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Self-reflective practice in sustainable design

Volume One

by

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Submitted in fulfilment of the requirements
for the degree of
Doctor of Philosophy

Deakin University

December, 2009
I certify that the thesis entitled: **Self-reflective practice in sustainable design**

submitted for the degree of **Doctor of Philosophy**

is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

I also certify that any material in the thesis which has been accepted for a degree or diploma by any university or institution is identified in the text.

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Abstract

Within architecture, sustainable design has arisen as the strategy for transforming design and building practices in support of ecologically sustainable development (ESD). The dominant approach to sustainable design is through the environmental design sciences with the focus on technical matters of building design, construction, performance, etc. Yet, architectural thinking is deeply implicated in unsustainable ideologies and this matter cannot be subsumed within a technical brief. Central to the transformative agenda of sustainable design is the need to transform values, including the designer’s own ethical know-how that informs his/her design praxis.

Missing from the sustainable design discourse is a thorough investigation of design as a self-reflective practice. The sufficiency of traditional approaches to self-reflective practice is currently under challenge with new methods incorporating meditation and yoga being developed within the cognitive sciences and psychotherapy. This has implications for sustainable design as a self-transformative practice, in that meditation and yoga target value-change through both deliberative and intuitive processes in acknowledgement that both are vital to value-change.

This thesis examines the strategies and coping skills of key architects engaged in sustainable design here in Australia to see how they manifest as sustainable design praxis. Findings include a holistic model of sustainable design that encapsulates the technological, phenomenological, psychological and social measures of wellbeing pursued by these architects both deliberately and intuitively throughout the design process.
For Peter Lucas

(1950 – 1999)

Who inspires me always.
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Including the Designer in a more Holistic Understanding of Ecologically Sustainable Design (ESD), co-authored with Dr. U. De Jong and presented at the
‘Speculation and Innovation: applying practice led research in the Creative Industries’ conference at Queensland University of Technology, Brisbane, Australia, 2005.

*Ecologically Sustainable Design through Reflective Practice*, co-authored with Dr. U. De Jong and presented at the 2005 World Sustainable Building Conference (SB05 Tokyo), Tokyo, Japan.

*Architecture, Ethics and Sustainability – an Exploration*, co-authored with Dr. U. De Jong and Dr. R. J. Fuller and presented at the ANZAScA Architectural Science Association 40th Annual Conference, University of South Australia, Adelaide, 2006
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Chapter 1

Self-reflective practice and sustainable design

1.0 Introduction

Within the architecture profession, sustainable design has emerged as a formal strategy for transforming design and building practices in accordance with ecologically sustainable development (ESD) (UIA/AIA 1993). ESD is itself a movement, formally recognised since the 1980s, to transform powerful human development practices, and especially industrialisation and consumerism, in accordance with what is considered ecologically sustainable (Brundtland 1987). Essentially, both ESD and sustainable design are formalised strategies for the transformation of ecologically unsustainable human development practices. Yet, within the architecture profession, there is an ambivalence towards sustainable design, despite the compelling need for the changes it champions and rhetoric of support for such changes (Owen 2003).

This thesis argues that, in order to address the ambivalence within the profession, practices specifically aimed at the designer need to be central to the transformative agenda of sustainable design. This argument purposefully foregrounds the individual as the basic unit of self-awareness and human agency. This is not to deny the profoundly embedded nature of all individual expression and thus the contextual moulding of free will, but to emphasise the subjective dimension of design. With this qualification in mind, the concern is that current design practices do not effectively address the designer’s individual, in-built mechanisms for value-change. Specifically, what seems to be missing is a
deliberate targeting of the designer’s values through design as a self-reflective practice. It will be argued that this represents an oversight attributable to longstanding tensions between different notions of human agency and, therefore, notions of self and of design. The first strategy to be pursued throughout this thesis, therefore, is to contrast the status of the subject in modernity against its status in sustainable design practice.

Western, post-enlightenment discourse on human agency and the status of the subject in modernity is now set against the diminution of religio-aesthetic inspiration, with its accommodation of mystery and the ineffable, as an authoritative measure of knowledge. This situation has led to an impasse, specifically between scientific and humanistic valuing of subjectivity and the nature of mind. Until very recently the impasse has hampered the development of self-reflective practice as a value-change mechanism, and in turn, affected its integration into design skills.

New opportunities now exist to break the impasse, with new theories concerning subjectivity, first developed in biology in the 1970s and pursued into the cognitive sciences in the 1990s, leading the way. While these theories are significant to architecture and design and will be discussed in greater detail within this thesis, of particular interest is that they have led to the renewal of phenomenology as an appropriate means for studying one’s subjectively lived body and life-world. Phenomenology has distinguished itself, within these developments, as a first-person method for studying subjectivity that acknowledges both the rigour and the limits of the scientific method. In a parallel development, a new wave of self-reflective practices for health and wellbeing has emerged within the psychotherapies. The common thread in these various developments, whether phenomenological or psychotherapeutic, is the adaptation of Buddhist meditation methods into their programmes of self-reflective practice.

Within architecture, phenomenology has been adopted more as a philosophy of subjectivity than as a rigorous methodology for self-reflective design practice.
Self-reflective practice and sustainable design

(Dodds and Tavernor 2002; Heidegger 1971; Holl et al. 2006; Nesbitt 1996; Norberg-Schulz 1979; Pallasmaa 2009; Pérez Gómez 1987; Seamon 1993; Seamon and Buttimer 1980). As a philosophy, it argues for the immediacy and full-bodied nature of the architectural experience and has stimulated insights into design practice that highlight its contingent, sense-making nature and sensorimotor dynamics. Such accounts feed into an ongoing debate over concepts of art and design which oscillate between designations of design as a rational decision-making process on the one hand and as an intuitive, sense-making process on the other. This thesis argues that both these aspects need to be addressed if design is to affect value-change as central to its transformative agenda.

The dominant discourse in sustainable design is reliant on the environmental design sciences and this has led to a focus on technical matters of building design, construction, performance, etc. (RAIA 1995). Criticisms of this approach to design, whether phenomenological or otherwise, target the non-technical nature of praxis as a choice-making activity central to design; arguing that this tends to be overlooked within the dominant discourse (Alexander 2001-; Alexenberg 2008; Fry 2009; Fuad-Luke 2009; Pérez Gómez 2006). Because of this oversight, a vital part of the transformative agenda of sustainable design is undermined, which is to challenge the designer’s ethical know-how that informs his/her design praxis.

This is not to suggest that there is not discussion about the purpose of design, its nature as a creative process and the role of the designer in transforming design priorities (Alexander 2001-; Chapman 2007; Inns 2007). What seems to be missing from this discourse, however, is a thorough investigation of design as a self-reflective, and therefore, self-transformative practice. It is as if, through logical argument and a focus on transforming the “Other” (this being the design process, the profession and wider society), automatic adjustments to the designer’s own values will occur and designers will become the value-change
Self-reflective practice and sustainable design

facilitators they need to be. This thesis argues that this is too simplistic an understanding of the mechanisms of value-change.

Design provides an opportunity for self-reflection, for research indicates that the designer conducts the design process as a reflective conversation with a problematic situation (Cross 2001; Cuff 1991; Schön 1983; 1985). Yet, the focus may be so task-oriented as to make little room for self-reflection that challenges the designer’s praxis. If sustainable design is to be carried out as transformative practice, challenging the designer’s own deeply-held convictions needs to be part of design thinking. The claim made here, and upon which this thesis rests, is that the transformation of design praxis can be enhanced through deliberate self-reflective practice.

Deliberate self-reflective practice traditionally refers to formal techniques of critical thinking (Scriven 1976). The sufficiency of traditional approaches is currently under challenge and is being expanded upon to incorporate new methods that deliberately engage emotional and corporeal modes of awareness to bring about self-transformation (Damasio 2005; Thompson 2007). Advances in understanding have come through the cognitive sciences and psychotherapy in Western culture, whereas in Asian culture, they are embedded in meditation and yoga (Begley 2007; Kabat-Zinn 1994).

With the adaptation of meditation and yoga into psychotherapy a growing phenomenon, this has sparked increasing scientific enquiry into their transformative potential that has implications for sustainable design as a self-transformative practice. Essentially, they imply that both the deliberative and intuitive aspects of design are open to transformation. This is because meditation and yoga are deliberative mind/body-training practices designed to target intuitive coping strategies for bringing about value-change. Design is both an immediate coping strategy and a deliberative process in that the designer’s own deeply-held convictions are accessed intuitively throughout the design decision-making process. Key to this understanding of design is that tacit knowledge informs the
initial coping strategy and, as such, guides design as a decision-making and critical-thinking exercise. Therefore, the argument upon which this thesis rests is that, for sustainable design to be holistic practice, it must provide the designer with practical methods for self-transformation based on these understandings.

1.1 Research aim

The aim of this thesis is to uncover the practical implications for architects of developments in self-reflective practice through an exploration of design as praxis. This is in recognition that, as praxis, design articulates deeply held convictions, attitudes and habits of mind that may impede the designer’s ability to practice sustainable design holistically. Through a focus on praxis, the two broad themes raised in the introduction to this thesis can be addressed: the contrasting status of the subject in modernity and in sustainable design practice, and the applicability of clinical/medical evidence to the design process. The expectation is to develop a model of self-transformative design practice that brings into focus what is currently overlooked as part of sustainable design’s transformative agenda: the subjectivity of the designer. This model will be presented as the first step in building a rigorous approach to design as self-transformative practice.

This thesis rests on three preliminary understandings about the nature of design. First, the transformative effect of design is understood to be upon two distinct but interconnected orientations of practice. They can be described as design intervention, where the focus is on the built environment, and designer transformation, where the effect is felt upon the performance of the designer. One orientation is explicit, outward-and task-oriented, while the other is implicit, inward- and self-oriented. The second understanding is that the designer embodies the transformative process, which re-emerges as his/her intuitive ethical know-how or praxis. The third understanding is that, while some self-transformation naturally occurs through design as reflective practice, this is of a limited nature when self-reflective practice is neither a deliberate part of design practice, nor practised as a full-bodied process.
1.2 Thesis outline

The scope of this thesis is contained to an investigation of self-reflective practice and design practice. The body of this thesis consists of two volumes. Volume One presents the literature review from Chapters 2 to 5 and the methodology chapter of Chapter 6. In Volume Two, Chapter 7 presents how questions drawn from the literature review were pursued into the field of sustainable design. Chapters 8 and 9, present the discussion of the material drawn from the field research. Chapter 10 concludes this thesis with an assessment of the research findings in advancing current knowledge about sustainable design as self-transformative practice.

In Volume One, the four chapters dedicated to the literature review cover, first, what is expected of the designer in terms of value-change, second, what is known about value-change through self-reflective practice that is pertinent to design, third, how sustainable design has come to be as it is currently pursued and, fourth, what is known about design as experienced by the designer.

