Social Barriers to Recycling: A Sociological Study

by

Denis George Elwell B.A. (Hons)

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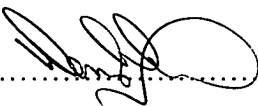Degree of Master of Arts

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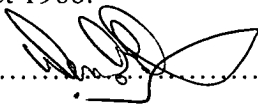
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Abstract

This thesis links the environmentally sustainable practice of recycling of post-consumer waste at the micro level of the individual household with the macro level of an institutionalised system of kerbside recycling programmes. It seeks to explain why, despite the high levels of environmental concern which currently exist within Western industrialised societies, this environmentally-friendly practice is often performed on an uneven or irregular basis, both in terms of the participation rate by individuals and in the range of materials which can be recycled. The proposed explanatory model identifies the key determinants of recycling. In addition it examines the sociopolitical factors which affect the recycling of post-consumer waste materials, and argues that institutionalised recycling schemes are designed to have only a minimal impact on production and consumption.

The empirical section of the thesis examines the impact of value orientation, knowledge of recycling, normative influences, perceptions of environmental risk, environmental orientation, the provision of institutionalised recycling programmes and sociodemographic factors. This examination is based on analysis of data from the 1993 International Social Science Program *Family and The Environment* survey and Tasmanian recycling data collected for this research project. The analysis highlights the contribution of four key factors influencing recycling practices: knowledge of recycling, community norms, environmental concern and the provision of institutionalised recycling programmes.

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CHAPTER 1

Introduction

Public concern for the environment has been increasing since the 1970s and two areas of escalating concern are waste disposal and resource depletion. Waste is a growing economic problem; it may be a health problem; it may jeopardise the 'quality of life' amenity that the environment provides; and it may also jeopardise the global climate, especially when the higher energy demands of processing virgin materials are taken into account.

As Read (1999) has suggested, there is considerable agreement emerging on a global basis on the key problems related to consumer waste accumulation and disposal; and on the strategic principles to be adopted in managing waste. Nevertheless, agreement on waste disposal methods is not always easy to obtain. In the view of Mack (1998) many waste problems are straightforward practical, technical ones - and these are dealt with relatively easily. Others are not. Mack (1998:1) continues that 'Garbage and waste are [also] potent subjects, overlaid with attitudes about pollution and dirt, disgust and revulsion'. This potency can affect the adoption of waste disposal solutions. An example of this potency is the utilisation of waste materials to generate electricity by burning non-recyclable waste materials in a Solid Waste Energy Recycling Facility (SWERF), transforming waste into energy. While there are economic benefits to be gained by commodifying a waste material that is costly to dispose of in landfill, there are also community concerns about pollution levels arising from the high- temperature incineration process (Greenpeace 2001).

1.1 Waste minimisation

Domestic waste is generally the largest element of consumer waste under the control

of local government. Prior to the introduction of kerbside recycling programmes,

packaging materials were the major component of domestic waste going to landfill.

For example, in the Greater Hobart LGA packaging materials comprised 60 per cent

of the total volume of domestic waste (Dowson 1991:1-2).

Alternatives to recycling as a waste minimisation measure have been tried. One

method of reducing the amount of domestic waste going into the waste stream is by

the introduction of a waste tax, such as implemented by the Danish government

(Anderson 1998:10). This tax encourages the reuse and recycling of various waste

materials. In its first decade of operation, waste to landfill and incinerators fell by

26 per cent and recycling was appreciably higher. Other writers have discussed the

option of taxing domestic waste disposal. For example, *The Economist* (7 June

1997) examines the idea of charging for each bag of garbage ('pay as you throw'). In

Australia, most Local Government Authorities still collect and dispose of household

waste 'free' (paid out of municipal taxes), subject to overall limits imposed by

individual authorities. The marginal price to the householder for disposal is zero -

two bags cost no more than one. But the marginal cost of disposal to the waste

disposal authority is not zero - there is a need for more trucks, more labour, more

landfill.

Incentive programmes are not always successful, or may have unwanted

consequences. *The Economist* (1997:80) reports that experiments with charging

ratepayers per bag have not been totally successful as only bags with pre-paid tags

are picked up. The price of the tag becomes the marginal price. According to *The*

Economist, a pilot programme in the United States of America (USA) in 1992 did

not cover the cost of administering the sticker scheme. Moreover, although the

number of bags and garbage cans fell by 37 per cent, this was partly due to the

'Seattle Stomp' - a 'frantic dance first noticed when that city introduced rubbish

pricing' (The Economist 1997:80). By compressing their waste, people crammed

about 40 per cent more into each garbage container. However, the weight of

materials only fell by 14 per cent. Additionally, some people resorted to illegal

dumping: '...the moral is clear: economic incentives sometime produce unforeseen

responses'. However, garbage pricing seems to increase recycling, although it may

be that it is cities with 'greener' citizens that introduce garbage pricing in the first

place.

A variation of the 'pay by volume' system is a 'pay by weight' scheme. Garbage

containers, such as Mobile Garbage Bins (MGBs), are bar-coded to an individual

household and the weight is registered by computer on the garbage collection truck

for charging to the household. However, like the 'pay by volume' project discussed

previously, this method can also result in 'anti-social' responses such as illegal

dumping or depositing rubbish in someone else's bin.

Overall, experience in both Europe and the USA shows that a separate charge for

waste disposal increases recycling and reduces total waste by about one half

(Bowman et al. 1998:263-264), whereas legislation setting individual recycling

targets may increase the probability of non-compliance because of a perceived threat

to personal freedom (Bryce et al. 1997:32-33). Several studies conducted in the USA

have examined the influence of financial incentives on recycling practices. These

incentives can be negative, in the case of 'pay by weight' waste disposal discussed

above, or positive, in which there is a financial reward offered to recyclers. Positive incentives have generally been of two kinds; lotteries and contests, and other financial incentives such as 'buy back' schemes for recyclable materials. These incentives were found by various researchers to have positive effects on recycling practices but these effects were generally only temporary. Witmer and Geller (1976:315) found that offering a monetary prize did result in a substantial increase in recycling. However, removal of the incentives resulted in a return to baseline recycling. This return to baseline effect has also been noted by Shrum et al. (1994:401) in their meta-analysis of recycling studies. Vining and Ebreo (1990:72) established that on-going forms of positive monetary incentives or negative incentives such garbage removal charges based on volume would be more likely to encourage long-term behavioural change.

Summarising the 'user-pays' methods, Goddard (1995:183) states that the only principled basis so far established is for 'user fees at the household level'. However, there has been little focus on the role of such fees to motivate 'source reduction' at the consumer or household level. This 'source reduction' has become a central theme in more radical panacea for unsustainable consumption practices and waste accumulation.

1.2 Waste and sustainability

Changing cultural value emphases on quality of life issues and on 'risky' ecological side effects of the industrial consumer society can be seen as paving the way for the increasing popularity of the concept of environmental sustainability. The future of the world's resources was highlighted from the ecological perspective in the Club of

Rome's report *The Limits to Growth* (Meadows et al. 1972, 1974). This report

brought to public attention the view that natural resources are finite. It concluded

that if the then evident growth trends in world population, industrialisation,

pollution, food production and resource depletion remained unchanged, planetary

limits to growth would be reached within the next one hundred years. However, the

Report also suggested that these growth trends could be altered, thus allowing the

establishment of a sustainable condition of ecological, demographic and economic

stability. This would still enable the basic material needs of every person on earth to

be satisfied through a 'transition from growth to global equilibrium' (Meadows et

al., 1974:24).

The debate over the 'limits to growth' generated many other publications in the

1970s such as those by Pausacker (1975) and Harvey and Hallett (1977) expressing

interest in sustainable development. The former brought the issue of sustainability

and recycling to the agenda of public debate, whilst the latter associated recycling

with a 'steady-state' economy. Subsequently, both concepts became central to the

debates about salvage, recycling and reuse of materials. The steady-state or

sustainable worldview was encapsulated in the recycling slogan 'the Three Rs' -

Reduce (the amount of materials used), Reuse (containers and other materials), and

Recycle (everything you can't reduce or reuse, also described as the 'solid waste

hierarchy' (Volokh and Scarlett 1997:80). The Three Rs have now expanded to 'the

Four Rs' - Refuse, Reduce, Reuse and Recycle in which the consumer is first of all

encouraged to refuse excess packaging and other materials (Environment Australia

1997:19), or to refuse some products and materials totally.

Hunt (1994:4) states that the concept of sustainability was placed '...into the thinking

habits of various actors...' on a global basis by the publication of the Brundtland

report for the World Commission on Environment and Development, *Our Common*

Future, in 1987. This view is supported by Read (1999:220) who states that the

Report 'placed the notion of sustainability firmly and immovably on the public

agenda'. The Report developed the concept of environmental sustainability on a

global economic basis. It also drew attention to the fact that the effects of human

activities had previously been compartmentalised within nations, within sectors and

within broad areas of concern (environmental, economic, social). These

compartments have now begun to dissolve, resulting in global crises which have

'seized public concern' such as the environmental crisis (World Commission on

Environment and Development 1987:4). Objectives regarding waste management

arise from the Brundtland report (1987) and the Rio Declaration on Sustainable

Development (1992) include:

- minimising waste,

- maximising environmentally sound waste re-use and recycling

- developing national programmes for waste management research and practice,

- raising public awareness, and

- promoting environmentally sound waste disposal (Read 1999:220).[1]

The debate over sustainability in the 1990s has focussed attention on two

environmental problems: resource depletion and pollution. Both problems arose

from a combination of population density, high consumption of materials, and

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[1] Whilst these objectives apply to all forms of waste (eg. industrial, hazardous or household waste), this thesis examines the disposal of post-consumer waste at the household level only. Further information on the recycling or disposal of waste materials other than household post-consumer waste

intense industrial - often 'disposable'- production. According to critics, the growth

imperative and the assumption of unlimited absorption of the by-products of

industrial development aggravated the problem of 'environmental overload', where

the environment was used as an assimilator of waste or 'waste sink' (Pearce and

Turner 1990: 40). Members of society took from the environment in the form of

resources, and added to the environment in the form of waste disposal and other

forms of pollution, a conduct that is not environmentally sustainable (Redclift

1996:134).

The debate also encompassed an economic frame. Using the environment as a waste

sink leads to negative externalities that were often not factored into the initial

economic calculations. Yearley (1992a, 1992b, 1996) has analysed the problems

caused by these externalities, such as the price of landfill sites, leaching of chemicals

and other pollutants into the water table, and visual degradation. In a model of ·

environmental sustainability that Pearce and Turner (1990:35) referred to as the

'Circular Economy', recycled and re-used products are removed from the waste

stream and become instead an addition to the resource base. The problems and

options associated with waste disposal and the return of waste materials to the

resource base are thus closely linked with a modern consumerist economy and

society.

1.3 Environmental concerns and household recycling

Institutionalised kerbside recycling programmes have been adopted by the public,

industry and local government in Australia as part of the wave of 'brown'

environmental concerns that started to dominate public attention from the end of the

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can be obtained from agencies such as Environment Australia, the Federal Australian Government

1980s (Pakulski et al. 1998).[2] This wave arose mainly as a result of media coverage

of environmental risks such as water pollution and waste disposal (Pakulski and

Crook 1998).[3] Such emphases in the media have skewed public perceptions towards

seeing recycling as principally an anti-pollution measure and as a solution to the

related problem of waste disposal. These perceptions - and a significant part of the

literature - tend to ignore a long history of earlier traditional forms of 'recycling' in

which materials were reused for their original purpose or for another purpose

without industrial reprocessing. Modern recycling methods differ in that used

consumer packaging and paper is now generally returned to a Materials

Reprocessing Facility for industrial reprocessing and re-manufacture into 'new'

consumer goods. These new goods may be similar to the original product or the

material may be used to make entirely different products.

Prior to the 1970s the term 'recycling' rarely appears in the literature, the more

common term being 'salvage'; and this term was usually applied to larger objects

such as car bodies, not to the recycling of household consumer packaging. The

salvage industry, however, only produced low prices for the materials recovered, as

it was cheaper and easier to use virgin materials for production. Packard (1963:197)

points out that it was in the interests of major steel companies to continue to use ore

from the mining leases in which they had made investments of hundreds of millions

of dollars rather than use scrap steel. The 1970s saw the beginning of a stream of

publications dealing with aspects of the theme of environmental salvation for the

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body, and from State Government bodies such as EcoRecycle Victoria.
[2] The division between green and brown concerns has been conceptualised by Crook and Pakulski (1995:39) who found that environmental concerns form two distinct clusters. These focus on different environmental problems. The 'green' cluster centres around 'logging of forests' and 'destruction of wildlife', and the 'brown' cluster centres on 'pollution' and 'waste disposal' (1995:42-43).
[3] For a fuller description refer to *Ebbing of the Green Tide? Environmentalism, Public Opinion and the Media in Australia*, 1998, J. Pakulski and S. Crook (eds).

Earth. Some, such as *Household Ecology* by Percivall and Burger (1973) contained only a few references to recycling, whereas others were devoted completely to the topic (*Recycling: is it the Solution for Australia?*, Pausacker, 1975). However, this genre of publication was not viewed as 'mainstream' until the 1980s.

These environmental publications were part of the rising tide of public concerns that spread throughout Western industrialised societies over the last four decades. Rachel Carson's *Silent Spring* (1963) and Barry Commoner's *Science and Survival* (1966) were among the key publications triggering this concern in the 1960s. Carson's thesis was that the indiscriminate use of insecticides and pesticides was destroying the already delicate balance of nature and posing a serious threat to human health through the persistent and continuous poisoning of the whole human environment. Commoner (1966:11) asked whether science was 'getting out of hand' and stated that the 'age of innocent faith in science and technology may be over'. There was not a high level of public debate arising from these publications, but they were debated in scientific and intellectual circles. The arguments contained in the publications generated considerable opposition from within the scientific and industrial communities. This resulted, for instance, in Carson and her findings becoming the subject of attacks from the chemical production sector. Critics accused the author of precipitating a propaganda campaign against the use of agricultural chemicals, and of making misleading statements about the effects of these chemicals. Summing up the critical viewpoint, Adler (1973:7) wrote that '*Silent Spring* ushered in the era of ecological hysteria'.

Despite these criticisms, the diagnosis and publicising of ecological risks soon gained celebrity status as a topic for discussion, first among 'green' intellectuals, and

then among the general public - especially after mass media coverage of ecological disasters such as oil spills, toxic waste leaks and contamination of waterways and oceans by industrial and domestic pollution. In the 1970s the environment became the subject of increasing academic and policy debates in North America, Western Europe and Australia. In what may be described as the 'first stream' of environmental concerns, issues such as land usage, urban development and wilderness preservation became the main focus of these debates (for example, see Buttel and Johnson 1977, Catton and Dunlap 1978, Morrison 1986, and Papadakis 1994). A 'second stream' of environmental concerns produced academic and public debates about ecology focussed on Malthusian issues of population growth and levels of natural resources (see Meadows et al. 1972, Fox 1990).

In the 1970s, producers, in an effort to decrease production costs and be competitive, deflected the focus of the disposal of consumer waste from recycling within the production process (too costly) to improved waste disposal through landfill and incineration (less costly to the producer). However, this raised fears within local communities about negative effects on their environment, and this, together with a perceived 'landfill crisis', resulted in local government becoming focal points for these issues. The answer was recycling, which Weinberg et al. (1995:180-181) describe as the 'magic hope' that would solve the landfill crisis; and garbage, landfills and resource conservation merged into 'kerbside recycling'.

Analysing the adoption and promotion of household recycling in the USA, Weinberg et al. (1995:181) continue that initially recycling programmes were driven by the rhetoric that recycling would be cost-effective, even profitable, and employment opportunities would be created. The landfill crisis would be solved, resource

depletion would be reduced and there would be fewer pollution problems. Under the influence of this rhetoric, household recycling of post-consumer waste achieved a high degree of acceptance in many industrialised countries where there was evidence of both a looming shortage of landfill and of perceived negative environmental effects arising from the disposal of waste in landfills or by incineration.

However, the promised financial benefits of recycling were rarely realised. Collection services were often subsidised by local government and this triggered a backlash opposition. Butler (2000:24), in examining the 'worth' of recycling practices in Australia found that despite this backlash against 'suburbia's sacred cow' and notwithstanding the reduced financial viability of household recycling, it remains widely, although often patchily, practiced. Nevertheless, despite the increasing acceptance of household recycling, proponents and opponents of this practice persevered in an ongoing debate over the positive and negative aspects of this environmental practice. In the next section some of the arguments for and against will be reviewed.

1.4 Recycling: Is it 'good' or 'bad'?

Most studies of household recycling have been based on the premise that recycling is 'good', at least in environmental terms. That this premise is widely held is exemplified by the 1999 Proclamation 7250 by Bill Clinton, then President of the United States. Clinton stated that 'Recycling is one of the great success stories in America's crusade to protect our environment...' and proclaimed November 15, 1999 to be 'America Recycles Day'. Clinton (1999:1) urged all Americans to observe the day with appropriate ceremonies and to take personal responsibility for the environment by recycling and by buying products made from recycled materials.

However, there have been both economic and environmental criticisms of household recycling. Schnaiberg's (1997:223) view is that recycling has represented a synthesis of ecological and humanistic concerns regarding resource supply to future generations, and has generally been accepted uncritically. Discussing the paradoxes and contradictions inherent in household recycling, Schnaiberg (1997:225) points out that the starting point for his recycling research was consistent with the arguments of most environmental sociologists, for example Derksen and Gartrell (1993), that recycling unites social constituencies with a more ecologically-benign 'materials policy'. However, recycling may have been subverted into 'just another profit centre' (Schnaiberg 1997:223), a view that is supported by Beck's (1992a:201) argument that in addition to the adverse ecological effects arising from industrial production, there are also benefits for the capitalist system. Recognition of environmental problems may create new markets in services and industries designed to reduce or eliminate those problems. Additionally, recycling may '...absorb environmental concerns..., rather than stimulate them'. Once institutionalised, recycling '...ceases to enhance... the social values of ecological preservation' and what remains after the initial enthusiasm is primarily a 'form of ritualism' (Schnaiberg 1997:233).

Poore (1994:24) has queried whether recycling is of benefit environmentally or economically, and argues that disposal of household garbage is not a serious environmental problem [in the USA] anyway. To concentrate on recycling programmes is '...irrational and wastes public funds that could be better directed at real environmental hazards'. True hazards are the ones that threaten human health. Critics argue that the threat of garbage has a symbolic value to the environmentalist

agenda. Poore's view is that when the symbol diverts attention from more pressing environmental and social problems, the symbol itself has become a threat.

Grogan (1992:86) states that commodity sales will never pay for full service delivery, although there may be cost savings in some locations. Similarly, Butler's (2000:24) view is that with volatile markets that may force waste companies to dump recyclables, financially recycling may be an exercise in futility. Socially and environmentally the answers have not been so clear. A middle view, such as that held by Volokh and Scarlett (1997:14), is that recycling is 'neither trash nor treasure'. Recycling, like all other activities, makes economical and environmental sense in some cases and not in others. Similarly, Adler (1973:289) refers to the concept of recycling as being appealing as it solves two problems: waste reduction in landfills and other disposal areas, and the conservation of materials and energy . His view is that recycling should be encouraged when feasible, but with an awareness that it will cost money, resources and effort (Adler 1973:300).

The 1991 Industry Commission Inquiry into Recycling (Australia) confirms that recycling is often seen as a way of reducing pollution, or has a link to the use of natural resources. Consumers may prefer products that have a lesser impact on the environment in the production, distribution or disposal phases, and may also prefer products in packaging that can be recycled or reused. However 'to make a rational choice consumers must have knowledge of the effects of their choices' (Industry Commission (Australia)1991:85). These effects include atmospheric ozone depletion, the production of greenhouse gases and energy savings.

In an attempt to answer the single question of whether kerbside recycling is good for

the environment, a study by Grant et al. (1999) provided data on a Life Cycle

Assessment (LCA) of the environmental impacts of recycling three materials (glass,

polyethylene terephthalate (PET) and steel cans) compared to their disposal as

landfill, when judged on six environmental impact categories. An environmental

LCA quantifies how much energy and raw material are used and how much solid,

liquid and gaseous waste is generated at each stage of a product's life (Industry

Council for Packaging and the Environment 2002:1).

The study by Grant et al. (1999:5) indicates that current recycling efforts are having

a positive environmental effect (i.e. a negative impact), when compared to disposal

of waste to landfill. The levels of environmental benefit increase as levels of

recycling increase. The benefits are predominantly from savings in resource usage

and industrial pollution, including energy savings. For example, Ackerman

(2000:35) cites evidence that using virgin material to produce aluminium increases

greenhouse gas emissions by a factor of 40. Recycling is particularly effective in

large urban settings where the transport distance for materials to a Materials

Reprocessing Facility (MRF) is not great. In the Melbourne (Victoria) metropolitan

area the energy costs of collecting materials for recycling amount to approximately

20 per cent of the energy saved in the production process (Grant et al. 1999:6).

Overall energy savings ranged from 74 per cent to 87 per cent for glass, PET and

steel cans. When modelled on a rural (or regional) location, for example a population

of 10,000 residents and 600 kilometres to a MRF, the resulting increase in transport

requirements had a consequence of increases in energy use and associated emissions.

However, the environmental benefits, although lower, were still positive (Grant et al.

1999:10). These findings were confirmed in a later comprehensive study on the

environmental and economic effects of kerbside recycling in Australia by Nolan-ITU

(2001). This study found that in monetary terms there was an national average

benefit of $42 per household per year, made up of an environmental benefit of $68

per household less a net financial cost of $26 (Nolan-ITU 2001:III).

These arguments rekindle the question: Is recycling the best way? The Industry

Commission Report (Australia) in 1991 states that while interest in recycling is

partly driven by a desire to avoid the wasteful use of natural resources, and has a part

to play in that avoidance, it is a '...very indirect way of achieving what appears to be

the main concern, that of resource conservation' (Industry Commission (Australia)

1991:121). While the recycling and reuse of packaging, in particular, is encouraged

by many in the community who see value in promoting a 'more frugal and less

wasteful society' (Industry Commission (Australia)1991:7), this goal may be better

achieved through appropriate pricing and management of resources. Incentives for

efficient recycling may be influenced by standards for pollution control and waste

disposal costs. If these costs cover the full costs of disposal, including externalities,

it should be possible to make the 'right social decision' when discarding waste

materials, and recycling may be the preferred option (1991a:98).

From an ecological viewpoint, alternatives to recycling include reducing or

eliminating consumption of packaging (especially plastics); using refillable

containers and buying in bulk; and only then choosing products in packaging that is

recycled and recyclable (Berkeley Ecology Center 1996:26). However, as Ackerman

(2000:35) points out, it is much easier to get people to change the way they handle

waste than to get them to change consumption habits. Institutionalised recycling is

an option that has given individuals the opportunity to participate in a pro-

environment activity which has a normative base, community-wide acceptance, and which requires little individual effort. It is politically popular and is not an antagonistic or controversial form of activity.

The solid waste hierarchy implies an order of priority in which recycle (or reprocess) is the last resort before disposing of materials into the waste stream. However, the options of refuse, reduce and reuse have achieved limited usage against the power of what Ungar (1998:253) refers to as 'the mobilisation of bias' by large actors, which has resulted in a 'stunted discourse that fatally undermines the environmental project'. A consequence of this bias is a 'Small Steps' package of environmental reform, which does not put an onus on individuals to change their behaviour. The core of this package is found in a host of catch phrases, such as the Three Rs (Reduce-Reuse-Recycle). However, difficult issues do not fit into the small steps package - 'even the idea of the "three Rs" misrepresents small steps, since the latter focuses on recycling rather than the anti-consumption notions of reducing or reusing' (Ungar 1998:258). For Ungar, the revealed environmental discourse is selective and constrained and has only a nominal conservation focus.

1.5 Conclusion

Recycling as a solution to the waste disposal problem has been embraced, and sometimes initiated, by both governments and industry, with the blessing of environmental lobbies. The reason for this unanimity is simple. Recycling does not reduce economic growth, indeed it may add to growth through its inclusion in the Gross Domestic Product (GDP), and may also deflect criticism over negative aspects.

of production, such as littering.[4] In the light of this unanimity, one may wonder why recycling is still embryonic in its frequency and scope. One reason for this is the persistence of strong social and sociopolitical barriers to recycling - some of which are identified in this thesis.[5]

The sociological literature on eco-friendly activities, recycling in particular, is fragmented and ranges between ideological and economistic extremes as well as individual and group locations. Green ideologues see eco-friendly conduct as being constrained by the dominant ideological societal perspectives such as consumerism. The economistic viewpoint stresses calculus of efficiency within a narrow perspective and frequent exclusion of environmental externalities. Environmental sociology opens the way for a more comprehensive perspective whereby both the eco-friendly and eco-hazardous are seen within the context of the dominant (but also contested) social values and commitments, widespread communal norms (for example, 'Do the Right Thing'), social and economic opportunities and, last but not least, knowledge and cognition that link normatively-guided commitments with opportunity structures.

Recycling, that is, the return of post-consumer household waste into the industrial production system, is conceived here as a rational social practice - a calculative and normatively guided activity which produces benefits for the environment. Recycling has been widely adopted as a method of waste minimisation and management. However, despite public expressions of high levels of environmental concern, recycling has not become a universal practice at either a community or an

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[4] The public perception of litter as an environmental and social problem led to the formation of the Litter and Recycling Research Association in Australia, later renamed the Beverage Industry Environment Council.

institutional level. This study investigates this paradox by analysing the social determinants of recycling practices and aims at identifying the main social barriers to recycling by proposing and evaluating a sociological model of these practices. The proposed model of recycling contains five main sets of independent variables identified as the key determinants of recycling: environmental concerns; social norms guiding the disposal of household consumer waste; knowledge of recycling; perceptions of environmental risk; and the opportunities for recycling provided by institutionalised programmes, such as kerbside recycling, sponsored by government and industry organisations. In addition, the effect of individual value orientations is also examined. The model is tested by empirical investigation utilising quantitative (survey) and qualitative (interview) data. The quantitative data is examined using bivariate and multivariate (regression) methods of analysis. Where appropriate, secondary data analysis of Australian and international data has also been used.

Chapter 2 commences with a brief outline of the history and policy initiatives underlying the current system of kerbside recycling collection operating in Australia. This outline includes a cross-national comparison of policy and practices where appropriate, and a comparison of two policy models that place a different emphasis on the responsibility for recycling - the Australian model where waste minimisation and recycling are seen as the consumer's responsibility, and the German model where responsibility is placed on the manufacturer. Chapter 2 also outlines the scope of institutionalised household recycling programmes generally available in urban areas of Australia, and paints a portrait of recycling in Australia.

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[5] For example, the influence of vested interests such as the packaging and beverage industries on proposals for the introduction of Container Deposit Legislation.

CHAPTER 2

Recycling: Where Are We, and How Did We Get Here?

Before examining the history and policy background of kerbside recycling

programmes, a terminological clarification of 'recycling' is necessary. Standards

Australia (1998:8) defines recycling as a 'set of processes (including biological) for

converting recovered materials that would otherwise be disposed of as wastes, into

useful materials and or products' (AS/NZS 3831). This definition takes no account

of reuse or alternative use without processing. A wider view of includes the

reprocessing, reuse or alternative use of materials recovered from the waste stream.

Account may also be taken of reflexive decisions by individuals to avoid using

certain materials or to buy products packaged to minimise waste generation. These

are all environmentally effective social means to attain waste minimisation. In other

words, processes which may be viewed socially as recycling, although industrial

reprocessing does not occur. However, for comparative purposes this chapter will

utilise the commonly accepted definition of recycling, that is, return of materials for

industrial reprocessing.

The main method of recycling household materials in urban areas in Australia is

commingled kerbside recycling, a system where household residents put all

recyclable materials in one container for collection from the kerbside. This is in

contrast to source separation recycling (SSR), where waste is sorted into categories

of 'recyclables' at the point where they would normally enter the waste stream. In

most countries this is either at the individual household or at a neighbourhood

collection depot. The use of SSR collection systems may be implemented on a wider

basis in Australia in the future. Collins (2001 21-23) points out that a mix of bins

and crates can be used in various locations in the one local government area. This mix may provide better results, depending on the housing density and the wishes of the residents.

2.1 Recycling in Australia

Historically there have been six systematic approaches to the recycling of paper and packaging materials in Australia, prior to the introduction of institutionalised recycling programmes (Clouser 1985:5-7). These are

1. Charitable groups making regular collections of materials,

2. Drop-off centres, often run by 'self-help' workshops,

3. Bottle drives, home collection, for example by the Boy Scouts Association,

4. Service station and hotel bottle areas,

5. Re-use of materials by manufacturers, for example empty beer and milk bottles, and

6. Bottle deposits on soft drink and similar packaging.

Bottle deposits are designed to ensure that packaging will be returned for recycling, in an attempt to reduce littering and waste of materials. This system is still current in South Australia where Container Deposit Legislation (CDL) exists. Under this legislation a small refundable deposit is paid on each container. However, there has been considerable opposition from the beverage and packaging industries to the extension of this system into other locations in Australia. Nevertheless, since the release of White's (2002) study in New South Wales, it is possible that CDL may be enacted in other states of Australia. Container Deposit Legislation will be discussed in more detail later in this chapter.

In addition to the systematic approaches detailed above, individuals could sell some used materials, for example, selling newsprint for use as wrapping material. However, this practice has now been regulated out of existence due to health concerns. Other packaging materials, such as glass bottles and metals have also had some exchange value for the individual. This value is dependent on the demand for a particular material at a particular time and fluctuates considerably. The value of intact glass bottles has fallen considerably over time as it is now very rare for bottles to be re-filled. The reuse of bottles is now claimed to be uneconomic and environmentally damaging, and while this is the subject of some argument, their value is now only that of a material suitable for reprocessing.

