CHANGING BEHAVIOUR AND CHANGING THE WORLD

Harmony Folz
MA student
School of Community and Regional Planning, University of British Columbia
Sustainable Development Research Institute

If sustainability is to be achieved, many changes are needed in the way we live our lives. These changes cannot be achieved without significant behaviour change on our part; new technologies, environmental education, and structural changes all will be ineffective unless there is behaviour change first. As well, behaviour change is incremental and self-reinforcing, so the important thing is not what behaviours need to change, but that some sustainability behaviours are adopted. In designing a strategy to effect this kind of behaviour change, I have drawn from the Precede/Proceed Model as well as much psychological research into what leads to changing behaviour[1]

1 The Need for Behaviour Change

I became a planner because of a hotdog toaster. An ad for this household gadget appeared in an in-flight catalogue that I leafed through on a flight returning from a four month backpacking trip through Central America. The very existence of such an appliance jolted into consciousness the thoughts that had been simmering on the back burner of my mind, thoughts that had germinated while I was travelling and tree-planting, and that had been planted by reading Gordon and Suzuki's *It's A Matter of Survival* (1990) in my tent while I was tree-planting. These

[1] This paper is based on my Masters thesis at UBC's School of Community and Regional Planning; my advisors are Drs. C. James Frankish and Robert Vanwynsburghe at the Institute for Health Promotion Research (UBC) and Dr. William Rees at the School of Community and Regional Planning. My thesis work has been supported by the Sustainable Development Research Institute's Georgia Basin Futures Project, and influenced by work done for that project with Drs. Frankish and Vanwynsburghe as well as Aviva Savelson, a Masters student at the Institute of Resources and the Environment (UBC).

were thoughts of concern for what was happening to the environment and thoughts about material belongings and the ramifications of both having too much and having too little stuff. The hotdog toaster helped me to realize that the environmental problems facing the world were a result of our non-necessary over-consumption of resources.

After the hotdog toaster epiphany, I decided that I wanted to work to help the environment, but I did not have a really clear idea of how to do so. So, instead of working for an environmental organization I ended up teaching English in Korea.

In Korea, my desire to work on environmental issues never waned, but I started to grow in my understanding of what was needed. I realized that change would have to happen in North America for it to have any meaning for the rest of the world. I could see that the Koreans, and most other developing countries, were looking to North America to gauge what level of consumption was appropriate as they increased their standard of living. This was not surprising since the North American way of life must have seemed like heaven to a country which had so recently been abjectly poor. However, I became aware that the Earth could never support every member of its population if everyone lived like we do, and that it was most unfair to ask the poor of the world to consume less that we might continue to consume the lion's share of resources. At the same time, it became clear that we could not go into 'undeveloped' countries and ask them to develop in sustainable ways when we cannot. Those countries would be justified in replying "if these technologies and ideas are so great, why aren't you using them?" It became clear to me that we in North America had to clean our own house first and lead the way for the rest of the world.

I determined that in order to effectively work on environmental issues, I needed to go back to school, and decided that planning would be perfect for me – here was a field that could enable me to actually DO something about bringing about change. I applied to do my Masters.

On my planning school application I wrote that I wanted to "further sustainable living." That is still my goal, but what I think will achieve that goal has undergone a series of shifts. When I started, I had the "build it and they will come" mentality; I thought that the problem was that we lacked the technology to live sustainably. At that point, I was a 'techno-optimist.' I thought that technology would be our saviour, one which would save us in spite of ourselves (Moncrief, 1974). However, I found that there were many technologies already available which could have greatly reduced our consumption of energy and/or resources, but they weren't widely known or used (Naess, 1997). I also quickly came to realize that techno-optimism ignored several problems inherent to technology, mostly that it often had unforeseen and unintended negative consequences. New problems often arise from our successes, not our failures, as technology knows no limits to its growth (Schumacher, 1973). For example, more efficient cars and cheaper fuel have the potential to lead to greater sprawl because people could afford to drive further (Register, 2001). Improved technology without any societal changes could also lead to increased consumption as technological improvements reduces the amount of labour needed while increasing the need for capital and energy (Wackernagel and Rees, 1996). Improved efficiency in one area also ignores limits in other areas (Wackernagel and Rees, 1996). It became clear that even if the 'greenest' environmental technology was used, by itself it would only extend catastrophe's due date, not forestall it.

So, simply improving technology was not the answer. I looked next to education. Perhaps by educating youth in the formal education system we could build a better tomorrow. However,

when I looked at how the education system works I found that the education a child receives is more dependent on the outlook of his or her classroom teachers than the goals of school boards or curriculum writers. But even the most dedicated environmentalist teachers are reluctant to change anything too much because they are leery of how parents will react. Thus, without backing from parents, education cannot effect societal change alone. So, while holistic changes to the education system are certainly needed, they will not happen without buy-in from both teachers and parents (Milbrath, 1995).

So what about educating adults? There are many groups trying to do this already. They most often provide people with information about our environmental ills in the form of pamphlets, books, broadcasts and advertising. The idea underlying these media efforts is usually that if people only knew what they were doing and had a new way to behave, they would be so horrified that they would change immediately. But according to most research, all these information campaigns generally achieve is to change attitudes and strengthen existing attitudes, beliefs and values; they usually do nothing to change behaviour except to add guilt to our pleasures. One of the most consistent findings of psychological research in behaviour change is that general attitudes do not predict specific behaviours (Hungerford and Volk, 1990; Newhouse, 1990; Gudgion and Thomas, 1991; Cook and Barrenberg, 1981; Jones, 1996; McKenzie-Mohr, 2000; Ölander and Thørgersen, 1995; Weyant, 1986; Cone and Hayes, 1980; Thørgersen, 1999; Winter, 2000; Corson, 1995).

