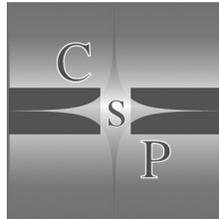


Environmental Psychology

Environmental Psychology Putting Research into Practice

By

Eddie Edgerton, Ombretta Romice
and Christopher Spencer



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TABLE OF CONTENTS

Chapter One	1
Introduction: Environmental Psychology is Eminently Applicable, but is it being Applied? Christopher Spencer	
Chapter Two.....	12
Environmental Psychology Research in Practice: Thoughts on Sustainable Architecture and Urban Design Sue-Ann Lee	
Chapter Three.....	30
User Needs Analysis and Bridging the Application Gap Wim Heijs	
Chapter Four	44
Rejecting Out of Place Elements in Urban Environments: Understanding Public Preferences Yandi Andri Yatmo	
Chapter Five.....	61
Analysing Incivilities in Places of Business Open to the Public: Linking Theory, Research and Practice Sarah Amador & Elena Sautkina	
Chapter Six.....	74
The Role of Information and Trust in the Process of Risk Perception Ricardo García-Mira & Isabel Lema Blanco	
Chapter Seven.....	91
Informing the Practice of Planning: Researching Future Environments using Desktop Computers Anna Conniff, Tony Craig, Richard Laing, Stephen Scott & Carlos Galan Diaz	

Chapter Eight	110
The Maternity Unit Window: Ulrich Revisited Maggie Butchart, Phil Lyon & Valerie Carr	
Chapter Nine	125
Participation as an <i>Authentic</i> Educational Process in Collaborative Projects for the Design of Public Space Paola Michialino	
Chapter Ten.....	140
Zeit, Geist and Sein Bill Thompson	
Chapter Eleven.....	151
Conclusions Ombretta Romice & Eddie Edgerton	

CHAPTER ONE

INTRODUCTION: ENVIRONMENTAL PSYCHOLOGY IS EMINENTLY APPLICABLE, BUT IS IT BEING APPLIED?

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In this book, you will meet a diversity of areas in which environmental psychologists have been at work. However, in this introduction, we want to argue that environmental psychology has so many potential applications; yet is so little known about beyond its own journals and conferences that its potential benefits are denied to the world. Is this our fault, for failing to “give it away” and if so, what can be done and is being done, to make its findings more accessible?

The debate about applying research findings from environmental psychology is as old as the discipline itself and has been referred to as the “applicability gap” (Russell & Ward, 1982; Seidel, 1985). What this introduction does is to gather views on the current state of the debate from experts working in the field. Christopher Spencer wrote to many seasoned colleagues to ask their opinions, and we will with their permission summarise some of their thoughts. As we will see, these opinions cluster around two closely related issues namely, *who* should we be giving our research to and *how* should this be done? However, before we look at the current state of the debate it is useful to dispel a frequently raised myth about environmental psychology namely, the novelty of the discipline.

“Environmental Psychology is such a new area”

Compared with other areas of psychology, environmental psychologists are wont to describe their area as a new branch of psychology. However, in reality environmental psychology has been around for many a year. Proshansky and colleagues’ pioneer volume launching the very title “Environmental Psychology” was published as far back as 1970 and since then, a huge amount of research has been generated. Two huge volumes of the Handbook of

Environmental Psychology came out in 1987 (1648 pages summarizing research up to that point) with two subsequent editions continuing to record its growth.

The Journal of Environmental Psychology was started in 1981 and a quarter of a century later, the journal is still receiving many more manuscripts than it can publish. Similarly the other central journal in the field, Environment and Behavior continues to flourish, (2007 sees volume 39 being published) and several other journals regularly carry relevant articles e.g. The Journal of Architectural Design Research.

There is also no shortage of professional associations e.g. the American Psychological Association (APA) has as its Division 34 “Population and Environment”, whose stated aim is “to improve interactions between human behaviour, environment and population”. Similarly, the Canadian Psychological Association has a vigorous section devoted to environmental psychology. The equivalent national associations in other countries vary in their coverage. In the UK for example, the British Psychological Society (BPS) largely ignores the field, and the banner is carried by the more informal organization “Environmental Psychology in the UK” (EPUK), formed by the coming together of psychologists and architects who share similar interests. A much longer established meeting ground is the Environmental Design Research Association (EDRA), whose purpose is:

“the advancement and dissemination of environmental design research, thereby improving understanding of the interrelationships between people, their built and natural surroundings, and helping to create environments responsive to human needs”.

Other similar organizations include the International Association for People-Environment Studies (IAPS), which aims “to improve the physical environment and human well-being”, and the International Association of Applied Psychology (IAAP), Division 4 – Environment.

So in one sense all is well; there is now a flourishing, multi-disciplinary field. The actual title itself “Environmental *Psychology*” may even be misleading as the field includes professionals from many disciplines other than psychology. There are theories, sub-fields and empirical evidence galore but the question is: “is anyone ‘out there’ listening?” Has environmental psychology had an impact upon the areas of life to which it is most relevant? In the words of George Miller, have we as environmental psychologists “given our psychology away?” (Miller 1975) This leads us on to the first of two issues that relate to the problem of applying environmental psychology research.

To whom should we be giving E.P. research?

First and foremost, there are the design professions such as Architecture, Town and Regional Planning, Landscape Architecture and Interior Design. However, the list goes on: Geographical Education (how far, for instance can young children develop concepts about place and at what age can children understand mapping concepts?); Tourism (what motivates people to travel and how can you encourage green tourism?); Political Science (how do people develop place identity and how can you resolve “territorial” conflicts?); Marketing and Advertising (how can you create ambience in a venue?); Criminology and Police work (is it possible to map the “journey to work” of the burglar?).