The first evidence of the involvement of local government in the recycling of household materials in Australia was in 1975, when the Knox Shire Council set up a collection depot at the entrance to its landfill area to collect bottles, cans, metals, paper and car batteries (Clouser 1985:4). Kerbside recycling first commenced in Tasmania in 1981 at Wynyard. Three types of organisation were involved with the provision of these earlier kerbside recycling services - private industry, charitable organisations and community-based volunteers. In 1982 a small pilot program was conducted in Tasmania in the City of Glenorchy (Cretney 1991:4-5).

In the 1980s the packaging industry became active in the area of recycling, taking a proactive role to head off criticism of packaging and its disposal, especially littering. Because of its high visibility, littering would draw the public's attention to the negative environmental effects of packaging. The industry role was, and still is, coordinated by the Beverage Industry Environment Council (BIEC), an industry organisation representing companies which make up more than 90 per cent of market

share of the Australian beer and soft drink producers and their suppliers. The organisation was originally formed in 1978 as the Litter and Recycling Research Association. The Council is funded by a voluntary levy on the sale of its members' products, and its mission is 'to minimise post-consumer waste from beverage industry member products and to represent the beverage industry in environmental policy processes' (Beverage Industry Environment Council 1999a:1).

BIEC believes in environmentally effective resource recovery '...that is economically sustainable and based on the principle of shared responsibility between Governments, business and community'(Beverage Industry Environment Council 1999a:1). The Industry Commission Report 1991 points out, however, that the threat of container deposit legislation '...has been a considerable inducement ...to set up or contribute to recycling programs, some of which appear to make less than efficient use of Australia's resources' (Industry Commission (Australia) 1991:125). BIEC owns the slogan 'Do the Right Thing', and the community education campaign centred on this slogan claimed a 70 per cent reduction in litter in Australia in the period from 1979 to 1989 (Beverage Industry Environment Council 1999a). Additionally, BIEC's view is that recycling practices are an environmental 'soft' option that might open the way to individual participation in other pro-environmental practices (Cretney 1999).

By 1989 the issue of recycling was being addressed on a 'comprehensive state-wide basis' (Cretney 1991:4-5). However, kerbside recycling programmes in Tasmania were not self-funding. In 1999, recycling schemes cost Local Government approximately $2.3 million, 17 per cent of Tasmania's total waste management budget. The beverage industry also spent approximately $2.5 million on purchasing

and shipping collected product interstate for reprocessing (Beverage Industry Environment Council Undated:a). Other contributions were made by the cardboard and newsprint industry.

Recycling policies in Australia are affected by input from all levels of government, the manufacturing and packaging industries, the recycling industry and environmental organisations such as Planet Ark. The Industry Commission (Australia) (1991:9-10) reports that governments influence recycling by various means. Local government do this indirectly through their waste disposal policies and directly through their collection systems. State governments exert influence through their waste disposal policies and industry policies, their purchasing policies and their control over local government. In the case of South Australia, influence has been exercised through CDL. The Federal Government exerts influence through its coordinating role in environmental matters and its tax policies. The influence of industries with a vested interest in maintaining the status quo on packaging and marketing has not gone unnoticed by sociologists. Critics of the role of industry in the establishment and promotion of recycling include Weinberg et al. (1995) and Ungar (1998). Their views are examined in detail elsewhere in this thesis.

The next sections will outline policy options that have been adopted to deal with the problem of consumer waste, and examine two differing points of view on the locus of the responsibility for the sustainable recycling of household waste.

2.2 Recycling: where does the responsibility lie?

Two differing policies for solving the problem of waste consumer packaging are

outlined below. Both are based on the concept of 'product stewardship' and take a

perspective that covers the life-cycle of the material. In Germany, the view is that the

material is always 'owned' by the manufacturer, and this is where the final

responsibility for recycling or disposal must lie.

In comparison, the view put forward by Australian industry groups, especially the

beverage and packaging industries, is that there must be joint stewardship between

industry and consumers over the life-cycle of a product, in which each link in the

chain from production to final disposal plays its part in waste minimisation

practices. This view has resulted in the implementation of the National Packaging

Covenant that is discussed in more detail below. Canadian policy makers adopted a

similar view that sees consumers, industries and governments sharing the

responsibility for the environmental impacts of packaging wastes.

The next sections will examine these differing policy options, commencing with the

policy adopted in Germany, the 'Avoidance of Refuse Ordinance'.

2.3 Germany: the 'Avoidance of Refuse Ordinance'

This policy mechanism puts the overall responsibility for materials on to the

manufacturer for the life-cycle of the product. In 1991, the German government

approved the 'Avoidance of Refuse Ordinance' (also known as the 'Topfer Law'

after its originator). This Law gave consumers the right to return product packaging

to retailers based on the premise that whoever places a package into commerce is

responsible for taking it back. Manufacturers or retailers must 'take back' their

packaging or ensure that 80 per cent of it is collected rather than thrown out (Scarlett 1994). A recycling quota is then applied to the collected material, for example 64 per cent for paper. Notably, both quotas were achieved by 1994 after remaining at 45 per cent for the previous twenty years (World Resources Institute 1999).

Under this legislation packaging is effectively defined as pollution, and the manufacturer is seen as having responsibility for the life cycle of a product. The 'polluter pays' principle fixes the full costs of market externalities back on to the manufacturer. These costs were previously imposed on the consumer and local government at the time of disposing of the waste.

There has been criticism of this policy. Scarlett (1994:30-32) believed that the programme would fail because 'it wrongfully assumes that packaging is pollution and that consumers are victims'. Packaging should not be seen as an external cost imposed on others, like toxic chemicals dumped into a river or vehicle exhaust fumes. Instead, Scarlett views acceptance of the packaging as a voluntary act by the consumer; the material is therefore 'owned' by the current holder at each step from production to consumption. Consumers are responsible for other costs associated with packaging. Local governments subsidise waste collection. However, for Scarlett this is not market failure but public policy failure.

Retailers and product manufacturers, rather than allowing themselves to be transformed into waste handlers, have sponsored public collection bins for recyclable packaging materials. This brings with it the problem of free-riders: consumers discard non-recyclable waste in these bins to avoid garbage collection charges. Further, industry bodies claim there are excessive costs of the buy back

scheme compared to other systems. German industry bodies also claim that packaging has been reduced in both the Netherlands and the USA even though they do not have take-back laws (Cooke 1992, Scarlett 1994).

2.4 Canada: the National Packaging Protocol

Adopted in Canada in 1990, the National Packaging Protocol (NaPP) is a voluntary covenant viewed as a challenge to 'turn around Canada's packaging waste generation and disposal practices', and achieve a reduction in the amount of waste sent for disposal (Environment Canada 2000). In brief, the NaPP requires that all packaging shall have minimal effects on the environment; priority will be given to the management of packaging through source reduction, reuse and recycling; and a continuing campaign of information and education will be undertaken to make all Canadians aware of the function and environmental impacts of packaging. A National Packaging Task Force (the Task Force) was set up to implement this policy. Targets for quantities of materials to be diverted from the waste stream were set for 1992, 1996 and 2000. By 1996 the NaPP had already met its year 2000 target, with a diversion of over 51 per cent from the waste stream when compared to the base year of 1988 (Environment Canada 2000).

2.5 Australia: The National Packaging Covenant

In the late 1990s Australia adopted a waste disposal strategy known as the National Packaging Covenant (the 'Covenant') based on a 'life cycle' approach and the principle of product stewardship. In contrast to the German policy described previously which puts the responsibility for collection and recycling of waste materials on the producer, the Covenant is voluntary and includes an ethic of shared responsibility for the lifecycle of products - including the environmental impact of

the product through to and including its ultimate disposal (Australia And New Zealand Environment And Conservation Council 2000:5). The Covenant arose out of high community awareness and concern about environmental issues, with continuing community support for kerbside recycling services.

The Covenant applies to the lifecycle management of consumer packaging and household paper, with the exclusion of paper that is used to publish newspapers or magazines (these products being covered by initiatives such as the national industry waste reduction agreement that broadly covers the same principles as the Covenant (Australia And New Zealand Environment And Conservation Council 2000:1-3). For those organisations that either fall outside the Covenant, for example imported packaging, or where a particular organisation does not adopt the principles of the Covenant, there is an associated National Environment Protection Measure on Used Packaging Materials (the NEPM). The Covenant and the NEPM impose an obligation on all those who benefit from production or use of a product to assume a share of responsibility for a product over its lifecycle (National Environment Protection Council 1999:5.2). The Covenant establishes a collaborative approach between all sectors of the packaging supply chain and all spheres of government, with acceptance by industry voluntary on a business-by-business basis. Local Government organisations have expressed reservations about the Covenant, such as a belief that the level of industry funding is inadequate at a national level, and Local Government is paying more than its fair share (Local Government Association of Tasmania 2000:4-5).

One of the specific aims of the Covenant as outlined by Australia And New Zealand Environment And Conservation Council (2000:43) is to develop recycling

strategies. The objectives for kerbside recycling are to establish a national, long-term, sustainable program for kerbside recycling of packaging and paper; facilitate cost-effective diversion from landfill of recyclable packaging and paper in the domestic waste stream; and to maximise householder participation in and resource recovery from kerbside collection programs in a sustainable manner (Australia And New Zealand Environment And Conservation Council 2000:20). The future of recycling in Australia is expected to involve an extension of current institutionalised kerbside recycling programmes. In addition, there will be greater emphasis placed on the purchase and use of products made from recycled materials instead of products made from virgin materials. An example of this trend is the 'Buy Recycled Business Alliance', a group of 28 companies who are committed to using and buying recycled products (Radio National 1999).

Whilst it can be argued that Container Deposit Legislation (CDL) and the reuse of containers, especially bottles, generates a more effective and environmentally friendly outcome, this thesis will only focus on the current system of collecting recyclables for industrial reprocessing. However, an outline of the CDL debate is given in the next section to illustrate both sides of the waste disposal and recycling dialectic, that is, the industry view and the environmental view.

2.6 Container Deposit Legislation

Container Deposit Legislation has been the subject of much policy debate. The Beverage Industry Environment Council (BIEC), the major industry association, strongly supports kerbside recycling but is opposed to CDL (Beverage Industry Environment Council 1999b). However, organisations such as the international environmental organisation Friends of the Earth (FoE) advocate the introduction of

CDL, both in Australia and in other 'no deposit, no return' regions of the world (Hopper 1992). A recent independent review of CDL in New South Wales has recommended that a deposit system for used containers be implemented, with a deposit applicable to most beverage containers (White 2002).

This review found that such legislation is an 'example of an increasingly important environmental management principle, known as extended producer responsibility' (White 2002:1). The overall conclusion of the review is that CDL should ensure that the recovery rate of used beverage containers is raised to a more economically viable optimum level, based on total benefits to society (White 2002:3). Current mechanisms for container collection and recycling are unlikely to achieve these rates.

The arguments against CDL have been summarised by BIEC (Beverage Industry Environment Council 1999b). BIEC's view is that CDL is not effective in reducing litter. BIEC claim that the rates of beverage litter and overall litter in South Australia (SA), the only Australian state with CDL, are only marginally different to other states and territories. However, this view is hotly contested, with Kiernan (2003:1) claiming a '50 per cent less collection of beverage containers on Clean Up Australia Day in South Australia than other states'.[6]

BIEC also claim that the removal of some containers from the waste stream for refund reduces the viability of kerbside recycling programmes by removing the most valuable scrap materials from the household recycling system (Beverage Industry

Environment Council, undated:b). This may also reduce the volume of other materials recycled, as some individuals may not bother recycling the smaller quantities of recyclable materials left after returning 'deposit' containers for their refund. The containers that attract a deposit in general are made of the more valuable materials such as aluminium and glass, and their removal tends to leave only lower value materials for collection in kerbside programmes. This view is supported by Alter (1993:166), who also argues that dual systems (kerbside recycling and deposit schemes) cost more to operate.

In contrast to BIEC's view, FoE point out that with the prospect of Sydney, Australia's largest city, transporting its waste to country areas for disposal the state of New South Wales is undoubtedly in the midst of a waste crisis (Hopper 1992:1). Their view is that with hindsight, the waste disposal problems we now face can be partly blamed on beverage and container manufacturers. These manufacturers, during the 1970s, forced a shift from refillable to disposable containers. Rather than 'refillables' we now have mountains of garbage, highlighting the question: should we return to more traditional methods of minimising our waste?

Despite what the FoE see as the overwhelming case in favour of CDL, their view is that financially powerful beverage and container interests throw millions of dollars a year into lobbying and propaganda campaigns to ensure its non-introduction (Hopper 1992:3). State and federal governments have done little to challenge these industrial interests and ensure the availability of refillable containers.

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[6] 'Clean Up Australia Day' is one day each year where members of the community are encouraged to make a coordinated effort to clean up litter from public areas. It is promoted by government and

Container Deposit Legislation is in line with a recommendation adopted by the

Council of the Organisation for Economic Cooperation and Development (OECD) in

1978 concerning the re-use and recycling of beverage containers (Hopper

1992:Appendix 1). This recommendation included the following element - that

member countries (including Australia):

> adopt appropriate measures with a view to maintaining, or where
> necessary introducing, a system of distribution by refillable containers
> covering as much as possible of the beverage trade. (Organisation for
> Economic Cooperation and Development 1978: 58-159)

Further, the OECD recommended that regardless of the measures taken to promote

the re-use of beverage containers, member countries encourage the recycling of the

ultimately disposed-of containers, and take any other necessary step to reduce as

much as possible any adverse effect they may have on the environment.

There is agreement between BIEC and FoE on one issue. That is, both groups see the

adoption of some form of recycling as a soft option designed to encourage other pro-

environmental activities. However, a major point of disagreement between the two

organisations is over kerbside collections. Whereas BIEC feel that CDL reduces the

viability of kerbside programmes as discussed above, FoE feel that CDL would

allow 'kerbside' to focus its attention on the collection of paper and compostable

materials.

Debate on the implementation of CDL is ongoing. Beverage containers are a product

in which there is a high loss rate. When beverages are consumed away from the

household the containers are usually either thrown away as litter or as waste; they

have no economic value to the consumer and it is inconvenient to keep them for later

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environmental organisations.

recycling. If recovery rates for beverage packaging are to be optimised, some form of financial incentive (such as CDL) or disincentive may be necessary.

The next section outlines details of the waste and recycling kerbside collection service operating in Tasmania at the time of this research. Collection rates for recyclable materials within Australia and internationally will also be compared.

2.7 Kerbside recycling in Tasmania

All basic kerbside recycling and garbage collection services were 'free' (that is, paid out of local government tax revenues) for individual households in the southern LGAs of Hobart, Glenorchy and Brighton at the time of this research. In the northern LGA, Launceston, three bags or bins of garbage per week were collected 'free', any excess incurring a small charge per bag. Hobart, Glenorchy and Brighton all operated similar kerbside recycling programmes. Only a minimal kerbside collection service was available to Launceston residents. Outlined in Table 2.1 are the details of the materials collected by the kerbside service available in the four Local Government Areas that are the subject of this thesis.

Table 2.1: Materials collected from kerbside in Local Government Areas

Material	Hobart	Glenorchy	Brighton	Launceston
Paper, fine (eg office paper)	No	No	No	Yes
Plastic drink bottles (PET, HDPE & PVC)[7]	Yes	Yes	Yes	No
Milk & juice cartons (liquid paperboard)	Yes	Yes	Yes	No
Newspapers and magazines	Yes	Yes	Yes	Yes
Glass bottles and jars	Yes	Yes	Yes	No
Cardboard	No	Yes	Yes	Yes

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[7] Code 1: polyethylene terephthalate (PET), Code 2: high density polyethylene (HDPE), and Code 3: polyvinyl chloride (PVC).

Steel cans	Yes	Yes	Yes	No
Aluminium cans	Yes	Yes	Yes	No

As shown in Table 2.1, there are two major variations between LGAs in the range of recyclable materials collected by the kerbside programmes. The first variation is that cardboard is not collected in the Hobart LGA. This caused several respondents to comment on their questionnaire forms about this discrepancy; for example, Q 665 - 'We would like cardboard kerbside recycling. It happens in Glenorchy!', and Q653 - [I don't recycle cardboard] 'they don't collect it'.

The second notable difference is the very limited range of materials collected by the kerbside service in the Launceston LGA. Glass, aluminium, plastics and steel were only recyclable if taken to the Launceston City Council's recycling depot, for which an access fee was charged to use the service, or to a recycling contractor. This minimalist household recycling collection policy of the Launceston City Council was a source of some concern to some residents, especially having to deliver materials to a depot and pay a fee to recycle materials that were collected from the kerbside in other LGAs. Typical comments as to why Launceston respondents did not recycle glass, aluminium and steel containers were: 'Too expensive' (Q1016), 'The recycling area is far too expensive, ... and I will not travel 2 to 3 1/2 km to deposit such items so most milk cartons get filled with rubbish...' (Q1020), 'Easy access, but disadvantage - charges are made' (Q1053). As will be demonstrated later in this thesis in the analysis of the Tasmanian data, the much smaller range of materials collected in Launceston had a measurable impact on overall recycling practices.

The recycling policy discussed above was current in Launceston at the time of data collection in 1999/2000 (Launceston City Council 1999). However, a change of policy occurred in 2002, after pressure from residents and the election of new Councillors, and Launceston introduced a full kerbside recycling service, similar to the other LGAs examined in this thesis, in September 2002 (Launceston City Council 2002).

No Tasmanian LGA accepts the following materials, although they are marked as recyclable with the recyclable symbol:

- Code 4: low density polyethylene (LDPE);

- Code 5: polypropylene (PP);

- Code 6: polystyrene (PS); and

- Code 7: mixed plastics.

In Tasmania these materials often end up as litter or landfill, although plastic supermarket bags (Code 4, LDPE) have a limited 'reuse' life span after the initial purchase, and may also be accepted back by some supermarkets for recycling. This is part of a growing trend in which the manufacturers or retailers of specific products which are not accepted in kerbside recycling programmes, such as supermarket bags, computers and computer printer cartridges, make arrangements for consumers to be able to drop off old or unwanted products at specific locations for return and recycling. For example, Planet Ark, supported by several major printer manufacturers, has established drop-off bins for used printer cartridges at selected post offices and retail outlets around Australia in an effort to reduce the number of cartridges that are thrown away to landfill each year, currently 18 million (Planet Ark 2003b).

It is notable that of the plastics listed above which are technically recyclable but are not collected from the kerbside in most parts of Australia, that is plastics Codes 4, 5, 6 and 7, the only one to become the subject of public discussion is LDPE (Code 4) in the form of supermarket bags. The reason for singling out supermarket bags from other forms of plastic with limited recyclability is possibly due to their high visibility as litter and an increasing public awareness of injuries caused to birds and sea life when the bags end up in waterways and the ocean (Planet Ark 2003a). There are current moves to ban or significantly reduce the use of plastic bags by supermarkets, most likely by the introduction of a levy (*The Mercury,* 27 September 2002:16). There is also a case for applying a total ban to this product (Crawford 2003:5). However, similar to proposals to introduce Container Deposit Legislation there are arguments for and against by the various sociopolitical interests involved. For an example of the 'For' case see Dee (2003:30), whilst Beynon (2003:31) puts the case 'Against' the introduction of a levy.

Essentially there is a similar system for the kerbside collection of recyclable materials in place in most urban areas in Australia, although collection frequencies, type of recycling bin and materials accepted may vary. In Tasmania the most common collection system used in urban areas is one garbage bin and a separate recycling crate. In other areas of Australia there may only be one bin internally divided into two compartments - one for waste and one for recyclables. Bins for

recyclables may also be divided into two sections, one for paper and one for other

commingled materials (Fairfield City 1997).[8]

2.8 Recycling - measuring its success

There are three key indicators of the success of recycling programmes. These are the

participation rate, the presentation rate and the percentage of materials recovered as a

proportion of total consumption. Whilst recycling statistics are sometimes quoted in

tonnes of material recovered, these figures need to be related to total consumption to

be meaningful and will not be cited in this thesis.

The participation rate is the percentage of a population that presents materials for

collection over a specified time period, and the presentation rate is the percentage of

a population that presents materials for collection on a single occasion (Standards

Australia 1998:7). The presentation rate is only a 'snapshot' of households recycling

at one particular point in time. Therefore, as some households do not put a recycling

crate out for collection on every collection day, it is not as accurate a measure as the

participation rate that counts recyclers over a more extended time frame. If the

methodology for determining the participation rate is sound, it is an essentially

accurate indicator of recycling. Only households that put recyclable materials out for

collection so infrequently as to miss being over the specified time period are not

included in this measure. An example would be those who adopt the first three steps

of the solid waste hierarchy, and may 'Refuse', 'Reduce' or 'Reuse' otherwise

recyclable materials to such an extent that they are not counted in the participation

rate.

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[8] While some Australian residents may see these recycling requirements onerous, spare a thought for
the residents of Minamata Bay, Japan, who are required to sort their garbage into 23 different piles
(Lunn 2000:8).

Methods for ascertaining the participation rate vary, but in Hobart it is now

determined by counting the number of households that put a recyclable materials out

for collection at least once in a six week period, based on a statistically

representative sample of Hobart suburbs (Interview with Hobart City Council Waste

Minimisation Officer, December 2001). This method of counting 'recyclers' lifted

the observed participation rate from 61 per cent to 79 per cent.

The Tasmanian data obtained in this research project show a claimed overall

participation rate of approximately 90 per cent. However, there are variations

between the four LGAs surveyed. In Brighton LGA 87 per cent of respondents

claimed to recycle at least some materials, in Glenorchy 96 per cent, in Hobart 93

per cent and in Launceston 67 per cent. The data for Launceston show the effect of

the minimalist kerbside recycling service in place in 1999/2000, and all the data are

likely affected by the fact that recyclers were more likely to respond to the

questionnaire than non-recyclers.

In addition to the kerbside collection services now available in most urban LGAs,

materials may be deposited at recycling depots operated by either local government

or by individual recycling contractors. Collection facilities for materials such as steel

and aluminium cans and glass and plastic bottles may also be available at some

public functions such as agricultural shows. The Hobart area also has a limited

number of recycling collection bins located in public areas such as shopping centres

and malls. In general these bins are situated near litter bins in areas of high public

usage and are provided mainly for the collection of beverage containers made of

steel, aluminium, plastic and liquid paperboard. A study by the Beverage Industry

Environment Council (1999c) found that the proportion of recyclable materials in

these bins varied by location. Recyclable materials were also found in adjacent litter

bins. The recyclables in the litter bin, under normal collection methods (that is, when

subject to the usual pick-up procedures, not being checked as part of a study) would

have gone to landfill as trash. BIEC's findings suggested that public place recycling

does work, although it is of critical importance that litter and recycling receptacles

are clearly delineated and labelled to assist members of the public identify the bins

(Beverage Industry Environment Council 1999c:8-11).

2.9 Conclusion - how much do we recycle?

A true comparison between countries and between states within Australia is often

not possible due to the fragmented and differential nature of published recycling

statistics, the inaccessibility of some data and the differing collection methods used.

In addition, in the words of a waste management professional (Interview 21, July

2002), there is '...no data in waste management' - [it is] ' *fairly much all made up* '

(my emphasis). Table 2.2 shows estimated diversion rates from the waste stream for

selected countries, compared to Hobart.

Table 2.2: International estimated current diversion rates from the waste stream (per cent)

Country	Rate	Country	Rate
Austria	33.0	Italy	5.0
Canada	**51.0	Netherlands	39.0
Denmark	29.0	Norway	21.0
France	7.0	Spain	3.0
Germany	39.0	Sweden	27.0
Great Britain	9.0		
Hobart, Tasmania	*28.0		

Sources:

Storer, N. Recycling Achievement in Europe: Resource Recovery Forum, 20 September 2001

*Beverage Industry Environment Committee 1997a:9-27

**http://www.ec.gc.ca/napp-pne

The recycling rate for Canada reflects the impact of the National Packaging Protocol, and that of Germany the 'Avoidance of Refuse Ordinance'. Both of these policy measures were introduced in the early 1990s, and the proportion of household waste recycled in Germany increased from 12 per cent to 30 per cent between 1992 and 1995 (Third Force News 2002:1-4). Implementation of Australia's National Packaging Covenant did not commence until 1999. Great Britain does not have an equivalent measure in place, and despite targets set in 1994 by the European Commission's Packaging and Packaging Waste Directive, it recycles the least glass and steel packaging in Europe and is near the bottom on aluminium cans. This situation has been described as 'shameful' by Friends of the Earth (2002:1). The low recycling rates in Great Britain appear to be linked to the fact that householders do not pay for their rubbish collection, resulting in what has been described as a 'dustbin culture' (*The Times*, 26 May 2000), and a 'pathetic' recycling record (Planet Ark, 2000). In comparison, in Germany waste disposal is expensive for the householder and in Switzerland fines are imposed on those households that include recyclable materials in with the rubbish (BBC 2002:1), resulting in higher rates of recycling.

Australia

The source for the Australian data is the *Planet Ark Recycling Report 2000* (Planet Ark 2001), unless otherwise noted. In 1999 it was estimated that 70 per cent of Australian households recycle in some way and 57 per cent had access to kerbside recycling facilities. The results of a study conducted in various Australian capital cities in the period from 1995 to 1997 indicated a presentation rate ranging from 52 per cent (Melbourne) to 81 per cent (Canberra). At that time Australians were diverting 19.8 per cent of the waste stream to recycling, with another 23.3 per cent of waste potentially recyclable (Beverage Industry Environment Committee 1997a:6). However, there is considerable variation between materials. The overall approximate percentages of some materials recycled in Australia in 1999 were as follows: 44 per cent of glass packaging, 67 per cent of aluminium cans, 40 per cent of steel cans and 70 per cent of newsprint (up from 28 per cent a decade previously). There are also variances between states. For example, the recycling rate for steel cans in 1997 ranged from 25 per cent in New South Wales to 41 per cent in Queensland (EcoRecycle Victoria 2000). The increase in the proportion of newsprint recycled can be attributed to an ongoing media campaign organised by the Publishers National Environment Bureau (the national equivalent of BIEC for the publishing industry) (*The Saturday Mercury*, 4 March 2000:43).

Tasmania

The 1997 national recycling audit found that 21.3 per cent of the waste stream was diverted to recycling in Tasmania, compared to the national average of 19.8 per cent. The potential recovery rate for recyclable materials was estimated at just over 40 per cent. The recovery rate for beverage containers was 82.7 per cent. Paper, cardboard and glass represented 85.5 per cent of the recycling stream. Notably, contamination in the Tasmanian recycling stream, at 1.4 per cent, was considerably less that the

Australian average of 6.8 per cent (Beverage Industry Environment Committee 1997a:79-82).

In summary, diversion rates, presentation rates and participation rates may vary considerably within countries and between countries. The recycling practices of individual households are contingent upon such factors as whether there is a kerbside collection system in place and its type and frequency. Recycling rates are also affected by the materials that individual recycling contractors will accept, and are often subject to financial factors that can change as the market for recycled material changes. In this regard both local and international factors come into play, as there is now a global trade in recycled materials. For example, countries such as the United States of America and Germany export large quantities of recovered aluminium, paper and plastics to markets around the world (Organisation for Economic Cooperation and Development 1997). Additionally, demand for recyclable materials is often dependent on consumer demand for products made from a proportion of recycled materials, such as photocopy paper, which may be more expensive than paper made from virgin materials. Also important is the relative 'cost' of disposing of materials into the waste stream. As shown in Table 2.2, diversion rates for recyclable material are likely to be lower in countries such as Great Britain where waste disposal is 'free' than in countries where waste disposal is expensive to the consumer, such as Germany.

The next chapter will present an outline of the perspective adopted for this thesis; that is, environmental sociology, followed by a discussion on the social location and impact of environmental concerns.

CHAPTER 3

Environmental Sociology and Environmental Concerns

A form of conduct such as recycling can be studied from sociological, economic, psychological, environmental or policy perspectives. The sociological perspective governing this research project is informed by environmental sociology, which appeared as a separate field of study in the 1980s. Buttel (1987) makes a distinction between the 'sociology of the environment', and a new 'environmental sociology'. The former focussed on fields of study such as land use issues, for instance the allocation of areas for recreation and resource management problems. In comparison, environmental sociology focuses on the physical environment as a factor that may influence or be influenced by social behaviour. Buttel (1987:466) refers to environmental sociology as a new sociology that '...recognized the role of physical-biological factors in shaping social structures and behaviour, that was aware of the impacts of social organization and social change on the natural environment'. There are five areas for investigation by this new branch of sociology. These are the new human ecology; environmental attitudes, values and behaviours; the environmental movement; technological risk and risk assessment; and the political economy of the environment.

These areas are now becoming the focus for systematic sociological research. However, while developing into an active research area, environmental sociology has also become specialised and fragmented (Buttel 1987:468) with increasingly diverse theoretical bases and methodologies. Environmental sociology offers advantages because of its wide scope and relationship to the concept of

sustainability, that is the long-term social and environmental viability of the conduct studied. Sustainability is typically discussed in the context of public concerns about the natural environment.

3.1 Environmental concerns and orientations

The literature on environmental orientations, according to Buttel (1987:472-474), can be divided into three major categories. The first includes studies involving sample survey methodology, which explore such environmental orientations as sociodemographic differences in attitudes and beliefs. The second category includes experimental studies, often of a social-psychological nature. The third covers applied studies that have attempted to determine the social factors related to behaviour associated with the environment. However, there is some overlap and this, together with the use of varied methodologies, has had the outcome that the results of studies of environmental concerns are often disputed or questioned.