I then considered structural change, that is, changing our political and economic system. I found that while structural changes are certainly necessary and could have strong influences on behaviour (Oskamp, 2000; Ölander and Thørgersen, 1995; Howard, 2000), they are unlikely to come about on their own. Governments as a whole are very resistant to change. Also, politicians

who reached the pinnacle of the structure were also unlikely to want to change the machinery which brought them power and prestige.

Politicians are also deeply indebted for their positions to their donors, many of whom are large corporations who also benefit from the status quo (Oskamp, 2000). Therefore, the politicians do not want to alienate the corporations by instituting changing the taxation and subsidy system on which their profits depend. Moving to full cost accounting for taxation and eliminating subsidies to consumptive industries would be very effective (Howard, 2000; Corson, 1995) but it is unlikely to happen without significant societal change.

Since politicians are highly motivated to stay in power, they are also unlikely to do anything that would go against the views they believe their constituents held. Opinion polls which measure the attitudes of their constituents provide justification for many of the actions or inactions (Ölander and Thørgersen, 1995). However, although much of the general population is sympathetic to the general idea of sustainability, few people understand the full implications of making the shift to that state or what the shift would entail for them (Milbrath, 1995; Wackernagel and Rees, 1996). This means that the public opinion polls reflect the public's flawed understandings rather than its general values (Wackernagel and Rees, 1996), which leads to the current situation where most people describe themselves as environmentalists, but are often against actions that would be beneficial for the environment.

Even if politicians are willing to pass laws without visible public buy-in, those laws are not very effective. Most people tend to react badly to being made to do something they do not want to do, and to dig in their heels against it, even though they may have been willing to do the very same thing before the action was mandated. This results from a psychological process called reactance

(Wiener and Doescher, 1991; Cialdini, 1985). Reactance is the reaction we in free-market democracies have whenever our free choice is limited or threatened; we perversely come to desire whatever is being taken away significantly more than we did previously (Brehm and Brehm, 1981; Cialdini, 1985). For example, in Florida in the 1970s, Dade County (Miami) outlawed the possession and use of phosphate detergents. But because the public was not behind the change in laws, they came to believe that phosphate cleaners were better in all ways than non-phosphate cleaners. They turned to smuggling, organizing van caravans to stock up on phosphate detergents in other counties, laying in as much as a 20 year supply (Cialdini, 1985, p. 209). Enforcement in cases like this is very expensive and difficult. Public buy-in for new laws and regulations is therefore necessary.

As for incentives and disincentives, providing tangible reinforcement for sustainable actions taken by citizens does result in change, but only for as long as the incentive or disincentive is in effect. This is because change based solely tangible reinforcement generally only lasts as long as the reinforcement does. It can be extended with intermittent reinforcement, but it does eventually die off (De Young, 1993; Dwyer et al, 1993; Gudgion and Thomas, 1991). Further, using tangible incentives can actually lead to reduced natural interest; for example, if a person is composting and then gets offered money to do it, he or she will come to associate composting with being paid. If funding is then cut, the person will most likely stop composting, even though they had done it before they got paid (Werner, 1991).

What did that leave? On reflection, the strategies I had considered, technology change, education and structural change, all came down to the choices and behaviours of individuals. I realized that "the health of our planet is inextricably dependent upon human behaviour" (Geller, 1995, p. 179) and that these behaviours needed to be changed if sustainability was to be reached (Weyant,

1986; Winter, 2000; Oskamp, 1995; Oskamp, 2000; Ölander and Thørgersen, 1995; Gudgion and Thomas, 1991; McKenzie-Mohr et al, 2000; Newhouse, 1990; Oskamp, 2000; Dwivedi, 1996; Howard, 2000; Thøgersen, 1999). Additionally, although technological, structural and educational changes were necessary, none of them would be possible without first changing the behaviour and choices of individuals (Cone and Hayes, 1980). Changing behaviour would also lead to further changes in technology, politics and education.

Having determined that changing the behaviour of individuals was the most effective way of 'furthering sustainable living' I had to think about how to do it most effectively. There are numerous fragmented programs aimed at changing one maladaptive behaviour or another, but this approach seems time-consuming and Sisyphean. It is also top down: planners, policy makers and other interested parties decide which behaviours need to change and go about changing them. This is a long, involved and costly process, and can only be done for one behaviour at a time.

Changing behaviour in this manner makes me think of a primitive computer game called Missile Command. In the game, the Earth is under attack from the sky from missiles which, if not stopped immediately, split infinitely, as shown by the left-hand part of Figure 1. Each particular missile needs to be stopped, otherwise it destroys the houses and the defence posts. Program