Chapter 2 presents a review of the major documents, both international and Australian, which define ecologically sustainable development and design. This is in order to uncover what is expected of the designer in committing to sustainable design practice and what is recommended for turning it into normative behaviour.

Chapter 3 presents a review of self-reflective practice in five parts in order to comprehend its effect upon normative behaviour. On the basis of longitudinal research into the impact of human development initiatives upon self-expression and autonomy, the first part of Chapter 3 reviews an account of reflective wisdom, drawn from the positive psychology literature. This account represents mainstream approaches to normative behaviour through self-reflective practice. It provides the springboard to explore the mechanics of self-reflective practice as a cognitive process. In the second part of Chapter 3, two models of
Self-reflective practice and sustainable design

consciousness are discussed. The first model, taken from experimental social psychology, locates the level of consciousness at which self-reflective practice is undertaken. The second model, taken from cognitive-behavioural therapy, gives equal recognition to the emotive and logical streams of cognition as crucial to human well-being and value-change. It underlies a “new wave” of cognitive-behavioural therapies incorporating meditation into their clinical programmes (Hayes et al. 1999; Kabat-Zinn 1994). This development within the psychotherapies allows for a review of the mechanics of meditation as a self-reflective practice with claims of value-change. The third part of Chapter 3 reviews the evidence in support of meditation through its integration into the health professions. This phenomenon is now regarded as one of the most researched areas in the psychotherapy literature (Khong 2009; Walsh and Shapiro 2006). Much of the research is on its therapeutic effects. However, a small but growing body of research is accumulating on its use as a value-change mechanism. In the fourth part, further research is pursued to uncover the effect of meditation upon intuition, creativity and ethical know-how; phenomena that underpin design as praxis. With certain understandings of human cognitive processes brought to the fore in Chapters 2 and 3, the discussion is brought back into the field of architecture and architectural design in Chapters 4 and 5.

Chapter 4 presents an interpretation of the impact of the Enlightenment and Modernism upon architecture based on phenomenological accounts. This is in order to ascertain why sustainable design has developed in the way it has in terms of the complex role architecture performs in society, for architecture embodies not only social, economic, technological and scientific development, it is also traditionally recognised as the highest of all the arts (Pérez Gómez 2006). As the highest of all the arts, architecture developed primarily as a means of enshrining an esoteric relationship between mortal life and the anonymous cosmic forces that mediate life.
The emphasis has changed, especially in the post-Enlightenment era of Western culture, till today, contemporary and mainstream understandings of building performance and design practice no longer value esotericism but instead emphasise a more pragmatic exotericism. That this shift from the esoteric to the exoteric has occurred in the recent history of Western civilization has been attributed, by a number of writers on sacred architecture, to those forces aligned with the rise of the material sciences (Alexander 2001-; Lawlor 1982; Pérez Gómez 1985; 1995; 2006; Schwaller de Lubicz 1981a; 1984; van Der Ryn 2005; Vesely 2004). In bringing about a new way of understanding the world, enlightenment thinking has had the effect of hastening the demise of those wisdom traditions grounded in archaic esoteric lore, amongst which architecture was pre-eminent.

The contemporary aspiration for building performance now resides in sustainable design, especially in response to the growing environmental crisis facing all life forms today. Such an aspiration is now informed through a range of scientific understandings and technologies grounded in physics and engineering, but also drawn from chemistry, biology, ecology and sociology. All these measures are arguably exoteric in their adherence to rational thought. While esotericism appears to play no part in current aspirations for sustainable design, design thinking represents ways to harness the esoteric urge that as surely underpins sustainable design as the exoteric urge. The conception of sustainable design as having two aspects, one exoteric and the other esoteric, apparently contradictory but in reality complementary, can be attested to through a propensity for morality, intuition, contemplation and religion alongside of, and often in tension with,

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1 An explanation of the difference between esotericism and exotericism, as provided by the art historian Luc Benoist and adopted for this thesis, is that esoteric practice allows the practitioner ‘to arrive at a quite different level of truth designed to impart wisdom which would penetrate the entire being both mind and spirit’. Benoist considers that this quite different level of truth is ‘far beyond philosophy and rational exposition’, which he explains remain constrained to the exoteric realm because of their ties to discursive thought. (Benoist, L. (1988). The Esoteric Path: An introduction to the Hermetic Tradition. England: Crucible. p.13)
reasoning and logic. The purpose of this chapter is, therefore, to bring the discourse on esotericism into the discourse on sustainable design.

Chapter 5 presents phenomenological and existential interpretations of design as a \textit{lived-world} experience. These accounts promote design as an inherently intuitive practice \textit{guiding} design decision-making; a picture at odds with the view of design as promoted in the sustainable design literature. Within the sustainable design literature, this aspect of design is overlooked in promoting design as an evidence-based and scientifically-grounded activity. The chapter ends with a discussion of the methods promoted for accommodating the impact of the more intuitive aspects of design upon the decision-making process. When this fuller picture of design thinking is taken into account, a number of synergies can be seen between sustainable design and meditation. But how do architects practising sustainable design make use of these synergies that enhance design as a self-transformative practice?

Chapter 6 presents the selection of a suitable method for addressing questions raised in the literature review and for taking them into the field of sustainable design. The three main themes pursued in the literature review – professional development, self-reflective practice and sustainable design – gave rise to six areas of concern that can be pursued in terms of design \textit{praxis}. They are expertise, commitment, spirituality, familiarisation, happiness and value-systems. These are issues at the crossover between private and professional concerns that underscore the everyday thinking of the working architect. As coping skills, they point to worldview construction and existential need influencing the design decision-making process. Following a review of research methodology from the Enlightenment to the post-modern era, in-depth interviews with architects

\footnote{This is a term meant to convey the intimacy of the design and the designer as a historical and value-laden process of becoming. It is based on the philosophical logic of phenomenology as developed through Heidegger that ‘self and the world belong together ... [They] are not two beings, like subject and object, but ‘the unity of Being-in-the-world’. (Heidegger, M. (1982). \textit{The Basic Problems of Phenomenology}. Bloomington: Indiana University Press. p.297)}
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working in the field of sustainable design are selected as the most appropriate means for addressing the main research aim.

To start Volume Two, Chapter 7 describes the rigour of the interview process. The interviewees are considered key practitioners in terms of the three main themes pursued in the literature review. The field study eventually comprised eleven interviews held with nine architects of whom six were acclaimed nationally and internationally by the profession as leading practitioners of sustainable design. Of the nine interviewees, two architects were known to engage in formal self-reflective practices and one engaged in deliberate but informal practice as part of their design practice. Four had strong affiliations with the Australian Institute of Architects (AusIA), the peak representative body of the architecture profession here in Australia, with two agreeing to be interviewed as representatives of the AusIA. By targeting a mix of designers with and without affiliations to the AusIA or self-reflective practice, but all committed to practising sustainable design, these different approaches to the central research objective made the constitution of the sample group rigorous in capturing a number of different perspectives on praxis, paradigms and value-change within the context of sustainable design practice.

Discussion of the material drawn from the interviews is presented in Chapters 8 and 9 through two major themes – the art of building and the art of dwelling. These two themes indicate a phenomenological and existentialist interpretation of sustainable design as a lived-world experience. In Chapter 8, the art of building is discussed through three integrated areas of architectural knowledge. They are the art of scenario-building, the articulation of meaningful spaces and the employment of the architectural sciences.

In Chapter 9, the art of dwelling is discussed through four interpretations of existential need which emerged as the compelling dynamic behind engagement in sustainable design and strategies for self-transformation. These four interpretations are discussed, first, in the context of human development
pressures, second, as a hidden limitation of sustainable design, and finally as two iterative strategies for self-transformation oscillating between the personal and interpersonal.

In bringing the thesis to a conclusion, Chapter 10 presents the findings drawn from the interview analysis in terms of how they advance a more holistic approach to sustainable design as transformative practice. This more holistic approach is presented through a recommended model of sustainable design that addresses design as *praxis*. It is a model that can bring rigour to *praxis* by incorporating deliberate self-reflective practices within it. As such it can focus the architectural profession on what is currently an under-researched aspect of the transformative agenda of sustainable design: design as *praxis*. 
Chapter 2

Ecologically sustainable development and sustainable design

2.0 Introduction

In introducing this thesis, sustainable design was presented as both a task-oriented and a self-oriented practice in order to separate out design as *praxis* for further research into its self-transformative potential. Chapter 2 presents a review of the major documents, both international and Australian, which define ESD and sustainable design in order to uncover what is expected of the designer in committing to sustainable design practice. That the need is for designers to commit to sustainable design and treat it as a self-transformative practice cannot be overstated. Unprecedented urbanisation trends over the past fifty years, have led to a consensus that ‘the outlook is grim’ in terms of unsustainable human development activity and environmental damage (UN 2005c:goal 7). The UN report (2005b:1) catalogues how substantial gains in human well-being, have come at the cost of approximately 60 percent of ecosystem services ‘being degraded or used up’. This is a trend set to ‘grow significantly worse in the next 50 years’ (UN 2005b:1). The main drivers of ecosystem degradation are reported

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3 Within the UN reports, well-being translates into people being better nourished and living longer and healthier lives than ever before, rising incomes, and the evolution of more participatory political institutions. Psychological or spiritual well-being is not part of this definition. The report also notes that this approach to well-being has been at an enormous and growing cost to ecosystems and the less fortunate. (UN (2004). Chapter 4: Policy Responses: Response Options and Strategies, *Millennium Ecosystem Assessment*: UN. p.60)
as ‘excessive demand for ecosystem services stemming from economic growth, demographic changes, and individual choices’ (UN 2003:27). It is the third driver - individual choices, but from the point of view of the designer - that is the subject of this chapter. The emphasis will be on the recommendations for designers concerning their own choices and what value-changes are recommended in practising sustainable design.

Section 2.1 takes a close look at key international reports on the state of the environment and human wellbeing. Section 2.2 looks at the Australian response. Section 2.3 assesses the official response of the architecture profession from the perspective of the International Union of Architects (UIA) and the Australian Institute of Architects (AusIA)\(^4\). Key findings and recommendations that cover the practice of sustainable design are analysed by distinguishing between task-oriented or self-oriented strategies. Conclusions can then be drawn about the characteristics of sustainable design as the profession understands it, and the role for self-reflective practice within sustainable design.