What evidence of the impact of environmental psychology on these potential users might one seek? In each of the above areas/disciplines/professions, do we find:

- Questions being asked which show an awareness of the importance of person-place transactions?
- Answers to those questions drawing on environmental psychology theories and research evidence?
- The presence of aspects of environmental psychology in the training and education of these professions?

Sharon Sutton, the City University of New York-trained environmental psychologist and architect emphasised the importance of education and in particular understanding process of “the making of an architect”, which involves a linked sequence of education, internship, licensure, and practice. She goes on to say that for most people, no methods, approaches or values will occur in practice that have not been planted as seeds in education. The problem according to Sharon is that the people who accredit architecture schools define competencies along with the people who give out licenses to practice architecture, who also specify what interns are to attend to during their internships. The schools are relatively powerless in this developmental process because they spend much of their time disagreeing with each other rather than formulating a strategy to counter the current process of accreditation and licensure. As a result, the architecture educational curriculum becomes shaped by people whose primary concern is with “life safety”, a topic more closely connected with engineering than psychology.

If we accept Sharon’s opinion then there is clearly a need to target the knowledge gained from environmental psychology research at those individuals and organisations responsible for the design of educational curricula in the relevant professions. However, an additional approach may be to develop

entirely new curricula that combine environmental psychology with existing professions such as architecture. This is a theme that is explored further in the concluding chapter of the book.

A different (but equally worthwhile) view comes from David Canter, one of the prime movers in environmental psychology in the UK and now a leading forensic psychologist based at the University of Liverpool. David wrote:

“my experiences in developing investigative psychology have supported the view I formed some time ago that we rather missed our way in environmental psychology mainly by not connecting directly with the decision making processes of our target professionals, architects, planners etc. We got sidelined too readily into matters of interest to us but not ones on which they could really act. For investigative psychology I am ensuring that we have a very strong stream of police decision-making research and that we have a clear focus on ‘decision support systems’. So the question we should be asking is, where are these decision support systems in environmental psychology?”

One example of the kind of organisation involved in the decision making process in the UK is the Commission for Architecture and the Built Environment (CABE). CABE is a major new source of research-led information for designers and its stated aim is “to inspire people to demand more from their buildings and spaces” They state their credo thus:

“We believe that well designed homes, streets, parks, work-places, schools and hospitals are the fundamental right of everyone. We use our skills and resources to work for a higher quality of life for people and communities across England, with particular concern for those living in deprived areas. We do this by making the case for change, gathering hard evidence, providing education opportunities and through direct help on individual programmes and projects. We motivate those responsible for providing our buildings and spaces to design and develop well. We demonstrate to those clients that investment in excellence will pay back many times over through a more productive workforce, more contented customers and a healthier bottom line”.

CABE publishes practical guides to creating better buildings and places, as well as policy documents commenting on the latest government planning and regeneration initiatives and case studies relating to experience learned from projects we have worked on. Examples of recent publications include: “Start with the park: creating sustainable urban green spaces in areas of housing growth and renewal” (July 2005) and “Decent parks? Decent behaviour? The link between the quality of parks and user behaviour” (May 2005).

Clearly a worthwhile research activity would be to identify those individuals and organisations that make decisions that relate to people-environment

interactions. Again, this is a theme that will be expanded upon in the concluding chapter.

How accessible is Environmental Psychology research?

If we accept that environmental psychology has produced large amounts of scientific research that has resulted in information that would be useful to the decision making process, the question then becomes “how easy is it for ‘others’ to access and use it?”

Clearly they would not wish to use the scientific papers as such. They would find them laden with jargon, over-detailed, too much concerned with theory and methodology, maybe even with hints of in-fighting! How can they find the way in? A number of our colleagues have expressed their views on this issue of “accessibility” along with examples of how to make their research findings easily available to a wider population of potential users.

Frances Kuo and her colleagues at the University of Illinois at Urbana-Champaign, have written some of the best researched scientific papers on the impact of “green” environments on well-being e.g. the calming effects of green environments on children with Attention Deficit Hyperactivity Disorder. As a companion to each scientific paper, her group routinely produces an on-line “poster” summary each of which has a “hot-link” back to the full scientific paper if the appetite is whetted.

Katherine Wolf, of the University of Washington has conducted a series of studies on the urban forest and people’s response to shopping settings. For each of these studies there is an accessible summary on the web and a downloadable fact-sheet that contains an outline of the main findings. One example would be:

Summary: “Shoppers are increasingly interested in the experience of shopping, as well as the goods and services they expect to purchase”.

Fact-sheet: “This research compared the attitudes and values of urban residents and business people regarding the urban forest in retail business districts. Research methods included photo-based surveys and interviews. The project was national in scope; surveys were distributed in cities throughout the United States having greater than 250,000 population. The results demonstrated public preferences for trees in business districts, and differences in response between business people and nearby residents. Differences in shopping behaviours were also detected for business districts having trees. Those surveyed claimed they would be willing to pay up to 12% for goods sold in a district having a quality urban forest”.

Kate Charles described the ways that the Canadian Institution for Research in Construction fulfils its duties to communicate its research to end users.