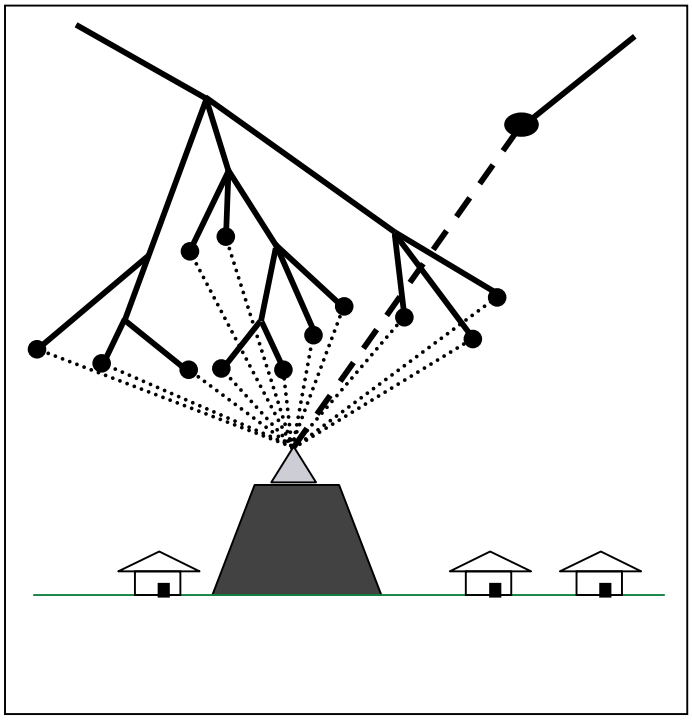


Figure 1 Go For the Source

developers are working like this, desperately trying to stay ahead of multiplying behavioural problems, finding that as soon as one is solved, others spring up unexpectedly and never knowing when they will miss one that will destroy something important. However, in the game, if the missile is stopped as soon as it appears, as has happened on the right, all the subsequent missiles are avoided. This illustrates to me that although the problem was the behaviour and choices of individuals, the solution would need to have a more general aim.

The general aim would have to involve changing our paradigm to a new paradigm that would embrace and encourage true sustainability. A new paradigm would mean wide-reaching change because it would influence many behaviours simultaneously. We would begin to consider the effects our each behaviour on the global ecosystem (comprising both 'natural' and human systems). But how to accomplish a paradigm shift?

Paradoxically, the answer seems to lie in changing as many behaviours as possible to those which are sustainable. There are several reasons for this. The first is cognitive dissonance, which is what happens when we do things that are incompatible with our beliefs and attitudes. Because we like to be consistent, we usually feel bad when we do this. To minimize this feeling we need to either change the belief/attitude or stop doing the action (Eagly, 1992; Gudgion and Thomas, 1991; Monroe, 1993; Winter, 2000). Thus, by encouraging sustainable actions we could slowly shift belief systems.

The second reason is the spillover effect, which happens when taking one action leads us to take another, similar action. It has been found that "when people start to act in an environmentally friendly way in one area, this behaviour tends to spill over into other areas" (Thøgersen, 1999, p. 72).

The third reason is the effect of visible behaviours on encouraging others to behave in the same way through the activation of social norms. Social norms reflect what we think is socially appropriate and lead to behaviours designed to win social approval (Werner and Makela, 1998). They are a strong predictor of behaviour, outweighing personal attitudes, and they also influence responses to opinion polls (Newhouse, 1990). Social norms that lead to behavioural change become internalized as personal norms as the behaviour continues (Ölander and Thørgersen, 1995).

The fourth reason is a process known as the diffusion of innovation, as shown in Figure 2. In this process only a few people usually adopt a new way of doing things at first. They are called innovators and make up only 2.5% of a given population. They are followed in the process by early adopters, who tend to be cosmopolitan opinion leaders, and who make up about 13.5% of the population. As the next group of individuals, the early majority, starts to adopt the innovation, it "takes off," the time period shown by the shaded area in the diagram. This early majority, making up about 34% of the population tends to be very deliberate and are willing to follow, but not to lead – their adoption of the innovation signals that it is moving into the mainstream. The next group to adopt are termed the late majority, who are also about 34% of the population, are more sceptical and cautious and like to be with the majority of their peers. The

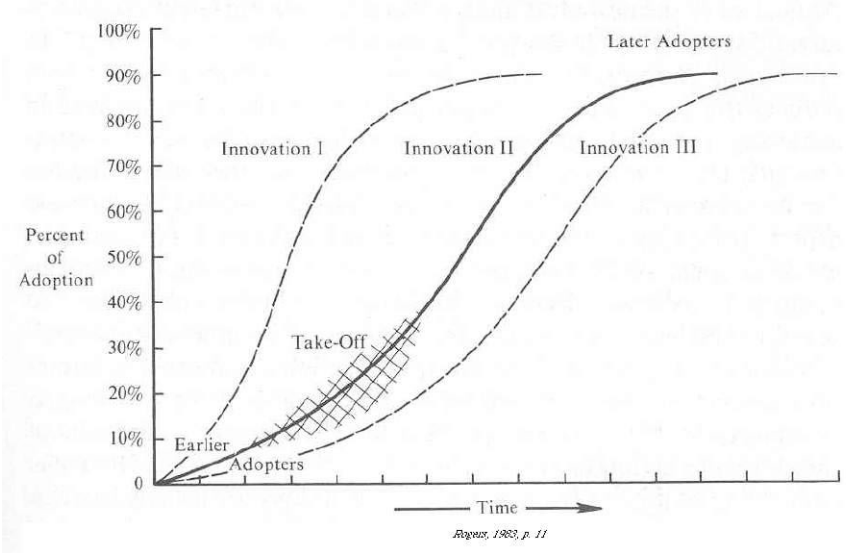


Figure 2 The Diffusion of Innovation

last 16% to adopt are called laggards – they tend to be the most traditional and isolated of anyone, and suspicious of change (Rogers, 1983).

The existence of these four psychological effects meant that

> policy should be focused on activation and behaviour change, but instead of trying to install a specific and well-defined behaviour – which may produce reactance in some and which others may find is prohibitively inconvenient – the goal should be to produce *some* relevant behaviour change and to stimulate activity around serious environmental problems in general (Thøgersen, 1999, p. 55).