### 2.1 The global perspective on ESD

The concept of ESD was formally recognised in 1987 with the adoption of the World Commission on Environment and Development Report, *Our Common Future*, at the 42\(^{nd}\) session of the United Nations (UN) General Assembly. ESD was defined in this report as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (Brundtland 1987:54). ‘Needs’ were recognised as ‘the essential needs of the world’s poor’ (Brundtland 1987:54). This understanding of sustainable design

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\(^4\) During the course of this research, the professional body in Australia changed its name from the Royal Australian Institute of Architects (RAIA) to the Australian Institute of Architects. In order to distinguish the acronym for Australian professional body from the American Institute of Architects (AIA), the acronym ‘AusIA’ has been used in this thesis. This is not an official acronym.
development is characterised as a compromise between the “growth” and “no-growth” factions of the environmental movement of the late 1960s and early 1970s (Steele 2005). Steele (2005:6) notes that the UN-led compromise promoted the conservation of non-renewable resources through ‘a more realistic understanding of the economic network that determines the use of these resources throughout the world’.

The adoption of the Brundtland Report in 1987 led to the development of Agenda 21 adopted at the 1992 UN Conference on Environment and Development (the Earth Summit). Agenda 21 is a plan of action to implement ESD ‘globally, nationally and locally by organizations, … Governments, and major groups in every area in which humans impact on the environment’ (UN 1992:wp). In 1997, terms for an international, legally binding protocol to reduce greenhouse gas emissions, known as the Kyoto Protocol, were negotiated. From there, a range of summits and conferences edge slowly towards global management strategies and agreements as the scientific facts harden for anthropocentrically induced and unavoidable climate change.

Concerns for the environment, economic wealth and human justice can be traced back to the reformist movements of the 18th Century brought on by Enlightenment thinking and its championing of reason and scientific thinking (Lumley and Armstrong 2003). By challenging established notions of truth, morality, religion and justice, Enlightenment thinking ‘helped demolish European monarchies and aristocracies, ferment the American and French Revolutions, and lay the theoretical foundations for … capitalism, liberalism, and democracy’ (Tampio 2006:457). Enlightenment thinking also challenged the excesses of ‘mercantilist thought’ that dominated economic progress at the time through a desire to improve the wellbeing of the majority (Lumley and Armstrong 2003:368). This provided the impetus behind the great social reforms of the 19th Century that included the abolition of slavery, the emancipation of women and the education of the poor (Lumley and Armstrong 2003). The Industrial
Ecologically sustainable development and sustainable design

Revolution, which underpinned economic wealth creation, provided for an array of improvements in public health, amenity and sanitation and new initiatives in architecture and urban planning (Stearns 1998; Williamson 1990). Ethical and altruistic considerations were realised through ‘a narrowly intended form of utilitarianism’ in pursuit of ideas about how to improve human “development”, social justice and man’s [sic] treatment of the natural environment’ (Lumley and Armstrong 2003:371). Combining development, equity and conservation is, therefore, not new to social and environmental policy.

This section focuses on three separate United Nations-sponsored reports. The first is the *UN Millennium Ecosystem Assessment Report* (MA Report) which is actually a series of reports; two of which are referenced in this review: the *Millennium Ecosystem Assessment, Ecosystems and Human Well-being: A Framework for Assessment*, 2003 report and *Ecosystems and Human Well-being: Synthesis*, 2005 report. The MA Report is a pioneering achievement in collating current understanding of the state of the global environment and human wellbeing across a range of western and non-western value paradigms. The next review is of *The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007)*. This is the most recent global assessment of climate change. Finally, *The UN Human Development Report (2007/8)*, which provides the logic behind development ethics, is reviewed. Together these three reports illustrate the need for ESD, its global scale and the ecological, economic and social agendas it encompasses.

### 2.1.1 UN Millennium Ecosystem Assessment Report (MA Report)

The MA Report came about through the need for a more co-ordinated decision-making mechanism to give proper effect to a number of international environmental protection conventions (UN 2005a). These conventions, set up to

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5 Refer to page 6 and 7 for a definition of utilitarianism

6 International environmental protection conventions are set up as treaties with legal obligations under international law.
protect biological diversity, wetlands and migratory species and to combat desertification, were not working well. The response of the United Nations was to undertake a worldwide stocktake on the state of the environment and the impact of human development pressures upon it. The comprehensiveness of its stocktake is based on scientific literature as well as knowledge from ‘the private sector, practitioners, local communities, and indigenous peoples’ (UN 2005a:v). It is the first of its kind in the history of humanity (UN 2005d). This is an achievement not only in terms of knowledge collation but also in terms of perspective. It recognises the fundamental interdependence of ecosystems and human well-being at many scales of interaction. And it recognises this on the basis of a number of knowledge traditions. Importantly, the report is an outgrowth of concern not just from scientists but also from business, civil society and indigenous stakeholders. It demonstrates the importance of strengthening multi-level community engagement in democratic processes as part of any ecologically sustainable design and development initiative.

Economic valuation provided the common metric for quantifying all the different perceptions of ecosystem value across ‘different disciplines, cultural conceptions, philosophical views, and schools of thought’ (UN 2003:128). The different perceptions were sorted into utilitarian, sociocultural or intrinsic ecological value types and given a monetary value through Multi-Criteria Analysis (MCA). This is a technique in which ‘socio-economic, ecological, and ethical perspectives are taken into account’ (Barker 2008:180; Figueira et al. 2005; Kohler et al. 2006; Munda 2005; Stern 2007).

According to the MA Report, the utilitarian paradigm is anthropocentric in that ‘(e)cosystems have value because they maintain life on Earth and the services needed to satisfy human material and nonmaterial needs’ (UN 2003:128). Alternatively, sociocultural value is ‘where people value elements in their environment based on different worldviews or conceptions of nature and society that are ethical, religious, cultural, and philosophical’ (UN 2003:128/9). This
value transcends utilitarian value where ecosystems are tied to the very identity of a community. It is identified as an ecocentric paradigm when ‘philosophical and ethical views recognize the intrinsic value of nonhuman species and ecosystems … (that) reach beyond human welfare considerations’ (UN 2003:140).

Acknowledging the intrinsic value of an ecosystem through an ecocentric paradigm is problematic for Western culture, infused as it is with Christian theology and Darwinian utilitarianism. Darwinian utilitarianism is the philosophy of human morality largely attributed to John Stuart Mill, a contemporary and supporter of Darwin’s theory of human evolution (Wright 1996). In a universe rendered godless through Darwinism, the fundamental guidelines for moral discourse, according to Mill, are happiness and suffering. The natural logic for maximising one’s own happiness is through ensuring the happiness of others. Mill specifically tied his ethic to the Christian ethic of brotherly and neighbourly love as ‘the ideal perfection of utilitarian morality’ (Mill 1863; Wright 1996:336). Utilitarianism is at its core a philosophy of self-sacrifice. There is ongoing criticism of the utilitarian paradigm. Its failures are variously attributed to the hierarchical relationship between God, humanity and nature in Judeo-Christian metaphysics (UN 2003; Wapner and Matthew 2009; White 1967), corruption through laissez-faire market zealotry (Barker 2008; Hamilton 2003; 2004; 2005; Hamilton and Breakspear 2004; Hornborg 1998; Kovel 2007) or the failure of Enlightenment philosophy in providing for existential need7 (Carroll 1998; 2004; Gray 2007).

The MA Report (2003:133) notes that ‘the utilitarian paradigm itself has no notion of intrinsic value’, in spite of the fact that many people do believe that ecosystems have intrinsic value. It emphasises this point through reference to ‘indigenous North and South American, African, and Australian cultural worldviews, as well as the major religious traditions of Europe, the Middle East, and Asia’ (UN 2003:141). Within contemporary Western science, the natural

7 See page 2.
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sciences do provide a particular instance where intrinsic ecological value of ecosystems is recognised. This is when causal relationships between parts of a system are seen as fundamental to the system as a whole. Examples given are in ‘the value of a particular tree species to control erosion or the value of one species to the survival of another species or of an entire ecosystem’ (UN 2003:129). The Gaia theory (Lovelock 1992; 2006) provides a pioneering and widely influential meta-theory of interdependence that expands upon this approach. It attributes intrinsic value to planetary systems on the basis that ‘the evolution of the first living organisms went hand in hand with the transformation of the planetary surface from an inorganic environment to a self-regulating biosphere’ (Capra 2002:5). In essence, ‘not only is life a planetary phenomenon, but the material environment of life on Earth is in part a biological construction’ (Thompson 2007:119). While critics of the Gaia theory agree that ‘life and the abiotic environment are causally coupled’ (Volk 2003:6/7) and therefore have intrinsic value, they disagree with the anthropomorphic language and teleology\(^8\) inherent in the proposition. This criticism highlights a major controversy over post-Enlightenment responses to intrinsic valuing of nature. It is often portrayed as a debate between science and mysticism, which tends to inhibit and distract efforts toward a more holistic measure of ecosystem value (Harding 2006; Hornborg 2006; Jones 2007a; Volk 2006). However, the teleology inherent in the Gaia theory can no longer be dismissed as non-scientific. Teleology is also recognised through concepts of self-organisation and autopoeisis\(^9\) which describe biological accounts of metabolism and cognition (Maturana and Varela. 1973; Maturana and Varela 1987; Weber and Varela 2002). Teleology is defined as ‘a

\(^8\) Teleology refers to ‘the doctrine of final causes [which] is the view that developments are due to the purpose or design that is served by them’. (Fowler, H. W., & Fowler, F. G. (1964). The Concise Oxford Dictionary of Current English. Oxford: Clarendon Press.)

\(^9\) Autopoiesis defines a living organism as ‘a network of processes of production (synthesis and destruction) of components such that these components continuously regenerate the network that is producing them, and constitute the system as a distinguishable unity in the domain in which they exist’. (Weber, A., & Varela, F. (2002). Life after Kant: Natural purposes and autopoietic foundations of biological individuality. *Phenomenology and the Cognitive Sciences*, 1, 97-125. p115)
primordial tendency of matter manifest in the form of organisms’ (Weber and Varela 2002:114). The point being made here is that there is a strong case grounded in the biological sciences for ascribing intrinsic value to all living organisms.

The MA Report, meanwhile, defends the need to extend intrinsic value to non-human entities such as animals and ecosystems through a critique of the two main traditions of modern secular ethics in western culture: utilitarianism and Kantianism\textsuperscript{10}. Contemporary economics is derived from nineteenth-century classical utilitarianism which emphasises self-interested, rational choice and happiness in terms of ‘a greater balance of pleasure over pain, as the putative goal of social policy’ (UN 2003:142). The assertion of individual rights - most basically to life, liberty, and property - is used to check the potential injustices of unbridled utilitarianism. In acknowledging the limitations of this model, the MA Report cites Kantian counter-utilitarian reasoning as an argument for extending intrinsic value to non-human entities. Kant distinguished between price and dignity in that:

Everything has either a \textit{price} or a \textit{dignity}. Whatever has a price can be replaced by something else as its equivalent; on the other hand, whatever is above all price, and therefore admits of no equivalent, has a dignity.