Below we quote from her description, a few examples of information dissemination that they have been using recently:

- The Newsletter: short articles in a newsletter that is published quarterly on the web
- Best practice guides: 4-6 page summaries of current best practice
- Website: a detailed website as part of our Cost-effective Open-Plan Environments (COPE) project, using an English literature student to summarise the main findings from our more detailed project reports
- Design Guide: a recently developed design guide aimed at improving open-plan offices for employees and their organisations' productivity
- Seminars: information from the previous two sources (above) were presented as a one-day seminar for practitioners, (this was also web accessible)

Kate makes the point that with all these formats, it is always a delicate balance to provide useful information without distilling research findings to the point of making them meaningless (or invalid). She concludes:

"I am lucky enough to work in an institution where disseminating research findings to practitioners is something that is very much part of our jobs and much encouraged. One of the drawbacks to this kind of activity in a university context is that it's not something that researchers are typically rewarded for (although that might be changing). There are two other factors that are important. One is that my institute has a critical mass of researchers, so it is easier to become a "known" source of useful information. I imagine it is much harder for individual psychologists to make themselves known to the design community (one solution might be to have some kind of umbrella organisation, from which different kinds of design guidance could come, provided by the individual members). The second factor is that we have the advantage of having multiple disciplines, which gives us access to a wide network of different construction-related communities. A side-effect of this is that our work tends to be promoted foremost from the practitioner-perspective, rather than as findings from any particular discipline (psychology, architecture, chemistry, etc). Practitioners, I think, tend to stick with the discipline they know, and so architects, for example, won't necessarily read something that comes from environmental psychology."

Maybe the answer lies in the design professions' own practice. The environmental psychologist Alan Hedge, who is Director of the Human Factors and Ergonomics Laboratory at Cornell University took issue with our initial question.

“I think you're being too pessimistic in your assessment of the utilisation of environmental psychology research by designers. Maybe this is not yet being embraced by all architects, but architects also are not the only design professionals for whom environmental psychology is relevant. In the U.S.A. environmental psychology/environmental human factors research is increasingly being utilised by all types of design professionals. For example, since 2002, the Foundation for Interior Design Education Research (FIDER) has required that interior design students receive instruction in this area. Under section 3 of their requirements it states: ‘student work MUST demonstrate understanding of theories of human behaviour and interior environments’. At the end of the last decade there were just less 9600 interior design firms in the U.S.A. and approximately 34000 interior designers. Interior design is a very rapidly growing field with many new programs coming on stream”.

So it seems that behavioural issues are being considered more than ever in design practice in the U.S.A. However, one challenge for environmental psychology (as Alan points out), is whether it can keep pace with the potential demand for behavioural-based design information. Alan concludes by commenting on the topic of making environmental psychology findings more accessible:

“To further promote environmental psychology it is also vital that environmental psychologists speak at the many design conferences that run annually in the U.S.A. If environmental psychology is to become even more mainstream then it is vital that researchers also learn something about how designers think and work and phrase their research findings appropriately, rather than just in conventional research language for a psychology audience. One of the main reasons that environmental psychology research wasn't being readily utilised was its presentation in psychological research language rather than being translated into design language. Consequently, in the autumn of 2000 the American Society of Interior Designers (ASID) provided very substantial funding and initiated a major program to develop a web-based clearinghouse for design and human behaviour research so that good research would get translated into language more familiar to designers. The resulting “InformeDesign” website has been operational since then. The website covers many journals but is selective in the research that it summarizes, choosing only the most interesting, current and relevant articles”.

So not to be too pessimistic, we will take heart from what Alan Hedge shows us is the more positive situation in the U.S.A., and conclude by sharing some further excellent instances of sites where our users can access summaries of our work.

Graham Sout, at the University of Newcastle, developed the Architecture, Planning & Landscape Information Gateway (SAPLING) website. This is a

free-to-access resource aimed at academics, students, professionals, practitioners, and anyone else with an interest in the areas of architecture, planning and landscape. Although based in the UK, SAPLING'S outlook, coverage and audience is international. It is a completely independent resource, unaffiliated to any organisation, institution or company. In developing the site Graham, has purposely tried and make it accessible to as wide an audience as possible. Part of this is about how the site looks, making the interface friendly and accessible, and avoiding the architectural cliches (not much text, and what there is, is all in lower case). The aim was to create "a professionally neutral image, rather than trying to look like an architectural site, construction site or heritage site".

Another highly individual compiler of information is Anne Beer, an environmental planning consultant specialising in urban green space issues who was based at the University of Sheffield, (having been in the Dept of Landscape she is now freelance and is a chartered Landscape Architect). On her website, Anne has developed a tutorial that aims to be of assistance to those involved in the design process, this includes clients and users as much as the site planners and designers and also environmental psychology researchers seeking new areas of research interest. It tries to identify what we know about people's experience of their immediate environment when they are within public spaces and also indicates the presumptions made about human reactions within public spaces through a lack of fundamental research. It is only an overview and the reader is directed to relevant published sources for further information and study. The overall purpose is to make those involved in design think more deeply about how users will experience the spaces they make and help them to be aware of the growing body of research to support their decision making.

Perhaps the closest to a current awareness service is the on-line and print "Research Design Connections". Some recent examples of its featured articles include:

- "Improving Navigation by Using Landmarks": Researchers testing hand-held interactive guides that use landmarks as navigational cues, discovered that these devices can help both younger and older adults move through a space, but were particularly useful for older adults.
- "Collaborative Work Environments": A new literature review on collaborative work environments provides a useful and concise summary of research on how people collaborate, and what we know about design interventions to facilitate work collaborations.
- "Housing and Well-Being": After reviewing a series of published studies relating housing characteristics and manifestations of poor mental health (such as childhood behavioural problems and

depression in adults), researchers were able to draw several conclusions about the relationship between housing characteristics and mental health.

- “School Buildings Influence Learning Outcomes”: For most children, directed learning occurs in a specific place they inhabit every school day - their school building. Two research studies add to our understanding of how these physical places can affect children’s learning-related behaviours and performance.

What the above comments reveal is that the issue of accessibility is clearly recognised and is being addressed by a number of environment-behaviour researchers. However, since this is mainly being done by highly motivated individuals on an ad hoc basis, perhaps the focus should be on identifying the most accessible format/s for environmental psychology information and developing a “one-stop” resource that is widely accessible. We shall return to this theme in the final chapter.