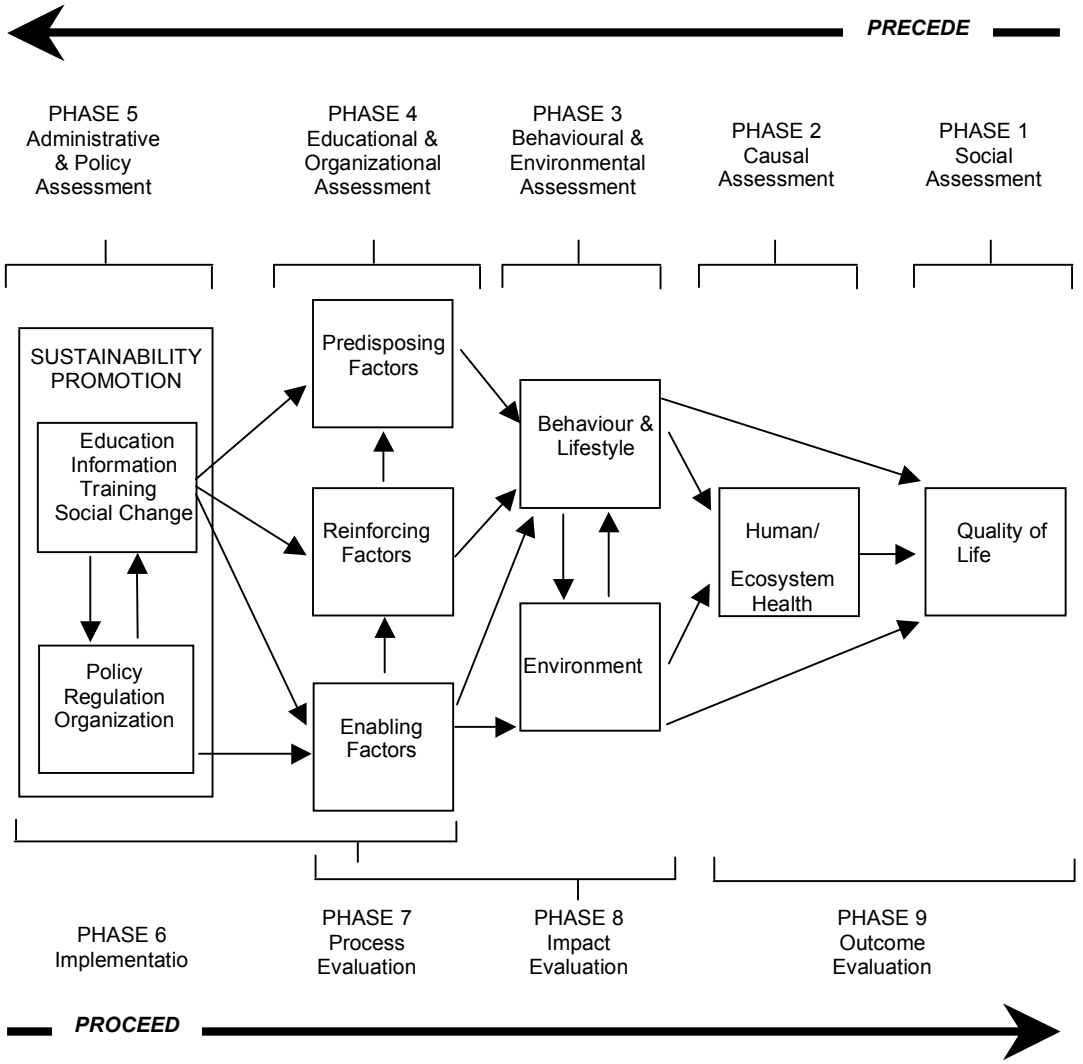
Based on all of this, my goal became to work for a paradigm shift through a cohesive program of incremental behaviour change aimed at individuals.

There were two major differences in my mind between the behaviour change approach and the other three I have mentioned (technology, education and political change). The first is the placement of responsibility for change – the other solutions mostly asked for change in others rather than in the individual. And while it is certainly easier to think that others should change than to think that oneself should change, it is easier to change oneself than to change others. The second was that in order for any the other three approaches to be successful, there would need to be massive and rapid changes to the system, changes that would seem to rely on a *deus ex machina* – it is said many times that change was needed, but less often how to achieve this change. The behaviour change approach, on the other hand, recognizes that change will have to be incremental and include simultaneous shifts in technology, education and the political-economic structure. So, the question became how behaviour change could be best effected. To answer this question I turned to a successful model of behaviour change used in the Health Promotion field.

2 The Precede/Proceed Model

The Precede/Proceed Model (Green and Krueter, 1999) can be used to describe relations between diverse behavioural, lifestyle and environment factors, to elucidate causal pathways between policy or program intervention and outcomes related to sustainable behaviours. It can also be used together with available models and theories of behaviour change and systems for assessing available evidence. Most importantly, the model facilitates the systematic planning, implementation and evaluation of potential programs and policies related to changing behaviour.

The Precede/Proceed Model has been widely applied in disease prevention and health promotion



after Green & Kreuter 1999

Figure 3 The Precede/Proceed Model (Adapted)

programs, and tested in research and evaluation projects. With over 700 published applications (and an equal number of unpublished applications) on a variety of health issues, the model is by far the most widely tested and validated model for planning health promotion programs and policies. It is based on the principle that most enduring health behaviour change is voluntary in nature. In order to successfully encourage behaviour change, a systematic planning process is used that seeks to empower individuals with understanding, motivation and skills and active engagement in community affairs to improve quality of life. Like many planning models, it is an iterative model, although it seems quite linear (see Figure 3). Some of the wording has been changed from the original to make the model more applicable to sustainability issues, but there have been no other changes.