(UN 2003:142/3)

The MA Report considers that many non-anthropocentric ethical theorists have extended upon the human rights notion of the dignity and intrinsic value of human beings to argue the case for nonhuman animals and living organisms up to ‘transorganismic levels of biological organization (species, biotic communities, ecosystems)’ (UN 2003:143). In this manner:

\textsuperscript{10} Kant is a late Enlightenment thinker whose ideas on epistemology, metaphysics, ethics and logic remain highly influential in configuring the contemporary Western worldview.
intrinsic value has been attributed to various aspects of nature (genes, organisms, populations, species, evolutionarily significant units, biotic communities, ecosystems) and to nature as a whole (the biosphere)

(UN 2003:143)

The overriding conclusion of the MA Report is that it ‘will require radical changes in the way nature is treated at every level of decision-making’ in order to avert dangerous climate change and the reversal of human wellbeing (UN 2005a:23). Balancing the modern secular ethics of Western culture against a number of other ethical systems provides an important model for the ecologically sustainable development agenda. Sustainable development is recognised as an ecocentric paradigm when it extends thinking beyond utilitarianism to include intrinsic value. This means extending beyond narrow human welfare considerations to include nature as a whole. As a consequence, there is a need to reappraise ‘modern rational choice theory and economic valuation’ (UN 2003:140/1). This concern emphasises a growing momentum away from neoclassical economics with its emphasis on instrumental rationality towards multi-criteria analysis.

2.1.2 Intergovernmental Panel on Climate Change Report 2007

Established in 1988 by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP), the Intergovernmental Panel on Climate Change (IPCC) has since produced a series of assessment reports (1990, 1995, 2001 and 2007) linking the environmental and socio-economic realities of climate change. Like the MA report, the IPCC reports are also the combined effort of thousands of scientists from around the world in bringing together a comprehensive understanding of such matters. The IPCC reports have evolved their own framework, specifically ‘to manage, rather than overcome, uncertainty’, by utilising qualitative and quantitative research into three major topics: ‘climate change impact, adaptation and vulnerability’ (Halsnæs et al. 2007:136). In taking this approach, the IPCC also challenges mainstream
neoclassical economics, specifically cost-benefit analysis (CBA)\textsuperscript{11}, which has crippled government-level responses to climate change over the past two decades (Barker 2008). The IPCC has taken:

> an interdisciplinary approach to the economics of dangerous climate change, contrasting the cost-benefit analysis (CBA) with the new economics of risk that acknowledges and respects the insights and analysis from other disciplines, namely the other social sciences, climate and geographical sciences, ethics, history, engineering as well as complexity and evolutionary theory (Barker 2008:175)

Barker, as one of the IPCC’s lead researchers, characterises CBA as an ‘inadequate and misleading’ model for climate change economics (2008:180). As in the MA Report, new economics based on multi-criteria analysis (MCA) have been used to include ‘complexity, evolutionary and Post Keynesian theory and emphasise institutions, non-linear dynamics, and deep uncertainty’ (Barker 2008:177). Within the IPCC Reports as within the MA Report, ‘intrinsic values (non-monetised) of human suffering, damages to nature, and risks and uncertainties are also taken into account as criteria for social choice’ (Barker 2008:180). The lesson to be drawn from the MA Report and the IPCC report is of the importance of an interdisciplinary approach that captures intrinsic value and accommodates complex dynamics. This approach provides for as full a measure as possible of human development needs and is, therefore, promoted as a central plank of ecologically sustainable development within these reports.

\subsection*{2.1.3 UN Human Development Report 2007/2008}

The United Nations approach to human development arose in reaction to the inadequacies of the mainstream development paradigm of the 1980s, ‘which

\textsuperscript{11} CBA is a quantitative analytical tool to quantify the costs and benefits of a programme or activity. (Financial Management Group (2006). Introduction to Cost-Benefit Analysis and Alternative Evaluation Methodologies. In Department of Finance and Administration (Ed.). Canberra: Commonwealth of Australia.)
presumed a close link between national economic growth and the expansion of individual human choices’ while overlooking the real human costs and social ills of development (UNDP 2009:wp). In the general push for democratisation during the 1990s, a more people-centred model was demanded. An alternative concept of human development emerged, concerned with ‘advancing the richness of human life, rather than the richness of the economy in which humans live, which is only part of it’ (UNDP 2009:wp). The philosophical basis of this new model of development was that:

All development is ultimately about expanding human potential and enlarging human freedom. It is about people developing the capabilities that empower them to make choices and to lead lives that they value. (UNDP 2008a:1)

The important indicators are not only economic but also social progress, efficiencies, equity, participation and freedom, sustainability and human security (UNDP 2009:wp). The strengthening of civil society through democratic participation is critical to this notion of progress. Challenging social influences that ‘stifle the understanding of inequity and muffle the voice of protest’ are seen as an integral part of the human development agenda (Sen 2002:81).

The imperative for activism has never been stronger than now in combating the very real dangers of climate change, with the damage already underway and ‘starting to affect some of the poorest and most vulnerable communities around the world’ (UNDP 2008a:3). Climate change is seen as humanity’s greatest battle on behalf of ‘social justice, equity and human rights across countries and generations’ (UNDP 2008b:8). In a call to arms the UNDP is adamant that ‘non-marginal changes are needed, given the path the world is on’ (UNDP 2008a:4). The challenge is to ‘think differently at many levels … (and especially) about what it means to live as part of an ecologically interdependent human community’ (UNDP 2008b:8). Ecological interdependence is not an abstract
concept: there is but one Earth and one atmosphere. Equity in providing for all must be the first concern of interdependence.

Sustainable development that combats climate change equitably requires the significant short-term costs involved to be borne by the developed world responsible for ‘recklessly mismanaging our ecological interdependence’ (UNDP 2008b:9). Failure to do so will be judged as ‘a moral failure on a scale unparalleled in history’ (UNDP 2008b:8). The UNDP argues that the real transformative agenda of sustainable development is to ‘challenge the way that we think about progress’ (UNDP 2008b:27). The official consensus that climate change is anthropogenic proves that ‘the economic model which drives growth, and the profligate consumption in rich nations that goes with it, is ecologically unsustainable’ (UNDP 2008b:27). This report asserts unequivocally that the real transformative agenda is to change one’s thinking about ‘ecological interdependence, about social justice for the world’s poor, and about the human rights and entitlements of future generations’ (UNDP 2008b:14). Therefore, sustainable design needs to adopt this call for self-transformation into its transformative agenda.

From this discussion, it can be argued that balancing the utilitarian ethics of western culture against other ethical systems is central to ESD and sustainable design, for ecosystems and human well-being operate at many scales of interdependence, from cellular metabolism to planetary systems. Therefore, intrinsic value cannot be confined to the human. The MA Report defends, in particular, the need to extend intrinsic value to animals and ecosystems. However, it acknowledges that such an ecocentric paradigm is problematic for Western culture, infused as it is with Christian theology and Darwinian utilitarianism. The UNDP report, on the other hand, asserts unequivocally that the real transformative agenda of sustainable design is to change one’s thinking about ecological interdependence in terms of social justice for the world’s poor and about the human rights and entitlements of future generations. Equity in
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providing for all of humanity must be the first concern of interdependence. The UNDP report also highlights that the imperative for activism has never been stronger than now in combating the very real dangers of climate change.

2.1.4 Ecologically sustainable development and human rights

Economic power and self-interest continue to dominate responses to environmental concerns (Sassi 2006; Wapner and Matthew 2009). The latter conclude that environmental justice requires leveraging the anthropocentrism that underlies human rights on the basis that ‘(h)uman exploitation of the natural world is only one element of moral insensitivity …’ (Wapner and Matthew 2009:204). For them, the real moral failure to be addressed is how ‘humans mistreat each other, using nature as a medium’ (Wapner and Matthew 2009:204). This is not to deny that the human-nature focus is vital, but to recognise that it is not sufficient. They note that it is ‘awkward simply to push moral principles beyond culture and into the nonhuman world, and clearly not very convincing to many people’ (Wapner and Matthew 2009:217). Their real concern is that:

Injustice arises because people tend to redirect rather than resolve environmental dilemmas, conveying their burdens onto vulnerable others through the geographies of power. Such displacement takes place across both space and time (Wapner and Matthew 2009:208)

Getting people in the developed world to take global responsibility for their actions is the key. This problem is compounded by industrialisation and globalisation feedback loops that are too long and complex for most people to take responsibility for. ESD must make these feedback mechanisms transparent in their impact upon human security, wellbeing and freedom. It must recognise this through multi-criteria assessments that allow for multiple evaluations of the human-human-nature nexus. Globalisation highlights the interdependence of humanity and environment in its global affect upon Earth as the only planet that can support humanity. Equity and justice are the essential concerns to be
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addressed. Encouraging global thinking through local action is the subject of the next section.

2.2 The Australian perspective on ESD

This section reviews the state of the environment and human wellbeing from the Australian perspective of ecologically sustainable development. In signing up to the 1992 UN Agenda 21, the Australian Government responded with its own strategy: the National Strategy for Ecologically Sustainable Development (NSESD). Ecologically sustainable development within the Australian context is defined as:

Using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.

(NSESD 2008:wp)

The NSESD recognises that there is a need for ‘key changes to the way we think, act and make decisions’ and ‘to look beyond economic progress’ in order to ensure development includes ‘an improvement in the quality of life through education, justice, community participation, and recreation’ (NSESD 2008:wp). Recommended key changes to thinking include thinking in the long-term and in an integrated way about wider economic, social and environmental implications for ‘Australia, the international community and the biosphere’ (NSESD 2008:wp). In its monitoring capacity, the NSESD has commissioned ongoing State of the Environment Reports (SoE) at 5-year intervals since 1996 as part of its reporting obligations to various international conventions and organisations. These reports emulate the MA Report at a national (Australian) level.

The SoE Report 2006 (being the latest) are reviewed for signs of the new thinking paradigm. The SoE reports draw on a number of data and information management and reporting organisations, of which the Australian Greenhouse
Office (AGO) is one. One of its reports, *An Assessment of the Need to Adapt Buildings for the Unavoidable Consequences of Climate Change: Final Report to the Australian Greenhouse Office, 2007* is reviewed in conjunction with the SoE 2006 report to note thinking paradigms specifically related to sustainable design and the built environment.

As a follow-up, the next report reviewed in this section is *Shifting Towards Sustainability (2007)*. It reports on government-level research into the professional development needs of the urban and building design professions and their capacity to lead sustainable development of the built environment. Expectations about the role and nature of sustainable design come to the fore in this report, thereby providing a standard against which to measure the response from the architecture profession presented in Section 2.3.

The last report to be reviewed will be the *Garnaut Climate Change Review*, which formed the basis of the 2008 Australian Government *White Paper* on carbon pollution reduction measures. It was commissioned in response to the hardening of the science in support of anthropogenic climate change considered by the IPCC Fourth Assessment Report in 2007. The case for mitigation and adaptation has become an urgent imperative. This report will be reviewed for its insights into the latest thinking by government about the evolving agenda for ecologically sustainable development.