In conclusion, we would like to commend to you the challenge set out by Thomas Fisher, addressing an audience of architects and designers under the provocative (and purposely ambiguous) title of “Architects Behaving Badly” (Fisher 2004). In this, he accuses his fellow professionals of ignoring environmental behaviour research. He asks:

“Since architecture centrally involves constructing environments for people, why has the architectural community largely ignored environmental psychology, the field that analyses how well we do in meeting people’s needs? Do they not want to know or, even more troubling, do they not care how they are doing? Have the various modern and post-modern ideologies got in the way, allowing architects to convince themselves that the enormous literature on environment and behaviour has little relevance to either the discipline or practice of architecture? Maybe architects, accustomed as they are to the visual representation of ideas and information, and allergic to data tables and descriptive statistics and environmental psychology with its dry prose and deadpan graphics, seems to speak another tongue. Likewise, the tendency of environmental psychology to focus on what it can measure as much as what really matters can lead even the most broadminded among us occasionally to ask: who cares? Yet, once we get past the differences in appearance and approach between architecture and environmental psychology, we will find, like travellers to a foreign country, a great deal to learn about ourselves and our practices”.

Architects sometimes complain that environment-behaviour research uncovers the obvious, and when you scan the abstracts in the major journals in the field you will find a lot that does seem self-evident: “inner city children

benefit from green space”; “windows in the workplace improve job satisfaction”; “aesthetically pleasing stairwells increase their use”; “ventilation affects worker performance”, etc. And yet how much does this claim of obviousness stem from a desire to avoid facing up to what architects have done over the last fifty years?

What this research really makes obvious is that architects have been designing cities without green space, workplaces without windows, offices without adequate ventilation, and stairwells from hell, and this points towards a much broader critique of the architectural community. The work of environmental psychologists reveals an architectural profession that has been too compliant in accommodating the private sector’s rush to maximize profits and the public sector’s desire to minimise spending. At the same time, environmental behaviour research shows an architectural discipline that has been overeager to impose its aesthetic ideologies and utopian visions on others, particularly the most vulnerable among us.

However, despite this critique, it has hopefully become clear from this introduction that the relationship between environmental psychology research and the design professions such as architecture, is now being addressed and progress is being made. Professionals in a range of related disciplines are becoming more aware of the relevance of environmental psychology research, whilst decision making bodies (at least in the UK) are becoming more aware of the need for evidence-based research aimed at improving the quality of our built environment. In a recent statement, the (then) First Minister for Scotland (Jack McConnell) stated that “The quality of Scotland’s built environment is important, not only to our quality of life, but to the perception of the country abroad as an outstanding place to be” (Scottish Executive 2007). The onus is now on us as environmental psychologists to rise to this challenge and produce well conducted and relevant research that is both accessible and applicable to “real-world” issues in people-environment transactions.

The papers

The purpose of this book is to present papers from environmental psychology that reflect the range of topics within the field and to demonstrate the practical applications of this research.

The papers begin with a literature review of research on sustainability in order to identify issues where environmental psychology can contribute (chapter 2). The particular focus is on sustainability in relation to architecture and urban design. Chapter 6, focuses on the way in which people perceive risk in relation to environmental problems and suggests ways in which communication and trust between citizens and decision makers can be improved.

A number of the papers focus on methodological research issues. Chapter 7 looks at how computer modelling technologies can be used as a method for public participation in urban design projects, whilst chapters 3 and 9 are concerned with the development of approaches/techniques that (i) attempt to bridge the applicability gap that exists between designs and users of environments, and (ii) allows all stakeholders to take an active part in design projects for public spaces, respectively.

Some excellent examples of how environmental psychology research can be applied to a variety of “real-world” problems are provided in chapter 5, 8 and 4. Chapter 5 identifies how spatial boundaries can be a major factor in understanding the uncivil behaviour that can occur between customers and employees in commercial environments; chapter 8 makes design recommendations for hospital maternity wards based on an investigation of whether window views of nature are a distraction from pain, and finally chapter 4 questions policy-makers’ negative views of street vendors in urban environments and suggests locations and times of the day where street vendors may be preferred by the public.

The papers finish with a discussion of a theoretical approach to environmental design that requires a new way of understanding culture (chapter 10)

In the concluding chapter, the authors of the book present a number of ideas for improving the ‘visibility’ of environmental psychology along with suggestions for increasing the likelihood that environmental psychology research will be recognised and applied.

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CHAPTER TWO

ENVIRONMENTAL PSYCHOLOGY RESEARCH IN PRACTICE: THOUGHTS ON SUSTAINABLE ARCHITECTURE AND URBAN DESIGN

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Abstract

Within environmental psychology issues of sustainability form a growing area of research and potential application. This is clearly demonstrated if one compares the overview of environmental psychology research by Stokols & Altman in 1987 with that by Bechtel & Churchman 15 years later in 2002. This paper presents an overview of the potential aspects of sustainability to which environmental psychology research could contribute, particularly with regard to its application in sustainable architecture and urban design. It is suggested that there are both *general* and *specific* issues of sustainability to which environmental psychology research can contribute. This paper identifies where environmental psychology research is already being undertaken, what its particular contribution is to the study of these issues of sustainability, and where the potential exists both for more research, and for more application, in the practice of architecture and urban design.

Keywords: environmental psychology; sustainability; architecture; urban design

Introduction

Sustainability is a growing area of research and application in environmental psychology. This can be seen for example, if one compares two major overviews of research in the field. In the “Handbook of Environmental Psychology” edited by Stokols & Altman and first published in 1987, only about 6 of the 43 chapters are concerned with issues connected to sustainability, although environmental problems are identified by Stokols & Altman in their

introduction as *key* to the development of environmental psychology. In contrast, in the second “Handbook of Environmental Psychology” edited by Bechtel & Churchman in 2002 at least 12 of the 42 chapters address these issues. In their introduction Bechtel and Churchman (2002) also identify the new emphasis on the ecological aspects of the environment as one of the significant changes in the field over the intervening 15 years.