For example, Van Liere and Dunlap (1981:652) questioned whether different measures serve equally well as indicators of the construct 'environmental concern'. Their answer was a qualified 'no' (Van Liere and Dunlap 1981:668). Measures of environmental concern vary in terms of the substantive issues and the theoretical conceptualisation included in the measure. Substantive issues include pollution, population and natural resources. According to Van Liere and Dunlap (1981:659), the evidence from previous studies generally does not support the assumption that different types of measures are equivalent, although their conclusion was based on a limited number of studies. However, as well differing on substantive issues and theoretical measures, environmental concerns may also vary due to social location

and social and cultural influences. A majority of studies measuring environmental

concern, including most of those cited by Van Liere and Dunlap in their meta-

analyses (1980, 1981), appear to be located geographically in North America, with

European based studies second most numerous.[9]

Another difficulty which arises is the use of the term 'green' as a blanket description

all pro-environmental activities Whilst in common usage concern for the

environment is often described as green, gradual differentiations between the

competing environmental orientations have been identified (Crook and Pakulski

1995). Studies utilising data from the 1990 and 1993 *Australian Electoral Studies*

found that environmental concerns 'form two distinct clusters', 'brown' and 'green',

based around specific issues (Crook and Pakulski 1995:39-46). The brown cluster

was based on 'pollution' and 'waste disposal', and also included concerns about the

'greenhouse effect' and 'overpopulation'. The green cluster encompassed such

issues as 'logging of forests' and 'destruction of wildlife', with 'soil degradation'

also being associated with this cluster. Pollution was the 'star' issue, being seen as

very urgent by 72 per cent of respondents, and was chosen by 57 per cent as either

the first (38 per cent) or second (19 per cent) most important environmental concern.

However, despite these differentiations, rising environmental concerns were

accompanied by the formation of new environmental movement organisations, such

as 'green' activist groups, political parties, lobby groups and Non-Government

Organisations. They were also stimulated by the growing environmental literature.

Writers such as Pearce (1989) and Yearley (1992a) adopted an ecological

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[9] There is a strong literature on the location of environmental concerns in Australia and this will be reviewed in more detail in the next Chapter.

preservation perspective in discussing environmental problems such as resource

depletion, overpopulation and especially pollution of the air, land and sea. This

perspective became associated with various versions of de-industrialisation, de-

modernisation or counter productivity theories and ideologies, which sought a

fundamental reorganisation of the core institutions of modern society (Fox 1990).

Such views were, in turn, challenged by supporters of ecological modernisation

theory (for example, see Mol and Spaargaren 2000:17-19). They argued that while

there may be a need for the repair of some structural design faults that have led to

severe environmental problems, there was no need to do away with those core

societal institutions directly involved in production and consumption. Most

governments adopted an environmental reformist stance, often shaped by industry

groups. According to those who supported this stance, it would be sufficient to fix

problems while maintaining 'business as usual'. Debates between radical

environmentalists and reformists have gradually shifted from the political realm to

specialised policy areas and - increasingly - the mass media.

3.2 Environmental concern, the media and environmental governmentality

In the 1980s general environmental issues began to receive more coverage in the

Australian mass media, and public debate about such issues as air and water

pollution and associated health and lifestyle risks began to achieve prominence as

part of the second stream of environmental concerns. The levels of concern

regarding environmental problems have been increasing throughout Western nations.

Dunlap and Scarce (1991:651) found that high levels of public support for

environmental protection have not only persisted but also risen substantially through

the 1980s. Supporting this view, research by Derksen and Gartrell (1993:434) found

that concern for the environment was at a 'cultural constant or norm'. Further, there

were indicators of a spread of these concerns throughout all social strata, and there is now little support for the view that environmental concerns are 'elitist' (see, for example, Buttel 1987). Cotgrove (1982) and Morrison (1986) cite evidence of a 'trickle down' effect of environmental consciousness from the early 1970s. In the United States of America polls showed that the percentage of the population viewing government spending on the environment as 'too little' rose continuously, from 48 per cent in 1980 to 71 per cent in 1990 (Dunlap 1991:12).

The overall rise in environmental awareness and public concerns in Australia peaked in 1989 and then dropped back to a lower level, although were considerably higher in the 1990s than pre-1989 levels (Pakulski et al. 1998:235-236). These concerns were fuelled by media coverage of such contentious issues as global warming, water pollution soil erosion within an environmental frame of reference. Concern for the environment soon became a major consideration in public debates over environmental policy and social practices in all member countries of the Organisation for Economic Cooperation and Development.

Wall (1995:466) highlights the major role played by the media in the dissemination of environmental concern and in transforming specific ecological problems into major public issues. Similarly, Pakulski and Crook (1998) have detailed the influence of the print media in Australia in publicising environmental concerns between 1983 and 1996. These concerns had initially entered the public arena as specific 'single issues', as environmental movement activists utilised the media to attract attention to their - often controversial - causes, such as anti-Gordon River dam protests of the early 1980s. After this 'radical elite environmentalism' period, environmental issues, both in Tasmania and elsewhere, became increasingly a matter

of widespread public concerns, peaking in the late 1980s. By the mid 1990s

environmentalism had became routinised as an area for mainstream media

discussion under a general environmental framework.

At the same time, industry and governments have been promoting environmental

citizenship and environmental education as a form of 'environmental

governmentality' - a factor considered by Darier (1996:64-67). He bases this

concept on Foucault's concept of 'governmentality', that is a strategy for the

systematic control of the conduct of the population, which takes place in the 'field of

power'. A process of 'normalisation' is imposed on individuals, mainly by

persuasion, as governments and corporations produce learning materials about the

environment, leading to the construction of environmental subjects who may

however see themselves as autonomous environmental citizens. This standardises an

increasing range of activities of the entire population, and may encourage a shift of

focus from 'green' issues to 'brown' issues such as waste disposal.

Eden (1993:1743-51) highlights this shift in what he described as the 'promotion of

public environmentalism through the use of individual environmental

responsibility', such as domestic recycling. The problems of post-consumer waste

minimisation became linked with overall concerns about the state of the

environment - the result was an institutionalised system of resource reuse, kerbside

recycling. Eden conducted a study in which individual environmental responsibility

is implicit in his categories of pro-environmental acts as 'ought' to do, 'should' do

and 'must' do. Both enabling and constraining contextual effects and institutional

options influenced this behaviour.

However, despite the fact that recycling programmes arose out of concern for the environment, Derksen and Gartrell (1993:434) found that these concerns did not always translate into pro-environmental behaviours. This is hardly surprising in the light of sociological research that shows discrepancies between declared concerns and actual practices. For example, Wall (1998:1) asks why, despite the public's telling demand for recycling', this did not generalise to other pro-environmental behaviours; and Dunlap and Scarce (1991:657) noted that changes in behavioural practices are mostly limited to actions 'that require minimal effort and personal cost'.

3.3 The social location of environmental concerns

Research suggests that environmental concerns are located in diverse sociodemographic categories. However, there is little agreement on the nature and strength of links between sociodemographic categories on the one hand, and environmental awareness and concern on the other. Writers such as Vining and Ebreo (1990) and Oskamp et al. (1991) report only weak relationships. Derksen and Gartrell (1993:434) found that as many as 90 per cent of respondents in surveys fell into the highest concern category in the early 1990s, indicating that environmental concern had spread across a broad range of sociodemographic variables. Further, the concerns expressed included a wide range of environmental issues.

Australian studies found some links between environmental concern and age, education, gender and postmaterial values. For example, Tranter (1996:77) found support for the social location of environmentalism, but only to a 'very limited extent'. However, he also noted that '... while the effects of social location are generally weak, *they vary according to the aspect of "environmentalism" under*

consideration' (my emphasis). The view of Crook and Pakulski (1995:53) was that

'... public concerns about the environment do not form a homogeneous category',

but that there was a high level of public concern about the environment in Australia

as a long-term issue. A study by McAllister and Studlar (1999:775) found evidence

of a shift away from social location as a base for environmental commitment.

Many studies that attempt to measure environmental concern have been quantitative,

comparing reported environmental behaviour with individual environmental

attitudes (also termed values, concerns and beliefs). However, Eden 1993:1744)

points out that these terms have often been used with 'lax terminological

distinction'. For Eden, the end result of using varied methods, measurements and

terminology has often been a difficulty in comparing the results of these studies.

The use of quantitative studies and correlations of aggregates of reported

environmental behaviour has been questioned. Aitken (1991:181) has criticised these

approaches 'for their excessive emphasis upon individual personality traits as the

source of social phenomena, representing "psychologism"'. He points out that these

studies often concentrate upon one form of pro-environment concern and give an

understanding of personal dispositions, but often lack reference to the social contexts

and the decisions that arise from the dispositions. An example of a study which can

be seen as having a psychologistic basis is that by De Young and Kaplan (1985-86)

which deals with the concerns, predicted rewards and satisfactions that individuals

derive from the practice of 'conserving' behaviours.

Another study which investigated individual motivations was conducted by Seguin

et al. (1999:1582), who analysed the contribution to environmental concerns and

practices of an individual's information about a particular environmental issue - that

is, perceived environmental health risks - when combined with personal motivations.

Similarly, Eden (1993:1944) believed that there is a need to study environmental

attitudes at deeper levels, taking into account perceptions of human agency. Van

Liere and Dunlap (1980) recommend that environmental concern should be studied

in terms of specific environmental issues (for example, recycling) and that research

should investigate people's beliefs and attitudes concerning tradeoffs between

environmental concerns and other valued goals.

3.4 Cultural values and social paradigms

Dunlap and Van Liere (1984:1013-1025) discuss the impact of values and social

beliefs. They refer to the effect of a society-wide Dominant Social Paradigm (DSP),

a fundamentally anti-ecological worldview or 'constellation of values, attitudes and

beliefs'. According to them, this basic societal worldview is transmitted

intergenerationally by institutional socialisation, and has a strong institutional base

(political, economic, religious and educational). It involves

> ...belief in abundance and progress, our devotion to growth and prosperity,
> our faith in science and technology, and our commitment to a laissez-faire
> economy, limited governmental planning and private property rights all
> contribute to environmental degradation and/or hinder efforts to improve the
> quality of the environment... (Dunlap and Van Liere 1978:10).

Dunlap and Van Liere's (1984:1014-1018) assumption is that core cultural values

and beliefs are the key determinants of individual beliefs, values and attitudes. This

seems to be confirmed by the results of their research in which bivariate correlations

indicate an overall negative relationship between commitment to the DSP and

environmental concern. Not only is there a negative relationship, but also

commitment to the DSP appears to be a major factor influencing environmental

concern. In similar vein, Read (1999:135) states that use of the environment by human societies is based on implicit social priorities, such as the extraction of mineral resources or the disposal of waste from production, and economic growth is prioritised over ecosystem preservation. The dominant model of environmental management is that of the 'rational individual calculator' (Read 1999:137).

Redclift (1996:135) also uses a functionalist model of environmental conduct in which 'the definition of human purposes toward the environment is given by existing social commitments, which are not questioned'. This lack of questioning of existing social commitments, such as continuing economic growth and increasing consumption of manufactured goods, has led to the institutionalisation by most Western societies of household recycling systems. While there is general agreement that 'the case for materials conservation is powerful' (Hayes 1978:33) the model adopted does not question the Dominant Social Paradigm. Dunlap and Van Liere (1978:10) argue that the DSP must be replaced by a more ecologically realistic worldview, which they refer to as a 'New Environmental Paradigm'(NEP) that incorporates 'limits to growth', the necessity of a 'steady-state' economy and the need to reject the dominant anthropocentric view of the world. The current practice of recycling a proportion of household waste does not reject this worldview; rather, it lends support to the DSP. It is notable that a considerable amount of household waste still goes direct to landfill as part of the ethos of the 'throw-away' society, undermining the notion of environmental sustainability.

The increasing spread of environmental concerns and their differentiation have also been linked by some theorists to a process of cultural shift. Inglehart (1981, 1990a, 1990b, 1997) links this cultural shift to the adoption of a higher 'postmaterial' value

priority by members of the 'baby boom' generation. Postmaterial value orientations place emphasis on quality of life issues rather than 'quantitative' material economic issues, similar to the 'higher order' needs described by Maslow (1954) in his 'hierarchy of needs'. Beck (1992a, b, c) also locates environmental concerns within a process of culture change in his analysis of a 'risk society' and a new reflexive consciousness of risk. He argues that there is an increasing individual awareness of the medical and ecological side-effects of the late modernisation phase.

The next chapter examines the import of the work of Inglehart and Beck as value and cognitive determinants of recycling practices. It also studies the writings of Yearley (1992a, 1992b, 1996) and Schnaiberg (1980), who view recycling and waste minimisation as related not so much to general cultural shifts in values as to communal norms and opportunity structures. Yearley treats recycling as an organised response to the problems of resource depletion and pollution, based in the normative structure of community and society. Schnaiberg sees recycling mainly as a rational sociopolitical response that complements, rather than opposes, the forces of industrial production and the consumer society.

CHAPTER 4

Values, Risk and Norms

The analyses of Inglehart, Beck, Yearley and Schnaiberg form the foundation of the model guiding this research project. The clusters of independent variables analysed in the regression models in Chapter 7 follow closely the core hypotheses formulated by these writers. Firstly, we turn to an outline of Inglehart's theory of changing value orientations and its relationship to recycling.

4.1 Inglehart: Culture shift and postmaterial values

Inglehart (1981, 1990a, 1990b) suggests a 'culture shift' in advanced societies in which an increasing proportion of the population come to adopt 'postmaterial' value orientations with the emphasis on participation and quality of life issues rather than a materialistic orientation. Inglehart links the new 'postmaterial value commitments' with pro-environmental orientations, concerns and involvement. His theory of rising postmaterial value orientations in Western societies and increasing concern over environmental problems points to a generationally specific internalisation of 'higher' value priorities, held by an increasing proportion of the younger population in advanced societies.

Inglehart cites the rise of new value priorities as an important factor in the development of environmental awareness and environmental movements. These movements have not arisen simply because the environment is in 'worse shape than it used to be', but mainly because individuals holding postmaterial values give expression to these values through high environmental sensitivity and concern (Inglehart 1990b:44-45). This results in support for environmentalism and growing concerns about the quality of the physical environment. Postmaterialists do not reject

the fruits of prosperity, but develop value priorities that are less strongly dominated

by the survival and prosperity imperatives that were central to early industrial

society.

Inglehart bases his theoretical framework on two key hypotheses; a 'scarcity

hypothesis' and a 'socialization hypothesis'. He theorises that individuals' value

priorities reflect the socioeconomic environment prevalent during the period of their

socialization. Those socialised in a period of affluence and political stability, (for

example, the post World War II era in the West), are more likely to develop a

'postmaterial' orientation than those socialised during a period of scarcity and

instability. With their economic and security needs met they are able to concentrate

on 'higher order' postmaterial goals. Interest in protecting the environment rather

than in self-centred economic distributional problems becomes dominant for such

people, whereas people socialised in a period of scarcity and conflict will tend to

hold 'materialist' values, where a greater subjective valuation is placed on things

that are in relatively short supply, for example economic and political security

(Inglehart 1981:881). Inglehart's two key hypotheses also imply that there will be

period effects that reflect short-term fluctuations in the socioeconomic environment,

such as the oil crisis of 1973 (1990a:79).

Inglehart (1981:886) found that holding postmaterial values was not based on age or

life-cycle effects. Rather it is the result of a cohort or generational effect, which

implies that the proportion of postmaterialists in a society will gradually increase

with generational replacement. Gow (1990:58-59), studying data from the 1990

Australian Election Study, found '... a hint of support for, but certainly not

confirmation of, Inglehart's conjecture' [that the percentage of postmaterialists will

be lower in each successively older generation]. Gow cites two possible reasons for the difference between the Australian situation and Inglehart's earlier research. These are the passage of two decades from the initial research, with the likelihood that the recession of the mid-1970s produced a period effect, and the possibility that there may be differences between the values of Australians and those of other countries.

4.2 Measuring materialist and postmaterialist value priorities

Inglehart used two constructed scales to measure materialist and postmaterialist value orientations, each containing a number of indicators for each orientation. These are a four-item battery and a twelve-item battery (see Question B7 in Appendix A for details of Inglehart's four-item battery).

Inglehart has stated that the four-item materialist / postmaterialist index, first used by him in 1970, is an indicator of certain basic value priorities - but he considers it only a rough indicator, the first step towards a multi-item index of values (Inglehart 1977: 31).[10] Two of these items measure postmaterial concerns and two measure material concerns. The scale was later expanded into a twelve-item index that was first used in 1973 (Inglehart 1981:885).

The reality is that choices between competing values must be made. For Inglehart (1989:256), the

> ...forced choice format that is used... [to measure values] reflects this reality. Everyone is in favour of free speech - but *not* everyone is willing to give it priority over maintaining order (emphasis in original).

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[10] De Graaf and Evans (1996:608) suggest that the postmaterialism scale does not measure post-'materialism', but indexes instead values pertaining to progressive liberalism.

Inglehart's method of questioning forces the respondent to rank the choices,

choosing the two most important responses from the four available, resulting in three

possible value orientations: materialist, postmaterialist or mixed. Bean and

Papadakis (1994a, 1994b) have taken issue with the 'ranking' method of analysing

responses. They propose that an alternative 'rating' method is a more theoretically

appropriate way of understanding the idea of Materialist and Postmaterialist value

orientations than a single conflict dimension. The rating method allows for a more

flexible account of individual choices - choices that may represent both materialism

and postmaterialism (Bean and Papadakis 1994a:264). However, Inglehart's view is

that the ranking method forces a choice of which goals are most desirable, whereas

ratings do not measure priorities (1994b:289-290).

Despite arguments presented by critics regarding methodological flaws (see for

example Cotgrove and Duff 1981, De Graaf and Evans 1996), Inglehart's

postmaterialist scale has been widely used in many surveys. The four-item battery is

used in this research project as an indicator of individual value orientations to allow

comparisons with the data originating in other surveys.

4.3 Recycling and postmaterialism

Holding postmaterial value orientations may result in individuals viewing recycling

as a moral or altruistic behaviour. This in turn may affect individual recycling

practices, support for communal norms and active campaigning for the provision of

recycling opportunities for post-consumer waste. In this regard Larsen (1995:87)

suggests that there is a 'connectedness between positive environmental attitudes,

personal responsibility, and broader social concern'. However, postmaterialist value

orientations may be displayed in such a wide range of behaviours that alone they are

an insufficient explanation of recycling practices. For example, postmaterial value orientations may also be evidenced in a commitment to reduce consumption, rather than 'consumption and disposal'. Graham (1999241-242) has examined important cultural shifts occurring with regard to materialism. She cites evidence of '...a recent trend among American consumers toward "downshifting" - the choice to reduce one's material consumption', and maintains that there is 'also some evidence of a world-wide shift away from materialism'.

Other studies have also addressed the issue of recycling as a value-driven practice. Researchers have studied household recycling as an altruistic or moral activity - that is, ostensibly motivated by values that seek to improve the world for the sake of others, such as future generations. Thogersen (1996) has conducted a meta-analysis of the literature of recycling which falls within the domain of morality. Thogersen's review examines recycling as an instance of prosocial behaviour from several points of view, including the relationship between intention and attitudes/social norms. According to Thogersen, all except one of the papers reviewed find that the intention to recycle depends on the attitude towards recycling, whereas the social norm has less influence than the attitude. Most of the studies found that the attitude towards recycling depends on how strongly it is believed that recycling leads to public benefits (1996:541).

This view of the need for a belief in the moral benefits of recycling is also a feature of the work of Schwartz (1977:222-255). In Schwartz's model of altruistic behaviour the social process begins with social norms that represent the values and attitudes of 'significant other' members of society. An individual may comply with social norms when it is recognised that interested groups both expect and sanction certain

behaviours. However, the influence of values or attitudes on behaviour is finite. If the perceived social or economic costs are too high, individuals may not be willing to pay them, and Schwartz found that actors may redefine the situation through perceived behavioural costs in order to neutralise the moral attitude or norm, or may deny the consequences or deny personal responsibility. Thogersen (1996:551) refers to this post-rationalisation as a reframing of the activity by changing to another 'schema of interpretation', for example from a moral obligation to an economic activity. Hopper and Nielsen (1991) conducted research based on Schwartz's altruism model. They found that recycling, as measured by behavioural outcomes, depended on personal norms (or 'internalized' norms), provided that the subject had a high awareness of consequences.

Collins (1996: 335) also views recycling as being promoted by social conscience, based on the popular belief that recycling is good for the environment. For him, household recycling is the confluence of economic and political issues (landfill space problems and pollution) and 'green social' concerns. Similarly, Pelton et al. (1993:61) claim that researchers have mostly agreed on a view that compliance with recycling practices is an altruistic behaviour and that social conscience 'exercises a tacit influence on the individuals decision to recycle'.

When viewed in the light of Inglehart's thesis, recycling as a moral activity may be seen as a consequence of the environmental concerns of those holding postmaterialist value orientations. Postmaterialists' support for practical environmentalism through the recycling of household materials reflects this concern - with an explicit reference to the quality of the physical environment (Inglehart 1990b:45), which also takes into account the needs of future generations.

In summary, a postmaterialist value orientation can result in diverse social practices. Environmental concerns and prudent behaviour are only one - and not necessarily a central - correlate of postmaterialism. Where a postmaterialist value orientation does exhibit in the form of environmental concern, Oskamp et al. (1991:515) have pointed out that environmental attitudes and behaviours themselves are fractionated into several specific components. As well as 'conventional' waste disposal issues such as institutionalised recycling of household materials, these may include avoiding or reducing the use of some types of packaging materials, the specific purchase of products packaged in environmentally-benign recyclable or recycled materials, or by campaigning against 'poor' packaging.

4.4 'Risk society' and awareness of environmental problems

In contrast to the value-driven locus of environmental concerns proposed by Inglehart, Beck sees them arising from a reaction to 'risks of modernization'. These risks have resulted in the development of a 'risk society', a form of industrial society in the late modern period (Beck 1992a, b, c). Beck (1992a:199) highlights what he terms the 'social production' of risks, which in advanced societies goes 'hand in hand' with the social production of wealth, thus triggering the risk society. For Beck (1992a:201), the risks of modernization are such that they evade immediate human perception; cause systematically determined, often irreversible damage; remain mostly invisible; and are based on causal interpretations. The new risks of late modernization are present - but unseen - as pollutants in air, food and water.

The medical and ecological side-effects of these new risks are perceived as qualitatively different from the 'hazards and dangers' experienced in earlier historical periods. Life-threatening risks that were faced by the members of earlier societies, such as diseases caused by poor sanitation or water supply, have largely been eliminated in advanced late-modern societies. The new risks - such as ecological damage and nuclear radiation - arise from the industrial production system itself, including the waste disposal process. For Beck, the risk society can be summarised in the phrase 'I am afraid!'. Anxiety takes the place of need (Beck 1992c:49).

In Beck's view, industrial society is the second of a three-stage periodization of social change that started with pre-modernity. The change continued through modernity and culminates in a new reflexive modernity, the risk society. In an early stage of the industrial society the production of risks was legitimated as a 'latent side effect' (Beck 1992c:12-13). However, due to the process of 'reflexive modernization' arising out of the problems and conflict arising from the production, definition and distribution of risk, Beck argues that in the risk society the 'logic' of risk production now dominates the 'logic' of wealth production that had been dominant in industrial society.

4.5 Recycling as risk management

The above arguments provide a useful framework for interpretation and analysis of recycling. For example, Weinberg et al. (1995:174) have examined the sociopolitical causes and consequences of recycling policies, which they see as political responses to social complainants. Recycling policies emerged because industrial production

has increased its dependence on discarding most producer and post-consumer waste, thereby stimulating demand for new disposable products. Producers deflected the waste disposal focus from 'recycling within the production process' (too costly) to 'improved waste disposal through landfill and incineration' (less costly to the producer). However, the latter option raised fears within local communities about negative effects on their environment - ecological health risks - and this, together with a 'landfill crisis', resulted in local governments becoming focal points for these issues. In addition, landfills, like littering, are highly visible, which is likely to mobilise local communities. The answer to these risk concerns was recycling, which Weinberg et al. (1995:181) describe as the 'magic hope' that would solve the landfill crisis. Garbage, landfills and resource conservation merged into 'kerbside recycling'. The rhetoric was that jobs would be created, and industrial production would be stimulated by new recycled products.

Weinberg et al.'s views are in line with Beck's argument that consciousness of the risks of civilisation can create new markets in products designed to reduce or eliminate risks (Beck 1992a:201-208). Beck refers to the 'revolutionizing of needs' that can transform saturated markets into open and expanding markets. However, he feels that risk must be controlled cosmetically, not eliminated. The sources of risk must be maintained, while industry aims at a symbolic management of the risks. This provides benefits for entrepreneurs, and 'raises [the logic of capitalist development] to a new level'. The risk society provides the 'boundless needs' needed to drive a system which is dependent on economic growth; the 'self-producing risk takes the place of pre-existent, manipulable needs' in the production system.

In a similar way, concern with recycling appears to Weinberg et al. as a form of critical reflexivity generated by the perceived risks emanating from industrial production and waste disposal. This theoretical linkage between Beck's thesis and Weinberg et al.'s argument regarding post-consumer waste minimisation in the form of household recycling is examined in more detail below.

Whilst the effects of communal norms can be seen as an 'unthinking' acceptance of recycling because 'everybody does it', interpreting recycling as a response to personal risk gives an alternative view of the recycler as a rational, calculative individual who attempts to minimise the adverse effects of disposing of waste to landfills or by incineration. These adverse affects are generally related to two main categories of risk. These are the health and physical well-being of the individual or potential environmental problems caused by disposal of waste in landfill areas.

In their study investigating associations between recycling practices and awareness of risks in the Orange County Annual Survey (USA), Baldassare and Katz (1992) examined whether individuals who perceive that environmental problems pose a serious threat to their health or well-being are more likely to engage in pro-environmental practices that require sacrifice. Baldassare and Katz (1992:604) hypothesised that the perception of environmental problems as a threat to personal well-being is a significant factor in adopting environmental practices. In line with Beck's central thesis, Baldassare and Katz's study found that perception of personal environmental threat and risk was significantly related to individual recycling practices ($r = .22$, $B = .22$, significant at the .001 level of probability). For instance, they noted that those who

perceive that environmental problems pose a very serious threat to their
health and well-being are more likely to engage overall in environmental
practices and, specifically, to recycle... (1992: 602).

Their study found that personal environmental threat is a better predictor of overall

environmental practices than sociodemographic characteristics, and their finding has

been reiterated by other researchers, such as Larsen (1995) and Wall (1995). Wall's

statistical study of Edmonton (Canada) residents analysed selected perceptual,

situational and structural influences on environmental lifestyle choices, using models

that feature environmental attitudes as a mediating variable. Her study found that

levels of pro-environmental behaviour on an individual basis will remain low unless

there is either *a link to immediate personal concerns* [my emphasis], or there are

societal arrangements to reduce compliance costs (1995:465).

Beck's view of environmental concerns and practices in the risk society as responses

to knowledge and perception of health and ecological risks suggests a second

'independent variable' in this research project. Two reasons why people may recycle

are firstly, a concern over resource depletion, and secondly, as suggested by Beck's

risk theory, a fear of the consequences arising from pollution of the environment.

Whilst Beck does not specifically refer to recycling, any method of reducing the

side-effects of the modern industrial process may be seen as a reasoned response to

the effects of the risk society. While any industrial manufacturing process may be

seen as a source of risk, the risk level is believed to be reduced by the reprocessing

of material rather than the processing of virgin materials. In addition, there are

perceived adverse effects arising from landfill disposal or incineration of waste

material, rather than reprocessing. Recycling ensures that post-consumer waste does

not end up in landfill and become a possible health risk.

In line with Beck's views detailed above, recycling is a rational response by industry to avoid the reduction in economic growth implicit in any move to reduce risk by reducing consumption and industrial production. However, Beck's risk society thesis does not address the problem of resource depletion. This gap is covered in the work of Yearley and Schnaiberg.

4.6 Resource depletion and waste management

Yearley (1992a, 1992b, 1996) and Schnaiberg (1975, 1980) both write on environmental problems as 'environmental sociologists', that is, a sociology in which enquiry focuses on the physical environment as a factor that may influence or be influenced by social behaviour. Rather than value orientations or risk, their focus is on recycling as a normative and institutionalised response to the problems of resource depletion and pollution.

Problems emanate from two major functions of the physical environment; in the first instance as a supply of resources, and then as a 'waste sink' for human societies. Yearley and Schnaiberg both examine these problems from a sociopolitical viewpoint, focussing on the excessive generation of waste in societies that are driven by the goal of economic growth, as well as on social reactions to the resultant waste problems.

Yearley draws attention to the generation of waste by modern urban societies on an 'unprecedented scale' (1992a:34), and sees waste and depletion of resources as two of the major environmental threats confronting modern societies (1992b:125-130). Not only is domestic waste disposal becoming a problem as space for landfill sites runs out, there is also the complication that domestic refuse may be unsafe, due to the leaching of acids and toxic wastes, minerals and organic materials into

groundwater supplies. Problems of waste disposal lead to dangers for the entire society, although these issues have often been dismissed by economists as 'externalities' for which neither the consumer nor the producer bears the cost. The environment assumes the cost, as if the environment was separate from society. There are objective physical facts underlying environmental problems. However, questions of physical fact are subject to both social control and social construction (Schnaiberg 1975:7). One problem associated with the environmental problems arising from waste disposal is that social practices '...reduce the visibility of [waste] sinks' (Redclift 1996:141-144). This allows the environmental effects to be mediated by distanciation from the individual. The attachment of an 'environmental' label to the problems generated by waste disposal provides a 'means of side-stepping underlying questions of sustainability'.