### 2.2.1 Australian State of the Environment Report (SoE) 2006

The Australian SoE reports represent ‘the only mandated national reporting process for which data from different aspects of the environment are brought together and assessed by independent experts’ (Beeton et al. 2006:1). These reports provide ‘accurate, up-to-date and accessible information about environmental and heritage conditions, trends and pressures’ (SoE 2008:wp). Its first finding is that after a decade of reporting ‘it is still impossible to give a clear national picture of the state of Australia’s environment because of the lack of
accurate, nationally consistent, environmental data’ (Beeton et al. 2006:3). However, the report notes ‘a major shift in the approach by government and the community towards environmental management during the last decade’ (Beeton et al. 2006:3). In spite of this shift, ‘individual consumption of most resources is increasing to support the Australian lifestyle’ (Beeton et al. 2006:3). It sounds like shifting chairs on the Titanic: whatever shifts have occurred have not altered the nation’s development course and associated notions of wellbeing towards a lifestyle that is ecologically sustainable. While lack of environmental data is seen here as a real problem, the following AGO Report contests this finding.

2.2.2 Final Report to the Australian Greenhouse Office (AGO): 2007

In the Final Report to the Australian Greenhouse Office (AGO): An Assessment of the Need to Adapt Buildings for the Unavoidable Consequences of Climate Change 2007, lack of environmental knowledge is seen as not the only, nor the most important problem facing Australians. Lack of behavioural knowledge is seen as the major challenge to society in responding to unavoidable, uncertain but increasingly rapid environmental change. With regard to effecting behavioural change, the report acknowledges that the behavioural literature does not support a direct relationship between rational decision-making and improved environmental knowledge. The problem is that ‘facts do not determine behaviour so much as perceptions about those facts’ (Branz Ltd 2007:37). Compounding this predicament is the further difficulty that ‘the relationship between perception and behaviour is itself complex’ (Branz Ltd 2007:37). These comments reflect a concern by the report’s authors that this understanding of behaviour was found to be missing in the research literature on ecologically sustainable development. What they found instead was the presumption of a direct relationship between energy-efficiency and behavioural change. The literature was generally found to reflect the notion that ‘more energy-efficient new building design will reduce greenhouse gas emissions’ (Branz Ltd 2007:37). The authors of the AGO report
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beg to differ. While acknowledging energy efficiency as a necessary initiative, they recommend remedial action in the form of more research:

> to establish and expand on our understanding of how people perceive the situation, what they understand and how they relate to various strategies of ‘response’, ‘coping’ and ‘adaptation’ (Branz Ltd 2007:37)

The importance of these findings to this thesis is that it signals the necessity to implement ecological sustainability through greater understanding of human nature. From the point of view of the architect / designer, it also signals the need for them to understand their own behaviour as integral participants in behavioural change. If ultimately, their response to climate change and sustainable development will ‘be driven by a sense of ethics and morals’ (Branz Ltd 2007:38), then becoming critically aware of their ethical preconceptions as well as their moral duties and how it influences design as praxis is essential. How this is being pursued within the architecture profession here in Australia is the subject of the following report.

2.2.3 Shifting Towards Sustainability 2007

*Shifting Towards Sustainability: Education for climate change adaptation in the built environment sector (2007)* complemented the Australian Government’s National Climate Change Adaptation Programme (2004-2008). It is a response to the IPCC 2007 call for urgent action to reduce greenhouse gases and prepare for climate change by reporting on ‘the professional training and development needs of architects, landscape architects, planners and engineers in climate change adaptation …’ (Lyth et al. 2007:vii). It was conducted as participatory research along with four professional institutions, which included the Australian Institute of Architects (AusIA). Amongst its findings was the need for practical skills based on ‘generic sustainability competencies’ that include ‘being able to work in integrated teams … lateral thinking and … (use of) creative ideas outside practice norms’ (Lyth et al. 2007:xi). These competencies need to be taught within ‘a new
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educational paradigm whereby teaching and learning is seen through the prism of climate change’ (Lyth et al. 2007:43).

The concern of this report for a new educational paradigm adds to the calls for changes to the West’s ethical and economic paradigms. However, it makes no reference to behavioural change research to back up its recommendations. Instead, it cites the various responses of its project partners in identifying their own behavioural change strategies. The AusIA noted a need to improve the accessibility of its knowledge services to its members and the strengthening of cross-disciplinary knowledge. This response does not adequately reflect the need for innovative behavioural change as called for by the AGO Report. Instead it seems to indicate a lack of awareness of such need. Whether this is the case is discussed in Section 2.3.

2.2.4 The Garnaut Climate Change Review: Final Report 2008

The Garnaut Climate Change Review is concerned about behavioural change. It was required to ‘examine the impacts of climate change on the Australian economy, and to recommend medium- to long-term policies and policy frameworks to improve the prospects of sustainable prosperity’ (Garnaut 2008:xiii). Behavioural impediments to achieving sustainable prosperity are seen as a major concern. Garnaut bases his concerns on the fact that ‘suboptimal decision making or ‘bounded rationality’ have been observed and documented in the behavioural economics literature’ (Garnaut 2008:408). He lists three characteristics to define this. First, when faced with complex decision-making, people often use rules of thumb. Second, people are reluctant to change their minds even if the logic is there to make that change. (He cites budgeting for capital and ongoing costs as an example.) Third, Garnaut notes that ‘there are some predictable biases in human decisions that could result in decisions that are both personally and socially suboptimal’ (Garnaut 2008:408). Particularly important biases include ‘biases towards the status quo and high rates of discounting of future costs and benefits’ (Garnaut 2008:408).
Rules of thumb logic, pre-empting of one’s options, conservatism and short-sightedness are common enough features of thinking that influence human behaviour. From the perspective of the architect/designer, awareness of these features, recognising them within themselves and their impact upon the design process is critical component of the transformative agenda of sustainable design and ESD, along with the ethical and moral implications already raised. Considering the complexities architects face throughout the design process, these important observations are explored in the following section.

2.3 Responses from the Architecture profession

The emphasis in the previous section was on exploring the paradigm shifts in thinking that have been called for at various levels of governance in the Australian context. They include shifts in ethical, economic and educational paradigms. There is a recognition that shifts made so far have not led to more sustainable outcomes. The big challenge is seen in shifting behaviour. The two reports that look specifically at the built environment professions indicate a lack of awareness of this need and of its complexity. Because change is ultimately driven by a sense of ethics and morals, addressing the ethical paradigm as a precursor to behavioural change is vital to the transformative agenda of sustainable design and ESD. How the profession perceives ecologically sustainable design and development is the subject of the following section. This section reviews the response of the International Union of Architects (UIA) and the Australian Institute of Architects (AusIA) as representatives of the architecture profession at an international and national level. How do they define the task set for the architecture profession? What areas of expertise do they see as critical for designers engaging in ecologically sustainable development? Have they considered a holistic design strategy that is both task-oriented and self-oriented?
2.3.1 International Union of Architects

The Declaration of Interdependence for a Sustainable Future released at the International Union of Architects / American Institute of Architects (UIA/AIA) World Congress of Architects (1993) provided the founding guidelines for architects to engage in ecologically sustainable design and development. This declaration was a response to Agenda 21 by the architecture profession at an international level. It recognised that ‘a diverse and healthy environment is intrinsically valuable and essential to a healthy society’ (UIA/AIA 1993:1). It notes that humans are ‘ecologically interdependent with the whole natural environment (and also) socially, culturally, and economically interdependent with all of humanity’ (UIA/AIA 1993:1). This understanding is in complete accord with the ecological values promoted in the MA Report and the UNDP Reports. Yet the definition of sustainable design it provides for architects seems much more anthropocentric:

Sustainable design integrates consideration of resource and energy efficiency, healthy buildings and materials, ecologically and socially sensitive land-use, and an aesthetic sensitivity that inspires, affirms, and ennobles; sustainable design can significantly reduce adverse human impacts on the natural environment while simultaneously improving quality of life and economic well being. (UIA/AIA 1993:1)

The Declaration then asks architects and building designers to ‘place environmental and social sustainability at the core of our practices and professional responsibilities’ (UIA/AIA 1993:1). Advice for doing this is through ‘improving practices, procedures, products, curricula, services, and standards …’ amongst other strategies (UIA/AIA 1993:1).

The document’s terms of engagement set out ‘a new Design Paradigm of Environmental Interdependence’ involving ‘innovative design, technologies and methods’ along with the establishment of ‘attitudes and values, and business and
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professional ethics and practices’ to ‘explore all opportunities for the rapid transformation …to achieve ecological sustainability …’ (UIA/AIA 1993:3).

Ten principles upon which the new design paradigm rests are listed. The first three are a concern to develop leadership qualities, promote participatory design strategies and give ‘full expression to a culture of interdependence with the environment’ (UIA/AIA 1993:3). The dominant concern is to extend architectural practice beyond current boundaries. Principles 4, 5, 6, 7 and 8 set out how this is addressed. The task is to incorporate multiple criteria assessments (qualitative and quantitative) drawn from multiple sources of knowledge including indigenous knowledge. Doing so allows for the development of long-term scenarios that do not discount future generations and can be readily made available to as wide a market as possible. In Principle 9 architects are called upon to ‘protect the rights and well being of the Earth and its peoples, the integrity and diversity of the Cultural Heritage, Monuments and Sites, and the biodiversity, integrity and sustainability of the global ecosystem’ (UIA/AIA 1993:3). The tenth principle calls for continuing professional development to be based on ‘the Arts, Culture and Humanities, the Natural and Social Sciences, and the Technologies …’ (UIA/AIA 1993:3). This is a critical observation, for it envisages sustainable design as holistic in both theory and practice.

This set of principles describes multiple modes of thinking and assessment to develop greater capacity by the architect to take on responsibility for wider ecological and social interdependencies. Developing such capacities challenges not just skills and knowledge acquisition but also ethical paradigms within which moral behaviour is formed and judged. These challenges are to be taken up through everyday work practices. Four design practices are recommended with detailed explanations for carrying them out. Because design as self-transformative practice is of central concern to this thesis, the UIA recommendations were critiqued for attention to techniques for enhancing this aspect of design.
Practices (sic) 1 discuss design outcomes and work practices. The emphasis is on the need to value ecological constraints above other options. A precautionary stance towards existing technologies and practices is recommended. Practices (sic) 2 discuss how to ensure building and infrastructure technologies and energy use are environmentally benign during and after use. The architect is to encourage community participation in their design that enhances interaction with the environment. Practices (sic) 3 emphasise the development of a ‘planetary culture of interdependence’ through the daily operation of professional practices (UIA/AIA 1993:6). The discussion recommends ethical practices of care based on integrity, humility, and equity. Practices (sic) 4 re-emphasise much of the detail of the first three practices within management skills for forecasting, monitoring, assessing and auditing of environmental changes from all these practices.