Although interest in sustainability can be seen to be growing, what is perhaps surprising is that there is not *more* applied environmental psychology research being undertaken in this area. It is suggested here, with regard to issues of sustainability and putting environmental psychology research into environmental policy and architectural and urban design practice, that we need more research, more applications of existing research, and that we need to make existing research and applications more evident.

There are several reasons why more research is needed. Firstly, within the domain of psychology, environmental psychology is still a relatively small and a relatively new specialism; there are not many environmental psychologists worldwide and therefore there is, not yet, a large body of research.

Secondly, as Nickerson (2003) and others would argue, even within the small domain of environmental psychology, there has been relatively little research that focuses on the effects that human beings have on the environment; particularly the natural environment and its resources. The main thrust of environmental psychology research has been on increasing the understanding of the effects of the environment on human beings. So it is argued that more of the first kind of research is needed.

With regard to increasing the application of existing research, Nickerson (2003) suggests that we need both people to review the existing research to find its practical applications and people who start with the (environmental) problems and then design research which helps to solve them. Either strategy is a challenge.

It is also a challenge to make existing research and applications more evident in environmental policy and design practice. It is difficult to find environmental psychology contributions explicitly acknowledged in government environmental documents and policies, although some researchers are contributing to them. This is part of a general problem with commissioned research and advisory roles. Also, when commercial interests in design practice or sensitive material are involved, it may not be possible to publish the work. However, researchers should be encouraged to publish within environmental psychology, as well as in these other contexts, wherever possible.

Another reason that some environmental psychology research is not more evident is that it has become diffused into other types of psychology or into

other disciplines. This is raised by Stokols (1995) as a paradox for the field and is also considered to be problematic by Bonnes, Lee & Bonaiuto (2003).

The links to, and differentiation from, other disciplines are explored in a special section of the Handbook edited by Bechtel & Churchman (2002). The contributions by Dunlap (2002) on environmental sociology and by Churchman (2002) on urban planning are pertinent to the subject of this paper. Other texts such as that by Becker & Jahn (1999) bring together a range of contributions from a number of social sciences, including environmental psychology (Werner 1999), specifically on the topic of sustainability.

After some general comments on theoretical frameworks and sustainability, this paper will explore research and application relating to issues of sustainability of particular relevance to sustainable architecture and urban design. It is suggested that there are both *general* and *specific* issues of sustainability that are of relevance to architects and urban designers and to which environmental psychology research can make a particular contribution. Following a brief overview of each, one general issue and one specific issue will be discussed more fully.

Theoretical Frameworks and Particular Methodological Expertise

Several authors have summarised the theoretical frameworks in psychology that can inform environmental psychology research; these include Bonnes et al. (2003) and Bell, Greene, Fisher & Baum (2001). A few, such as Winter & Koger (2004), have focused particularly on issues of sustainability.

In their recent book Bonnes et al. (2003) take theoretical approaches that have originated within psychology and show how each can inform the understanding of psychological processes “when considered as interfaces between person and socio-physical environments” and thus “this reformulates them as environmental psychological processes” (Bonnes et al. 2003 p 20). They present the theoretical approaches chronologically and show how each has come to be used in environmental psychology. Their aim is to clarify the theoretical roots of environmental psychology. They also hope to help guarantee its continued integration in psychology *and* to show its specific contribution alongside other social sciences, when applied to environmental problems. They discuss schema theory, cognitive processes, perception, place attachment, the Theory of Planned Behaviour, identity theories and discursive psychology.

They acknowledge that this approach contrasts with other overviews such as those by Stern (1992), Pawlik (1991), Gardner & Stern (2002) and Nickerson (2003), which as mentioned above, focus on serious environmental issues and

then review the research within environmental psychology that is concerned with the psychological dimensions of these problems. The aim of this research is to assist understanding for wider policy and practice decision making.

Bonnes et al. (2003) see environmental psychology as integrative and as important for psychology as a whole. They argue that environmental psychology has always had both strands, that of internal relevance to related psychological theory and research, and that concerned with external relevance. They make a plea for it to continue a two-pronged development i.e. both intradisciplinary research focusing on *processes* and research with external relevance focusing on *contents*.

Bell et al. (2001) in their text “Environmental Psychology” place the emphasis mainly on psychological theory as applied to the person-environment interaction however, from the first edition in 1978 they have devoted one of their chapters to “Changing behaviour to save the environment”. They also include a wider remit than many similar texts in terms of the effects on people of environmental aspects such as weather, climate, toxic hazards and pollution.

They describe theories of perception and cognition, arousal, environmental load, adaptation level, behavioural constraint and Barker’s Ecological Psychology. At the end they briefly add some comments on other theoretical perspectives that are particularly concerned with the design of physical environments including defensible space, privacy, environmental press and competence, and wayfinding.

Winter & Koger’s (2004) book “The Psychology of Environmental Problems” is specifically concerned with the relationship between psychology and issues of sustainability. They review major theoretical frameworks in psychology and show how each one can contribute to our understanding of some aspects of sustainability. The six theoretical frameworks discussed are: Freud/Psychoanalytic, Social, Behavioural, Physiological, Cognitive, and Holistic (Gestalt & Ecopsychology).

They show for example how Freudian psychology can help us to understand our defence mechanisms with regard to environmental problems and how changing our sense of selves in relation to nature will not be easy. Social psychology shows us for example, how our attitudes and behaviour are influenced by norms of appropriate behaviour and how we are influenced by our reference groups. It shows that changes are easier to make if we put ourselves in social situations that support them. Social psychological studies of the links between lifestyle and happiness are discussed below. Behavioural studies show us that the environment influences our behaviour, which in turn influences the environment. Research also shows that behavioural change (such as to pro-environmental behaviour) will occur where it is easy or convenient to do so. Cognitive approaches show us that inappropriate (unsustainable)

behaviour can arise from distorted or missing information about the consequences of our actions; we are not usually rational risk assessors. Holistic frameworks are beginning to be applied to the study of ecological problems, it is hoped that we will come to see our intimate relationship with others and with the ecosystem. A new chapter on the physiological effects of environmental toxins and stress on humans has been added to this second edition of the book.