In addition, stocks of natural resources are finite, although to date new technologies have allowed the utilisation of existing resources more efficiently or the substitution of one resource for another (Yearley 1992b:127-129). Yearley states that the argument about resource depletion is not cut and dried; however, the logical point that resources must be finite begs the question - when will scarcity of resources become evident? Whilst both these problems have their basis in the physical environment, Yearley (1992a:49) questions whether the objective conditions of these environmental problems are sufficient to promote awareness of them as a social problem.

Yearley considers that discourse regarding the problems and solutions may be framed to minimise challenge to the dominant western worldview of economic growth. Unlike most environmental issues, in which the most significant actors are

often voluntary organisations, recycling appears to be largely driven by industrial and governmental groups. An important element in the [commercial] response to environmentalism has been the idea that ordinary people can have an effect on the environment through their purchasing decisions, and that companies and advertising consultants 'have been adroit in their responses to the perceived requirements of the green consumer' (1992a:98). While green production, say by the packaging of a product in recyclable containers, may legitimate the purchase of that product, it may also draw attention away from environmentally damaging practices of production (1992a:191). It *diverts attention* from the question 'Do we need this product at all?', perhaps reflecting, as mentioned previously, the sociopolitical influence of vested interests.

In the view of Yearley, recycling is a reformist practice adopted in order to cope with the problem of waste disposal. If the recovery rate of household waste is high enough it is economically viable to use the material again. However, he believes that there is no proof that the reformist path is sustainable, and that reforms may 'not penetrate deeply enough to overcome global threats of pollution'(1992b:152). A capitalist, market-based growth system may not, in the long term, be compatible with sustainability. Yearley's view of the incompatibility of the capitalist system and sustainability is shared and expanded by Schnaiberg (1995:173), who sees recycling as a normative, institutionalised policy which reflects the dominance of [industrial] sociopolitical interests, and causes the least disruption to the production of consumer goods.

Schnaiberg, like Yearley, locates environmental problems within the sociocultural structure and argues that reformist environmental practices such as recycling may

not be sufficient to combat the polluting effects of industrial production. Schnaiberg takes a stronger line than Yearley in his argument that dominant sociopolitical (industrial) interests have influenced materials and recycling policies to ensure that these policies do not unduly disrupt the forces of production.

The major factors causing environmental problems, according to Schnaiberg (1980:43), are population growth, technological imperatives, desires of affluent consumers and organisational features of (especially capitalist) production. Schnaiberg (1975:5-8) explores the 'structured relationships between societal organisations and the physical environment' using a dialectical model to portray the nature of social conflict over environmental issues. He focuses on the economic expansion of societies that necessarily require environmental extraction, which in turn inevitably leads to ecological problems (both pollution and resource depletion). Therefore these ecological problems potentially restrict further economic expansion. He claims that 'economic expansion is a social desideratum', his antithesis being that 'ecological disruption is a necessary consequence of economic expansion'. Concerns over this ecological disruption have resulted in the emergence of a dialectic insofar as the following proposition is accepted: 'ecological disruption is harmful to human society' (Schnaiberg 1975:6). Schnaiberg continues that much criticism is centred on this proposition, understandably as this proposition involves questions of social evaluation as well as physical fact.

From the perspective of Yearley and Schnaiberg, recycling is initially as much a public as a governmental reaction to the environmental problems and public concerns generated by littering, landfill and the incineration of waste. A solution became necessary when the externalities associated with previous methods of waste

disposal were perceived as a problem. This led to community pressure to clean up

the environment. The response to this pressure is institutionalised recycling policies

which have received widespread acceptance as communal norms, but which are

often directed by industry with the cooperation of government.

CHAPTER 5

Recycling: Conceptual Frameworks and Social Barriers

In similar fashion to the studies of environmental concerns discussed previously, the

majority of academic studies of household recycling originate from North America

or Europe, although there have been a small number of studies done in Australia (for

example, see Terry et al. 1999), and New Zealand (for example, see Bryce et al.

1997). Some work has been done in non-Western countries, typically focussing on

one specific recyclable material. For example, Kishino et al. (1999) studied the

attitudes of consumers in Japan to the purchase of recycled fibre toilet paper, and

Cheung et al. (1999) examined wastepaper recycling in Hong Kong.[11]

5.1 Recycling - conceptual frameworks

Previous studies into household recycling provide background material for an

examination of urban recycling in the Hobart and Launceston areas. These studies

may be divided into various conceptual frameworks. For instance,

- value orientations - altruism (Hopper and Nielsen 1991);

- moral behaviour (Thogersen 1996);

- reaction to personal risk (Baldassare and Katz (1992);

- knowledge and education (Ellen 1994);

- general environmental concern (Derksen and Gartrell 1993);

- sociodemographic characteristics (Wall 1995);

- as normative behaviour (Berger 1997; Bryce et al. 1997; Bratt 1999); or

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[11] Other examples of recycling studies divided into geographic location are: Canada - Derksen and
Gartrell (1993), Berger (1997); USA - Hopper (1991), Vining and Ebreo (1992), Baldassare and Katz
(1992), Gamba and Oskamp (1994); United Kingdom - Bowman et al. (1998), Read (1999); Sweden -

- as a marketing problem (Shrum et al. 1994).

These conceptual frameworks will be reviewed in more detail below.

5.1.1 Recycling, the opportunity structure and communal norms

Perhaps the most powerful explanation of conduct comes from the theoretical family of rational choice (RC). RC theories see conduct as driven by rational calculations. The key parameters of such calculations include costs and gains assessed within situationally specific opportunity structures, for example Olson (1965) discussed the rational behaviour of individuals in a group setting. For Olson (1965:65) it does not matter whether the objectives of individuals are selfish or unselfish - they should be pursued by efficient and effective means. In the case of recycling conduct, the RC model stresses the importance of obstacles and incentives coded into the structure of recycling opportunities.

Many recycling studies have emphasised the need to provide this type of programme. For example, Lansana (1992:16) showed that a decision to recycle may be influenced by the provision of waste storage containers and collection points. The system of placing materials in one or more recycling bins for kerbside collection by local government or private contractors is the method generally used, although there are variations in different areas. Derksen and Gartrell (1993:434) compared people with access to a structured recycling process (such as a kerbside collection service) to people lacking such access. As would be expected, their results showed that people with easy access recycled more than those without access. The strongest predictor of recycling was living in a single-family unit, as kerbside recycling was only available to this type of home in the geographic area surveyed. The second

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Sterner and Bartelings (1999); Germany - Schahn and Holzer (1990); and Denmark - Thogersen

strongest predictor was having friends and neighbours who recycle. Peer

participation and the normative influence were important determinants of recycling

behaviour (Derksen and Gartrell 1993:435). Derksen and Gartrell's (1993:435) view

was that some social contexts were likely to discourage the adoption of

environmentally prudent behaviours, and individual motivations may not easily

overcome contextual barriers to action.

This was not an isolated finding. Berger (1997:515), in an analysis of Canadian data,

also showed that the availability of kerbside recycling was often based on area of

residence, type of dwelling, education and income. A similar Canadian study by

Wall (1995:465) also found that levels of pro-environmental behaviour remained

low unless there were societal arrangements to reduce compliance costs, such as

institutionalised recycling programmes, or there was a link to immediate personal

concerns. However, in order to succeed, these programmes had to be simple and

convenient.

Contextual or situational factors, such as too little waste, lack of time or lack of

storage space, were shown by Bowman et al. (1998:265) to have a negative effect on

recycling. Further confirmation comes from an Australian study by Grant et al.

(1999:10). In line with other studies of the environmental impact of recycling, they

claim that overall collection costs and emissions from recyclable materials collection

may be reduced by reducing the frequency of collection. However, while this

reduces financial and environmental impacts by cutting collections from weekly to

fortnightly to monthly collections, their results indicate there would be a loss of

material collected which would wipe out any environmental or financial gains. This

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(1994).

is mainly due to two factors: the inconvenience of storing materials for a longer period and the householder forgetting when collections were due. As a result, much recyclable material goes directly into the waste system for landfill disposal. The study by Grant et al. confirmed earlier findings by Jacobs et al. (1984:127), who supported the view that while the provision of a container to help residents sort recyclable materials from waste was effective, higher levels of participation were achieved when pickups were both weekly and coincided with the collection of garbage.

In summary, empirical studies from many Western industrialised nations conclude that in order to succeed, recycling has to be seen as simple, convenient and gratifying, with a frequent and reliable collection service and with the provision of simple but adequate information to allow the sorting and preparation of materials with a minimum of cost and effort from the householder. Ungar's (1998:255) view is that given the initial inertia [of householders and consumers] and the fact that actions are embedded in social networks and institutions, efforts to change environmental practices require both a 'kick-start' and ongoing institutional supports. Kerbside recycling provides both convenience and overcomes to a large degree any lack of knowledge on the part of the individual, with the added benefits of peer group pressure and modelling.

Peer pressure assists in creating a new communal norm in favour of consumption and recycling, to replace the 'old' normative behaviour of consumption and disposal. For example, the Canadian studies of Derksen and Gartrell (1993:435-436) and Berger (1997:523), show that access to a recycling programme may, because of its high social visibility, create a context in which recycling becomes a social norm.

Nielsen and Ellington (1983:307), in a study conducted in the USA, found that when 'recycling has been adopted by enough people to have an impact, it becomes normative and social change has occurred'.

Hopper and Nielsen (1991) confirm the effect of social norms on the incidence and scope of recycling. Their study examines the extent to which normative processes are themselves shaped through interpersonal contact through a social technique, a block-leader program, and the comparative effect of two communication techniques, prompting and information. They found that block-leaders, who were artificially introduced into social networks as an on-going strategy in order to actively shape recycling norms, had the greatest impact on recycling practices (Hopper and Nielsen 1991:210). However, the other two strategies were only used intermittently. For any strategy to have a persistent impact it needs to be regularly available to its target population.

It should also be noted that Hopper and Nielsen's research was carried out in a 'middle-to-upper-middle-class' residential neighbourhood in the USA and the block-leader strategy may not succeed in other areas. An attempt by Bowman et al. (1998:267) to replicate Hopper and Nielsen's block leader initiative in Great Britain failed when few volunteers came forward, apparently due to fear for their own safety. Bowman et al.'s (1998:266-267) study used two strategies - a normative strategy that applied social pressure through a combination of antecedent and consequent conditions (that is, a monthly community newsletter delivered before material pickups were due and a feedback approach after the pickups), and a second strategy of applying antecedent conditions only (a monthly flier containing information on why people should recycle and the consequences of not recycling).

Their findings indicate that these normative interventions were more effective at increasing levels of recycling among existing recyclers rather than prompting non-recyclers to start recycling (Bowman et al. 1998:263).

The literature reviewed above indicates that for many people recycling can be established as a routine practice, based on the development of communal norms and influenced by friends, family and neighbours. However, unlike the work of Inglehart and Beck discussed previously, recycling is seen as an unreflexive practice. In these circumstances, household recycling of post-consumer materials is unlikely to be successful unless supported by a convenient, institutionalised collection system such as regular kerbside collections.

5.1.2 Knowledge and recycling

Several researchers see knowledge of recycling practices as a most important factor in the successful implementation of kerbside recycling programmes. This point was highlighted by Simmons and Widmar (1990), who found that recyclers were more likely than non-recyclers to believe in environmental conservation. However, despite their positive environmental attitudes, recycling may not result if knowledge of recycling is lacking. There are three main types of recycling knowledge. The primary category is knowledge of materials that are appropriate for recycling in a given locality, and of materials that act as contaminants if placed with recyclable materials. The second category is knowledge of how the materials should be prepared prior to collection. This reduces costs for the recycling service and also guards against contamination. The third category is knowledge of why materials should be recycled and the benefits arising from recycling - that is, the relationship between

environmental problems and recycling. As will be demonstrated later in this thesis, a lack of 'first category' knowledge detracts significantly from the overall recycling effort. A lack of 'second category' knowledge can also have an impact, for example when materials are not collected due to unacceptable presentation.

Whilst it is possible to be an effective recycler without 'third category' knowledge, studies have shown that being informed about the positive consequences of environmental actions may increase commitment (Hopper and Nielsen 1991:195). Bratt (1999:634) makes the distinction between awareness of [actual] consequences and assumed consequences. People who believe that their choice to recycle will have a significant impact on environmental problems may not have a great awareness of actual environmental consequences, but they may be more likely to recycle. Indeed, for Bratt, awareness of actual consequences may reduce environmentally friendly behaviour if it is known that the behaviour has no visible effect on the problem.

However, Bowman et al. (1998:268) determined that recyclers had more knowledge than non-recyclers of what happened to their waste after collection. Overall, they established that knowledge was positively related to levels of recycling, and that '...the less a respondent recycled the more likely they were to identify a lack of knowledge as a barrier to behaviour' (Bowman et al. 1998:270). Jacobs and Bailey (1982-83:144) also confirmed that the provision of information increased participation, and Simmons and Widmar (1990:16) established that 'those who felt confident in their knowledge engaged in recycling significantly more often' (Simmons and Widmar 1990:16). However, the information channels used to transmit knowledge must be appropriate (Lansana 1992: 22). Her study, conducted in New York, showed that recyclers received most of their information through the

print media, especially newspapers, which were felt to be the most effective means of transmitting information. Lansana's view contradicts earlier finding by Jacobs et al. (1984:127) who noted that distributing brochures door to door was more effective than newspaper advertisements.

The importance of relevant knowledge reaching the recycler was confirmed by Gamba and Oskamp (1994:587) in a study conducted in California, USA. They determined that knowledge was the most significant predictor of recycling behaviour. Respondents' knowledge of recycling was tested by asking them to indicate which materials, from a list of nine, were recyclable through the kerbside commingled recycling service (that is, a collection service where all recyclable materials are placed together in the one bin). Knowledge correlated significantly with both observed and self-reported recycling practices (Gamba and Oskamp (1994:601).

Earlier studies by Vining and Ebreo (1990) and De Young (1989) had similar findings. De Young (1989:341) reported that recyclers and non-recyclers had similar attitudes to recycling but that non-recyclers reported a lack of information on how to recycle. Vining and Ebreo (1990:55) found that recyclers were more aware of publicity about recycling, more knowledgeable about which materials were recyclable and more aware of the means for recycling those materials. However, they could not explain the variance in knowledge between recyclers and non-recyclers, suggesting that perhaps 'non- recyclers selectively ignore or discount information they perceive as being irrelevant to their own behaviour, whereas recyclers seek out and remember information about recycling' (Vining and Ebreo 1990:68).

The above review indicates the importance of the availability and dissemination of factual knowledge about recycling, and it appears that there is often confusion in the community about the materials that can be recycled, how they are to be prepared for collection and the underlying environmental facts behind recycling programmes. A common theme in the literature is that participation and recovery rates are positively associated with knowledge of what can be recycled, how it should be recycled and why it should be recycled. To maximise participation and recovery rates this information needs to be readily available to members of the community in a form that can be easily understood and accepted.

However, knowledge does not operate in a vacuum and environmental concerns also play a role in producing a commitment to recycling, along with the values and communal norms discussed previously. Nevertheless, Thogersen (1994:145) states that even citizens who are well motivated by a concern for the environment may perform badly in recycling programmes due to a lack of appropriate knowledge. The role of environmental concerns will be reviewed in the next section.

5.1.3 Environmental concerns and recycling

Various studies have examined the links between environmental concerns and such pro-environmental behaviours as recycling. Derksen and Gartrell (1993:434), in their Canadian study discussed earlier, have noted that environmental concern has become a norm in western societies, with pro-environment attitudes seen as socially acceptable and desirable. However despite the high percentage of respondents expressing concern for the environment, they found as mentioned previously in Section 5.1.1 that some social contexts were likely to discourage the adoption of pro-

environmental behaviours, and individual environmental concerns may not be sufficient to overcome contextual barriers to action. Despite the prevalence of environmental concern and pro-environmental attitudes, responses to recycling programmes which require the sorting and separating of household waste have often been disappointing (Derksen and Gartrell 1993:434). Rather than environmental concern, they found that the strongest predictor of recycling was access to a kerbside recycling service. Whereas concern for the environment had no significant direct effect on recycling, it had a strong and significant effect on recycling among those with access to a kerbside recycling programme (Derksen and Gartrell 1993:438-439).

In research conducted in the USA, Vining and Ebreo (1990:55) established that both recyclers and non-recyclers were motivated by concern for the environment. However, non-recyclers were more likely to be concerned with financial incentives and rewards for recycling and with matters of personal convenience. In a later study they found that both general environmental concern and attitudes specific to recycling had become more favourable over time, with recyclers exhibiting stronger pro-environmental attitudes than non-recyclers (Vining and Ebreo 1992:1580). Oskamp et al. (1991), following Van Liere and Dunlap's recommendation that environmental concern should be studied in terms of specific issues (see Chapter 3), researched the effect of environmental concerns and attitudes on recycling. In a study also conducted in the USA, they found that general environmental concerns did not predict recycling behaviour, but attitudes specific to recycling did (Oskamp et al. 1991:517). In general, there is a positive association between environmental concern and conservation behaviours (Ebreo et al. 1999:108). However, the existing

literature suggests that it is difficult to predict individual conservation behaviours by assessing general environmental concern.

All of the antecedents of recycling practices discussed above are located within the social structure of society and are therefore influenced by individual sociodemographic characteristics

5.1.4 The sociodemographics of recyclers

There is a lack of agreement on the social locations of recycling practices. In a review of the literature on recycling research, Shrum et al. (1994:394) claim that there is a 'plethora of studies dealing with many different aspects of recycling', and that most studies, including their own, are predominantly piecemeal or partial in nature. This has resulted in attributing variations in recycling practices to sociodemographic location to appear vague if not contradictory. Derksen and Gartrell (1993:434) observe that there appears to be little association between sociodemographic variables and recycling behaviour, and Larsen (1995:83) found that 'there is considerable recycling potential in almost all demographic groups, provided there is sufficient motivation'.

Some findings are debatable. Whilst education and income have been shown in some studies to have a positive influence on recycling this may be partly because access to recycling programmes in some areas is restricted to higher socioeconomic locations. Residents with higher income and education may recycle higher quantities of materials because they have more 'knowledge' of recycling, make better use of recycling information or because they have higher consumption rates than those on

lower incomes. In this regard, Oskamp et al. (1991:506) confirm that recyclers have significantly higher family income than non-recyclers. However, having a higher income and consuming more goods should only affect the overall quantity of materials recycled; it should not in itself affect the participation rate or the proportion of materials recycled.

The effects of age are also disputed. Studies of environmental concern had indicated that being younger was a consistent predictor of environmentalism. For example, Van Liere and Dunlap (1980:182-183), in their meta-analysis of environmental concern research, confirmed the negative correlation between concern and age.[12] That is, younger people are more likely to be concerned about the state of the environment.

In contrast, recycling studies generally show a positive association with age or no association. Vining and Ebreo (1990:66) indicated that recyclers were somewhat older than non-recyclers, with a mean age of 42 for recyclers and 35 for non-recyclers. Similarly, Lansana (1992:20) found that recyclers were between 40 and 64 years of age, whereas non-recyclers were generally aged under 40. Bowman et al. (1998:268) also reported that increasing age was significantly related to recycling. Woodrum and Wolkomir (1997:229) found that environmental concern is more characteristic of the young, but 'older persons more often engage in individual environmental activities such as recycling'. They also found gender to be important, with women more environmentally concerned than men (Woodrum and Wolkomir 1997:229).

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[12] Samdahl and Robertson (1989:76) reported a positive effect for age, but stressed that this was a controversial finding.

This was confirmed by other studies. For instance Downs and Freiden, (1983:145) reported that women were more sensitive to conservation measures within the household, and Wall (1995:467) confirmed that the main demographic correlates of environmental behaviour were gender, income and education. Women and people with higher incomes or educational levels were more likely to engage in pro-environmental behaviours. Schahn and Holzer (1990:777-779) reported that men had a higher concrete knowledge of environmental problems than women, but women scored higher on all other conceptual scales. Baldassare and Katz (1992:605-613), linking sociodemographic location to personal risk, noted that perceptions of the seriousness of personal environmental threat were highest among younger respondents and women. They found no evidence that the younger, high income or highly educated respondents were more likely to be involved in pro-environmental practices.

5.2 Summary of recycling motivations

The literature reviewed above attests to the strong influence some factors have on recycling. However, it is important to remember that all of these 'situational and opportunity' factors vary in their impact. Most of the sociological and motivational studies reviewed originated in North America (Canada and the USA). There is also some interest in the subject in Europe and a small number of academic studies have been conducted in Australia and New Zealand. Other Australian studies analysed recycling containers/garbage bins, or present the results of questionnaires from industry and government agencies with an interest in recycling.[13]

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[13] For example, see publications by the Beverage Industry Environment Council (1997a, 1997b) or EcoRecycle Victoria (1998a, 1998b).

There are also studies originating in 'non-Western' countries as these countries industrialise or consume higher levels of packaged goods. These have not been considered in this research project, as the aim here is to compare research from other industrialised societies similar to Australia.

The literature suggests that the most important variables to affect recycling practices are the availability of institutionalised opportunities for recycling, knowledge of recycling and communal norms. Education may have a mediating impact through individual knowledge of recycling. Education may also be reflected in concern for the environment, perceptions of environmental risk and also in value orientations (but not necessarily in 'green' ideologies). These factors may influence an individual's level of commitment to recycling rather than whether that person recycles at all.

The effect of financial incentives has been noted previously. While positive incentives such as prizes do have an impact, this impact appears to be only temporary - the behaviour may cease when the incentive ceases. In comparison, the effect of negative financial sanctions such as paying for waste disposal by weight or volume can encourage more households to recycle or reduce the quantity of materials purchased. However, negative sanctions may also result in anti-social behaviours by some individuals, such as the illegal dumping of rubbish to avoid extra payment.

5.3 Barriers to sustainable recycling practices

The barriers to recycling as a sustainable environmental behaviour fall into three main areas. These are sociopolitical, economic and contextual barriers to the implementation of solutions to the environmental problems arising from post-consumer waste. The first barrier, the sociopolitical, raises questions about the power of Dunlap and Van Liere's concept of the Dominant Social Paradigm in society (1984:1025), and their new world view, the 'New Environmental Paradigm' (Dunlap and Van Liere 1978:10).

The power of this Dominant Social Paradigm is such that it makes any fundamental change to society, such as a move to reducing consumption, difficult to generate. In this context, Skillington (1997:505) refers to the newly emerging master frame of 'sustainable development' reasserting the dominant theme of progress through pragmatic and efficient solutions. Sustainable development is seen as an economic process of strategic action, rather than a normative process involving both cooperation and mutual recognition.

This question is also taken up by Schnaiberg (1980), who argues that the wide recognition of environmental problems focuses on pollution and waste, which are both linked to consumption patterns in industrial societies. He sees consumption patterns as 'distorted consumption' (Schnaiberg 1980:159). The resultant high levels of refuse pollution become major urban problems and political issues. Under this form of distorted consumption governments and major corporations look for 'quick fixes' such as recycling, which are least disruptive to production (Schnaiberg 1980:209). In similar fashion to Schnaiberg, Redclift uses a functionalist model of environmental use, in which the 'the definition of human purposes toward the

environment is given by existing social commitments, which are not questioned'
(Redclift 1996:135).

Environmental management usually looks at the physical environment in terms of
the function it performs, and the social practices that lead to the environmental
functions are frequently ignored, as 'the social commitments which drive our
patterns of consumption, and recreation, are not normally themselves subject to
environmental policy intervention' (Redclift 1996:133-134). These underlying social
commitments driving our consumption, and therefore contributing to waste, are
afforded value by being 'naturalised'. Ungar (1998:254) refers to the environmental
discourse as being selective and constrained, which while having a nominal
conservation focus simultaneously 'endows them [consumers] with a virtual
entitlement to a limitless range of goods and services', as long as the waste materials
are recycled.

The second barrier to sustainable recycling, the economic area, also has a large
influence on the recycling of household packaging. Recycling programmes were
initially driven by the rhetoric that recycling would be cost-effective, or profitable
(Weinberg et al. 1995:181). Therefore, Local Government became 'willing players'
in the recycling game, as they anticipated a financial surplus, the 'strong' promise, or
at least a reduction in waste disposal costs, the 'weak' promise. Certainly the strong
promise has not been kept, and although the evidence is ambiguous, it appears that
the weak promise has also failed to be realised. Recycling does not pay for itself, as
remanufacturers desire to make a profit from the process itself (Weinberg et al.
1995:184, 187-188).

Grogan puts the view that recycling and waste reduction programmes must be based on the belief that there are positive long-term benefits, both environmentally and financially. Some analyses have shown a cost saving to the taxpayer when compared to traditional collection and disposal, especially in areas where landfill costs are rising due to higher environmental standards and longer travel distances to landfill areas (Grogan 1992:86), and the work of Grant et al. (1999) detailed earlier has shown that there are environmental benefits. However, in most areas the state is increasingly subsidising post-consumer recycling operations, primarily through the operation of kerbside collection programmes.

A third barrier to sustainable recycling is the lack of efficient, simple and convenient structured recycling programmes, such as kerbside collections. Access to an institutionalised kerbside service produces much higher levels of recycling than where that access is not available (for instance see Derksen and Gartrell 1993). Reducing the frequency of collections has also been shown to reduce the quantities of materials placed out for recycling, although there is a saving in financial and environmental terms (vehicle emissions) in reducing collection frequency (Grant et al. 1999:10).

This project examines recycling as a social process, and obstacles to recycling as social barriers, utilising a model emerging from the environmental sociology and political debates over environmental sustainability (see Figure 6.1 in Chapter 6). The study chiefly examines the effects of value orientations (altruism / morality), environmental knowledge, perceptions of environmental risk, environmental concerns and communal norms, in relation to an institutionalised system of kerbside recycling.

The intention of this study is to further the understanding of ecologically prudent conduct, help in identifying the social barriers to recycling, and lead to improvements in the strategies for social enhancement of the environmental practice. The conceptual framework and possible theoretical motivations for recycling practices have been outlined in more detail earlier in this thesis. The sociological model and methodology employed in this project are outlined in detail in the next chapter, along with univariate analysis of the variables that will be utilised in the study.

CHAPTER 6

Sociological Model, Methodology and Research Design

This chapter begins with an explanation of the sociological model that underpins this research, then outlines the research strategy adopted to empirically assess the theoretical claims. Firstly, the origins of the sociological model are outlined in the next Section.

6.1 The sociological model and research design

The motivations and meanings of individual recycling practices have their origins in diverse sociocultural settings and processes. As discussed in Chapter 4, two differing viewpoints of the locus of these settings, processes and the increasing environmental concerns they generate, are provided by Inglehart (1981, 1990a, 1990b) and Beck (1992a, b, c). Both locate environmental concerns within a process of cultural change. Inglehart sees these concerns as driven by a new set of 'postmaterialist' value orientations, whereas Beck links environmental concerns with a radicalising awareness of new risks. Inglehart and Beck both discuss environmental issues from an overall societal viewpoint. In contrast, Yearley (1992a, 1992b, 1996) is more specific in his writings on the effects of the modern consumer society and its relationship to increasing waste disposal problems. He treats recycling as an organised response to the dual problems of resource depletion and industrial pollution, located in the normative structure of society. These dual problems emanate from two major functions of the physical environment: as a supply of resources, and as a 'waste sink' for human societies. Yearley examines these problems from a sociopolitical viewpoint, focussing on the excessive generation of

waste in societies that are driven by the goal of economic growth, and social reactions to the problems of waste disposal.

Schnaiberg (1997:223) also examines recycling from a sociopolitical viewpoint, and argues that recycling has generally been accepted uncritically, despite the paradoxes and contradictions inherent in household recycling (1997:225). He claims that recycling may have been subverted into 'just another profit centre' (Schnaiberg 1997:223). Indeed, institutionalised recycling may act to inhibit environmental concerns, rather than encourage them (Schnaiberg 1997:233).

Institutionalised household recycling programmes such as kerbside recycling have achieved varying degrees of success as a waste minimisation in many advanced industrialised western nations such as Australia, the USA and several European countries. In Tasmania, this recycling is at best a 'patchy' social practice, partly based on socio-demographic factors, but especially noticeable where there is little or no institutionalised support in the form of government sponsored services and facilities. This lack of instititionalised support was evident at the local government level in Launceston at the time this research was conducted, with the Launceston City Council reluctant to institute a kerbside recycling service comparable to those operating in the Southern LGAs. A comparable kerbside recycling programme was not instituted in Launceston until 2002. The reluctance of local governments authorities to operate recycling schemes appears to be primarily an economic decision. Even though there may be savings in the cost of operating landfill areas, kerbside recycling collections are subsidised by the beverage and packaging industries. These industries, through the Beverage Industry Environment Council, spend approximately \$2.5 million per annum in Tasmania on purchasing and

shipping collected product interstate for reprocessing. Other contributions are made by the cardboard and newsprint industries (Beverage Industry Environment Council 1999b:1).

Individual recycling contractors and industries may also refuse to collect certain materials on economic grounds. For example, the contractor for the Hobart LGA at the time of the Tasmanian survey did not collect waste cardboard as the contractor did not have an outlet for such material. The Recycling Officer for one of the Tasmanian LGAs stated in an interview in December 2001;

> ... the variety across council areas is a problem and it really shouldn't be there, there are only two recycling contractors in Southern Tasmania and there are 12 Councils and there's more than two different ideas out there about what can be recycled...[Councils should] organise what the repertoire will be, and try and standardise it. [For instance] Hobart needs to include cardboard, the others need to include plastic 3.[14]

It should be noted that the most common comment made by respondents from Southern Tasmania to the questionnaire concerned the unavailability of kerbside cardboard recycling in the Hobart LGA (when that material was collected in other southern LGAs). In this regard, it is expected that collections of cardboard will finally commence in the Hobart area at some time in 2004 (Hobart City Council email, August 2003).