Aligning personal values with these raised aspirations is vital if these practices are to be achieved. Current architectural and building practices indicate that architects are being asked to conduct themselves in ways that challenge the status quo and the ethical predispositions that underlie the status quo. The UIA’s new design paradigm explicitly challenges the practitioner to monitor and change existing values and habitual behaviour that may predispose outcomes. It asks the practitioner to develop leadership skills and naturalise integrity, humility and equity into their daily practice through care. Self-reflective practice is critical in the development of such virtues. Yet their integration is to be managed and monitored through task-oriented practice. This is a necessary strategy, but may not be comprehensive enough without explicit methods for self-transformative practice. The concern has already been raised that behavioural change is not directly reflexive and that this is not a well-understood science. These concerns drive the review of the AusIA as representative of the Australian architecture profession to be taken up in the next section.
2.3.2 Australian Institute of Architects

The Australian Institute of Architects (AusIA) promotes itself as the major representative organisation of the architecture profession within Australia with nearly 80% of the profession as registered members (RAIA 2006). It also considers that it has developed considerable expertise in addressing ‘sustainability issues’ since this has been ‘the focus of (its) work for more than a decade’ (Parken 2004:1). It considers that there is a ‘pivotal opportunity for architects’ to play a ‘crucial role’ in a sustainable future (RAIA 2003:1.3.2). One of its major priorities is to contribute to the broader sustainability debate as ‘a primary opinion maker on the design of the built environment’ (RAIA 2001a:1). This rhetoric is in spite of an estimation that ‘architects are responsible for only a small share (estimates suggest less than 5 per cent) of design of new residences’ (Productivity Commission 2000).

To prepare and guide the architect for this role in daily practice the AusIA has developed an Environment Policy with its appendix, Sustainable Design Strategies For Architects. It also produces an ongoing Building Design Professions (BDP) Environment Design Guide as part of an industry-wide collaborative effort to provide a comprehensive portal of evidence-based, peer-reviewed information pertaining to sustainable design. The policy and its strategies are an interpretation of the UIA Declaration.

The AusIA Environment Policy contains five principles. Architects are first required to commit to, and then to develop, to educate, to formalise and to implement sustainability. The recommendation is to ‘work towards placing sustainability at the core of their practice structure’ (RAIA 2001b:2). Practitioners are directed to ‘continually develop and improve their own sustainable practises and procedures’ (RAIA 2001b:2). These directives refer to

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education and skill development along with formalisation of practices that ‘ensure sustainable design becomes normal practice’ (RAIA 2001b:2). Examples are then drawn from the BDP Environment Guide to provide practitioners with sustainable design strategies that cover pre-design, siting and planning issues, concept design, material selection, energy, water and other resources, construction management, and building operation and management.

An initial 2001 report instigated by the AusIA on uptake of architectural responses to sustainable design found that while client demand and perceptions of financial cost were the greatest barriers to the implementation of ESD, other major barriers included ‘lack of available information, lack of building materials and equipment information, and resistance from contractors’ (Owen 2001:1).

Another general survey of the building profession in 2003, instigated by the Australian Greenhouse Office, found that continuing professional development is still a problem in that ‘...very little understanding or competency in delivering ESD measures is gained through formal education, training or continuing professional development (CPD). The majority gained their knowledge and skills ‘on the job’” (Hood 2003:1). Follow-up study by Owen (2003) found resistance from the profession to be cultural as well as pragmatic in that sustainable design is seen as a science of technology, whereas architects see architecture as a wider art.

By 2008 the AusIA is still reporting that: ‘(t)he attitude and the social philosophy of architects as agents of change, needs to be comprehensively addressed’ (Baverstock 2008:1). Baverstock reiterates Owen’s (2003) findings. He notes that perceptions of climate change strategies as simply a technology or technical issue may be convenient but ‘the reality is not that simple. Global warming is a holistic problem, just like architecture as a discipline has always been’ (Baverstock 2008:1).
More than a decade ago, in 1993, the UIA set the agenda for a new design paradigm and the AusIA followed up in 1994 with strategies to bring this about. The AusIA, like the UIA, also highlights the need for self-transformation to align intent with outcome. But it too concentrates on task-oriented initiatives to bring this about. Without integrating explicit techniques for self-transformation into design practice, it may be undermining the first principle of its Environmental Policy, which is to commit. By not encouraging more effective commitment to the necessary values required of sustainable design, this may in turn compromise a more comprehensive change in behaviour called for by the AGO and Garnaut Reports (Section 2.2.2 and 2.2.4). By not promoting more comprehensive behavioural change the AusIA may also be compromising its ability to be a primary opinion maker and to situate architects as crucial players in a sustainable future.

2.4 Conclusion

This chapter has reviewed a range of key reports and statements of intent about environmental and human wellbeing in order to establish first, the agenda of sustainable design as promoted within the architecture profession and second, the level of self-reflective practice required by architects to carry it out. The need to reassess and enlarge upon utilitarian ethics to satisfy urgent environmental, economic and social obligations has been highlighted along with alternative approaches using multi-criteria assessments of value that promote sociocultural and intrinsic valuation. However, because economic power and self-interest continue to dominate concerns for environmental justice, leveraging anthropocentric utilitarian ethics through a strengthening of human rights is considered the most direct way to address environmental injustice. This allows a proper focus on the abuse of the poor and those who are too politically weak to resist the West’s greater political and technological power to shift environmental problems upon them. Greater transparency in global transactions and industrial processes along with the shortening of feedback loops are considered key
strategies in confronting this. Efforts to counter abuse of the poor and less powerful members of humanity are the proper concerns of architects in their role as mediators between society, technology and environment. Strategies for engaging in these efforts can occur at a number of scales of social organisation that come back to the scale of the individual. At the scale of the individual they describe self-reflective practice.

The architecture profession itself has responded to the need for behavioural change by mapping out sustainable design as a new design paradigm and calling for commitment to it through a range of reflections upon ethical practice. Task-oriented approaches are promoted for monitoring commitment and change. This is a necessary strategy but is not sufficient, as resistance to change persists. Whether structural change precedes behavioural change or vice-versa is a moot point, but the structural shifts that have been orchestrated so far have not produced behaviour change. Research suggests resistance persists while ecological sustainability is perceived as a technical issue only. This strengthens the need to prioritise attitudinal change strategies. Behavioural change has been found to be a symptom of attitudinal change that is not directly linked to structural change or rational logic. The profession has called for self-reflective practice. This is seen in the call to cultivate leadership qualities, to naturalise integrity, humility, and equity into daily practice through care and to monitor commitment to change. Chapter 3 assesses self-reflective practice as a method for change.
Chapter 3

Self-reflective practice

3.0 Introduction

In Chapter 2, a number of key international and national (Australian) reports were critically analysed to draw out the self-transformative agenda of ecologically sustainable development as it pertains to the designer. These reports highlighted the need for value change as the basis for behavioural and structural change. As the new design paradigm, sustainable design is essentially a vehicle to promote and defend sociocultural and intrinsic values through a strengthening of human rights. The UIA Declaration of Interdependence outlines how to orient design practices towards this end. Monitoring skills to ensure outcomes match intent are critical. The UIA also specifies a range of virtues that include leadership, integrity, humility, and concern for equity as the basis of an architect’s capacity to engage effectively in sustainable design. These virtues can be cultivated and monitored through self-reflective practice. How to do this, however, is not specifically addressed. Instead, it is indirectly addressed via the task-oriented aspect of design. This gap in design skills needs bridging. Task-oriented and self-oriented aspects of design are both seen to require attention, yet specific methods to enhance the self-oriented aspect are not provided for.

The aim of this chapter is to distil the evidence for self-reflective practice as an effective method for fostering and monitoring value change, especially in relation to the virtues outlined in the UIA Declaration. Section 3.1 presents research into the overall impact of modernisation upon human values, in order to introduce, in Section 3.2, the notion of wellbeing outlined in Section 2.1.3. It introduces techniques for developing wellbeing at the scale of the individual through a
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particular model of wellbeing - the Reflective Wisdom Account. This model is an up-to-date, psychologically informed logic for practising reflective wisdom that advances the Humean\textsuperscript{13} philosophical tradition of virtue ethics.\textsuperscript{14} The treatment of self-reflective practice within this model establishes the status quo against which further reviews of self-reflective practice will be judged. Section 3.3 introduces the mechanics of self-reflective practice, explaining the particular level of consciousness and the generic types of psychosomatic exercises required for its practice. Section 3.4 tracks neuroscientific and psychotherapeutic research into self-reflective practice and its adoption into professional development regimes, specifically within the health disciplines. This arena of professional practice is highlighted for two reasons. It is deemed the most reliable and the most direct source of information on self-reflective practice as a therapeutic and performance enhancing technique. Clearly relevant is the concern to incorporate evidence-based medicine within a humanistic paradigm of patient care which has certain parallels with sustainable design with its agenda to establish an evidence-based, participatory-design paradigm. Section 3.5 reviews the research literature on intuition and the effects of meditation upon intuition in developing ethical know-how to draw out the opportunities and challenges of self-reflective practice relevant to design practice as a creative process.

3.1 Modernisation and value-change

In terms of its impact upon human development, the modernisation associated with modernism ‘is producing increasingly humanistic societies that place

\textsuperscript{13} The Humean tradition is based on the Enlightenment Utilitarian philosopher David Hume’s argument that normative authority derives from our passionate nature, our sentiments, emotions and desires; that is, ‘our contingent natures, rather than from universal Reason’. (Tiberius, V., & Philosophy, S. T. A. I. R. o. (2002). Maintaining Conviction and the Humean Account of Normativity. \textit{Topoi: An International Review of Philosophy}, 21, 165-173. p166)

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growing emphasis on human freedom and self-expression’ (Inglehart and Welzel 2005:2). Inglehart and Welzel’s research (2005:289) highlights ‘the expansion of autonomous human choice [a]s a central component of human development, and … indicates that autonomous choice is also a universal human aspiration’. It ‘demonstrate[s] that socioeconomic development tends to transform people’s basic values and beliefs – and it does so in a roughly predictable fashion’ (Inglehart and Welzel 2005:5). These value changes, especially in postindustrial societies where self-expression is highly ranked, include ‘relatively low levels of confidence in technology and scientific discoveries as the solution to human problems and [a public] relatively likely to act to protect the environment’ (Inglehart and Welzel 2005:137). The trend towards self-expression is linked to rising levels of existential security. However, these trends need to be set against the research measuring the environmental impact of human development and the very real danger to ongoing existential security as a result of such impacts (Chapter 2).

The rising value placed on self-expression measured in Inglehart and Welzel’s research (2005:293) is linked to ‘a fundamental shift in authority from external institutional bodies to the individual’, which Inglehart and Welzel argue ‘reflect[s] an internalization of authority’. This shift has been found ‘to make publics more humanistic but not more egocentric’ (2005:8). This trend towards individual autonomy and the internalisation of authority lends weight to the argument pursued in this thesis that self-reflective practice is an important device for self-transformation. It shows that self-reflective practice is attuned to trends in human development because self-reflective practice encourages the internalisation of authority.