Winter & Koger (2004) also see a unifying role here but within the *topic* of sustainability, not the discipline: “How to sustain human existence on the planet could become psychology’s core question, offering an intellectual coherence to a discipline increasingly fragmented by diverse concerns” (Winter & Koger 2004 pp 211-212).

Besides theoretical contributions to this area, Oskamp (2002) and others, outline particular methodological contributions to be made by environmental psychologists.

In his summary paper in a special issue of the American Psychologist, Oskamp (2000) identifies the two key problematic behavioural patterns for sustainability as overpopulation and overconsumption. He proposes seven strategies for addressing these problems in which psychological research has an important part to play. Contrasting approaches are proposed by the other contributors, which reinforce the case that more research is needed. Stern (2000) suggests that large organisations and governments be targeted, but others see individual and social change on a wide scale to be necessary.

In a more recent summary, Oskamp (2002) identifies three areas of research for sustainability where psychologists can contribute their particular expertise: measurement research, studies of naturally occurring relationships, and intervention research.

He identifies a number of aspects of sustainability that need careful measurement, including: inclusion with nature, sustainability attitudes and intentions, personal sustainable behaviour, sustainable performance by nations, and cross-cultural comparisons of different nations and cultural groups. He also advocates the study of naturally occurring relationships with reference to sustainability and discusses three possibilities: identifying cultural patterns associated with high sustainability, following up successful behavioural change programmes, and finding and studying examples of societies or cultures where conflicting values have been melded without conflict or violence. Finally, Oskamp (2002) also suggests that for intervention research we need to know more about how best to use situational pressures, build internalised motivation, resist ecological harm, develop community sustainability programmes, utilise the mass media, and (like Stern 2000) influence corporations and governments.

Research into General Issues of Sustainability

In the introduction to their book “The Psychology of Sustainable Development”, Schmuck & Schultz (2002) suggest that there has not been enough psychological research in this area and for their discussion they separate aspects of environmental, social and economic sustainability, while pointing out that they need to be seen to operate together and to be in balance. They review the causes of sustainable and non-sustainable behaviour and suggest that *both* need further study. They outline the potential of psychology to foster sustainable development: “To achieve sustainability, large scale changes are needed aimed at intergenerational equity, intragenerational equity and interspecies equity. Psychology, as the science of human behaviour, can play an important role in understanding and promoting sustainable development”, (Schmuck & Schultz 2002 p3).

Nickerson (2003) in his book “Psychology & Environmental Change” presents a useful summary of research on general issues of sustainability, combining environmental, social and economic issues in his discussion. As mentioned above, Nickerson (2003) as a psychologist, is particularly concerned about the paucity of psychological research that focuses on the effects of human beings on the environment and therefore presents this as the focus of his book.

He summarises the research that has been done and identifies what needs to be done, not only for the topics of attitude and behavioural change and of risk assessment and prevention (as other texts discussed in this paper) but also helpfully across a wider range of design-related topics. These include: technology enhancement (for energy efficiency, water, transport, food and forests), increasing “resource-light” technologies (by using IT and teleconferencing), and artefact design and evaluation (in terms of longevity and recyclability), see for example Chapman (2005).

Other *general* issues of sustainability pertinent to architects and urban designers which are not so explicitly covered by Nickerson (2003), and to which environmental psychology research can contribute include: Environmental and Social Impact Assessment (Pol 2002), Post-Occupancy Evaluation (Zimring 2002) and Participation (Horelli 2002, Wiesenfeld & Sanchez 2002, EPRG Surrey 2006 and Gifford 2002). Participation will be seen to be a recurring theme in the discussions below.

Although environmental psychology research can contribute both theoretically and methodologically to the study of these general issues, it is acknowledged that other physical and social sciences can, and should, also contribute.

Research on Social Dilemmas, Attitude Change and Pro-Environmental Behaviour

Within *general* issues of sustainability one of the key challenges for everyone concerned with sustainability (citizens as well as psychologists, architects and urban designers), is how to deal with the “Commons Dilemma” (Hardin 1968) and how to promote attitude change and pro-environmental behaviour.

Ruckelshaus (1989) succinctly summarises the problem: “It means trying to get a substantial proportion of the world’s people to change their behaviour in order to (possibly) avert threats that will otherwise (probably) affect a world most of them will not be alive to see”.

Winter & Koger (2004) see the contribution of psychology here as vital: “...we will need a robust psychology to help us make crucial changes in our behaviours, thoughts, feelings and values” (Winter & Koger 2004 p 211).

We are encouraged to “Think Global Act Local”. Winter & Koger (2004) conclude their book by proposing six operating principles for people to start to make a difference in the face of what can seem to be overwhelming global issues. They show a parallel between the sections of their book and Uzzell’s (2000) paper in which he explores the reasons why people, although they are concerned about global problems, do not feel responsible for them and, paradoxically, do not seem to perceive local problems.

In their book “Environmental Problems and Human Behaviour”, Gardner & Stern (2002) devote several chapters to Social Dilemmas and the contribution of psychological research to strategies for their possible solution. They compare changing attitudes and providing information, changing the incentives and community management, as well as discussing the combination of solution strategies in particular examples. In drawing lessons from some successful environmental programmes, they highlight the importance to success of having a known goal agreed and for there to be participation in choosing the goal/s. The role of participation is again seen as important here.