This 'patchiness' of recycling - in spite of widespread and intense environmental (especially 'brown') public concerns - forms the focus of this study.[15] This research follows lines of analysis either explicit or implicit in the work of Inglehart, Beck, Yearley and Schnaiberg, as well as a Canadian study of household recycling conducted by Derksen and Gartrell (1993). The model used as the basis for this

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[14] Plastic 3 is polyvinyl chloride (PVC).

project, and shown in Figure 6.1 below, conceptualises recycling as a social activity that involves perceptions and conduct located in the context of communal norms and collectively-shaped opportunity structures. Six key determinants of recycling are specified. These are: (1) value orientations; (2) environmental knowledge and knowledge of recycling practices; (3) environmental concerns; (4) perceptions of risk; (5) communal norms; and (6) institutionalised opportunities for recycling.

In conceptualising household recycling as a social act I draw on Parsons' *The Structure of Social Action* (1967), and the 'voluntaristic theory of action' that Turner (1986:59-611) describes as a synthesis of the useful assumptions and concepts of utilitarianism, positivism and idealism. According to Turner (1986:60), the basic elements of voluntaristic action are: a) individual actors, who are b) goal seeking, c) have alternative means to achieve their goals, d) are confronted with a variety of situational conditions, e) are governed by values, norms and ideas, and f) make subjective decisions based on the first five elements. In the model shown in Figure 6.1 the recycling of household waste is viewed as a voluntaristic practice that is normative, cognitive and value oriented. This practice may be supported or hindered by institutional structures. 'Patchy' recycling practices reflect the existence of social barriers to recycling, even though the environmental benefits of recycling outweigh the disadvantages (for example, see Grant et al 1999).

The aim of this research is to improve our understanding of recycling as a social practice and to identify the main social barriers to the recycling of materials that would otherwise become part of the waste stream. Kerbside recycling is the key method of 'post-consumer' waste management and minimisation examined in this

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[15] For a discussion on 'green' versus 'brown' environmental concerns see Chapter One.

project. Recycling is conceptualised here as a social activity that involves socially-constructed perceptions, motivations and conduct in the context of communal norms and the individual's value orientation, within a sociopolitical framework of opportunity structures shaped by governments and industry groups.

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                    ┌─────────────────┐
                    │ Independent     │
                    │ variables       │
                    └─────────────────┘

                    ┌─────────────────┐
                    │ Environmental   │
                    │ knowledge       │
                    └─────────────────┘

                    ┌─────────────────┐
                    │ Environmental   │
                    │ concerns        │
                    └─────────────────┘          ┌─────────────┐
                                                 │ Dependent   │
┌──────────────┐   ┌─────────────────┐           │ variables   │
│ Value        │──→│ Perceptions of  │           └─────────────┘
│ orientations │   │ environmental   │──→        ┌─────────────┐
└──────────────┘   │ risk            │           │ Recycling   │
                   └─────────────────┘           │ practices   │
                                                 └─────────────┘
                   ┌─────────────────┐
                   │ Communal        │
                   │ norms           │
                   └─────────────────┘