There are two stages to the model, which is read first from right to left and then from left to right. The first stage (right to left) is Precede, which has several component phases. In Phase 1 we assess quality of life and determine what is wrong – in this case it would be the quality of life for the planet, which is not doing so well. In Phase 2, we determine the problems in human and ecosystem health which affect the quality of life. Then, in Phase 3, we look at what there is in our behaviour and lifestyle and in the greater environment (here meaning structural environment as well as the natural environmental) that cause these problems. Next, in Phase 4 we then look at what factors influence our behaviour and the environment. These are divided into three categories, all of which have been found necessary for a program to effectively change behaviours (Nutbeam and Harris, 1998). The three categories are Predisposing Factors, aimed at antecedents to behaviour (such as knowledge, attitudes, beliefs and values) that provide the rational or motivation for the behaviour; Enabling Factors, which provide the necessary resources (such as skills, availability and accessibility of resources) needed for a motivated

behaviour to be realized; and Reinforcing Factors, which provide us with tangible or social incentives or disincentives for doing or not doing certain things – they provide the necessary social and material support for the persistence or repetition of the behaviour (Green and Krueter, 1999). After we have determined which factors are influencing our behaviour and the environment, we move to Phase 5 where we look at how we can help to shift those factors through strategies aimed at the individual or group and at the structural environment.

After we have done our assessment, we move to the second stage of the model, Proceed. The first phase of this stage, Phase 6, is the implementation of the strategies we have devised in Phase 5. However, we are not done once we have put the strategies in place – we move to Phase 7, which is a process evaluation. In this phase we have to monitor the strategies and their effects on the predisposing, reinforcing and enabling factors. In Phase 8, impact evaluation, we monitor the factors and whether they have any impact on behaviour, lifestyles and the environment. Finally, in Phase 9, we look at how the strategies have affected our health, ecosystem health and quality of life in an outcome evaluation. From the assessments we determine how many iterations are necessary – if we find there to be a problem we can go back and adjust either our understanding or our strategies.

This model is very valuable for designing behaviour change strategies for several reasons. First of all, it points out the need to consider both internal and external factors on behaviour and address them both. Second, it advises a comprehensive strategy which addresses predisposing, enabling and reinforcing factors. Third, it shows that this comprehensive strategy should be comprised of different tactics, instead of relying on one tactic such as education. The idea of predisposing, enabling and reinforcing strategies offers a broad framework within which one can organize more specific types of methods to change behaviour. By thinking of strategies in this

capacity, it offers program planners a structured means of addressing the factors that influence the targeted behaviours therefore putting them in a better position to judge which strategies are most applicable. As evidenced in the Health Promotion field, this increases the likelihood that the chosen strategies will be more effective (Green and Krueter, 1999). Finally, the Precede/Proceed Model highlights the need for evaluating the effects of the strategies.

That it would be difficult to use this model comprehensively in the area of behaviour change leading to sustainability should not deter us from using it in a general sense. In other words, we should not get caught up in trying to determine exactly what sustainability should look like or how we would assess it, instead we should look at the problems we can determine and the general direction we want to go and work from there.

3 Factors in Behaviour Change

Available literature and theory from fields including environmental psychology, social psychology and health promotion each point to a set of factors that are likely to influence (and explain) individual behaviours related to environmental sustainability. Figure 4 provides a pictorial display of such factors.

Using the framework of the Precede/Proceed Model we can break these intro-personal factors into those which are predisposing, those which are enabling and those which can be at times predisposing, enabling and/or reinforcing. These are as follows:

- Predisposing Factors
  - Demographics: location, age, gender, culture and education
  - Personal Factors: values, personality, self-efficacy and locus of control
  - What's "known": knowledge and beliefs

- Attitudes: to the behaviour in question and to the bigger picture
- Self Image: personal norms and self-concept

- Predisposing and Enabling Factors
  - Life So Far: habits and experience
  - Skills

- Predisposing, Enabling and/or Reinforcing Factors
  - Social Pressures: social milieu and social norms
  - Time and Space: geographic location, surroundings and historical moment