Other research on attitude change and pro-environmental behaviour includes that by Geller (2002) who describes both antecedent and consequent strategies. Staats (2003) uses the Theory of Planned Behaviour in his research on these issues and Oskamp (2002) considers individual approaches, group approaches and organisational approaches in his studies.

Nickerson (2003) summarises the psychological research that has been done on changing behaviour with regard to sustainability. The wide remit of this research can be seen from his headings which include the practical: increasing energy-conserving behaviour, conserving energy in transportation, increasing recycling, reducing waste production, and anti-littering campaigns, as well as

the social: education and persuasion in behaviour change, the importance of choice, a sense of control, commitment and information feedback, peer pressure and social norms, change versus effective lasting change, and motivation. He also lists some remaining questions for research into environmentally beneficial behaviour.

Psychological research needs to identify where and why certain well-intentioned sustainability policies and initiatives work and where they do not. It has been found that in some cases they do not lead to the extent of change that was hoped for and in some cases the initiatives actually backfire and exacerbate the problem, as was the case with the car number-plate initiative implemented in Athens, which increased the atmospheric pollution it was designed to reduce!

Research into Specific Issues of Sustainability

Researchers have also focussed on the application of environmental psychology research to *specific* issues of sustainability. Some of the specific areas relating to architecture and urban design will be highlighted here by using the “Triple Bottom Line” categories i.e. *Environmental* sustainability, *Social* sustainability and *Economic* sustainability, as identified in the Brundtland Report (WCED 1987). However, it should be noted that several issues overlap these categories and that these issues are also studied by other physical and social scientists.

As this paper is limited what follows in Table 2-1 is a summary of those aspects considered to have particular relevance to architecture and urban design, together with some suggested sources for further information on psychological research into these aspects. One *specific* issue is then chosen for fuller discussion.

It can be seen that there are three types of environmental psychology research: research on the effects of people on the environment and its resources; research on the effects of the environment on people; and research into the implications, for people, of particular policies or designs which are trying to address problems of sustainability.

Environmental Sustainability	Social Sustainability	Economic Sustainability
Air and Noise Pollution Bell et al. (2001); Winter & Koger (2004); Edelstein (2002); Bronzaft (2002)	Sustainable Communities Moughtin (2005); Fowles (2000); Macnaghten (2001); Lee (1995)	Implications of “Natural Capitalism” – valuing natural, human and social capital Hawken, Lovins & Lovins (1999); Winter & Koger (2004); Nickerson (2003)
Thermal Comfort & “Sick Building Syndrome” Bell et al. (2001)	“Inclusive” Design Helen Hamlyn Research Centre, Royal College of Art; Colour Design Research Centre, Kingston University	Green Consumer Behaviour Wagner (1997); Chapman (2005)
Energy Issues Schmuck & Schultz (2002); Nickerson (2003); Moughtin (2005)	Implications of the “Compact City” see sources & discussion below	Alternative Lifestyles and Homeworking see sources & discussion below
Waste and Recycling Nickerson (2003); EPRG Surrey (2006)	Alternative Lifestyles see sources & discussion below	
Transport Issues Nickerson (2003); EPRG Surrey (2006); Moughtin (2005)	Participative Decision Making see sources & discussion below	
Materials and Aesthetics Bell et al. (2001); Williamson, Radford & Bennetts (2003); Phillips (2003)		
Environmental Management Systems Pol (2002)		

Table 2-1: A summary of *specific* issues of sustainability pertinent to architecture and urban design.

Quality of Life & Sustainable Architecture and Urban Design

One overarching concern that links many of these aspects is the implication for the “quality of life” of citizens of implementing sustainable policies and design practice. “Sustainable development requires an economy directed at

improving the quality of life, decoupled from the quantity of consumed resources” (Schmuck & Schultz 2002 p 6).

The implications of taking up more sustainable lifestyles are the concerns of one strand of psychological and social research (Degenhardt 2002). There is a growing body of work that shows the limitations of consumption with regard to human happiness and well-being. Work by psychologists includes that by Kasser & Kanner (2003) who suggest that psychologists have been ignoring this area of research partly because it is politically sensitive and because psychology has had a long established application in advertising and marketing to *encourage* consumption.

James’ (2005, 2006) research illustrates both the Social Dilemma with regard to the planet and the lack of fulfilment experienced by those most able to take advantage of current (exploitative) lifestyles.

Winter (2003) specifically addresses psychological solutions to the problem of overconsumption applying a number of theoretical frameworks. This topic is also covered in her book with Koger (Winter & Koger 2004), which shows that people are not happier when they own more things. Happiness relates more to social relationships, personal control, leisure time activities and meaningful work.

An observation by Jenks & Dempsey (2005) links the discussion of these social aspects of sustainability with that of built form:

“...it is behaviour, lifestyles and people’s aspirations that are at the heart of achieving a sustainable environment. The form of urban areas and buildings within them, do not determine sustainable behaviour, but they might provide the right setting for it” (Jenks & Dempsey 2005 p 417).

There is considerable current debate in architecture and urban design about how to design and plan to achieve sustainability. There are discussions about the relative sustainability of cities, towns, suburbs and rural areas. There are discussions about designing at high densities and low densities. There are discussions about taking a “high-technology” or “low-technology” approach to sustainable architecture. There are debates about policies for new building, for refurbishment and for regeneration. There is not as much debate about the implications of these differing strategies for the “quality of life” of the users of these planned environments and almost no acknowledgement that environmental psychology research might have a role to play in these debates.

In discussing “quality of life” in connection with sustainable architecture and urban design, aspects will be considered at different scales ranging from the city scale through to that of the building. The material in this section will be

drawn from a combination of current discussions by designers, by researchers in other social sciences and by a few psychologists.