┌──────────────┐   ┌─────────────────┐
│ Sociopolitical│──→│ Opportunity     │
│ influences   │   │ structure       │
└──────────────┘   └─────────────────┘
```
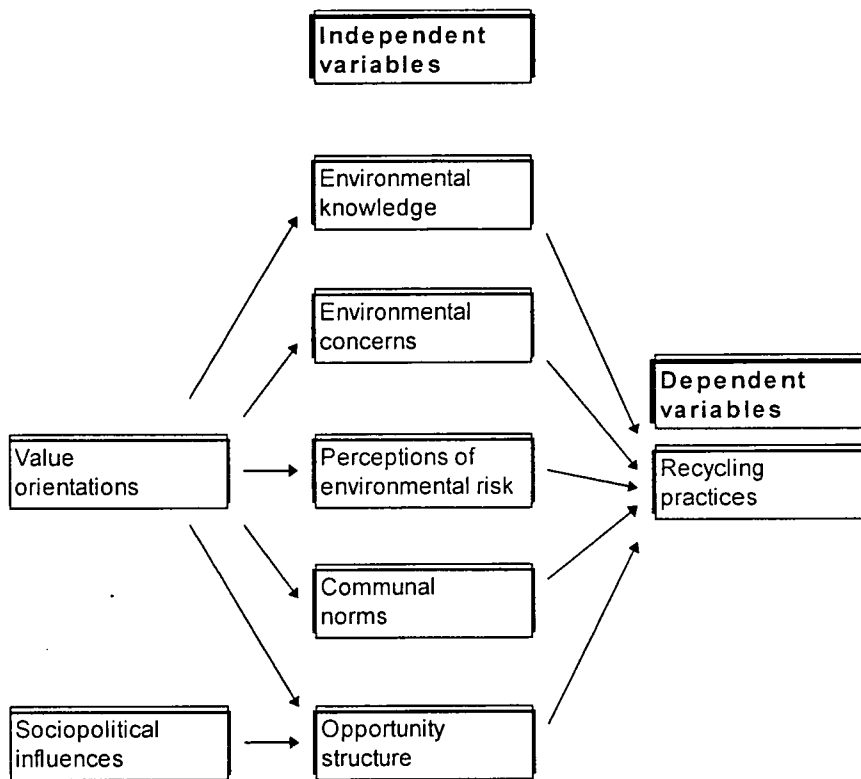
Figure 6.1: Model of key independent variables (determinants affecting recycling practices

6.2 Questionnaire methodology and Tasmanian data

The model was tested in Tasmania in the Hobart, Glenorchy, Brighton and Launceston LGAs, by collecting data using a questionnaire to measure respondents' actual (self-reported) recycling efforts and practices, environmental attitudes, value orientations, normative behaviour, knowledge of recycling practices, access to recycling programs, and a range of sociodemographic details. (See Appendix A for

questionnaire details). Respondents in Southern Tasmania were invited to volunteer

for a follow-up interview, and interviews were conducted with selected respondents

in order to examine in greater detail their view on recycling and non-recycling.[16] For

questionnaires distributed in the Launceston LGA the section in the questionnaire

asking for potential interviewees was deleted, as the research plan did not allow for

interviews with Launceston residents due to financial limitations. In all other

respects the questionnaires were identical. Launceston was chosen for comparative

purposes because, as mentioned above, at the time of the survey Launceston had

only a minimal kerbside collection service. Materials such as plastics, aluminium

and steel cans had to be taken by the householder to a recycling facility, whereas in

the south these materials were collected as part of the kerbside recycling service.

However, the Launceston LGA City Council was under pressure from residents to

implement a 'full' kerbside recycling service and a full service, similar to that

operating in the South of Tasmania, commenced in September 2002.

The survey questionnaire was distributed by post to 800 households selected

systematically by suburb in the South of Tasmania, and 200 in the North. It was sent

to households in all suburbs in the Hobart and Glenorchy municipal areas, as listed

in the 1996 Census of Population and Housing: Hobart Suburbs (Australian Bureau

of Statistics, 1998a, Publication Number 2026.6), and also to Bridgewater and

Gagebrook residents in the Brighton Municipality. Glebe was included as part of

Hobart, Dynnyrne as part of Sandy Bay and Moonah comprised East Moonah,

Moonah, Springfield and West Moonah. In the Launceston area the questionnaire

was sent to residents in all suburbs listed in the 1996 Census of Population and

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[16] See Appendices D and C for details of the 'Statement of Informed Consent' signed by interview respondents and the 'Information Sheet' given to those respondents.

Housing: Launceston Suburbs (Australian Bureau of Statistics, 1998b, Publication Number 2028.6) which are wholly contained within the City of Launceston municipal area.

Respondents were selected using stratified sampling by suburb proportional to the population size in each suburb. To ensure a proportional distribution of questionnaires between suburbs, the number of persons over the age of 19 years living in each target suburb as at the 1996 Census was calculated, and that number was expressed as a percentage of the total population over the age of 19 years for the combined suburbs in each population centre. (The age group of >19 years was utilised as the population figures for this group were easily obtainable from the published Census data, whereas the equivalent figures for the >17 years age group were not available from the published data. The questionnaire was targeted at the adult head of the household, which would be deemed to include respondents aged 18 years and over but it was not considered that the small age discrepancy would influence the results). This percentage was then applied to the total number of questionnaires to be administered; that is, 800 questionnaires in the South and 200 in the North, giving a potential maximum number of respondents for each suburb pro-rata to the proportion of that suburb's population in the Local Government Area. It should be noted that there is no proportional relationship between the total number of questionnaires allocated to the north and the south of Tasmania, and the quantities of 200 and 800 questionnaires respectively do not reflect the comparative population sizes in those geographic areas. The aim of the 200 questionnaires administered in the north of the state was to obtain a 'snapshot' of recycling practices in an area where there was only a limited kerbside recycling service - not to be numerically comparable with the questionnaires administered in the south.

For the Greater Hobart area potential respondents from each suburb were selected from the Hobart and Southern Tasmania 2000 telephone directory.[17] Commencing with a random start from the first page of telephone subscribers, the first non-business subscriber in every second column in the directory with an address located in one of the required suburban areas was selected. This process was continued until the required number of household addresses was reached for each suburb. A similar process was followed for the Launceston area, utilising the Launceston and North Eastern Tasmania 2000 telephone directory. A questionnaire with a unique identifying number was mailed to the selected households, along with a Reply Paid envelope for return of the completed questionnaire. Details of the number of questionnaires sent out to each suburb, and other details such as the numbers of questionnaires returned unclaimed, the numbers of completed questionnaires returned, and the response rate by respondents agreeing to be interviewed, are presented in Appendix B (Southern Tasmania) and Appendix C (Northern Tasmania). Entries in the telephone directories were up to date as at 31 July 1999, and the questionnaires were sent out in March (Southern Tasmania) and April 2000 (Northern Tasmania). A summary of response rates and interview rates for each LGA is shown in Table 6.1.[18]

Of the 800 questionnaires sent out in the South, 49 were returned unclaimed, and 751 were delivered. Of these, 254 were returned completed, a response rate of 33.8 per cent. Sixty-one southern respondents, or just over 24 per cent of the final sample,

[17] Although this method of obtaining respondents limited the number of potential responses to those households with a listed home telephone service, it was felt that this would have only a minimal effect on the overall sample obtained.

[18] In this and subsequent statistical analysis, primary data from this research project are described as 'Tasmanian Survey of Household Recycling, 2000' for identification purposes.

indicated that they were willing to participate in a qualitative interview.[19] The

response rate for Launceston in the North was 54 completed questionnaires from 199

delivered, a rate of 27.1 per cent. Only one questionnaire was returned unclaimed

from Launceston, due to the early detection of doubtful addresses as explained

below. The overall response of 308 completed questionnaires from 950 eligible

questionnaires is 32.4 per cent. Full summaries of the numbers of questionnaires sent

out to each suburb and the response rate are shown in Appendices B and C.

Table 6.1: Summary of response and interview rates by Local Government Area (per cent)

Local Government Area	Number of questionnaires returned	% to quest'aires delivered	Respondents willing to be interviewed	% to questionnaires returned	% of interviewees by LGA
Hobart	140	51.15	39	27.85	63.95
Glenorchy	104	32.00	20	19.25	32.80
Brighton	8	18.60	2	25.00	3.25
Launceston	54	27.15	N/A	N/A	N/A
Unknown (South)	2				
Total	N = 308	32.42	N = 61	24.10	100.00

Source: Tasmanian Survey of Household Recycling, 2000.

The response rates in the southern LGAs range from a high of 51 per cent in Hobart,

through 32 per cent in Glenorchy, to a low of 19 per cent in Brighton. This may

reflect relative socio-economic differences, as reflected in the indices of relative

socio-economic disadvantage in the suburbs contained within each LGA (Australian

Bureau of Statistics 1998c).[20] The response rate for the Launceston LGA was 27 per

cent, perhaps reflecting the absence of a 'full' kerbside recycling programme in that

LGA.

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[19] At the end of the questionnaire distributed in Southern Tasmania, respondents were asked if they were willing to participate in a qualitative interview.

There was an unforeseen problem with utilising addresses from the telephone directory, in that addresses were occasionally incomplete and in some cases insufficient to enable delivery of the questionnaires. For the most part this occurred in cases where the address was part of a multi-storey building or similar unit accommodation. In such cases the telephone directory only included the street number of each property, not the unit number. In these cases the postal service returned them as 'Insufficient address'. As this problem became evident when questionnaires sent to southern addresses began to return, problem addresses were, when identifiable, not used in selecting respondents from Northern Tasmania. This resulted in a much higher delivery rate of questionnaires in the North. In a very small number of cases the questionnaires were returned due to the directory address being incorrect.

An examination of the Tasmanian questionnaire data provides a brief summary of the sociodemographic characteristics of the sample. A frequency distribution of sociodemographic questions is contained in Table 6.2 below. Table 6.2 indicates that the Tasmanian sample is relatively old (median age = 52 years, and in the Tasmanian data only three per cent of respondents are aged in the 18-24 age group). The Tasmanian data over-represents the highly educated strata (25 per cent of respondents have either a degree or postgraduate qualifications compared to nine per cent in the 1996 Census), and also white-collar occupations, particularly professional occupations (based on Australian Standard Classification of Occupational Groups). The over-representation of older respondents reinforces the findings discussed

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[20] These indices are based on factors such as household income, degree of home ownership, occupational status and educational credentials.

earlier indicated that recyclers are generally older than non-recyclers (Vining and

Ebreo 1990:66, Lansana 1992:20).

Table 6.2: Summary of selected sociodemographic variables, Tasmania (per cent)

Sex			Education		
Male	42.0		Primary	3.0	
Female	58.0	N = 293	Secondary	27.0	
			College	14.0	
Age			Non-trade	4.0	
18-24	3.0		Trade	12.0	
25-34	13.0		Diploma	15.0	
35-44	20.0		Degree	15.0	
45-54	20.0		Postgraduate	10.0	N = 299
55-64	19.0				
65+	25.0	N = 291	**Household**		
			One person	24.0	
Marital status			Couple	34.0	
Never married	17.0		Couple + dep. children	23.0	
Married	62.0		Single + dep. children	7.0	
Widowed	7.0		Other, all > 15	10.0	
Divorced/sep.	14.0	N = 292	Other	2.0	N = 302
Employment sector	.		**Non-waged classification**		
Self-employed	15.0		Unemployed	4.0	
Private sector	45.0		Retired	74.0	
Non-profit	7.0		Housework	16.0	
Family bus.	3.0		Student	6.0	N = 141
Government	30.0	N = 168			
Occupation			**Political alignment**		
Mgr/Admin.	15.0		Liberal	30.0	
Professional	45.0		Labor	42.0	
Trade	12.0		Democrats	7.0	
Clerical/sales	23.0		Green	10.0	
Prod'n/t'port	1.0		Other	10.0	N = 269
Manual	4.0	N = 181			

Source: Tasmanian Survey of Household Recycling, 2000.

Further, the percentage of respondents with graduate qualifications or higher in the

Hobart area was 21 per cent in the 1996 Census, whereas over 42 per cent of the

respondents to my survey from the Hobart LGA claim graduate or postgraduate

qualifications. Comparative figures for other LGAs regarding those respondents with

degrees are: Glenorchy - Census 3 per cent, my survey 7.9 per cent; and Launceston

- Census 7 per cent, my survey 17.3 per cent. Census figures are approximate only, due to a minor discrepancy between the age group in the Census (>15 years) and my data (adult respondents, ie. >17 years). No respondents in the Brighton LGA (Bridgewater and Gagebrook only) claimed graduate qualifications, although the Census figure for these suburbs is only 0.6 per cent.

The majority (90 per cent overall) of the returned questionnaires were from respondents who claimed to recycle. This ranged from a high of 94 per cent in the Hobart LGA to a low of 68 per cent in the Launceston LGA (which at the time of the survey had only a minimal institutionalised kerbside recycling programme). This low participation rate in the Launceston LGA is an indication that the lack of an institutionalised kerbside recycling programme has a significant effect on recycling rates.

It is likely that the process of self-selection inherent in the questionnaire methodology may have inflated the overall ratio of recyclers to non-recyclers. The over-representation of various taxonomic groups in the Tasmanian data, such as recyclers, older people and the higher educated, may be attributed to this process. Vining and Ebreo (1990:69) have drawn attention to a process of self-selection as influencing the type of person to respond to surveys of this nature. De Vaus (1995:108) supports this view, stating that to obtain representative samples 'it is necessary to have *some control over who completes the questionnaire*' [emphasis in original], a condition which is not achievable using postal surveys.

As discussed earlier, a methodologically reliable estimate for the Hobart LGA area put the proportion of households recycling approximately 79 per cent in 2001

(Interview with Hobart City Council Waste Minimisation Officer, December 2001).

Recycling statistics for other locations were discussed earlier in Section 2.5. A

summary of recyclers versus non-recyclers, by LGA, is shown below in Table 6.3.

The very small Brighton sub-sample (eight questionnaires returned out of 43

delivered) may actually indicate a low level of recycling in this area.

Table 6.3: Percentage of respondents who recycle (per cent), by Local Government Area

	Hobart	Glenorchy	Brighton	Launceston	Total
Yes	93.6	96.3	87.5	67.9	89.8
No	6.4	3.8	12.5	32.1	10.2
N	140	104	8	53	305

Source: Tasmanian Survey of Household Recycling, 2000.

The Tasmanian survey data, whilst limited in scope, allows the examination of the

social and cultural distribution of recycling practices recycling in large urban centres

in Southern and Northern Tasmania. These are the Local Government Areas (LGAs)

of Hobart, Glenorchy and Brighton in the South and Launceston in the North.

6.3 International data

Secondary survey data are also analysed. The 1993 International Social Science

Program (ISSP) *Family and The Environment* module (reference Za2450), including

its Australian data sub-set No.825 (Kelley et al. 1995) is also a major source of data

for this project. The ISSP environment module was chosen because it contains

similar independent variables to those in the Tasmanian survey, and one identical

dependent variable. The 1993 survey is the most recent data available as data from

the second ISSP environment module administered in 2000 has not yet been publicly

released. The countries chosen for comparison are mainly advanced industrial

societies, with large samples. The Australian data from the 1993 ISSP survey

situates Australia in an international context. The individual countries to be used in

the analysis are Australia, Canada, Great Britain, Japan, Netherlands, New Zealand,

Norway, the United Sates of America and West Germany. Regression analysis of

these countries is presented in Chapter 7. Based on nationally representative

samples, the Australian data (and those from other countries) provide background

information that is representative of the entire country.

6.3.1 Independent and dependent variables for international data

Data from the 1993 International Social Science Program (ISSP) *Family and The*

Environment module (reference Za2450) are also used in the bivariate and

multivariate analysis in Chapter 8. The dependent variable used in that analysis is

identical to the variable used in the analysis of the Tasmanian data to measure the

degree of effort made by respondents to recycle. Independent variables measuring

environmental concern and perceptions of environmental risk are also constructed

from the international data. It should be noted that the questions asked in the

Tasmanian survey were intended to be an equivalent measure; however, they differ

somewhat. The construction of the variable measuring value orientations is identical

in both data sets, while the educational variable is similar. Full details of the

construction of the international variables are contained in Appendix H.

The use of the ISSP data firstly allows a direct comparison countries selected for the

ISSP survey, and secondly allows a comparison to be made at the national level for

one of the dependent variables used later in the analysis of the Tasmanian data.

The next section provides an outline of the statistical methods utilised in this thesis.

6.4 Data analysis

6.4.1 Statistical methods

The empirical investigation of the survey data utilises univariate, bivariate and multivariate methods of statistical analysis. Frequency tables and bivariate crosstabulations are presented initially to illustrate the sociodemographic distribution of respondents and the relationships between independent and dependent variables. The Ordinary Least Squares (OLS) method of regression analysis is then applied to examine the impact of several independent variables on each of the dependent variables. Lewis-Beck (1980:13) states that the adoption of OLS can be justified on several grounds, including that the linear specification is generally the most parsimonious. Coefficients of determination (R^2) will be presented to indicate the amount of variance 'explained' by each regression equation, with data from other Australian and international sources used for comparative purposes.

The primary source of quantitative data for this project is extracted from the 308 Tasmanian questionnaires returned. Multiple regression analysis of the Tasmanian survey data and secondary data sources will allow the empirical evaluation of hypotheses, and also hold constant the effect of other 'control' variables. Multivariate statistical methods allow analysis where several independent variables and the dependent variable are correlated with each other to a varying extent (Tabachnick and Fidell 2001:1). Multiple regression analysis allows the estimation of the net effects of each IV separately, when the possible confounding effects of control variables are held constant (de Vaus 1995:219). Missing data for the regression analyses is replaced with the mean score for each variable. De Vaus (1995:284) states that where the value on a variable for any given person is not

known, '...the best guess for that person is the same as the measure of central tendency for that variable'.

6.4.2 Tasmanian data - independent and dependent variables

The main 'independent' variables are value orientations, knowledge of recycling, environmental concerns and urgency, perceptions of environmental risks, communal norms (measured by respondents' perception of their neighbours' recycling practices) and the availability of an institutionalised opportunity structure (kerbside recycling), as well as selected sociodemographic variables. Scales constructed to represent value orientations, perceptions of environmental risk and green/brown environmental concerns are utilised in the statistical analysis. The main 'dependent' variables examined in this project measure recycling practices in terms of both the quantity and intensity of recycling. The actual practices measure whether respondents recycle; the proportion of material recycled; and the degree of effort made to recycle materials. A complete description of the variables and their operationalisation is detailed in Appendix I.

Independent variables

Value orientations

Respondents are classified as 'materialist'(coded as '0'), 'mixed' (coded as '.5') or 'postmaterialist'(coded as '1'). The frequencies of each value group are shown in Table 6.4 below. Notably, there were fewer materialists (13 per cent) than postmaterialists (22 per cent) in these data. Again, these responses reflect the socioeconomic status of respondents across the LGAs.

Table 6.4: Distribution of Postmaterialist, Materialist and Mixed value orientations within Tasmania (per cent)

Area	Postmaterialist	Materialist	Mixed	N
Tasmania	22.0	13.0	65.0	275
Hobart LGA	29.0	9.0	62.0	125
Glenorchy LGA	15.0	19.0	66.0	97
Brighton LGA	12.0	25.0	63.0	8
Launceston LGA	12.0	19.0	70.0	43

Source: Tasmanian Survey of Household Recycling, 2000.

Environmental orientation and urgency

Following Crook and Pakulski (1995), the perceived urgency of respondents' green and brown environmental concerns was determined using an additive scale, scored between '0' (not urgent) and '1' (very urgent). The urgency of brown issues (pollution and waste disposal) was based on questions B3a and B3c. The urgency of green issues (logging and destruction of wildlife) was based on questions B3b and B3d. In addition, respondents' environmental orientation was measured by asking them to choose the most urgent and second most urgent issues from question B3. Respondents giving priority to pollution and waste disposal are classed as belonging to the 'brown' cluster. Those giving priority to logging of forests and destruction of wildlife are classed as 'green', whilst others are classified as 'mixed'. Table 6.5 below shows the distribution of environmental orientation by Local Government Area.

Table 6.5: Environmental orientation, Tasmania, by Local Government Area (per cent)

Environmental Orientation	Tasmania	Hobart LGA	Glenorchy LGA	Brighton LGA	Launceston LGA
Green	14.4	22.0	9.0	0.0	7.0
Brown	25.1	18.0	27.0	14.0	36.0
Mixed	60.5	60.0	56.0	86.0	57.0
	100.0	100.0	100.0	100.0	100.0
	N=271	N=127	N=91	N=7	N=44

Source: Tasmanian Survey of Household Recycling, 2000.

Knowledge of recycling

Respondents' knowledge of actual recycling practices was measured by question A2, which tested knowledge of the materials that could be disposed of within the kerbside recycling system in each Local Government Area. Respondents were scored on a scale of 0 (no correct answers) to 10 (all correct), again rescaled to range between '0' and '1'. The knowledge levels for each LGA are summarised in Table 7.6 below. The expectation is that knowledgeable respondents will be more likely to recycle, to recycle a larger proportion of materials and to make more effort to recycle than less knowledgeable respondents.

Table 6.6: Table of respondents' knowledge of kerbside recycling, scored out of 10, Tasmania (per cent)

Location/Score	Score 0-3	Score 4-6	Score 7-10	N
Tasmania	13.1	22.5	64.4	306
Hobart LGA	5.7	33.6	60.7	140
Glenorchy LGA	1.9	10.6	87.5	104
Brighton LGA			100.0	8
Launceston LGA	62.9	1.9	24.0	54

Source: Tasmanian Survey of Household Recycling, 2000.

Environmental risk

The perception of the seriousness of the threat to respondents' health and well being from environmental problems such as air and water pollution was measured by

question B4: 'How serious a threat do you think environmental problems such as air

and water pollution are to your health and well-being?'. For regression purposes the

responses were rescaled from '0' (not at all serious) to '1' (very serious). A summary

of responses to this question is shown in Table 6.7 below. It is expected that those

respondents who see environmental risk as very serious will be more frequent

recyclers.

Table 6.7: Perceived risk to health and well-being from environmental problems, Tasmania (per cent)

Not serious	1.4
Slightly serious	8.4
Moderately serious	29.1
Very serious	61.1
	100.0
	N = 296

Source: Tasmanian Survey of Household Recycling, 2000.

Communal norms

The impact of communal norms was measured by Question A11: 'Do your

neighbours recycle?' The responses have been rescaled from '0' (none recycle) to '1'

(all recycle). Similarly to other independent variables such as knowledge of

recycling and perceptions of environmental risk, it is hypothesised that the impact of

normative pressures would be reflected in higher levels of recycling practices.

Opportunity structure

The differing levels of recycling opportunities are represented by the geographical

location dichotomy north/south. Respondents from the south of Tasmania (Local

Government Areas of Hobart. Glenorchy and Brighton were coded as '1', those from

the north (Launceston LGA) as '0'. This variable was expected to have considerable

impact on recycling practices due to the minimalist kerbside recycling programmes

available in the north at the time of this research.

Sociodemographic variables

For the purposes of regression analysis respondents were divided into age categories
18-24 years, 25-44 years and 45 years and over, and the oldest group was used as the
reference category. However, for comparative purposes respondents were divided
into finer categories in the bivariate analysis (for example, 18-24 years, 25-34
years...). Dummy variables were also constructed for gender (males coded as '0',
females as '1') and tertiary education (graduate degree or higher are coded as '1',
else '0').

Dependent Variables

Three dependent variables were operationalised for the Tasmanian survey data, to
measure different aspects of recycling practices. All were self-reported estimates.
The details of these variables follow below. For regression purposes all dependent
variables are analysed on a scale of '100' (high level of practice) to '0' (low level).

Does respondent recycle?

A dichotomous variable was used to measure whether the respondents recycled any
materials: Question A3: 'Do you recycle any household materials?' - Yes / No

Proportion of materials recycled

A second dependent variable estimates the recovery rate of various materials
expressed as a proportion of total household consumption of that material. This
variable is based upon Question A6: 'For materials that you do recycle, what
proportion do you recycle?' The proportion was measured on a scale coded as All,
Most, Some, Little, None. The materials listed in the questionnaire were those most

commonly accepted in kerbside recycling programmes - newspapers/magazines, aluminium cans, cardboard, steel cans, plastic drink bottles, milk and juice cartons, and glass jars and bottles. Responses for each recycling item were then combined as a cumulative scale, All to None.

Degree of effort

The third dependent variable is an estimate of the number of times the respondent makes a special effort to recycle materials. The measure is derived from Question A4: 'How often do you make a special effort to sort glass, metal, plastic or paper for recycling?'. Responses to this Likert scale ranged from Always to Never.

6.5 Qualitative interviews

In addition to empirical survey data, a variety of qualitative interview data is drawn upon for this thesis. As mentioned above, respondents to the Southern Tasmania survey were invited to volunteer for an in-depth follow-up qualitative interview, with 61 initially volunteering to participate. The interview response rate follows a similar pattern to the overall response to the questionnaire, with higher responses in LGAs and suburbs with higher socio-economic status (see Table 6.8 below). The response rate was especially high in the Hobart suburbs of Sandy Bay and South Hobart. Graduates (37.8 per cent), women (54.4 per cent) and postmaterialists (38.8 per cent) were all over-represented among the volunteers.

Interviews were conducted with selected respondents to the questionnaire resident in the Greater Hobart area in order to probe in depth the meanings attached to both recycling and non-recycling practices. In addition, qualitative evidence from

interviews conducted with recycling 'professionals' employed by Local and State

Government, recycling service operators and representatives of the beverage and

packaging industries is also presented.

Table 6.8: Summary of interview response rates by Local Government Area and Suburb (per cent)

Local Government Area	Suburb	Number of questionnaires returned	Respondents willing to be interviewed	Percentage to questionnaires returned	Percentage of interviewees by LGA
Hobart		**140**	**39**	**27.85**	**63.95**
	Battery Point	4	1	25.0	
	Fern Tree	1	-		
	Hobart	6	1	16.6	
	Lenah Valley	9	2	22.2	
	Mount Nelson	10	2	20.0	
	Mount Stuart	9	1	11.1	
	New Town	27	6	22.2	
	North Hobart	6	-	-	
	Sandy Bay	28	11	39.3	
	South Hobart	26	12	46.2	
	West Hobart	14	3	21.4	
Glenorchy		**104**	**20**	**19.25**	**32.80**
	Austins Ferry	3	-	-	
	Berriedale	3	1	33.3	
	Chigwell	7	2	28.6	
	Claremont	20	3	15.0	
	Derwent Park	3	-	-	
	Glenorchy	28	7	25.0	
	Goodwood	2	-	-	
	Lutana	5	1	20.0	
	Montrose	5	-	-	
	Moonah	18	5	27.8	
	Rosetta	10	1	10.0	
Brighton		**8**	**2**	**25.00**	**3.25**
	Bridgewater	6	2	33.3	
	Gagebrook	2	-	-	
Unknown		**2**	-		
Total		**N = 254**	**N = 61**	**24.10**	**100.00**

Source: Tasmanian Survey of Household Recycling, 2000.

This chapter has outlined the methods, data and variables that will be employed in

the subsequent analyses. In the following chapter bivariate and multivariate analyses

are presented to examine the relationships between various aspects of recycling and

the independent variables described above.

CHAPTER 7

The Key Social Elements - Bivariate and Regression Analysis

This chapter analyses data collected in the study of recycling practices using

bivariate analysis (cross tabulations) and the Ordinary Least Squares (OLS) method

of regression analysis discussed in Chapter 6. The analysis includes the primary

survey data collected in Tasmania and secondary sources of data from Australian and

international surveys where appropriate.

7.1 Bivariate analysis

This section outlines findings based on bivariate analysis of Tasmanian and

international data, concentrating on associations between the dependent and

independent variables used later in the regression analysis. Firstly, it considers the

impact of age on the degree of effort put into recycling materials. A comparison of

international data in Table 7.1 below confirms the tendency discussed in Chapter 6

for older people to put more effort into recycling. In general, recycling increases with

each age category. This is in line with the findings of other researchers. For example,

Lansana (1992:22) found that recyclers are likely to be in the 40 to 64 age group, and

Derksen and Gartrell (1993:438), who found that age correlated positively with

recycling. The Tasmanian data show the same tendency, however the percentages of

respondents claiming to 'always' put an effort into recycling are higher than the

comparable statistics for Australia and other countries presented in Table 7.1. There

are at least three possible reasons for this difference. The first reason may be because

of the process of self-selection of respondents inherent in the Tasmanian data (as

discussed in Chapter 6), resulting in a higher number of respondents who 'always'

make an effort to recycle; and the second due to the fact that the ISSP data date from 1993 and acceptance of recycling may have increased in the ensuing period. Thirdly, Tasmanians, at least in certain pockets, are highly sympathetic towards environmental issues, and this may be translating here into high positive levels of recycling practice. Almost all of the southern respondents came from he two major LGAs surveyed in the south, Hobart and Glenorchy. These areas are both part of the Federal Government electorate of Denison, widely regarded as one of the most 'green' electorates in Australia (Australian Broadcasting Corporation 2001:1).

Table 7.1: International comparison, percentage of populations who claim to 'always' make an effort to recycle, by age group (years), compared to Tasmanian data.

Country/Age Grp	18-24	25-34	35-44	45-54	55-64	65+	N
Australia	24.5	31.0	41.9	43.7	48.8	51.8	1611
Canada	23.2	37.3	43.7	39.9	44.0	56.2	1150
Great Britain	7.3	15.3	20.0	15.3	26.0	36.6	1168
Japan	12.8	32.4	48.1	49.4	61.5	59.1	1266
Netherlands	22.1	36.0	44.0	50.4	57.8	58.1	1791
New Zealand	20.6	24.4	27.9	29.3	38.0	33.2	1153
USA	33.3	32.5	48.8	34.3	40.7	42.5	1460
Tasmania*	57.1	50.0	49.0	70.6	70.2	71.8	261

Source: 1993 ISSP Survey Za2450[21], *Tasmanian Survey of Household Recycling, 2000.

Other aspects of the relationship between the independent and dependent variables are shown below in Table 7.2. Firstly, the data contained in this table confirm the tendency shown in Table 7.1 above for older people to be more likely to be involved with recycling. In Table 7.2, the oldest age group (45 years and over) is more likely to both recycle and to always make an effort to recycle. The only dependent variable where this does not hold true is in the proportion of material recycled. This may be influenced by the relatively high age of the sample, with 25 per cent of respondents

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[21] *International Social Science Program* 1993 (ISSP) survey of international environmental attitudes (reference Za2450), Q56 "How often do you make a special effort to sort glass, metal, plastic or paper for recycling? Always, Often, Sometimes, Never."

in the 65 years and over category and thus perhaps having physical difficulty in

recycling high proportions of material. However, there is only a difference of eight

percentage points between those in the oldest and second-oldest age groups who

claim to recycle all of their recyclable material (55 per cent and 63 per cent

respectively), considerable in advance of the 18-24 age group (30.0 per cent).

The table shows a gender effect for females across all three dependent variables

(DVs), with females more likely than males to recycle on each of the variables.

However, the situation for the independent variable (IV) 'graduate' is not as clear-

cut. Graduates are slightly more likely to recycle but less likely to always make an

effort or to recycle all of their recyclable materials.

As expected, the IV representing geographic location shows a marked difference in

favour of residents in the south of Tasmania across all three DVs. As discussed

previously, this can be attributed to the minimal pattern of kerbside recycling

available in the north at the time these data were collected. These data show being

resident in the south increases the likelihood of recycling by 27 percentage points

and of always making an effort by 21 points. The likelihood of southerners claiming

to recycle all their recyclable materials is much higher, 67 per cent for the south

compared to ten per cent of northerners. Again, this difference can be attributed to

the fact that northerners would need to take most materials to a recycling depot for

recycling rather than have the materials collected from the kerbside. Additionally,

residents wishing to take material to the Launceston City Council depot also had to

pay to deposit recyclable material. This factor would deter many residents for

recycling those materials that could not be recycled through the kerbside system

operating in Launceston.

The IV measuring value orientations shows an increased likelihood for postmaterialists to have a positive outcome when compared to materialists over all three DVs, ranging from eight points for whether the respondent recycles to18 points for effort.

The IVs measuring perceptions of environmental risk and degree of urgency inherent in environmental problems show opposing results. The majority of respondents see a high degree of urgency in both green and brown environmental problems, and the data show a positive outcome on all three DVs when compared to those who see a low degree of urgency. In comparison, the data show that those respondents who see a high level of threat to their health and well-being from environmental problems such as air and water pollution are likely to have a 'negative' recycling outcome when compared to those with a low perception of risk. For this variable, the negative outcomes range from 21 points (effort and proportion of materials) to 36 points (respondent recycles).

The final independent variables to be examined in this table are the respondents' knowledge of recyclable materials and their perception of the recycling habits of their neighbours. Again, having a high knowledge of which materials can be recycled increases the likelihood of a positive outcome across all three DVs, ranging from 15 points for whether the respondent recycles to a high of 62 points for the proportion of materials recycled. Having neighbours who all or most recycle also increases considerably the chances of positive recycling outcomes, from 37 points (effort) to 53 points (recycles).

Table 7.2: Comparison of selected aspects of Independent Variables and Dependent Variables (per cent)

Independent Variable	Dependent variable: Recycles = Yes	Dependent variable: Effort to recycle ='Always'	Dependent variable: Proportion of material recycled = All	N
Age (years)				
18-24	80.0	40.0	30.0	10
25-44	89.7	43.3	62.9	97
45+	92.9	65.0	55.1	185
Gender				
Female	98.2	64.1	62.4	170
Male	88.6	56.1	55.3	123
Education				
Graduate	94.7	58.7	54.7	75
Non-graduate	91.5	59.8	59.4	224
Geographic location				
South	94.5	61.4	66.6	254
North	67.9	40.7	9.3	53
Value orientation				
Postmaterialist	93.3	70.0	65.0	60
Mixed	90.5	56.4	55.3	179
Materialist	86.1	52.8	55.6	36
Urgency of environmental problems				
Green - high urgency	91.6	61.8	61.7	191
Green - low urgency	75.0	40.0	25.0	20
Brown - high urgency	92.5	60.5	59.6	228
Brown - low urgency	72.7	27.2	27.3	11
Perception of environmental risk				
High	60.9	42.0	41.7.	266
Low	96.7	63.3	60.0	30
Knowledge of recyclable materials				
Low (0-3/10)	80.0	42.5	12.5	40
Medium (4-6/10)	78.2	36.2	30.4	69
High (7-10/10)	95.4	68.0	74.6	197
Neighbours recycle				
All/most do	96.2	68.1	86.0	185
Some do	90.0	48.3	58.3	60
Most don't/none do	43.8	31.2	37.5	16

Source: Tasmanian Survey of Household Recycling, 2000.

The independent and dependent variables shown in Table 7.2 and discussed above will form the basis of the regression analysis of the Tasmanian data to be examined later in this chapter. However, firstly the multivariate analysis sections will commence with regression analysis of Australian and international data using variables selected from, or similar in nature to, the variables discussed in this section.

7.2 Multivariate results - an international comparison

This Section uses regression analysis (OLS) to compare selected countries using data

from the 1993 International Social Science Program (ISSP) *Family and The*

Environment module (reference Za2450), including its Australian data sub-set

(reference D0825). Comparative data are presented in Table 7.3 for selected

advanced industrial countries (ie. Australia, Canada, Great Britain, Japan,

Netherlands, New Zealand, Norway, the USA and West Germany). The dependent

variable is derived from the question 'How often is a special effort made to sort

material for recycling' (response categories: always; often; sometimes; never). The

scale is rescored to range between 0 and 100, where 0 represents 'never' and 100

represents 'always'. Independent variables include a postmaterial values scale, age

measured in years in years, dummy variables for university graduates and women,

and scale variables to measure environmental concern and perceptions of

environmental risk.

An examination of the regression coefficients in Table 7.3 shows that the effects of

the independent variables are in the main consistent across the ten countries

examined, although the magnitude of the effects vary between countries. Of

particular influence are the variables representing concern about the state of the

environment and perceptions of environmental risk. For example, in Australia those

who are very concerned about the environment (environmental concern) are 37 per

cent more likely to always make an effort to recycle than those who are not at all

concerned, whilst the statistics for the Netherlands and Norway are even higher.

While these estimates represent the difference between extreme values on the

environmental concern scale, they are nonetheless large effects, and highly

significant statistically. The effects for the environmental concern variable are statistically significant at the 0.001 level for all countries except Japan, which records the lowest effect for environmental concern of 12 per cent (significant at the 0.05 level).

Similarly, concern over air and water pollution ('risk') also increases the likelihood of always making an effort to recycle, by as much as 28 points on the 0-100 scale for West Germany, 21 points in Great Britain, and by about 13 points in Australia and the USA. The lowest effect of the risk variable is recorded in the Netherlands (7 points). Interestingly, the Netherlands records the highest effect (39 points) on the other attitudinal variable, environmental concern. All countries recorded statistically significant effects for environmental concern with Great Britain and West Germany showing the largest effects.

Postmaterial value orientations increase the likelihood of always making an effort to recycle, although the magnitude of these effects varies across the ten countries. Postmaterialists are more likely than materialists to make an effort to recycle, but these effects are only likely to hold among the populations of Great Britain, New Zealand and the USA according to the t tests for the regression coefficients.