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15 The data for this research was collected from 1981 to 2001 and covers eighty-one societies containing 85 percent of the world’s population.
3.2 Self-reflective practice and reflective wisdom

In Section 2.1.3, human wellbeing was defined as a state of being where people could lead lives that they value. It is also true that wellbeing is ‘what we have when we are living lives that are not necessarily morally good, but good for us’ (Tiberius 2006:1). This more nuanced definition distinguishes two fundamental orientations toward the good life –self-interest and selflessness - that underlie all ethical discourse. Awareness of these fundamental orientations and bridging between them is considered a necessary pursuit if one is to pursue a good life that is morally good. A model of reflective wisdom developed within virtue ethics by the philosopher Valerie Tiberius (2008:16/17) recognises this distinction and she presents her model as a bridging method ‘informed by empirical psychology and, in particular, by positive psychology … which emphasizes the study of mental health, well-functioning, and related strengths of character’. What is important about Tiberius’ model to this thesis is that it provides an account of current thinking about self-reflection and thus provides a baseline from which to assess the impact of self-reflective practices upon wellbeing. In it she promotes reflective wisdom as a life-long strategic moral practice and places self-awareness in a hierarchy of strategies for developing reflective wisdom. Her account advances the Humean tradition by acknowledging that normative behaviour rests on choice-making that cannot be reduced to principles of pure reason. Ethical behaviour is therefore more the result of a disposition to engage in the monitoring of one’s passionate nature than to deny it through rational deliberation.

The new design paradigm of sustainable design is an explicitly moral practice. Architects are being asked to commit to its moral objective - ecologically sustainable development - through a set of core virtues: leadership, integrity, humility, and concern for equity (Section 2.3.1). It refutes any separation of private and professional virtues. The quest for the architect is to value these particular moral pursuits and virtues as part of what feels good for her / him when reflecting upon the good life as led by him / her. Tiberius’ model of reflective
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wisdom provides a method for making this happen. Her concern is to enable ‘a self-directed life (that) is not the same as a selfish life’ (2008:12). A self-directed life requires ‘train(ing) the rational and reflective capacities we actually have so that they can function together with our emotions, moods, and desires to get us somewhere we’d like to be’ (Tiberius 2008:7). Tiberius relies on established indicators of personal wellbeing that strongly identify commitment to others, especially family and friends, as central to individual flourishing. She argues from the evidence that, as one becomes more self-directed, this leads not only into more personally fulfilling relationships, but sets up a natural progression to caring about the wider world while also resisting its more damaging aspects identified (again from the research) as hedonism and homogenisation.

Tiberius’ recipe for reflective wisdom requires training specific habits and problem-solving strategies into virtues summarised as (i) a sense of perspective, (ii) flexible attention skills, (iii) moderate self-awareness and (iv) optimism. These are ingredients for success because through them:

A person with reflective virtues learns from experience, has stable commitments to what she deems valuable, and responds appropriately. She knows when to reflect (on her values or the facts) and when to be absorbed in her pursuits, when to insist on scrutinizing her beliefs and when to live with a picture that is probably somewhat distorted.

(Tiberius 2008:34/35)

Throughout her discussion of the four virtues, Tiberius emphasises the need to start ‘with the rational and informational limitations we have’ (2008:19). Establishing a point of view that one can commit to and be motivated to improve upon (for example, the view promoted as ecologically sustainable design and development), requires reflecting upon one’s values and noting what really matters according to the emotional responses they stimulate. Reasoning about things without noting their affective orientations (which can be summarised as aversion, attachment or indifference) is simply not enough.
Tiberius appreciates that one’s values are shaped by one’s deepest desires, and conviction comes from thinking there is something good about them. She counters the temptation to be sceptical of such an “irrational” logic by arguing against the reliability of reflective practice in the first place. Tiberius recommends it is better to query what counts for self-reflection. She is convinced of ‘the fallibility of our reflective capacities’ (Tiberius 2008:34). Instead of suggesting improvements to self-reflective practice however, she recommends a number of strategies for sidestepping the issue by emphasising ‘an external point of view of oneself, and the possibility that there are things we simply cannot or should not know’ about the mind (Tiberius 2008:120). This is a crucial point in her argument. It reflects the normative view about the mind, about mental development and about the preferred perspective for viewing the mind within Western culture.

Tiberius accommodates underdeveloped self-reflective capacities because this is the normative condition within Western society. She knows that ‘paying attention to our feelings can inform us both about what we do value and what we ought to value (Tiberius 2008:53). She also knows that ‘paying attention to the motivational aspects of our value commitments (our desires, emotions, and feelings) cannot be overestimated’ (Tiberius 2008:56). She cites various studies that show how values and behaviour are linked through affect. She understands the need for self-reflection. Yet, she promotes the idea that ‘introspection about the reasons for our preferences is harmful to us in a variety of ways’ and cites a number of studies to prove this (Tiberius 2008:113/114). She proffers their conclusion that ‘we cannot access the unconscious processes that are really responsible for why we prefer one thing to another, and so we make up reasons that are inaccurate’ (Tiberius 2008:113/114) to defend her argument for moderate self-awareness (the third virtue of her four virtues). Tiberius bolsters her argument by tying it to research on optimism (her fourth virtue). She argues that ‘having an exaggerated sense of our own abilities and prospects can actually help
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us succeed’ (Tiberius 2008:113). She cites research to show that such illusions are invaluable. They are:

correlated with contentment, positive attitudes toward the self, the ability to care for and about others, openness to new ideas and people, creativity, the ability to perform creative and productive work, and the ability to grow, develop, and self-actualize, especially in relation to stressful events (Tiberius 2008:113)

This accommodation of the limits of self-reflective practice will be taken up again in Sections 3.3 and 3.4 when contrary evidence will be assessed as to the efficacy of self-reflective practice in developing upon the very successes she notes. This is not to denigrate her model of reflective wisdom as a whole, but to recognise its limits as a way of moving forward in assessing self-reflective practice.

Tiberius’ method for patterning one’s self-reflective practices according to contingencies of work and life such that spontaneity and creativity are not impinged upon is most relevant to practising architects. She appreciates spontaneity and creativity as modes of non-reflective experience that are ‘a crucial component of a good life and a vital source of information about what it is to live well’ (Tiberius 2008: 66). She understands non-reflective experience as an everyday practical perspective in which ‘our emotional responses and dispositions (are in) accord with the values that define that perspective’ (Tiberius 2008:78). This is a crucial observation because it reinforces the importance of self-reflective practice in establishing appropriate values through which to guide one’s everyday non-reflective experiences.

Tiberius also values intuition especially in developing flexible attention skills (the second virtue of her four core virtues). Flexible attention skills are necessary because ‘(m)oving between various practical perspectives and shifting from the practical to the reflective is an important part of life’ (Tiberius 2008:77). Being open to change depends on grasping reasons ‘quasi-intuitively, without engaging
in any reflection on how they are justified’ (Tiberius 2008:79). Therefore, ‘the wise person is open to the intuitions, feelings, and perceptions that draw her attention to the relevant reasons without fully engaging her rational capacities’ (Tiberius 2008:81). Developing one’s intuition is important to this model of reflective wisdom.

Flexible attention skills are also important in maintaining proper perspective upon one’s progress (the first virtue). Taking a perspective on things is a necessary skill for assessing conflicting values and is therefore an important quality for a practising architect especially when juggling the various needs within particular projects (in addition to juggling life/work/family commitments). Again, it requires conviction about one’s point of view, which leads back to improving the quality of one’s self-reflective practice in establishing that view.

Tiberius argues that ‘modern life is demanding in at least four different ways’ (2008:60). First, there are more options in life than ever before, which leads to confusion and anxiety. Second, while ‘our culture overemphasizes self-direction and the importance of being ourselves and making our own choices … we do not receive training in developing our autonomy’ (Tiberius 2008:60). Third, erosion of community ties ‘increases isolation and alienation’ (Tiberius 2008:60). Finally, our relative affluence in a global context of enormous disparity creates pressing demands for an appropriately moral life in response. Tiberius recommends her model as a stalwart against behaving badly. She is concerned that people behave badly because they have ‘(i) bad or insufficiently robust values, (ii) bad deliberation, or (iii) deliberation that has no effect on action’ (Tiberius 2008:163). She emphasises reflective wisdom through the development of her four core virtues as critical to addressing these behavioural problems.

The Reflective Wisdom model can be seen to be a useful method for patterning one’s self-reflective practices according to the contingencies of life. Importantly, it clarifies the need for self-reflection for a number of reasons. First, it establishes the need for self-reflection to establish one’s value commitments and also one’s
sense of perspective in judging between competing values. Second, it establishes the need to move in and out of self-reflection in order to preserve the spontaneity and creativity of non-reflective experience and the value of intuition in conducting these moves as part of one’s flexible attention skills. However, while it values self-reflectivity and intuition, it does so without advancing upon known shortcomings when reasoning about one’s subjective values. Instead the model is presented as a way to work with and even valorise an individual’s limited and biased reasoning power concerning self-knowledge. This treatment of self-reflective practice could arguably be contributing to bad behaviour by not addressing ways to improve self-reflective practice per se. To do so could improve upon one’s deliberation skills and lead to greater autonomy through which to negotiate the complexities of living a moral life. To move beyond the limitations of this model, recent studies of self-reflective practice undertaken across the mind sciences that specifically identify its power in extending reasoning skills will be relied upon.

### 3.3 Self-reflective practice as a technique

In the previous section an argument was presented for reflecting upon the importance of establishing personal values as the basis for professional practice. Self-reflective practice was established as a necessary part of the patterning of a well-self-directed life that could promote value change. This section sets out two steps through which to explore the mechanics of self-reflective practice. The first step locates it at a level of consciousness. The second step introduces its value change mechanics as a body/mind process. In this second step attention is given to the motivational aspect of value commitments and the way they configure creative flow. That creativity is considered vital to an architect’s self worth will be taken up again in Section 3.5 when research into intuition is surveyed.

#### 3.3.1 Self-reflective practice as a level of self-awareness

The first step to understanding self-reflective practice as a mental activity is to situate it in a hierarchy of consciousness. Within experimental social
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psychology\textsuperscript{16}, a framework known as the Social/Personality Model that ‘has guided empirical research for more than three decades’ will be used for its well-recognised simplicity and clarity (Morin 2005:359). This model identifies the emergence of consciousness from the lower levels of cognition and grades the various levels of higher self-awareness. Figure 3.1 lists the types of information processed within each level of self-awareness. In this model, the processing of private self-information is considered a higher level of self-awareness than public self-information processing. Higher again is meta self-awareness. Meta self-awareness is the level of awareness required for self-reflective practice.