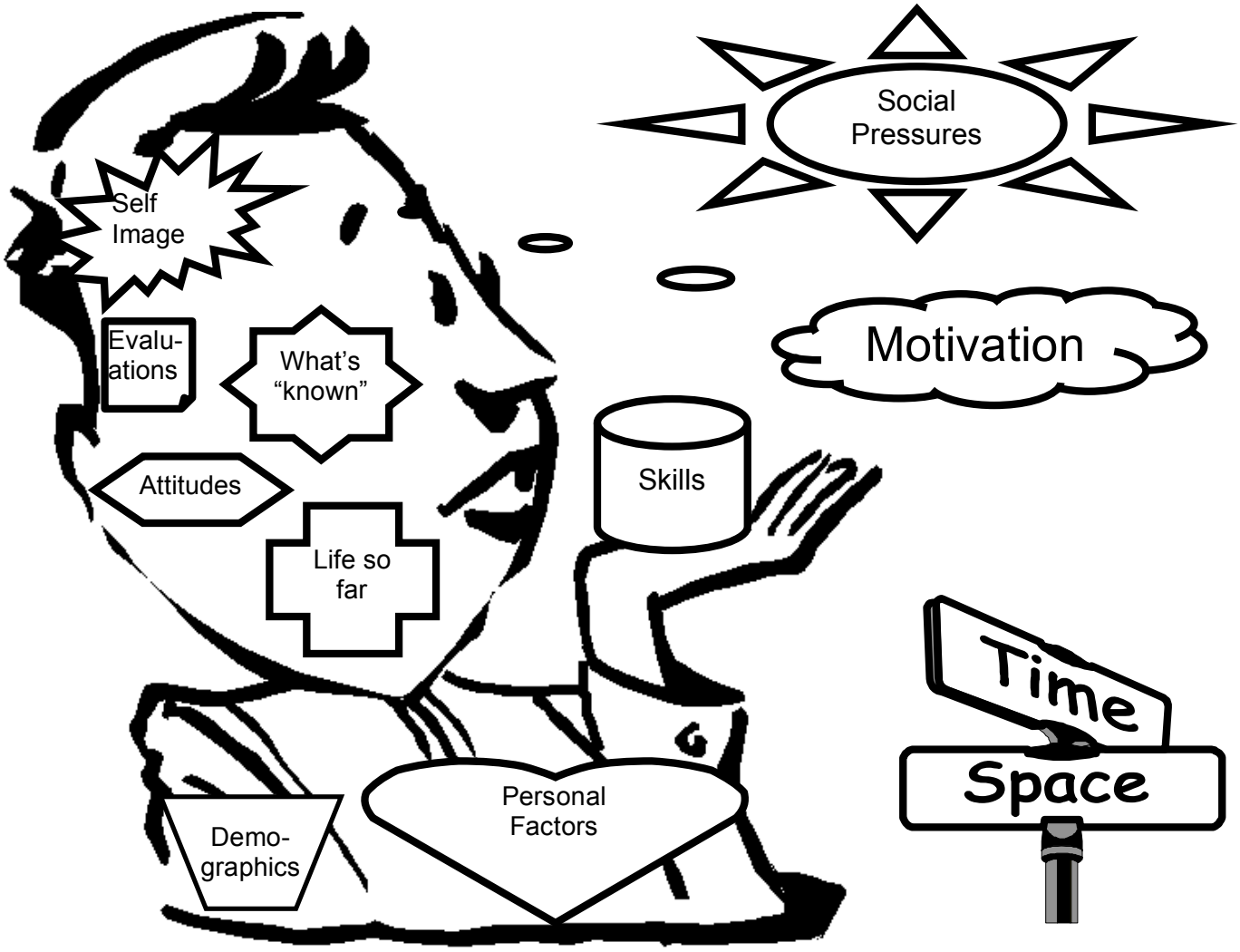


Figure 4 Intra-personal Influences on Behaviour Change

The above factors are neither independent nor mutually exclusive. Indeed, the various factors overlap and may influence each other and the formation of intentions to act. Each set of factors provides an important piece of the puzzle of sustainable behaviours. Below is a summary of those of the above factors which have been found to have an influence on proenvironmental behaviour.

3.1 Predisposing Factors

While it is nearly impossible to segment populations by demographic information as is done in marketing (McKenzie-Mohr et al, 1995; Ray and Anderson, 2000), there are certain traits that set apart people who are more likely to engage in proenvironmental behaviours, such as urban location and a high degree of political liberalism (Van Liere and Dunlop, 1980; Fransson and Garling, 1999; Arcury, 1990; Dietz et al, 1998). On a personal level, environmentally concerned people are well-adjusted and/or socially mature, feel more responsible, are less self-involved, and "may be more advanced in moral development, humanistic perspective, social initiative, cooperativeness, and independent thinking" (Borden, 1985, p. 114) than others. They give more thought to values and are more committed to actions that affirm their values. (Borden, 1985). Similarly, early adoption of new technologies and ideas is correlated with more education, literateness, higher social status and more upward mobility and early adopters tend to be more empathetic, less dogmatic, more able to think in the abstract, more rational, more intelligent, more predisposed to change, more able to deal with risk and uncertainty, less fatalistic, more in favour of science and education, and more motivated and driven than those who adopt later (Rogers, 1983). There are also some gender-based personality differences in that "environmentally concerned females tend to be more extroverted than either environmentally indifferent females or environmentally concerned males" (Borden, 1985, p. 114). However, it

seems that those who identify least with their sex role are most likely to be environmentally concerned; those of either sex who score highly on a measure of androgyny (combining male and female psychological traits) have more ecological concern, knowledge and commitment (Borden, 1985; Hungerford and Volk, 1990).

Those likely to engage in proenvironmental behaviours are also likely to be high in self-efficacy and locus of control. Self-efficacy is a construct from social learning theory referring to the belief an individual holds that he or she is capable of performing a specific behaviour. If a person believes that his or her actions will be effective in bringing about a result, they are more likely to act (Bandura, 2000 #9; Geller, 1995; McKenzie-Mohr et al, 1995; Ölander and Thørgersen, 1995). Locus of control is related to self-efficacy and refers to an "individual's perception of his or her ability to bring about change through his or her behaviour" (Newhouse, 1990, p. 26) People can believe it to be external, or controlled from the outside, which makes them less likely to make personal changes, or internal, where one's own actions bring about change (Newhouse, 1990; Geller, 1995). If someone believes they have control over events he or she is more likely to act (Fransson and Garling, 1999; Cook and Barrenberg, 1981; Geller, 1995; Hungerford and Volk, 1990; Ramsey, 1993).

People undertaking proenvironmental behaviours are also more likely to hold a self-concept that says that they are the kind of person to do that sort of thing. Self-concept is what a person believes about him or herself. People try to behave and think about themselves in ways that accent the positive by maintaining consistency between words and actions and by following through on promises, especially those that result in behaviours that are active, public, effortful and freely chosen. Addressing these needs, such as through social marketing, leads to the most

sustained individual behaviour changes (Werner, 1999). In addition, telling people they are a certain way works better than persuading them to become that way (Weyant, 1986).