The propensity to recycle increases with age in all countries except the USA and West Germany. Gender is important in Australia, Japan, the Netherlands, New Zealand and Norway – with women more likely to make an effort to recycle than men – and the effort to recycle is higher among the tertiary educated in Australia, Great Britain, Norway and the USA. However, the effect of education in Great

Britain and the USA is more than double that in Australia and Norway. As an

illustration, controlling for other independent variables a 20-year-old Australian

Table 7.3: Regression coefficients (OLS) for effects on dependent variable 'How often is a special effort made to sort material for recycling'(OLS)

	Australia	Canada	Great Britain	Japan	Netherlands	New Zealand	Norway	USA	West Germany[22]
Intercept	22.1***	30.4***	-15.5**	24.2***	35.1***	20.1***	1.3	29.0***	41.2***
Postmat values	3.5	0.9	9.2**	3.0	1.0	6.7*	2.6	9.2**	3.0
Degree	5.9**	3.0	14.1***	0.9	2.1	3.5	4.3*	13.0***	2.3
Women	6.0***	1.0	3.3	12.1***	2.7*	4.2*	3.5*	1.7	0.4
Age in years	.27***	.22***	.46***	.57***	.29***	.22***	.34***	.06	.07
Env Concern	37.0***	35.8***	40.2***	12.3*	38.7***	25.8***	38.6***	31.0***	26.7***
Risk	13.3**	12.1*	20.6***	10.5*	8.0*	15.0**	13.1*	12.9*	27.5***
Model Summary									
R^2	.071	.045	.135	.153	.087	.051	.094	.035	.069
N	1779	1467	1261	1305	1852	1271	1414	1557	1014

Notes: *P<0.05 **P<0.01 ***P<0.001
Source: 1993 ISSP Survey Za2450, *Family and The Environment*

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[22] In the ISSP survey, Germany was divided into East and West Germany.

male would score 27.5 on the 0 to 100 scale, compared to 32.9 for a 40 year old.[23] A

tertiary educated Australian female (say aged 40), who is very environmentally

concerned and very concerned about risk would score approximately 95.[24]

The model 'explains' a greater amount of variation in the dependent variable in

countries such as Great Britain and Japan, but far less for Canada, New Zealand and

the USA. The main contributions to the model come from environmental concern

and age; however, the 'risk' variable makes a substantial contribution for Great

Britain and West Germany.

7.3 Multivariate results - Tasmania

As discussed previously, three dependent variables that measure recycling practices

are used in the regression analysis of the Tasmanian data. The first variable (Table

7.4) is a dichotomous measure indicating whether the respondents claim to recycle

any materials, scored as No = 0, Yes = 100. The second variable (Table 7.5)

measures how often the respondent makes a special effort to recycle materials,

scaled as Never = 0 through to Always = 100. This variable is identical to that used

to measure effort in the analysis of the international data discussed in Section 7.2

above. The third dependent variable (Table 7.6) estimates the recovery rate of

various materials expressed as a proportion of total household consumption of that

material, scaled from 0 (low proportion recovered) to 100 (high).

Eight separate regression models are presented in Table 7.4 below, where the

dependent variable is a simple dichotomy: whether or not respondents recycle any

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[23] That is, the estimate for a 20 year old Australian is calculated as the intercept plus age in years
multiplied by the regression estimate for age, or 22.1 + [20 * .27] = 27.5. For a 40 year old

materials. Table 7.4 commences with a separate model to measure the effects of each

independent variable individually (Models 1 to 7), and Model 8 that measures the

combined effect of each of the ten independent variables on the dependent variable

(on a 0-100 scale). In Models 1 to 7 the variables that make the greatest contribution

to 'explaining' the likelihood of respondents recycling are knowledge of recyclable

materials, having neighbours who recycle and residence in southern LGAs.

Residing in the south of Tasmania increases the likelihood of recycling by 28 points

on the 0-100 scale compared to those in the north of the state. Having an accurate

knowledge of which of the 10 most commonly recyclable materials are accepted in a

particular LGA increased the likelihood by 45 points, and the effect of having

neighbours who all recycle contributes 44 points. The effects of these three variables

when taken individually are highly significant statistically, all at less than the 0.001

level. However, knowledge of recycling is the only variable to remain significant at

this level in the full model (Model 8). Noticeably, the effect of the urgency of brown

environmental concerns is 18 points (significant at the .05 level), whereas the

perceived urgency of green concerns produces a slightly negative effect.

In the full model the effect of knowledge, and neighbours who recycle reduces to 30

points ($p<0.001$) and 25 points ($p<0.01$) respectively. Nevertheless, these effects

indicate the marked influence of these particular variables in the overall model. The

effect of the dependent variable comparing the southern and northern LGAs reduces

to 11 points, significant at the $p<0.05$ level. The effect of this variable is an

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Australian, the estimate is calculated as 22.1 + [40 * .27] = 32.9.
[24] Similarly, this estimate is calculated as 22.1 + [40 * .27] + 37.0 + 13.3 +5.9 +6.0 = 95.1.

Table 7.4: Regression coefficients (OLS) for effects on dependent variable 'Does respondent recycle any materials?'

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Independent (Constant)	87.9	66.89	86.8	75.7	98.7	61.0	58.3	39.2
Age Group 18-24	-11.5							-5.5
Age Group 25-44	-1.4							-1.1
Women	2.2							3.8
Graduate	5.2							2.5
South		27.6***						10.9*
Postmaterialist			5.2					3.8
Urgency of green envir. concerns				-0.7				1.4
Urgency of brown envir. concerns				17.7*				15.9
Risk					-10.5			-14.6*
Knowledge of recycling						44.6***		27.1***
Neighbours recycle							43.4***	25.0**
Model Summary								
R²	.010	.119	.002	.016	.010	.152	.086	.225
Adjusted R²	-.003	.116	-.001	.009	.006	.149	.083	.197
N	308	308	308	308	308	308	308	308

Notes: *P<0.05 **P<0.01 ***P<0.001
Source: Tasmanian Survey of Household Recycling, 2000.

indication that the lack of a 'full' kerbside recycling programme does reduce the number of residents who will recycle some material. The effect of age, while not statistically significant, is shown in Model 1. Being in the 18-24 years age group has a negative effect of 12 points, and in the 25-44 age group a negative effect of two points when compared to older respondents. The effect of brown environmental concerns is slightly reduced, to 16 points, in the full model and loses statistical significance.

The bivariate results presented earlier suggest that knowledge of recycling is far greater in the south, with only 24 per cent of northern respondents able to correctly identify seven or more of the ten materials listed in Question A2 in the survey questionnaire (see Table 6.6). In comparison, 64 per cent of respondents from the Hobart LGA correctly identified a minimum of seven materials, and Glenorchy residents scored even higher at 87 per cent. This discrepancy between Hobart and Glenorchy may perhaps be explained by the fact that many Hobart residents mistakenly believe that cardboard is a collectable material in their area. The poor result from Launceston LGA may perhaps be attributed to the fact that far fewer residents of that area recycle compared to the south of Tasmania. Those who do not recycle may lack the interest to acquaint themselves with a knowledge of recyclable materials. The only other independent variable to show a statistically significant effect is the variable representing perceptions of environmental risk. However, this variable has a *negative* effect of approximately 15 points in the full model, a totally unexpected result. In this analysis the effect on those who see air and water pollution as a very serious threat to their health and well-being is to *reduce* the likelihood of them recycling any materials. This finding contrasts with the positive effect of perceptions of environmental risk obtained in the analysis of the ISSP international

data in Table 7.3 above. However, the 'risk' variable in the ISSP consisted of

answers to a different set of questions, whereas in the Tasmania data only a single

question represents risk. Again, whilst not statistically significant, there is also a

small negative effect for the two younger age groups, 18-24 and 25-44 years.

Table 7.5 will consider recycling practice measured in terms of how often a special

effort is made to sort material for recycling (response categories: always; often;

sometimes; never), scaled 'Always' = 1 through to 'Never' = 0.

Again, in Table 7.5 a similar analytic strategy is employed, with a separate model to

measure the effects of each independent variable individually (Models 1 to 7),

followed by the full model (Model 8). In the individual models four variables are

statistically significant. These are living in a southern LGA (12 points), having a

knowledge of recyclable materials (32 points), having neighbours who all recycle

(24 points) and being in the age group 25-44 years (negative effect of 9 points).

When the combined model is examined, the only variable to remain significant is

knowledge, which retains both its effect and significance level. The normative effect

of having neighbours who recycle has less impact on this dependent variable, effort,

than on the other two dependent variables examined in Tables 7.4 and 7.6. In

contrast, 'effort' is the only variable upon which having a postmaterialist value

orientation has a notable impact (10 points). Again, as in Table 7.4, the 'risk'

variable has an unexpected negative effect. Measured individually (Model 4), brown

and green environmental concerns produce effects of 10 points and 4 points

respectively. However, in the full model these effects are reversed, with that of

brown concerns reducing to 3 points and the effect of green concerns increasing to 9

points. This effect of green concerns in the full model is the only instance across all

Table 7.5: Regression coefficients (OLS) for effects on dependent variable 'How often is an effort made to sort material for recycling'

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Independent (Constant)	78.2	68.5	72.6	67.9	85.0	58.2	61.6	48.8
Age Group 18-24	-12.7							-8.1
Age Group 25-44	-8.3*							-8.4*
Women	4.7							5.79
Graduate	2.4							-1.7
South		11.9*						-2.4
Postmaterialist			10.6					9..9
Urgency of green envir. concerns				3.7				8.7
Urgency of brown envir. concerns				9.3				2.7
Risk					-7.7			-12.4
Knowledge of recycling						31.3***		30.1***
Neighbours recycle							23.1**	11.8
Model Summary								
R^2	.020	.021	.009	.007	.005	.069	.023	.115
Adjusted R^2	.007	.017	.005	.000	.002	.066	.019	.082
N	308	308	308	308	308	308	308	308

Notes: *P<0.05 **P<0.01 ***P<0.001

Source: Tasmanian Survey of Household Recycling, 2000.

three dependent variables analysed where green environmental concerns have a greater effect than brown concerns.

Finally, in Table 7.6 below, recycling practice is measured as an estimate of the recovery rate of various materials, expressed as a proportion of total household consumption of that material, scaled from 0 (low proportion recovered) to 100 (high).

In the individual models in Table 7.6 three variables show statistically significant effects, and again they show similar influences as per Tables 7.4 and 7.5. Living in a southern LGA (48 points), having a knowledge of recyclable materials (69 points) and having neighbours who all recycle (57 points), are the most influential independent variables. In this instance, however, all three variables remain significant in the full model. As would be expected, their effects reduce somewhat in the combined model; the south to 26 points, knowledge to 38 points and having neighbours who all recycle to 24 points. This is the strongest positive effect for southern location over all three dependent variables examined in Tables 7.4, 7.5 and 7.6, indicating the ability of respondents in the south to recycle higher proportions of recyclable materials due to the level of kerbside recycling services provided in southern LGAs. As in the previous tables, perceptions of environmental risk has a negative effect, although not significantly so. Paradoxically, the impact of the variable measuring perceptions of risk to respondents' health and well-being caused by environmental problems recorded a negative effect of between 10 and 12 percentage points across all three dependent variables. However, the 'risk factor' had a positive effect in the analysis of the Australian and international data (see Table 7.3 above). This 'anomaly' in the Tasmanian data may indicate that the respondents,

Table 7.6: Regression coefficients (OLS) for effects on dependent variable 'Proportion of materials recycled'

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Independent (Constant)	71.6	36.1	72.4	56.8	85.3	31.2	34.5	2.9
Age Group 18-24	-16.0							-8.9
Age Group 25-44	3.5							2.2
Women	1.5							4.1
Graduate	8.5							3.9
South		47.5***						26.0***
Postmaterialist			5.2					1.8
Urgency of green envir. concerns				8.7				8.5
Urgency of brown envir. concerns				14.4				14.6
Risk					-11.7			-15.8*
Knowledge of recycling						68.4***		37.8***
Neighbours recycle							56.4***	23.3**
Model Summary								
R²	.022	.266	.002	.018	.021	.271	.110	.383
Adjusted R²	.009	.264	-.002	.011	.012	.268	.107	.361
N	308	307	308	308	308	308	308	308

Notes: *P<0.05 **P<0.01 ***P<0.001

Source: Tasmanian Survey of Household Recycling, 2000.

who are overall well educated and perhaps well-informed about the risk issues

associated with pollution generally, do not see waste disposal issues in Tasmania as

a risk to health.

Again, this table shows a greater influence for brown environmental concerns (15

points) than that for green concerns (9 points). As noted above in the discussion of

Table 7.5, the only dependent variable to show a higher effect for green concerns

was that which measured recycling 'effort' in the full model.

The results from these three tables are striking in another way. Several of the

independent variables that were expected to influence recycling practices showed

only weak and non-statistically significant effects. Notably, demographic variables

had little influence on recycling, unlike the situation revealed by the national data

(see Table 7.3). Of the three dependent variables examined, younger people were

more likely to make an effort to sort recycling material (Table 7.4) compared to the

other two independent variables. However, all three Tables, 7.4, 5.5 and 7.6, show a

negative relationship with recycling practices for the younger age groups. Education

had little effect as a predictor of recycling, although the data confirm a general

tendency observed in other studies for women to be slightly more positive about

recycling than men.

The next section will briefly examine the motivations underlying recycling practices,

using in-depth interview material conducted with participants from the Tasmanian

survey.

7.4 Qualitative data

The qualitative data examined in this section was obtained by interviewing selected

respondents to the questionnaire from Southern LGAs. A small but representative

selection of interviews has been chosen for this section. Details of the interview

process were given previously in Section 6.3.2. A copy of the Statement of Informed

Consent provided to interviewees appears in Appendix D, and a copy of the

Interview Schedule used when conducting the interviews is shown in Appendix E. In

addition, the views of employees and contractors associated with the recycling

industry and the beverage and packaging industries were also obtained through in-

depth interviews.

Almost all of the respondents interviewed claimed to be recyclers. Unfortunately,

only three of the 61 respondents who were willing to be interviewed were non-

recyclers, and all three declined to be interviewed when approached after the return

of the survey questionnaires. Attempts to locate other non-recyclers by other means

produced only one person willing to be interviewed. In comparison, recyclers in

general were enthusiastic about taking part in the interview process. This may be

because recycling is viewed socially as a 'good' environmental practice and the

interview phase of the research gave individuals the opportunity to promote their

own 'environmental goodness'. Several approaches were made by individuals who

had heard about the research project from external sources and who wanted to be

interviewed 'because I am a really good recycler'.

In general, the respondents interviewed basically fall into two categories: those who

wish to 'save the planet', and for whom no financial price is too high to pay for

recycling - that is, a value-driven or ideological point of view; and those who see

recycling as an economically rational decision which will reduce waste disposal and landfill costs. However, there are crossovers between the two views. For instance, one recycling professional (Interview P5) saw immediate benefits in terms of reducing the volume of waste going to landfill, and also benefits for the planet in the future due to the reduction in requirements for virgin material production. This produced a 'feel-good factor immediately, because you can see it, ...and [economic] flow-on benefits later'.

Typically, those whose aim was protection of the environment felt that recycling involved inconvenience and sacrifice, such as '...heaps more. Heaps more washing up, heaps more organisation of space...' (Female; 49 years; Postmaterialist value orientation; Degree). This interviewee would be 'happy to pay more for a better recycling service'. One passionate interviewee 'recycled everything', taking materials that were not collected by the local Council to a commercial recycling contractor (Male; 59; Mixed value orientation; Trade qualification). Materials which were not recyclable by any means in Tasmania were either re-used in some fashion, such as by giving plastic bread bags to a local nursing home to save them the cost of buying plastic bags, or by posting the container back to the manufacturer with a form letter stating his objection to their using non-recyclable material (with no postage, so that the manufacturer paid the cost of postage). A third recycler (Female; 49 years; Postmaterialist value orientation; Honours Degree) viewed her recycling as part of her personal responsibility [to Planet Earth], an 'emotional thing' which gave her satisfaction. She felt that recycling had become popular and 'a bit trendy', but 'unfortunately, to refuse to reduce is what people practice most...which in my estimation would be the best thing to do'. However, she felt that she 'would prefer to recycle rather than it just go into things like landfill'.

The aspect of recycling as a panacea for over-consumption was raised by another recycler (Female; 40 years; Postmaterialist value orientation; Tertiary education) who commented on one aspect of recycling: the expiation of guilt caused by over-consumption. In her words, excessive consumption causes an

...enhanced feeling of guilt so anything that you can do to expiate [the sense of guilt about] everything that we do being detrimental to the environment is a load off your shoulders.

This is in line with Ungar's (1998:259) view reviewed earlier in Section 5.3. That is, a minimalist environmental discourse from industry and governments combined with a voluntaristic environmental stance gives individuals the right to indulge in trade-offs. Rather than reduce consumption, just try to conserve in other ways such as recycling.

One recycler who believed the important reason for recycling is to preserve resources said he always thought about the consequences when recycling - 'That's the main reason for recycling ...if it wasn't economic in terms of dollars I'd still do it. For the reason that it looks after the planet'. (Male; 47 years; Postmaterialist value orientation; Degree)

There were differing views from non-recyclers. One interviewee who responded to the questionnaire as a recycler, admitted when being interviewed to only recycling under duress (family pressure), and recycling for convenience and 'marital cohesion' only. Left to his own devices, he claimed to be an anti-recycler on economic grounds (Male; 47 years; Mixed value orientation; Postgraduate (economics)). His view was that the green movement and governments had preached the values of recycling due to its electoral popularity. He saw a perverse result in Tasmania as the costs of

collection and transport [to Materials Recycling Facilities in other parts of Australia]

'... are so expensive you are actually in a negative situation'. Further, his belief was

that '...people [such as Local Government] are starting to realise the folly of the

"feel-good" policy' due to the costs involved'. The only 'true' non-recycler to be

interviewed (Female; 35 years; Mixed value orientation; College/Matriculation

education) felt that recycling was a 'good thing to do', even though she didn't

recycle. She felt that it was 'Good for the environment, good for not filling up the

tips with all this junk we throw out...'. However, she also stated that she would not

try to reduce the amount of waste by, for example, buying products with less

packaging. Similarly to comments above, this person saw recycling as involving

both inconvenience and sacrifice of her personal time. This person refused to make

the perceived sacrifice to recycle material through the kerbside scheme.

The above excerpts from selected interviews give a modest intimation of the values

and rationalities that underpin household recycling practices. Motivations range from

a desire to 'save the planet' no matter what the cost to an economically rationalist

viewpoint in which recycling must have proven financial benefits. As mentioned at

the start of this section, recycling (and non-recycling) can be an instrumentally

rational practice, or a practice that is emotionally driven by value and environmental

orientations.

The discussion of qualitative material concludes the analysis of data and evidence.

The survey data examined in this chapter provides an overview of recycling practices

in Tasmania. The most prominent predictors of recycling behaviour highlighted are

the availability of a comprehensive kerbside recycling programme, the normative

effect of having neighbours who recycle and a knowledge of materials that are

accepted for recycling by the kerbside programme. As anticipated, the findings also confirm the likelihood that older people, women and those concerned about environmental problems are the most positive about recycling.

In the final chapter that follows, the various threads discussed throughout this thesis will be drawn together in a series of interpretive arguments, concluding statements and more speculative suggestions.

CHAPTER 8

Conclusion

Refuse, Reduce, Reuse, Recycle! Or Refuse to Reduce?

**Interviewer: Do you actually have a recycling bin? Respondent: A black one?
Yes, great for doing weeds in the garden... (Non-recycler, female, age 35).**

This thesis has analysed the sociological factors that underlie the practice of
recycling based on the institutionalised household recycling programmes available in
urban areas of Australia. The research paints a portrait of the practice of recycling in
Australia - where we are now and how we got here. A more speculative view of
where we are going in the future will be dealt with later in this chapter.

What is important?

The survey data analysis in Chapter 7 points to three key factors that have a major
effect on positive recycling practices. The first is the provision of an institutionalised
kerbside recycling programme, which results in recycling practices being
'routinised' (Pakulski and Crook (1995). If a convenient, comprehensive programme
is in place then most householders will recycle. As the data from Northern Tasmania
indicates, the lack of a convenient kerbside collection system for recyclable
materials has a measurable negative impact on recycling practices. This impact was
heightened by the Launceston City Council's policy at the time of this research to
charge residents for accessing the Council's recycling depot to drop off material.

However, householders also require *readily available* information in order to
recycle. They need knowledge of acceptable collection practices, that is, *what* can be

recycled and *how* it is to be recycled in the Local Government Area in which they reside. The constant rejection of inappropriate or incorrectly presented materials by collection agencies may deter future recycling by the household. For example, in the Hobart LGA cardboard left out for collection will be rejected, as it is not accepted in that area. Newsprint is accepted, but must be bundled and tied with string. Newsprint put in plastic bags will be rejected. In this regard, it would be useful to standardise collection practices between LGAs. 'Third category' knowledge alluded to in Section 5.1.2, that is, knowledge of why materials should be recycled and the pursuant environmental benefits, is not necessary to be an effective recycler. However, knowledge of the environmental benefits of recycling may produce a synergistic effect with the third key factor highlighted by this research, communal norms. A distinct positive normative effect is gained from having neighbours who recycle. 'Recycle' has become accepted as a form of pro-environmental social participation which does not require the taking of an oppositional environmental and economic stance, which may be seen as implicit in the first three 'Rs' of the waste hierarchy, 'Refuse', 'Reduce' and 'Reuse'.

From an ideological perspective the analysis only gives minor support to a view of recycling as an articulation of a value oriented, ecologically prudent activity. Holding a postmaterialist value orientation did increase the likelihood of respondents making an extra effort to recycle. The impact on whether a respondent recycled or the proportion of material recycled was negligible. However, postmaterialists interviewed were more likely to feel a personal responsibility to minimise their impact on the Earth.

Respondents' perceived urgency of brown environmental issues had a positive impact on the likelihood that they would recycle, and on the proportion of materials recycled, whereas green concerns influenced positively the amount of effort put into recycling. Sociodemographic factors had little overall impact, although it should be noted that there is a low or negative effect for those in the younger age groups.

In summary, the main social barriers to ecologically sustainable recycling in its current form are the lack of a convenient, institutionalised kerbside recycling programme, lack of acceptance of a wide range of materials and lack of readily available information regarding the service. Where these barriers are not present most consumers will recycle. However, as noted previously in this thesis, the current system of collections in Australia only accepts a relatively small range of materials. Many materials go directly to the waste stream and on to landfills. In addition to kerbside collection programmes, consideration needs to be given to an extension to the provision of easily accessible drop-off locations for specific materials, such as for printer cartridges detailed in Section 2.7. It should be noted that in Australia this is a voluntary action by industry, not mandated by law as is the situation in Germany and discussed in Section 2.4.

For recycling to result in true sustainability the range of materials accepted needs to be widened considerably. For this to occur these need to be positive sanctions for the recycling of materials which are not at present recycled, or negative sanctions to discourage their use. For example, governments can encourage the purchase of goods made from recycled material by the use of financial incentives or disincentives, making such practices more financially viable when compared with products made from virgin materials. This will expand the market for recycled

materials. In addition, the local processing of recyclable materials on a regional basis needs to be encouraged by the provision of industry incentives such as taxation offsets to minimise the environmental impact of transporting materials.

Where are we going?

The above remarks presume acceptance of a system of consumption and recycling which does not confront the Dominant Social Paradigm outlined in Section 3.4 (Dunlap and Van Liere 1984). In these concluding remarks, a return is made to the key issue raised in the Introduction to this thesis. Despite widespread expressions of concern for the environment and an acceptance of recycling as a beneficial and sustainable solution to the twin problems of resource depletion and waste disposal, recycling has not become a universal practice. This discrepancy exists at both a community and institutional level.

Whilst many materials are technically recyclable, there is a large degree of variation between the types of materials collected and recycled, both within Australia, and elsewhere in the world. Even materials marked with the 'arrow' symbol to indicate that they are recyclable are often not collected. In Tasmania, examples are polystyrene, polypropylene and mixed plastics. Australians, while 'better' recyclers than the residents of some other countries, still toss out as waste almost 5 billion drink containers and 7 billion shopping bags annually. Overall, each individual Australian sends almost two tonnes of trash each year on a one-way trip to the tip (Australian Broadcasting Corporation 2003:1). However, this is only part of the problem. Meadows et al. (1992:83) state that '...every ton of garbage at the consumer end of the stream has also required the production of 5 tons of waste at the manufacturing stage and 20 tons of waste at the site of initial resource extraction'.

If recycling as currently practiced is to be environmentally sustainable several aspects need to be improved. The range of materials that are collected through kerbside recycling programmes needs to be extended; the proportion of materials currently collected needs to be increased; and those who do not currently recycle should be encouraged to recycle. To encourage a normative effect, recycling should be promoted as a financially prudent and environmentally beneficial measure, when weighed against the costs and environmental externalities of waste disposal. For example, pricing of waste disposal by other means could be made to reflect the true cost of such disposal by waste disposal authorities. However, recycling is not free. There is a cost to pay, whether that cost is paid at the time of purchase, during the life-cycle of the product (as in container deposits) or after disposal (environmental and financial externalities).

The two most important reasons for recycling given by Tasmanians are firstly, to reduce pollution and protect the environment and secondly, to preserve resources. If this is the case, then the current method of recycling fails miserably due to the small overall proportion of materials used that are actually recycled. If recycling is meant to be a panacea for problems of resource depletion and the environmental externalities of the industrial production process, then the evidence shows that the extent of recycling needs to be increased, both in the quantity and range of materials recycled. However, as stated earlier in these concluding remarks, this ignores the first three steps of the solid waste hierarchy, 'Refuse', 'Reduce' and 'Reuse'.

Why are so many materials not recycled? Why not container deposits? Why not

refillable bottles? Whilst it is possible under the current institutional arrangements to

reduce waste disposal and virgin resource use by diverting some post consumer

waste from the waste stream to recycling, the question must be repeated: Why some

materials and not others?

Writers such as Schnaiberg and Ungar, whose work was reviewed earlier in this

thesis; claim that this shows the sociopolitical influence of industry lobby groups

such as the beverage and packaging industries. This view is in line with the concept

of environmental governmentality, reviewed in Section 3.2. The institutionalised

recycling programmes and informational materials provided by industry and

governments are seen as 'normal' by individuals who perceive themselves as

reflexive, autonomous environmental citizens (Darier 1996:66-67). In Darier's view

however, these individuals have been 'constructed' as environmental subjects,

mainly through the persuasion of governments and corporations.

Industrialists argue that while there may be structural design faults inherent in the

industrial system that have led to environmental problems, there is no need for major

changes to the core societal institutions directly involved in production and

consumption. This is in line with ecological modernisation theory (Mol and

Spaargaren 2000). However, environmental sustainability may not be possible

without eventually 'confronting the political power of those who benefit from

present arrangements' [my emphasis](Pepper 1993:15).

Appendix A: Questionnaire
SURVEY OF HOUSEHOLD RECYCLING

<div style="text-align: right">Number..............</div>

I am conducting a study of household recycling in Tasmania, and your cooperation in completing this questionnaire would be appreciated. **Details of the survey are confidential.** The questionnaire should take approximately 5 to 10 minutes to complete. **It should be completed by the adult head of the household or spouse.** The results will help in designing a more effective and user-friendly system of recycling. **Your answers are very important, even if you never recycle any materials.**

The study is part of research in the School of Sociology and Social Work, University of Tasmania. If you have questions or concerns about this project, please contact the coordinator, Denis Elwell on (03) 6226 2715 (University), or Professor Jan Pakulski on (03) 6226 2337.

HOW TO FILL OUT THIS QUESTIONNAIRE:

To answer most of the questions you only need to circle a number. Please circle the number which is **closest** to your view - there are no right or wrong answers. Here is an example.

Do you think the government should spend more or less on education?

Spend more	1	Same	2	Spend less	3	Don't know	9

If you think the government should spend more on education, you would circle 1, as shown.

Please return the completed questionnaire in the enclosed Reply-paid envelope. **Thank you** very much for taking part in this study.

Section A - Household Recycling Practices

A1: Does your household have a regular kerbside collection service for any recyclable materials? Please circle one number only.

Yes	1	No	2

If "No', go to Question A3

A2: Which of the following materials can be placed out for kerbside recycling? Please circle one number for each material.

	Yes	No	Don't know
A. Paper, other than cardboard, newspapers and magazines	1	2	9
B. Plastic drink bottles	1	2	9
C. Milk and juice cartons	1	2	9
D. Plastic supermarket bags	1	2	9
E. Glass bottles and jars	1	2	9
F. Aluminium cans	1	2	9
G. Plastic detergent bottles	1	2	9
H. Steel cans	1	2	9
I. Newspapers / magazines	1	2	9
J. Cardboard	1	2	9

A3: Do you recycle _any_ household materials? Please circle one number only.

Yes   1   No   2

If "No', go to Question A9

A4: How often do you make a special effort to sort glass, metal, plastic or paper for recycling? Please circle one number only.

Always	Often	Sometimes	Never	Don't know
1	2	3	4	9

A5: What is the _main_ method of disposing of each of the following materials in your household? For each material circle one number only

	Kerbside recycling	Tip recycling area or depot	Re-use within h/hold	Resell/ donate to fund-raising	Throw out as waste	Not used	Don't know
A. Newspapers / magazines	1	2	3	4	5	6	9
B. Aluminium cans	1	2	3	4	5	6	9
C. Cardboard	1	2	3	4	5	6	9
D. Steel cans	1	2	3	4	5	6	9
E. Plastic drink bottles	1	2	3	4	5	6	9
F. Milk and juice cartons	1	2	3	4	5	6	9
G. Glass jars and bottles	1	2	3	4	5	6	9

A6: For materials that you _do_ recycle, what proportion do you recycle? For each material circle one number only.

	All	Most	Some	Little	Not applicable - Do not recycle	Don't know
A. Newspapers / magazines	1	2	3	4	8	9
B. Aluminium cans	1	2	3	4	8	9
C. Cardboard	1	2	3	4	8	9
D. Steel cans	1	2	3	4	8	9
E. Plastic drink bottles	1	2	3	4	8	9
F. Milk and juice cartons	1	2	3	4	8	9
G. Glass jars and bottles	1	2	3	4	8	9

A7: Do you typically recycle or throw out any of the following? For each material, please circle one number below.

	Recycle	Throw out	Not applicable	Don't know
A. Paper, other than cardboard, newspapers and magazines	1	2	3	9
B. Non-food plastic bottles, such as detergent bottles	1	2	3	9
C. Clothing, textiles	1	2	3	9
D. Car batteries	1	2	3	9
E. Motor oil	1	2	3	9

A8: The following are four typical reasons why some people recycle (A, B, C & D).

A. To preserve resources for future generations.

B. To 'Do the Right Thing'.

C. Because of the convenience of kerbside recycling.

D. To reduce pollution and protect the environment.

Please rank the importance of these reasons to you by writing the letters in the appropriate boxes below.

Most important	Second most important	Third most important	Least important
☐	☐	☐	☐

A9: For any materials below that you do not recycle, what is the main reason? For each material, please circle one number.

	Not used - avoid buying	Unaware of recycling options	Do not like / oppose recycling	Quantities too small	Too much trouble	Don't know
A. Newspapers / magazines	1	2	3	4	5	9
B. Aluminium cans	1	2	3	4	5	9
C. Cardboard	1	2	3	4	5	9
D. Steel cans	1	2	3	4	5	9
E. Plastic drink containers	1	2	3	4	5	9
F. Milk cartons	1	2	3	4	5	9
G. Glass jars and bottles	1	2	3	4	5	9

A10: How easy or difficult is your access to recycling, other than kerbside recycling? For each method below, please circle one number.

	Very easy	Easy	Difficult	Very difficult	Don't know
Visiting recycling depots	1	2	3	4	9
Visiting tip recycling centres	1.	2	3	4	9
Placing materials in charity bins	1	2	3	4	9

A11: Do your neighbours recycle? Please circle one number below.

Yes, all do	Yes, most do	Some do	No, most don't	No, none do	Don't know/ not sure
1	2	3	4	5	9

Section B - Environmental and Social Issues

The following questions ask for your _personal_ opinion.

B1: On a scale of 1 to 7, where 1 is 'not concerned' and 7 is 'very concerned', how concerned are you about the state of the Earth's environment? Please circle one number below.

Not concerned						Very concerned	Don't know
1	2	3	4	5	6	7	9

B2: Are you a member of any group whose main aim is to preserve or protect the environment?

Yes   1   No   2

B3: In your opinion, how urgent are each of the following environmental concerns in this country? Please circle one number for each concern listed below.

	Not urgent		Fairly urgent	·	Very urgent	Don't know
A. Pollution	1	2	3	4	5	9
B. Logging of forests	1	2	3	4	5	9
C. Waste disposal	1	2	3	4	5	9
D. Destruction of wildlife	1	2	3	4	5	9

Which two of these environmental issues has worried you personally the most in the last 12 months? Which is the most urgent? And which is the second most urgent? Please put the letter for each issue in the appropriate box below.

Most urgent [ ]   Second most urgent [ ]

B4: How serious a threat do you think environmental problems such as air and water pollution are to your health and well-being? Please circle one number below.

Not at all serious	. Not too serious	Somewhat serious	Very serious	Don't know
1	2	3	4	9.

B5: In political matters people talk of the 'left' and the 'right'. Where would you place yourself on a scale of 0 to 10, where 0 means the left and 10 means the right? Please circle one number below.

	0	1	2	3	4	5	6	7	8	9	10	
Left												Right

B6: Generally speaking, in federal politics do you usually think of yourself as:

Liberal	Labor	National Party	Australian Democrat	Green	Other (please specify)
1	2	3	4	5	6.....................

B7: Finally in this section, a question about what you think the aims of Australia should be for the next 10 years. Here is a list of four aims that different people would give priority.

A. Maintain order in the nation

B. Give people more say in important government decisions

C. Fight rising prices

D. Protect freedom of speech

If you had to choose among these four aims, which would be your first choice? And which would be your second choice? **Please put the letter for each aim in the appropriate box below.**

First choice [   ]   Second choice [   ]

Section C - Personal background, education and work

This final section includes questions about yourself and your household.

C1: Firstly, what is your sex?
Male 1   Female 2

C2: When were you born? Just the year will do.
Year 19........

C3: What is your current marital status? Please circle one number below.

Never married	1	Widowed	3
Now married (including de facto)	2	Divorced or separated	4

C4: Which of the following describes your household? Please circle one number below.

One person	1	Couple, dependent ·child(ren)	4
Couple only·	2	One parent, dependent child(ren)	5
Other households, all members over 15	3	All other households	6

C5: What type of residence do you live in? Please circle one number below.

Freestanding, detached house	1	Flat in multi-storey block	4
Semi-detached / townhouse / terrace / villa	2	Other	5
Flat, home unit	3		

C6: What is the highest educational level you have reached? Please circle one number below.

No formal education	1	Trade qualification	6
Primary (up to Year 6)	2	Diploma	7
Secondary (Years 7-10)	3	Degree	8
College/Matriculation (Years 11-12)	4	Postgraduate	9
Non-trade qualification	5		

C7: Now some questions about the work you do. If you are currently employed, which of the following best describes your work? Please circle one number below.