Sustainable Urban Design

At the city scale, one of the most pervasive ideas for designing for sustainability is the ‘compact city’. In urban design this idea is not new, however it has been promoted recently as a particularly suitable vehicle for achieving sustainability. It was espoused by Roger’s Urban Task Force (1999) and has become incorporated in current British urban policy.

It is argued that designing high density, compact, urban settlements will make the best use of existing infrastructure, will cut car use and emissions, will reduce energy consumption through enabling Combined Heat & Power (CHP) and district heating schemes, and protect the countryside. The Urban Task Force (Rogers 1999) proposals include, in summary:

- High density mixed-use development, with mixed housing tenure, at 50 units per hectare
- Homes within 10 – 15 minutes walking distance from local centres
- Connections to other centres via public transport
- A well designed public realm: streets, squares, parks & open spaces

However the implications of this strategy for the “quality of life” for individuals has not been fully researched and there are a number of aspects to which environmental psychology research could make a particular contribution. Bell et al. (2001) list some of them including: relationships with nature, noise, thermal comfort and “sick building syndrome”, pollution, density and crowding, privacy, and individual locus of control.

Jenks, Burton & Williams (1996), Williams (2000), Jenks & Burgess (2000), Jenks & Dempsey (2005), and others at the Oxford Institute for Sustainable Development have been studying the implications of compact city ideas for a number of years and their work clearly shows the complexity of the topic and of the task. They have also considered these ideas in a number of contexts including both in the developing and the developed world.

Williams (2000) for example, has studied the impacts of intensification policies in Britain in three London boroughs over a ten year period. She evaluated them using three types of planning objectives: environmental, quality of life and economic. She lists the three main components of the “quality of life” objectives as follows; providing housing in a sustainable way to improve the quality of life, to upgrade urban environments to foster civic pride, local

identity, community spirit and safety, and thirdly, to improve social equity by making services more accessible to all urban residents.

She lists both the potentially positive and negative impacts of the implementation of intensification in each borough. These include: the reduction in air pollution and noise, a better environment for pedestrians and cyclists, the reduction in private space both inside and outside housing, the loss of greenery, increased wear and tear in the built fabric, and potential bad neighbour effects with high density mixed-use developments e.g. increasing noise, disturbance and litter.

The results varied between the boroughs and between components: “some aspects of intensification in some places have contributed to sustainability, whilst others clearly have not.” A key finding for those interested in environmental psychology’s contribution, was that success was “dependent on how people valued their neighbourhoods” (Williams 2000 p 44).

In a more recent review, Jenks & Dempsey (2005) also identify what can be seen as a particular subject for environmental psychology research: “The way forward here depends upon a clear understanding of the existing environment, the people who live there, and thus the type of development or intensification that would be acceptable” (Jenks & Dempsey 2005 p 416).

Moughtin (2005) and others do not see the “compact city” concept as a universal model for sustainability. They list the advantages of lower density design for sustainability as: facilitating the use of solar power, being better for food growth and for the recycling of organic waste, and for enabling subsequent infill development as needs develop and change over time. Moughtin (2005) reminds us that public participation in Britain shows an overwhelming preference for lower density design and for a house and garden. He suggests a spectrum of built form for sustainability with the compact city at one end and the eco-village at the other. In between, as well as the garden city, he proposes the “bio-city”, which is self-sustaining within its bioregion. He also sees governance and participation as key elements with design: “it is effective public participation (*at the local level – my addition*) that is also the foundation of good urban design” (Moughtin 2005 p 227).

Moughtin (2005) describes sustainability as a human crisis not an environmental crisis. As a planner and urban designer this is perhaps surprising but the focus on the human dimension pervades his book. Nevertheless he praises urban design for leading British efforts to achieve more sustainable cities. Some guidance and case studies of “good” sustainable urban design are now becoming available to designers. Thomas (2003) a respected environmental engineer has been applying sustainability in his practice and has compiled a useful collection of papers by designers and others, arising from the sustainable urban design conference he hosted at Kingston in 2002.

Barton, Grant & Guise (2003) are concerned with sustainability in neighbourhood planning. As well as being used by designers, their guide can also be used by developers and community groups to enable informed and integrated local decision making for sustainability. It has a wide remit as the sub-title (“health, sustainability & vitality”) suggests and although they recognise the profound shift in architectural and urban design practice that needs to occur, they describe their work as “practical idealism”.

Sustainable Architecture

There is much ambivalence towards issues of sustainability within architecture. Some architects are very committed to sustainable practice, some are very sceptical about it and some, while sceptical of the oversimplification of ideas of sustainability, are taking a thoughtful approach to exploring the concept and its implications in more depth. Williamson, Radford & Bennetts (2003) and the contributors to Abley & Heartfield’s (2001) book are in this category.

Williamson et al. (2003) support a richness and diversity of sustainable architecture solutions “crafted in care and joy” and suggest that “a sustainable architecture will follow if we encourage architects towards beautiful acts as a virtue, working on their inclinations rather than a prescription of duty” (Williamson et al. 2003 p 61).

The benefits of user participation in architecture are shown to be both local and global. At the local level, practising architects Broome (1995) and Fowles (2000) both show that where people directly participate in their housing design and construction, their houses are sustainable in both a material and a long-term survival sense.

Macnaghten (2001), a rare psychologist in an architectural text, makes a connected but different observation based on his research, concerning the global benefits:

“.. the practical challenges for such (sustainability) initiatives are far-reaching and would involve sizeable shifts in the culture of planning and building practice: if we are serious in understanding the conditions for a more sustainable society, we need to recognise that the more directly involved are people in the construction and preservation of their dwellings, the more likely they are to care for and cherish the planet we all inhabit” (Macnaghten 2001 p 92)

Conclusion

Oskamp (2000) echoes Macnaghten’s (2001) point: “...that resolving the ecological crisis is a momentous and crucial task and that completing this task