Proenvironmental behaviour is also very much influenced by personal norms, which are "the self-expectations for specific action in particular situations that are constructed by the individual" (Schwartz, 1977 in Thøgersen, 1999, p. 62). They are deeply rooted in generalized values and have been found to be a strong predictor of behaviour (Widegren, 1998; Thøgersen, 1999). Living up to one's self-expectations leads to pride, enhanced self-esteem, security and other favourable self-evaluations and violation or anticipation of it results in guilt, self-deprecation, loss of self esteem and other negative self-evaluations (Widegren, 1998; Werner, 1999). However, if a personal norm is too difficult to follow, in a given situation, most people will activate mental defence strategies such as denial in order to feel better about not doing what their personal norm says they ought to do (Ölander and Thørgersen, 1995). People are also more likely to follow a norm if they are aware that there are negative consequences for others that the feel responsible for (Weyant, 1986).

As for the factors commonly believed to determine behaviour, knowledge, attitudes, beliefs and values, psychological research has consistently found that there is no direct correlation between any of them and behaviour (Stern, 2000; Clark, 1989; Thørgersen, 1999; Hungerford and Volk, 1990; Newhouse, 1990; Gudgion and Thomas, 1991; McKenzie-Mohr, 2000; Dwyer et al, 1993; Cook and Barrenberg, 1981 #, 207; Jones, 1996; Ölander and Thørgersen, 1995; Weyant, 1986; Cone and Hayes, 1980; Winter, 2000). The exception is that specific attitudes and beliefs about a behaviour are correlated with performance of that behaviour (Ölander and Thørgersen, 1995; Eagly, 1992; McKenzie-Mohr et al, 1995). That does not mean that they have no influence, but more that their influence is mediated by so many other factors that direct correlation is nearly

impossible. Proenvironmental knowledge, attitudes, beliefs and behaviours can be thought of as necessary prerequisites for behaviour change which are far from sufficient to actually bring it about.

3.2 Predisposing and Enabling Factors

Habits, the things we do without really thinking about them, influence our daily behaviour to a large degree – where habits are strong the attitude-behaviour link is weak, and where habits are weak, the attitude-behaviour link is strong (Ölander and Thørgersen, 1995). Much of our consumption of resources is habitual – as Jean-Jaques Rousseau said in 1775, "What was once luxury becomes habit, and then need" (in Michaelis, 2000, p. 80). Accordingly, habits are an important barrier to overcome. It is much easier to do what we have always done than it is to do something new that requires thought and learning (Stern, 2000).

Experience also informs what we do, as well as informing our attitudes, beliefs, values, skills and a host of other factors (Stern et al, 1995; McKenzie-Mohr et al, 1995). Many environmental attitudes and values are formed due to life experiences, such as childhood hiking trips or positive experience with animals. Others are formed through the experience of "insights that result in instantaneous and irreversible shifts in values and lifestyle orientations" (Borden, 1985, p. 120). It has also been suggested that a major influence for people involved in conservation movements is the sense of loss experienced from watching the destruction of a cherished wild land or having been harmed by an environmental problem (Newhouse, 1990; McKenzie-Mohr et al, 1995). Experience can also be a negative factor in beginning a more sustainable action because quite often it represents a break from what our experience has told us is the "right" way to live.

Skills refer to practical abilities that a person has for performing a specific behaviour. In the environmental context, this can include things such as recycling or composting. In order for action to take place, a person has to know how to do it. They also have to know that the possibility for a certain action exists, to have knowledge of strategies that they can undertake. Additionally they must believe that the behaviour has tactical efficacy – that is, it will have an effect (McKenzie-Mohr et al, 1995) These practical factors are strong predictors of behaviour (Hungerford and Volk, 1990; Ramsey, 1993; McKenzie-Mohr et al, 1995), as are most enabling factors.

3.3 Predisposing, Enabling and/or Reinforcing Factors

Social factors are shown as the sun in Figure 4 because all "individuals are embedded in a social structure that has substantial influence on all psychological variables" (Stern et al, 1995). Further, much environmentally related behaviour takes place in a social context (Hormuth, 1999). Social pressures, including the social milieu and social norms, heavily influence our motivation to act.

The social milieu refers to general awareness toward a problem or need for collective action and are strongly influenced by historically based differences in values and ways of thinking (Werner, 1999). Awareness by itself does not lead to people being persuaded to change, but sets the stage for it. Making problems visible and convincing seems the best way to make people aware (Werner, 1999).

Social norms are what we think is socially appropriate and lead to behaviours designed to win social approval (Werner, 1999). They are spontaneous, unwritten and informally enforced (Hechter and Opp, 2001). They reflect our beliefs about the doings of others and their likely

approval of what we do or do no do (Schultz, 1998). They work because we have a desire to be thought of as responsible citizens, to be accepted and respected by others, to conform to group/societal norms and to receive praise form our group/society and they can be much more effective than financial rewards or regulation (Jones, 1996; Zimbardo and Ebbesen, 1970; Werner, 1999). Much of our current over-consumption behaviour is based on social norms (Hormuth, 1999; Michaelis, 2000). Norms can be influenced by feedback, which gives a person information about aspect(s) of his or her behaviour (Schultz, 1998). If there is a discrepancy between his or her existing performance on a given task and an abstract standard, the person can either change his or her behaviour to match expectations, abandon or change the standard, or disregard the feedback as spurious (Schultz, 1998). There are two kinds of social norms: descriptive norms "specify what most people do in a particular situation, and they motivate action by informing people of what is generally seen as effective or adaptive behaviour there" and injunctive norms "specify what people approve and disapprove within the culture and motivate people by promising social sanctions for normative or counternormative conduct" (Reno et al, 1993, p. 104) (also Schultz, 1998). Injunctive norms have been found to be more powerful in influencing behaviour (Reno et al, 1993; Schultz, 1998).