Manager / administrator	1	Clerical, sales and service	4
Professional	2	Production / transport	5
Trade	3	Manual worker, labourer	6

C8: If you are not currently employed, please circle one number below.

Unemployed	1	Housework	3
Retired, pensioner	2	Student	4

C9: If you are currently employed, for whom do you work? Please circle one number below.

Self-employed	1	Employee in family business / farm	4
Employee in private company or business	2	Employee in Federal / State / Local Government	5
Employee in non-profit organisation	3		

That is the end of the questionnaire. Thank you very much for taking part in this study. **Please put the completed form in the post-paid reply envelope and post it back. If you would be willing to**

participate further in this project by taking part in a short interview regarding your views on recycling, please provide contact details below. <u>I am interested in interviewing both non-recyclers and recyclers</u>. Interviews will be conducted at a time and place to suit you, and should take approximately thirty minutes.

Name...

Contact telephone number (03) 62...................
or other contact..

Appendix B: Questionnaire Numbers, Southern Tasmania

Suburb	Suburb code	Local Gov't Area	Number of questionnaires	Questionnaire Numbers	Returned unclaimed	Nett out	Returned completed	Per cent completed
Austins Ferry	31	Glenorchy	17	201-217		17	3	17.65
Battery Point	32	Hobart	18	218-235	1	17	4	23.53
Berriedale	33	Glenorchy	14	236-249		14	3	21.43
Bridgewater	34	Brighton	29	250-278	3	26	6	23.08
Chigwell	35	Glenorchy	22	279-300	1	21	7	33.33
Claremont	36	Glenorchy	53	301-353	3	50	20	40.00
Derwent Park	37	Glenorchy	6	354-359		6	3	50.00
Fern Tree	38	Hobart	4	360-363		4	1	25.00
Gagebrook	39	Brighton	18	364-381	1	17	2	11.76
Glenorchy	40	Glenorchy	119	382-500	13	106	28	26.42
Goodwood	41	Glenorchy	8	501-508		8	2	25.00
Hobart	42	Hobart	16	509-524	1	15	6	40.00
Lenah Valley	43	Hobart	32	525-556	3	29	9	31.03
Lutana	44	Glenorchy	19	557-575		19	5	26.32
Montrose	45	Glenorchy	14	576-589	1	13	5	38.46
Moonah	46	Glenorchy	50	590-639	5	45	18	40.00
Mount Nelson	47	Hobart	22	640-661		22	10	45.45
Mount Stuart	48	Hobart	21	662-682		21	9	42.86
New Town	49	Hobart	70	683-752	3	67	27	40.30
North Hobart	50	Hobart	21	753-773	3	18	6	33.33
Rosetta	51	Glenorchy	26	774-799		26	10	38.46
Sandy Bay	52	Hobart	90	800-889	4	86	28	32.56
South Hobart	53	Hobart	57	890-946	3	54	26	48.15
West Hobart	54	Hobart	54	947-1000	4	50	14	28.00
Unknown							2	
TOTAL			800		·49	751	254	33.82

Appendix C: Questionnaire Numbers, Launceston LGA, Northern Tasmania

Suburb	Suburb code	Number of questionnaires	Questionnaire numbers	Returned unclaimed	Nett Out	Returned completed	Per cent returned from nett out
Alanvale-Newnham	11	13	1001, 1077-1088		13	4	30.77
East Launceston	12	14	1002-1015		14	3	21.43
Invermay-Inveresk	13	11	1016-1026		11	2	18.18
Kings Meadows	14	11	1027-1037		11	3	27.27
Launceston	15	15	1038-1052		15	2	13.33
Mayfield	16	10	1053-1062		10	3	30.00
Mowbray	17	14	1063-1076		14	3	21.43
Newstead	18	6	1089-1094		6	3	50.00
Norwood	19	13	1095-1107		13	6	46.15
Punchbowl	20	10	1108-1117	1	9	3	33.33
Ravenswood	21	16	1118-1133		16	3	18.75
Rocherlea	22	5	1134-1138		5		0.00
St. Leonards	23	5	1139-1143		5		0.00
South Launceston	24	12	1144-1155		12	1	8.33
Summerhill	25	10	1156-1165		10	5	50.00
Waverley	26	7	1166-1172		7	1	14.29
West Launceston	27	17	1173-1189		17	6	35.29
Youngtown	28	11	1190-1200		11	5	45.45
Unknown						1	
TOTAL		200		1	199	54	27.14

Appendix D: Statement Of Informed Consent

'Recycling and Sustainability: Social correlates of attitudes and practices'.

I have read and understood the 'Information Sheet' for this study. The nature and possible effects of the study have been explained to me by the investigator. I understand that my participation involves taking part in an interview regarding recycling and household recycling practices. I understand that all research data will be treated as confidential. Any questions that I have asked have been answered to my satisfaction. I agree to participate in this investigation and understand that I may withdraw at any time without prejudice. I agree that research data gathered for the study may be published provided that I cannot be identified as a subject.

Name of subject...

Signature of subject   .... Date   /   /

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

Name of investigator   Denis George ELWELL

Signature of investigator   ....

Date   /   /

Appendix E: Information Sheet

University of Tasmania Letterhead

Information sheet

'Recycling and Sustainability: Social correlates of attitudes and practices'

Chief Investigator: Professor Jan Pakulski

Assistant Investigator: Denis Elwell

Department of Sociology and Social Work

University of Tasmania

The purpose of this study is to investigate recycling as part of a social process and to investigate differences in recycling practices in Tasmania. It is being conducted as part of the Assistant Investigator's work to fulfil the requirements for a degree of Doctor of Philosophy in Sociology. We are interested in surveying or interviewing people in Hobart and surrounding areas regarding their household recycling practices. Participation is voluntary, and any respondent may withdraw at any time without prejudice.

Subjects will be required to complete a survey form, which should take approximately 15 minutes. Respondents will be asked to volunteer to participate in a follow-up interview which should take approximately one hour. No identifiable details will be kept with the survey or interview information and you will receive no follow-up calls or visits from any private or government bodies as a result of your participation in this project. Every effort will be made to keep details of the research confidential, although quotes (in the form of 'Interview Number #' or by the use of a fictitious name) may be included in the final published document. The final results of the research may be released publicly, but will not be sent back to the participants. This information sheet, plus a copy of the consent form for those participating in interviews or group discussion, may be kept by the subject.

The study has received ethical approval from the University Ethics Committee and complies with the laws of the state. Concerns of an ethical nature, or complaints about the manner in which the project is conducted should be referred to the University Ethics Committee (Chair of the Committee; Dr Margaret Otlowski, (03) 6226 7569 or Executive Officer; Ms Chris Hooper, (03) 6226 2763. If you have questions or concerns about this project, please contact Denis Elwell on (03) 6234 1777 (home) or (03) 6226 2715 (University), or Professor Jan Pakulski on (03) 6226 2337

Appendix F: Interview Schedule

Recycling practices and sustainability: Attitudes, meanings, motivations and discourses of recycling practices

- Thank you for completing my questionnaire and agreeing to be interviewed
- Provide Information Sheet and explain
- Provide Statement of Informed Consent and get signature

Do you mind if I record this interview?

Firstly, an introductory question:
When you recycle (do not recycle) household materials, do you think about the consequences of what you are doing?

Q1. Now, if I could ask you an obvious question: why do you recycle (not recycle)?

> PROBES
> Moral act
> Values/altruism
> Good for the community - normative
> Reduces hazards to health
> Household source reduction
> Waste of effort - materials go to landfill
> Landfill cheaper
> Messy, time consuming
> Nowhere to store materials
> Lack of knowledge of recycling

Q2. In your view is recycling good/effective? If so, why and for whom (if not, why not)?

CATEGORIES	REASONS
Individual	Conserve resources for future generations - sustainability
Family	
Community	Reduce pollution in manufacturing
Manufacturers	Creates employment
	Reduces litter
	Cheaper for ratepayers than landfill
	Reduces health hazards
	Remanufacturing conserves energy?
	Reduces waste in garbage
	Convenience
	Do the Right Thing

Q3. Do you make an effort to avoid purchase, or reuse, materials (including green waste / putrescibles)rather than industrial recycling?

Q4. In your view, what are the main obstacles that prevent or restrict recycling here; and generally?

Q5. In your view, does recycling involve inconvenience or sacrifice? If yes, what kind of inconvenience / sacrifice: time, money?

> PROBE
> Reduced standard of living - eg not buy convenience
>   foods

Q6. In your view what could and should be done to boost the scope, frequency and effectiveness of recycling?

Q7. Where do you get your information about recycling?

Primary = What   Secondary = How   Tertiary = Why

> PROBES
> Local government - handouts, side of crate
> Newspapers, magazines
> Radio
> Television
> Environmental organisations - is respondent a
>   member or sympathiser? If so, which group/s?
> Internet
> Word of mouth
> Role of media, state, industry in promoting recycling

Q9. And is that information sufficient?

> PROBES
> What
> How; including preparation of materials
> Why

Thank you for giving me your time. Your participation in this project has been of great value.

Appendix H: Construction of Variables, International Data

Source: 1993 ISSP survey Za2450, *Family and The Environment*

Independent variables

The independent variables 'Environmental concern' and 'Risk' for the analysis of the ISSP data were constructed as follows:

Environmental concern: The scale is a composite of responses to the following.
v14: Almost everything we do in modern life harms the environment.
v22: Economic growth always harms the environment.
v24: How willing would you be to pay much higher prices in order to protect the environment?
v25: How willing would you be to pay much higher taxes in order to protect the environment?
v26: How willing would you be to accept cuts in your standard of living in order to protect the environment?
v28: I do what is right for the environment, even when it costs more money or takes more time.

Questions v14 and v22 had response categories 'Strongly disagree' to ' Strongly agree'. Questions v24, v25, v26 and v28 had response categories 'Very unwilling' to 'Very willing'. Reliability testing of these items produced an alpha statistic of 0.71. A scale is deemed to be statistically reliable if it produces an alpha score of at least 0.7 (de Vaus 1995:256). The scale was rescored between '0' (Not concerned) and '1' (Very concerned).

Risk: An environmental risk scale was also constructed. The scale is a composite of responses to the following questions.
v44: Nuclear power stations danger to environment?
v45: Nuclear power stations danger to family?
v46: Air pollution from industry danger to environment?
v47: Air pollution from cars danger to family?
v48: Pesticides and chemicals in farming danger to environment?
v49: Pesticides and chemicals in farming danger to family?
v50: Pollution of rivers, lakes and streams danger to environment?
v51: Pollution of rivers, lakes and streams danger to family?
v52: Greenhouse effect danger to environment?
v53: Greenhouse effect danger to family?
All questions had the response categories 'Not dangerous' to 'Extremely dangerous'.
Reliability testing of this scale produces an alpha statistic Of 0.90, and thus is deemed to be highly reliable.
Scale - Not a risk = 0 to Very great risk = 1.

Other independent variables were coded as follows:

Value orientations: scale based on questions v7 and v8, was constructed following Inglehart (1977) as a three category variable. It was then scaled: Postmaterialist = '1', Mixed = '.5', Materialist = '0'.

Education was dummied as Degree or higher = '1', others = '0'.
Age was measured in its natural metric
Gender was dummied as Female = '1', Male = '0'.

Dependent variable

Effort is derived from Question v56: 'How often do you make a special effort to sort glass, metal, plastic or paper for recycling?'. Responses to this Likert scale ranged from Always to Never (rescaled as Always = 100, Often = 66, Sometimes = 33 and Never = 0).

Appendix I: Construction of Variables, Tasmanian Data

Source: Tasmanian Survey of Household Recycling, 2000.

Independent variables

Value orientations
Postmaterialist/materialist value orientations were measured by using Inglehart's 4-item Postmaterialist scale (Q. B7) (Inglehart 1981:884-885). Question B7 asked 'Which two of the following four goals do you personally consider are the most important':
(a) Maintain order in the nation.
(b) Give people more say in the decisions of government.
(c) Fight rising prices.
(d) Protect freedom of speech.
Respondents giving priority to (a) and (c) are classed as 'materialist'(coded as '0'), (b) and (d) as 'postmaterialist'(coded as '1'), whilst others are 'mixed' (coded as '.5'). The frequencies of each value group are shown in Table 6.4 below. Notably, there were fewer materialists (13 per cent) than postmaterialists (22 per cent) in these data. Again, these responses reflect the socioeconomic status of respondents across the LGAs.

Environmental orientation and urgency
Following Crook and Pakulski (1995), the division between, and urgency of, green and brown environmental concerns are based on question B3. For the purposes of regression analysis, responses to questions B3a and B3c ('brown' environmental issues of pollution and waste disposal) were combined using an additive scale and rescored to range between 0 (not urgent) to 1 (very urgent). Responses to questions B3b and B3d ('green' environmental issues of logging and destruction of wildlife) were treated in similar fashion.

In addition, respondents' environmental orientation was measured by asking them to choose the most urgent and second most urgent issues from question B3. Respondents giving priority to pollution and waste disposal are classed as belonging to the 'brown' cluster. Those giving priority to logging of forests and destruction of wildlife are classed as 'green', whilst others are classified as 'mixed'.

Knowledge of recycling
Respondents' knowledge of actual recycling practices was measured by question A2, which tested knowledge of the materials that could be disposed of within the kerbside recycling system in each Local Government Area. Respondents were scored on a scale of 0 (no correct answers) to 10 (all correct), again rescaled to range between '0' and '1'.

Environmental risk
The perception of the seriousness of the threat to respondents' health and well being from environmental problems such as air and water pollution was measured by question B4: 'How serious a threat do you think environmental problems such as air and water pollution are to your health and well-being?'. Using a Likert scale ranging from 1 (Not at all serious) to 4 (Very serious), this item was rescaled for regression analysis from Not serious = '0' to Very serious = '1'.

Communal norms
The impact of communal norms was measured by Question A11: 'Do your neighbours recycle?' using a Likert scale from 1 (Yes, all do) to 5 (No, none do). The responses were rescaled to range from '0' (none do) to '1' (all do).

Opportunity structure
The differing levels of recycling opportunities are represented by the geographical location dichotomy north/south. Respondents from the south of Tasmania (Local Government Areas of Hobart, Glenorchy and Brighton were coded as '1', those from the north (Launceston LGA) as '0'.

Sociodemographic variables
Respondents were divided into *age* categories 18-24 years, 25-44 years and 45 years and over, and dummy variables were created for the first two categories. In the regression models the oldest group was used as the reference category. However, for comparative purposes respondents were divided into finer categories in the bivariate analysis (for example, 18-24 years, 25-34 years...). Dummy variables were also constructed for *gender* (males coded as '0', females as '1') and *tertiary education* (graduate degree or higher are coded as '1', else '0').

Dependent Variables

Does respondent recycle?
A dichotomous variable was used to measure whether the respondents recycled any materials:
Question A3: 'Do you recycle any household materials?' Yes / No, rescaled No = '0', Yes = '100'.

Proportion of materials recycled
This variable is based upon Question A6: 'For materials that you do recycle, what proportion do you recycle?' The proportion was measured on a scale coded as All, Most, Some, Little, None. The materials listed in the questionnaire were those most commonly accepted in kerbside recycling programmes - newspapers/magazines, aluminium cans, cardboard, steel cans, plastic drink bottles, milk and juice cartons, and glass jars and bottles. Responses for each recycling item were then combined as a cumulative scale, All to None (rescaled as All = '100', Most = '75', Some = '50', Little = '25' and Never = '0').

Degree of effort
This measure is derived from Question A4: 'How often do you make a special effort to sort glass, metal, plastic or paper for recycling?'. Responses to this Likert scale ranged from Always to Never (rescaled as Always = 100, Often = 66, Sometimes = 33 and Never = 0).

References

Ackerman, F. (2000) 'A load of rubbish', *Waste Management and Environment*, 11(5): 35-37.

Adler, Cy (1973) *Ecological Fantasies: Death From Falling Watermelons*, 2nd edition, New York: Green Eagle Press.

Aitken, S. (1991) 'Person-environment theories in contemporary perceptual and behavioural geography 1: personality, attitudinal and spatial choice theories', *Progress in Human Geography*, 15(2):179-193.

Alter, H. (1993) 'Cost of recycling municipal solid waste with and without a concurrent beverage container deposit law', *Journal of Consumer Affairs*, 27(1):166-187.

Australia and New Zealand Environment and Conservation Council (2000) *The National Packaging Covenant.*

Australian Broadcasting Corporation (2001) 'Federal Election 2001: Denison', *Public Record*, <http:www.abc.net.au/public/elections/2001fed/electorates/deni.htm> 18 December 2003.

Australian Broadcasting Corporation (2003) 'The Waste Club', *Four Corners*, <http://www.abc.net.au/4corners/content/2003/transcripts/s941450.htm> (11 September 2003).

Australian Bureau of Statistics (1996) *Environmental Issues: People's Views and Practices*, Publication No.4602.0, Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1998a) *1996 Census of Population and Housing: Hobart Suburbs*, Publication Number 2026.6, Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1998b) *1996 Census of Population and Housing: Launceston Suburbs*, Publication Number 2028.6, Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1998c) *Information paper: 1996 Census of Population and Housing; Socio-economic Indexes for areas*, Publication No. 2039.0, Canberra: Australian Government Publishing Service.

Baldassare, M. and Katz, C. (1992) 'The personal threat of environmental problems as predictor of environmental practices', *Environment and Behavior*, 24(5):602-616.

BBC (2002) "Tackling Britain's "waste mountain", *BBC News 11 July 2002*, <http://news.bbc.co.uk/2/low/uk_news/2121882.stm> 3 October, 2002.

Bean, C. and Papadakis, E. (1994a) 'Polarized Priorities or Flexible Alternatives? Dimensionality in Inglehart's Materialism-Postmaterialism Scale', *International Journal of Public Opinion Research*, 6(3):264-288.

Bean, C. and Papadakis, E. (1994b) 'Polarized Priorities and Flexible Alternatives: Response to Inglehart and Hellevik', *International Journal of Public Opinion Research*, 6(3):295-297.

Beck, U. (1992a) 'Modern Society as a Risk Society' in Nico Stehr and Richard Ericson (eds) *The Culture and Power of Knowledge*, New York: Walter de Gruyter.

Beck, U. (1992b) 'From Industrial Society to the Risk Society: Questions of Survival, Social Structure and Ecological Enlightenment', *Theory, Culture and Society*, 9.

Beck, U. (1992c) *Risk Society : Towards a New Modernity*, London: Sage.

Berger, I. (1997) 'The Demographics of Recycling and the Structure of Environmental Behavior', *Environment and Behavior*, 29(4): 515-531.

Berkeley Ecology Centre (1996) 'The Seven Myths of "Recycled" Plastic', *Earth Island Journal*, Fall: 26.

Beverage Industry Environment Council (undated:a) *Recycling Fact Sheet*, BIEC.

Beverage Industry Environment Council (undated:b) *Are Beverage Container Deposits a Good idea?*, BIEC.

Beverage Industry Environment Council (1997a) *1997 National Recycling Audit & Garbage Bin Analysis*, BIEC.

Beverage Industry Environment Council (1997b) *Kerbside Recycling - Community Concerns Survey*, BIEC.

Beverage Industry Environment Council (1999a) *Who Is BIEC Tasmania and What Do They Do?*

Beverage Industry Environment Council (1999b) *Litter and recycling in Tasmania: key issues summary.*

Beverage Industry Environment Council (1999c) *Public Place Recycling: Waste Audit, February 1999.*

Beynon, B. (2003) '"Shotgun approach" flawed', *Waste Management and Environment*, February:31.

Bowman, N., Goodwin, J., Jones, P. and Weaver, N. (1998) 'Sustaining recycling: identification and application of limiting factors in kerbside recycling areas', *International Journal of Sustainable Development and World Ecology*, 5:263-276.

Bratt, C. (1999) 'The Impact of Norms and Assumed Consequences on Recycling Behavior', *Environment and Behavior*, 31(5):630-656.

Bryce, W., Day, R. and Olney, T. (1997) 'Commitment Approach to Motivating Community Recycling: New Zealand Curbside Trial', *The Journal of Consumer Affairs*, 31(1):27-52.

Butler, M. (2000) 'Recycling: is it worth it?', *Waste Management and Environment*, May.

Buttel, F. and Johnson, D. (1977) 'Dimensions of Environmental Concern: Factor Structure, Correlates and Implications for Research', *The Journal of Environmental Education*, 9(2):49-64.

Buttel, F. (1987) 'New Directions in Environmental Sociology', *Annual Review of Sociology*, 13:465-488.

Carson, R. (1963) *Silent Spring*, London: Hamilton.

Catton, W. Jr and Dunlap, R. (1978) 'Paradigms, Theories, and the Primacy of the HEP-NEP Distinction', *The American Sociologist*, 13:256-259.

Cheung, S., Chan, D. and Wong, Z. (1999) 'Reexamining the Theory of Planned Behavior in Understanding Wastepaper Recycling', *Environment and Behavior*, 31(5):587-612.

Clinton, W. (1999) *Proclamation 7250--America Recycles Day*, U.S. Government Printing Office.

Clouser, D. (1985) *Practices of Waste Disposal and Attitudes to Source Separation Recycling in Glenorchy, Tasmania*, Environmental Studies Working Paper 18, Centre for Environmental Studies, University of Tasmania.

Collins, L. (1996) 'Recycling and the Environmental Debate: A Question of Social Conscience or Scientific Reason?', *Journal of Environmental Planning and Management*, 39(3):333-355.

Collins, R. (2001) 'Kerbside recycling does pay after all', *Waste Management and Environment*, March:21-23.

Commoner, B. (1966) *Science and Survival*, London: Gollancz.

Cooke, J. (1992) 'It's not easy being green!', *Traffic Management*, 31(12):42-46.

Cotgrove, S. and Duff, A. (1981) 'Environmentalism, values and Social change', *British Journal of Sociology*, 32(1): 93-110).

Cotgrove, S. (1982) *Catastrophe or Cornucopia: The Environment, Politics and the Future*, Chichester: John Wiley and Sons.

Crawford, B. (2003) 'Cut plastic bags or else, retailers told', *The Weekend Australian*, May 24-25:5.

Cretney, M. (1991) *Kerbside Recycling Evaluation Report*, Tasmanian Recycling and Litter Awareness Council

Cretney, M. (1999) 'Developing markets for kerbside collected products', *Waste Management and Environment*, 10(12): 48-49.

Crook, S. and Pakulski, J. (1995) 'Shades of Green: Public Opinion on Environmental Issues in Australia', *Australian Journal of Political Science*, 30: 39-55.

Darier, E. (1996) 'The Politics and Power Effects of Garbage Recycling in Halifax, Canada', *Local Environment*, 1(1):63-86.

Dee, J. (2003) 'The plastic bag habit', *Waste Management and Environment*, February:30.

De Graaf, N. and Evans, G. (1996) 'Why are the Young More Postmaterialist? A Cross-National Analysis of Individual and Contextual Influences on Postmaterial Values', *Comparative Political Studies*, 28(4):608-635.

Derksen, L. and Gartrell, J. (1993) 'The Social Context of Recycling', *American Sociological Review*, 58: 434-442).

De Vaus, D. (1995) *Surveys in Social Research*, 4th Edition, St Leonards: Allen and Unwin.

De Young, R. (1989) 'Exploring the difference between recyclers and non-recyclers: The role of information', *Journal of Environmental Systems*, 18: 341-351.

De Young, R. and Kaplan, S. (1985-86) 'Conservation Behavior and the Structure of Satisfactions', *Journal of Environmental Systems*, 15(3): 233-242.

Downs, P. and Frieden, J. (1983) 'Investigation potential market segments for energy conservation strategy', *Journal of Public Policy and Marketing*, 2:136-152.

Dowson, G. (1991) *Domestic Waste Composition Study*, Tasmanian Recycling and Litter Awareness Council.

Dunlap, R. (1991) 'Public Opinion in the 1980s: Clear Consensus, Ambiguous Commitment', *Environment*, 33(8):9-15, 32-37.

Dunlap, R. and Scarce, R. (1991) 'The Polls-Poll Trends: Environmental Problems and Protection', *Public Opinion Quarterly*, 55:651-672.

Dunlap, R. and Van Liere, K. (1978) 'The "New Environmental Paradigm", *The Journal of Environmental Education*, 9(4):10-19.

Dunlap, R. and Van Liere, K. (1984) 'Commitment to the Dominant Social Paradigm and Concern for Environmental Quality', *Social Science Quarterly*, 65(4):1013-1028.

Ebreo, A., Hershey, J. and Vining, J. (1999) 'Reducing Solid Waste: Linking Recycling to Environmentally Responsible Consumerism', *Environment and Behavior*, 31(1):107-135.

The Economist, (1997), 343(8020):80, 7 June.

EcoRecycle Victoria (1998a) *Public Views Victoria 98: Community Attitudes to Waste and Recycling*, East Melbourne, Vic.: EcoRecycle.

EcoRecycle Victoria (1998b) *Kerbside Recycling in Victoria: Assessment of Markets and Costs*, East Melbourne, Vic.: EcoRecycle.

Eden, S. (1993) 'Individual environmental responsibility and its role in public environmentalism', *Environment and Planning A*, 25:1743-1758.

Ellen, P. (1994) 'Do We Know What We Need to Know? Objective and Subjective Knowledge Effects on Pro-Ecological Behaviors', *Journal of Business Research*, 30: 43-52.

Environment Australia (1997) *Global Warming - Cool It*, Canberra: Environment Australia.

Environment Canada (2000) *The National Packaging Protocol*, http://www.ec.gc.ca/napp-pne.

Fairfield City (1997) *Fairfield City State of the Environment Report*, <http://www.fairfieldcity.nsw.gov.au/environ/19961997/6&5.htm> (19 March 2001)

Fox, W. (1990) *Towards a Transpersonal Ecology: Developing New Foundations for Environmentalism*, Boston: Shambhala Publications.

Friends of the Earth (2002) *Europe calls for tough recycling targets*, <http://www.foe.co.uk/pubsinfo/infoteam/pressrel/2001/2001060500012 5.html> (3 October 2002).

Gamba, R. and Oskamp, S. (1994) 'Factors Influencing Community Residents. Participation in Commingled Curbside Recycling Programs', *Environment and Behavior*, 26(5):587-612.

Goddard, H. (1995) 'The benefits and costs of alternative solid waste management policies', *Resources, Conservation and Recycling*, 13:185-213.

Gow, D. (1990) 'Economic Voting and Postmaterialist Values' in C. Bean, I. McAllister and J. Warhurst (eds) *The Greening of Australian Politics: The 1990 Federal Election*, Melbourne: Longman Cheshire.

Graham, J. (1999) 'Materialism and Consumer Behavior: Towards a Clearer Understanding', *Journal of Social Behavior and Personality*, 14(2):241-258.

Grant, T., Sonneveld, K. and Lundie, S. (1999) *Is Recycling Worth The Effort? Summary Report for Stage 1 of the Life Cycle Assessment of Packaging Waste Management in Victoria*, EcoRecycle Victoria.

Greenpeace (2001) *No Time to Waste! The Greenpeace Anti-incineration Homepage*, <http://archive.greenpeace.org/~toxics/html/content/incineration/> (3 October 2002).

Grogan, P. (1992) 'What's It Costing?', *BioCycle*, December:86.

Harvey, B. and Hallett, J. (1977) *Environment and Society: An Introductory Analysis*, Cambridge, Massachusetts: MIT Press.

Hayes, D. (1978) 'Repairs, Reuse, Recycling - First Steps Toward a Sustainable Society', *Worldwatch Paper 23*. Worldwatch Institute.

Hopper, J. and Nielsen, J. (1991) 'Recycling as Altruistic Behavior: Normative and Behavioral Strategies to Expand Participation in a Community Recycling Program', *Environment and Behavior*, 23(2):195-220.

Hopper, P. (1992) *Container Deposit Legislation for New South Wales - Bringing Back Returnables*, <http://www.geko.net.au/~gargoyle/>.

Hunt, C. (1994) 'The Sustainable Development Debate Revisited', *Current Affairs Bulletin*, 70(10):4-11.

Industry Council for Packaging and the Environment (2002) *What is an Environmental Life Cycle Analysis?*, <http://www.incpen.org/html/lca.htm> (14 September 2002).

Industry Commission (Australia) (1991) *Recycling: Volume 1, Recycling in Australia*, Report No. 6, Canberra: Australian Government Publishing Service.

Inglehart, R. (1977) *The Silent Revolution: Changing Values and Political Styles Among Western Publics*, Princeton: Princeton University Press.

Inglehart, R. (1981) 'Post-Materialism in an Environment of Insecurity', *The American Political Science Review*, 75(4): 880-900.

Inglehart, R. (1989) 'Observations on Cultural Change and Postmodernism', in J. Gibbins (ed.) *Contemporary Political Culture: politics in a postmodern age*, London: Sage.

Inglehart, R. (1990a) *Culture Shift in Advanced Industrial Society*, Princeton: Princeton University Press.

Inglehart, R. (1990b) 'Values, Ideology. and Cognitive Mobilization in New Social Movements' in R. Dalton and M. Kuechler (eds) *Challenging the Political Order*, Cambridge: Polity Press.

Inglehart, R. (1994) 'Polarized Priorities or Flexible Alternatives? Dimensionality in Inglehart's Materialism-Postmaterialism Scale: A Comment', *International Journal of Public Opinion Research*, 6(3):289-292.

Inglehart, R. (1997) *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies*, Princeton: Princeton University Press.

Jacobs, H. and Bailey, J. (1982) 'Evaluating Participation in a Residential Recycling Program', *Journal of Environmental Systems*, 12(2):141-152.

Jacobs, H., Bailey, J. and Crews, J. (1984) 'Development and Analysis of a Community-based Resource Recovery Program', *Journal of Applied Behavior Analysis*, 17(2):127-145.

Kelley, J., Evans, M., and Bean, C. (1995) *International Social Survey Programme 1993: Environment [computer file] (Environment Australia SSDA Study No. 825)*. Canberra: Social Science Data Archives, The Australian National University.

Kiernan, I. (2003) 'The Waste Club', *Four Corners*, ABC Television: 8 September.

Kishino, H., Hanyu, K., Yamashita, M. and Hayashi, C. (1999) 'Recycling and consumption in Germany and Japan: a case of toilet paper', *Resources, Conservation and Recycling*, 26:189-215.

Lansana, F. (1992) 'Distinguishing Potential Recyclers from Nonrecyclers: A Basis for Developing Recycling Strategies', *Journal of Environmental Education*, 23(2):16-23.

Larsen, K. (1995) 'Environmental Waste: Recycling Attitudes and Correlates', *The Journal of Social Psychology*, 135(1):83-88.

Launceston City Council (1999) *Special Rubbish Collection Day* Advertising
    Brochure.
Launceston City Council (2002) 'Launceston to recycle',
    <http://www.launceston.tas.gov.au/whatsnewitem.php?id=1682>, 27
    March 2002.
Lewis-Beck, M. (1980) *Applied Regression: An Introduction*, Newbury Park:
    Sage Publications.
Local Government Association of Tasmania (2000) 'National Packaging Covenant -
    LGAT Response'.
Lunn, S. (2000) 'Recycling gets on its bike in overdrive', *The Australian*, 23
    October, 2000.
Mack, A. (1998) 'Editor's Introduction', *Social Research*, 65(1): 1-2.
Maslow, A. (1954) *Motivation and Personality*, New York: Harper and Row.
Meadows, Donella., Meadows, Dennis, Randers, J. and Behrens, W. III
    (1972) *The Limits to Growth: A Report for the Club of Rome's Project on
    the Predicament of Mankind*, London: Earth Island.
Meadows, Donella., Meadows, Dennis, Randers, J. and Behrens, W. III
    (1974) *The Limits to Growth: A Report for the Club of Rome's Project on
    the Predicament of Mankind*, New York: Universe Books.
Meadows, D., Meadows, D. and Randers, J. (1992) *Beyond The Limits:
    Confronting Global Collapse, Envisioning a Sustainable Future*, Vermont:
    Chelsea Green Publishing.
The Mercury, 27 September, 2002.
Mol, A. and Spaargaren, G. (2000) 'Ecological Modernisation Theory in Debate: A
    Review', *Environmental Politics*, 9(1):17-49).
Morrison, D. (1986) 'How and why environmental consciousness has trickled
    down' in A. Schnaiberg, N. Watts and K. Zimmerman (eds)
    Distributional Conflicts in Environmental Resource Policy, Aldershot:
    Gower Publishing.
McAllister, I. and Studlar, D. (1999) 'Green versus Brown: Explaining
    Environmental Commitment in Australia', *Social Science Quarterly*,
    80(4):775-792.
Nielsen, J. and Ellington, B. (1983) 'Social Processes and Resource Conservation: A
    Case Study in Low Technology Recycling', in N. Feimer and S. Geller
    (eds) *Environmental Psychology: Directions and Perspectives*, New
    York: Praeger Publishers.
Nolan-ITU Pty Ltd (2001) *Independent Assessment of Kerbside Recycling in
    Australia, Revised Final Report - Volume I*, Nolan-ITU: Manly.
Olson, M. (1965) *The Logic of Collective Action*, Cambridge, Ma: Harvard
    University Press.
Organisation for Economic Cooperation and Development (1978) *Beverage
    Containers, Re-use or Recycling*, Paris.
Organisation for Economic Cooperation and Development(1997) *Major OECD
    Exporters of Recyclable Secondary Materials, by Type, and Volume, 1995*,
    <http://www.odic.gov/cia/publications/hies97/k/tab138.htm> 18 April,
    2001.
Oskamp, S., Harrington, M., Edwards, T., Sherwood, D., Okuda, S. and Swanson,
    D. (1991) 'Factors Influencing Household Recycling Behavior',
    Environment and Behavior, 23(4):494-519.
Packard, V. (1963) *The Waste Makers*, Harmondsworth: Pelican Books.

Pakulski, J. and Crook, S. (1998) 'The Environment in Australian Print Media, 1983-1996', in J. Pakulski and S. Crook (eds) *Ebbing of the Green Tide? Environmentalism, Public Opinion and the Media in Australia*, Hobart: School of Sociology and Social Work, University of Tasmania.

Pakulski, J., Tranter, B. and Crook, S. (1998) 'The Dynamics of Environmental Issues in Australia: Concerns, Clusters and Carriers', *Australian Journal of Political Science*, 33(2):235-252.

Papadakis, E. (1994) 'Development and the Environment', *Australian Journal of Political Science*, 29 (Special Issue): 66-80.

Parsons, T. (1967) *Sociological Theory and Modern Society*, The Free Press, New York.

Pausacker, I. (1975) *Is Recycling the Solution? - an assessment of waste recycling in Australia*, Monbulk: Patchwork Press.

Pearce, D. (1989) *Blueprint for a Green Economy*, Earthscan Publications: London.

Pearce, D. and Turner, R. (1990) *Economics of Natural Resources and the Environment*, Harvester Wheatsheaf, New York.

Pelton, L., Strutton, D., Barnes, J. Jr. and True, S. (1993) 'The Relationship among Referents, Opportunity, Rewards and Punishments in Consumer Attitudes toward Recycling: A Structural Equations Approach', *Journal of Macromarketing*, Spring:60-74).

Pepper, D. (1993) *Eco-socialism: From deep ecology to social justice*, London: Routledge.

Percivall, J. and Burger, P. (1973) *Household Ecology*, Sydney: Ure Smith.

Planet Ark (2000) *British Government targets 'pathetic' recycling record*, <http://www.planetark.org/dailynewsstory.cfm?newsid=6864>, 29 May 2000.

Planet Ark (2001) *Planet Ark Recycling Report 2000*, [On-line]. Available at <http://www.planetark.org/recycling/page.cfm?pageid=00.00.00.00.00>, 3 June 2001.

Planet Ark (2003a) http://www.planetark.org/cartons4treespage.cfm?pageid=5 (30 September 2003).

Planet Ark (2003b) 'Cartridges 4 Planet Ark', <http://www.planetark.com/generalpage.cfm/newsid/21/story.htm > (10 October 2003).

Poore, P. (1994) 'America's "Garbage Crisis": a toxic myth', *Harper's Magazine*, 288(1): 24-27.

Radio National (1999) 'Buy Recycled Business Alliance', *Earthbeat*, 17 July, 1999.

Read, A. (1999) '"A weekly doorstep collection, I had no idea we could!" Overcoming the local barriers to participation', *Resources, Conservation and Recycling*, 26:217-249.

Redclift, M. (1996) *Wasted: Counting the Costs of Global Consumption*, London: Earthscan Publications.

Samdahl, D. and Robertson, R. (1989) 'Social Determinants of Environmental Concern: Specification and Test of the Model', *Environment and Behavior*, 21(1):57-81.

The Saturday Mercury, 4 March 2000:43.

Scarlett, L. (1994) 'Recycling Rubbish', *Reason*, 26(1): 30-35.

Schahn, J. and Holzer, E. (1990) 'Studies of Individual Environmental Concern: The Role of Knowledge, Gender, and Background Variables', *Environment and Behavior*, 22(6):767-786.

Schnaiberg, A. (1975) 'Social syntheses of the societal-environmental dialectic: The role of distributional impacts', *Social Science Quarterly*, 56:5-20.

Schnaiberg, A. (1980) *The Environment: From Surplus to Scarcity*, New York: Oxford University Press.

Schnaiberg, A. (1997) 'Paradoxes and Contradictions: A Contextual Framework or "How I Learned to Suspect Recycling"', *Humanity and Society*, 21(3):223-239.

Schwartz, S. (1977) 'Normative Influences on Altruism', *Advances in Experimental Social Psychology*, 10:221-279.

Seguin, C., Pelletier, L. and Hunsley, J. (1999) 'Predicting Environmental

Behaviors: The Influence of Self-Determined Motivation and Information about Perceived Environmental Health Risks', *Journal of Applied Social Psychology*, (29)8:1582-1604.

Shrum, L., Lowrey, T. and McCarty, J. (1994) 'Recycling as a Marketing Problem: A Framework for Strategy Development', *Psychology and Marketing*, 11(4): 393-416.

Simmons, D. and Widmar, R. (1990) 'Motivations and barriers to recycling: Toward a strategy for public education', *The Journal of Environmental Education*, 22(1) 13-18.

Skillington, T. (1997) 'Politics and the struggle to define: a discourse analysis of the framing strategies of competing actors in a "new" participatory forum', *British Journal of Sociology*, 48(3): 491-513.

Standards Australia (1998) *Waste management - Glossary of Terms*, AS/NZS 3831.

Sterner, T. and Bartelings, H. (1999) 'Household Waste Management in a Swedish Municipality: Determinants of Waste Disposal, Recycling and Composting', *Environmental and Resource Economics*, 13:473-491.

Storer, N. (2001) *Recycling Achievement in Europe: Resource Recovery Forum, 20 September 2001*, <www.esauk.org/estet/nickstorer.pdf>, 3 October 2002.

Tabachnick, B, and Fidell, S. (2001) *Using Multivariate Statistics*, 4th edition, Needham Heights, MA: Allyn and Bacon.

Terry, D., Hogg, M. and White, K. (1999) 'The theory of planned behaviour: Self-identity, social identity and group norms', *British Journal of Social Psychology*, (38):225-244.

Third Force News (2002) TFN211 - Recycling, <http://www.scvo.org.uk/tfn/features-archive/features-pages/211.html.> (3 October, 2002).

Thogersen, J. (1994) 'A model of recycling behaviour, with evidence from Danish source separation programmes', *International Journal of Research in Marketing*, 11:145-163.

Thogersen, J. (1996) 'Recycling and Morality: A Critical Review of the Literature', *Environment and Behavior*, 28(4):536-558.

The Times, 26 May, 2000.

Tranter, B. (1996) 'The Social Bases of Environmentalism in Australia', *Australian and New Zealand Journal of Sociology*, 32(2): 61-85.

Turner, J. (1986) *The Structure of Sociological Theory*, 4th ed, Belmont Wadsworth Publishing.

Ungar, S. (1998) 'Recycling and the dampening of concern: comparing the roles of large and small actors in shaping the environmental discourse', *The Canadian Review of Sociology and Anthropology*, 35(2):253-276.

Van Liere, K. and Dunlap, R. (1980) 'The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence', *Public Opinion Quarterly*, 44:181-197.

Van Liere, K. and Dunlap, R. (1981) 'Environmental Concern: Does It Make a Difference How It's Measured', *Environment and Behavior*, 13(6):651-676.

Vining, J. and Ebreo, A. (1990) 'What Makes A Recycler? A Comparison of Recyclers and Nonrecyclers', *Environment and Behavior*, 22(1):55-73.

Vining, J. and Ebreo, A. (1992) 'Predicting Recycling Behavior from Global and Specific Environmental Attitudes and Changes in Recycling Opportunities', *Journal of Applied Social Psychology*, 22(20):1580-1607.

Volokh, A. and Scarlett, L. (1997) 'Is recycling good or bad - or both?', *Consumers' Research Magazine*, 80(9): 14-19.

Wall, G. (1995) 'Barriers to individual environmental action: the influence of attitudes and social experience', *The Canadian Review of Sociology and Anthropology*, 32(4):465-490.

Weinberg, A., Schnaiberg, A., and Gould, K. (1995) 'Recycling: Conserving Resources or Accelerating the Treadmill of Production?', *Advances in Human Ecology*, 4:173-205.

White, S. (2002) 'Executive Summary', *Independent Review of Container Deposit Legislation in New South Wales*, <http://www.isf.uts.edu.au/CDL_Report/execsummary.html> (25 March 2002.

Witmer, J. and Geller, E. (1976) 'Facilitating Paper Recycling: Effects of Prompts, Raffles and Contests', *Journal of Applied Behavior Analysis*, 9(3):315-322.

Woodrum, E. and Wolkomir M., (1997) 'Religious Effects on Environmentalism', *Sociological Spectrum*, 17:223-234.

World Commission on Environment and Development (1987) *Our Common Future*, Oxford: Oxford University Press.

World Resources Institute (1999) *World Resources 1998-99*, World Resources Institute.

Yearley, S. (1992a) *The Green Case: a sociology of environmental issues, arguments, and politics*, London: Routledge.

Yearley, S. (1992b) 'Environmental Challenges' in S. Hall, D. Held and T. McGrew (eds) *Modernity and its Futures*, Cambridge: Polity Press.

Yearley, S. (1996) Sociology, Environmentalism, Globalization: Reinventing the Globe, London: Sage Publications.