indicates that people respond quickly to situational pressures to sustain a commons. When people understand that they are interdependent with society and nature, they conserve appropriately.

What Can Psychology Learn?

- Continue benefiting from collaboration with other disciplines.
- Bigger impact for our efforts: A significant problem with psychological research is targeting relatively trivial behaviours. In the US, the National Research Council has been the leader in identifying significant targets for behaviour change (Stern and Fineberg, 1996; Stern et al., 1992). They use multiple disciplines and methods to identify who the major users, wasters and decision-makers are, and how to effect changes in those target areas. Many purchase decisions are made by builders interested in saving money at the expense of long-term energy conservation. Built-in conservation saves resources for the long term and must be encouraged (Barnett, 1995; Calthorpe, 1993; National Audubon Society, 1995).

Conclusion

Many authors are concerned about our environmental future. Can we evolve a world society that treats humans and ecosystems fairly? Have we done irreparable harm already? Where do we want to go and how can we get there safely? Events, such as the MOST workshop on sustainability, provide opportunities to decide what kind of people we want to be. With effort, we may be able to create situations that optimize our chances of realizing sustainability.