Social norms are very powerful. The emergence of norms can dampen reactance (Stern and Kirkpatrick, 1977). They are a strong predictor of behaviour (Hormuth, 1999), outweighing personal attitudes; Ajzen and Fishbein (1977, in Newhouse, 1990) found that attitudes only predict behaviour when there are no strong norms about it. Polls can also be influenced by perceived norms (Newhouse, 1990; Weyant, 1986). Social norms that lead to behavioural change will become internalized as personal norms as the behaviour continues, which "involves integrating them into one's value set as well as learning which decision situations they are

relevant for" (Ölander and Thørgersen, 1995, p. 353). Social norms are especially important with new behaviours since people are often feel uncertainty or ambiguity about how and whether to do the behaviour and so compare their performance to others (Hormuth, 1999). At the same time their behaviour provides a base of comparison for others.

A person's location at a given time and place effects almost everything that he or she does through economic, political, historical, geographical, cultural and ecological influences. Though a person cannot change much in relation to these forces, some of the forces or the interpretation of the forces themselves can change and exert a different influence upon the person. Thus our interpretation, or story of these influences can be very important since "our actions are largely constituted by the stories that we tell ourselves about what is real, true, and important in our lives. Each of use literally stakes his or her life on a small set of core stories about what is true and important in life" (Howard, 1997, p. 3).

4 A Behaviour Change Strategy

Of the findings in the previous sections several points stand out as especially salient for designing behaviour change strategies:

- Behaviour Change
  - "[T]he goal should be to produce *some* relevant behaviour change and to stimulate activity around serious environmental problems in general" (Thøgersen, 1999, p. 55)
- Precede/Proceed Model
  - Programs should encourage voluntary change
  - Individuals should be empowered with understanding, motivation and skills
  - Programs should make use of predisposing, reinforcing and enabling strategies in a comprehensive strategy
  - Programs should be iterative and include provision for evaluation

- Psychological Research
  - Proenvironmental knowledge, beliefs, attitudes and values are important, but only as predisposing factors; by themselves they do not lead to behaviour change
  - People with high values of self-efficacy are more likely to engage in proenvironmental behaviours
  - People with internal loci of control are also more likely to engage in proenvironmental behaviour
  - People prefer to act in accordance with their self-concept and personal norm
  - Habits and experience are strong factors against changing behaviour, but once behaviour is changed can be strong factors in continuing with the behaviour
  - Having the skills to perform a behaviour is an important predictor of actually performing it
  - Social milieu and social norms have a very strong influence on behaviour as people like to act in accordance with what they belief others think they should or should not do
- From other literature not cited above
  - Asking for and getting commitment is a strong predictor of the success of a behaviour change strategy (Kassirer and McKenzie-Mohr, 1998; McKenzie-Mohr, 2000; Cook and Barrenberg, 1981; De Young, 1993; Ölander and Thørgersen, 1995)
  - Providing feedback is an important form of reinforcement (Kassirer and McKenzie-Mohr, 1998; McKenzie-Mohr, 2000)
  - Prompting people repeatedly helps cement new behaviours (Kassirer and McKenzie-Mohr, 1998; McKenzie-Mohr, 2000)
  - Doom and gloom messages and asking people to sacrifice do not really encourage behaviour change – framing sustainability as an improvement in our lives is a better strategy (Kaplan, 2000; De Young, 2000)

Though there are likely multiple strategies that can take advantage of these findings, I have conceived of one strategy in particular which seems to use nearly all of them: sustainability self-help groups. As I propose it, this strategy is similar to one detailed by Kassirer and McKenzie-

Mohr (1998). However, my conception is different in that it makes use of the Precede/Proceed model, as well as in the bottom up nature of choosing which behaviours to change.

Sustainability self-help groups would be made up of self-selected individuals, people who see the need for changes to the way they live, but who may not know how to achieve those changes. The groups could be made up of friends, neighbours, colleagues, or people who did not previously know each other, but in the groups the participants would come together as equals (Kasserir and McKenzie-Mohr, 1998). These groups would work through the Precede/Proceed process to determine what they wanted their lives to look like, and possible strategies that they might undertake to achieve that goal. They would choose which strategies they could feasibly undertake themselves and make a commitment to the group that they would actually do them. Kassirer and McKenzie-Mohr (1998), suggest several points for the mechanics of these groups:

1. Structure the groups so that people take turns playing leadership roles. Provide adequate support for the leaders
2. Design group meetings so that all participants apply what is being discussed to their own households
3. Make sure that the groups are the right size
4. Set up the groups to meet at least six times, no more than two to three weeks apart.
5. Provide group members with ongoing feedback and encouragement
6. Build in a sustainable process for recruiting new groups

These seem to be valid guidelines which could be added to and refined with experience.

Sustainability self-help groups would have several benefits beyond the actual change of behaviour. They would be a resource to improve specific knowledge and skills, as well as a source for ideas. Groups would improve the perceived self-efficacy of their members, as well as providing a source of reinforcement. They would strengthen members personal norms and self-

concepts and make them feel that their lifestyle choices were valued and accepted by their peers. And, through the actions of their members, they would influence people who were not a part of a group but who saw the actions being performed. These people then would be more likely to perform those actions on their own, and the slow, incremental process of a paradigm shift would be underway.

5 Conclusion

While I truly believe that the strategy outlined above would have a significant effect on changing behaviour towards sustainability, I fully recognize that it cannot achieve sustainability all by itself. Other concurrent changes are both necessary and desirable. Planners should be aware of the need for multiple and integrated strategies and do their utmost to enable strategies in different areas, forever pushing forward, skating on the edge between what is possible and what is feasible. At the same time, individuals should anticipate these strategies and change their consumption patterns to prefer quality over quantity, and should examine what really is necessary in order to live in harmony with each other and the environment and change their behaviour accordingly.

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