According to Morin (2004:198), meta self-awareness defines:

\begin{quote}
The capacity to become the object of one’s own attention in which the person actively identifies, processes, and stores information about the self. It is an awareness of one’s own mental states (e.g., perceptions, sensations, attitudes, intentions, and emotions) and public self-aspects (e.g., behaviors including actions and general physical appearance). This potential focus on private and public self-information can extend to a host of other self-related dimensions for example, professional work, intimate relationships, financial situation, health, and sexuality.
\end{quote}

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Figure 3.1: The Social/Personality Model of levels of consciousness (Morin 2005)

The Social/Personality Model however, does not explain the significance of the subconscious or unconscious in information processing, nor the effect of emotion upon such processing. To explain this, the Interacting Cognitive Subsystems model of mind provides a cognitive science\textsuperscript{17} based model that recognises that information processing works, not through one, but through two meaning making subsystems (Clarke 2005; Teasdale and Barnard 1993). Clarke explains how one of these subsystems is verbally coded, analytical and implicated in our sense of autonomy (our critical thinking), while the other subsystem processes sensory and emotional information vital to our sense of relationship and well-being (our emotional sensibility). The importance of this model is that, (i) it recognises that

neither system is in overall control of one’s subjective experiences; (ii) sense of wholeness depends on close communication between both these aspects, and (iii) because the subsystems are considered as distinct, it is possible for this communication to become overloaded or skewed in some way. Wellbeing, in this model, requires ‘smooth communication’ between the emotional/relational and the logical subsystems (Clarke 2005:4). Self-reflective practice, especially in the form of mindfulness meditation, is promoted in this model as ‘a useful technique to manage the balance’ (Clarke 2005:4). For instance, research into the effectiveness of mindfulness meditation as part of cognitive-behaviour therapy for depression has shown that it affects brain plasticity by ‘mut(ing) overactivity in the frontal cortex, the seat of reasoning, logic, analysis, and higher thought … [and] rais(ing) activity in the hippocampus of the limbic system, the brain’s emotion centre’ (Begley 2007:149). This has led to a 66% success rate in combating relapse, the most intransigent aspect of depression, compared to 34% success rate for drug-therapy. In effect, these figures indicate a neurotic condition can be altered with relatively good chances of that alteration being permanent, which suggests habits connected to the neurotic condition have also been affected. Habitual thinking underlies everyday non-reflective activity. The research also points out that changes in habitual behaviour are not just the result of enhanced emotional wellbeing, but that training the emotions is the key to countering recidivism. The following section details how self-reflective practice incorporating meditation changes habitual thinking. The synergy between the details of meditation and design thinking is discussed further in Chapter 5.

3.3.2 The mechanics of self-reflective practice
The second step to understanding self-reflective practice is to clarify how, in balancing these dual processes of critical thinking and emotion sensibility, it brings about value change. At this point it is necessary to introduce the concept of meditation as an advanced form of self-reflective practice with claims to value change. Meditation is a generic term that covers ‘a family of complex emotional
and attentional regulatory strategies developed for various ends, including the cultivation of well-being and emotional balance’ (Lutz et al. 2008:163).

It is important to note that meditation is not a Western tradition of mental development and is therefore not widely practiced within Western culture. The history of its development into a methodical and rigorous self-reflective practice is Asian, and its prevalence in much of Asia is due to the influence of Hinduism, Buddhism and Taoism. Multiple forms of meditation have come to the West in a number of culturally specific waves throughout the 20\textsuperscript{th} Century (Blofeld 1980; Wallace and Hodel 2008). Mindful of these qualifications, Lutz et al. (2007:7) advise that, in coming to an understanding of the mechanics of meditation, ‘it is crucial to separate the highly detailed and verifiable aspects of traditional knowledge about meditation from the transcendental claims that form the metaphysical or theological context of that knowledge’.

Within the West, various traditions that exhibit certain similarities to aspects of meditation have been pursued down through the ages, from the pre-Christian Pythagoreans through Medieval Christian mysticism to modern monasticism and other contemplation-based revivals of Christianity, Theosophy, modern secular traditions of phenomenology and increasingly as complementary healing traditions to mainstream practices in health and wellbeing (Hayes 2002; Hayes et al. 1999; Kabat-Zinn 1994; Keating 1994; 2002; Kristeller and Johnson 2005; Wallace and Hodel 2008). However, according to Wallace and Hodel (2008), many of these traditions suffer from interrupted development or underdevelopment and none are widely practised, which lessens their appeal to authority. For these reasons, Buddhist meditation traditions, which ‘have accumulated a vast amount of expertise in training the mind and cultivating its ability for reflection and introspection’ (Varela and Shear 1999a:6), will be drawn
upon and only those practices that are currently the subject of scientific enquiry will be considered.\textsuperscript{18}

The impetus behind the development of meditation comes from a philosophical understanding that psychological and behavioural problems are caused by lack of self-awareness about one’s cognitive and emotional states (Lutz et al. 2007). Therefore, any practice that is considered by the tradition to be an effective method for change ‘must include some set of reliable techniques that induce mental states which will induce the desired changes in behavioral and psychological traits’ (Lutz et al. 2007:11).

Jinpa (2006) distinguishes between five essentially different types of meditation practices which are quoted \textit{verbatim}.

1) Mindfulness meditation, wherein the individual learns to pay deep attention to the minute processes within the flow of his or her breath or mental processes, while remaining undistracted by other sensory or discursive thought processes.

2) Meditation in the form of taking something as an object, such as when the person takes the fundamental truths of one’s condition like the utterly transient nature of one’s life, for instance, as the object of deep contemplation.

3) Meditation in the form of cultivation of positive mental qualities, such as compassion and loving kindness. Here compassion and loving kindness are not so much the objects of meditation; rather the person seeks to cultivate these qualities within his or her heart.

4) Meditation as visualization or simulation, such as where the person visualizes himself or herself as going through the various stages of dying.

\textsuperscript{18} Buddhism has taught for twenty-five hundred years that the mind is an independent force that can be harnessed by will and attention to bring about physical change. (Ibid.)
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5) Meditation in the form of prayer where, for example, the meditator aspires to attain the enlightened attributes of the Buddha for the sake of bringing about the welfare of countless sentient beings. (Jinpa 2006:2)

Throughout these practices two generic meditation categories are employed, a discursive type of meditation and an absorptive type of meditation. They are often combined in a single session or over the course of a practitioner’s training (Davidson and Lutz 2008; Jinpa 2006). Within a single session they are practised as four core steps (Kelsang 1990). These steps are: mental preparation, the discursive type of meditation (also known as analytical meditation or contemplation), the absorptive type of meditation (also known as placement, or insight meditation) and dedication. Throughout these successive steps, visualisation is the key to mind control.

According to Geshe Kelsang, to prepare for a meditation session one first calms the mind utilising breathing meditation and visualisation. This is the first step and it encourages an objective distancing from one’s normal mental processes:

> Breathing naturally, we try to concentrate on our breath without being distracted by conceptual thoughts. As we breathe out we imagine that we exhale all our negativities, obstacles, and distracting thoughts … As we breathe in we imagine … pure, white light. (Kelsang 1990:18)

The second step is an analytical form of meditation upon a particular subject matter (e.g. compassion) to ‘reach a conclusion or cause a specific virtuous state of mind to arise’ that then becomes the object of placement meditation (Kelsang 1990:3). This state of mind is explained further:

> The purpose of contemplation is to bring to mind the object of placement meditation. We do this by considering various lines of reasoning, contemplating analogies, and reflecting [on what is known about, for example, compassion]. … When through our contemplations the object
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appears clearly [without doubts or confusion], we leave our analytical meditation and concentrate on the object single-pointedly.

(Kelsang 1990:13)

For an architect this stage provides the opportunity to contemplate upon the multiple reasons for ecologically sustainable development and for strengthening one’s conviction as to the virtues required for its practice. As the Dalai Lama (Dalai Lama 2001:51) advises, ‘you are cultivating a sense of closeness or empathy with your chosen object by studiously applying your critical faculties.’ Once familiarity with the chosen object/topic is developed through empathy, the meditator must ‘then remain focused on it by means of settled meditation in order to help it sink in more profoundly’ (Dalai Lama 2001:52). Placement meditation is what Geshe Kelsang considers ‘the actual meditation’ (1990:13). This is the third step, in which ‘we settle our minds on a chosen object without engaging in analysis or thought’ (Dalai Lama 2001:52).

The development of empathy through scrutiny in the preceding step is now embedded by ‘remain(ing) fixed on that feeling, without engaging in thought’ (Dalai Lama 2001:52). If the feelings of empathy one has generated fade or the mind wanders ‘we should return to analytical meditation to bring the feeling back to mind … and [once again] hold the feeling with single-pointed concentration’ (Kelsang 1990:14). With systematic repetition ‘intuitive insight arises [but] only after the object has been understood intellectually, and it becomes a part of the mind’ (Ngawang 1974:154). From this reading of the mechanics of meditation, it can be seen that meditation guide the development of one’s intuition through reason and empathy.

The act of dedication to finish the formal meditation session is the final step. It is to direct any value change achieved towards the attainment of even greater value change with each session. In Buddhist terminology ‘we ensure that the merit we created by meditation is not wasted but acts as a cause for enlightenment’ (Kelsang 1990:14). To make sure the meditation session is not wasted one must
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integrate it into daily life. This is when ‘we should keep a watch over our mind at all times by applying mindfulness, alertness, and conscientiousness; and we should try to abandon whatever bad habits we may have’ (Kelsang 1990:14).

As discussed in Section 3.2, one’s values are shaped by one’s deepest desires, and conviction comes from thinking there is something good about them. Within each meditation session one is advised to first disengage from habitual thinking and then encouraged to scrutinise one’s desires carefully before allowing oneself to think they are good. Prior to all meditation sessions, reading and study of its purpose is considered crucial as mediation is undertaken essentially ‘to engage in combat with our afflictive emotions’ (Dalai Lama 2001:76). By this, the Dalai Lama is referring to meditation as the mechanism for bringing one’s desires under control through deliberate strengthening of mind and body processes. The claimed outcome is intuitive wisdom or the ability to act without deliberation in such a way that, upon reflection, one judges it positively. It is also referred to as ethical know how (Varela 1999a). Intuitive wisdom as a state of awareness equates to the ‘practical perspective’ or creative flow, highlighted in Section 3.2, as the non-reflective aspect of daily living that configures the bulk of conscious activity. The importance of intuition is in guiding non-reflective activity.

Self-reflective practice, when practised as a regular meditation and followed up through mindfulness, can bring about value change through engaging one’s critical thinking and emotional sensibility. This leads to greater control over the formation of one’s intuition. Critical reasoning skills are developed specifically to give rise to an empathetic familiarity with a desired virtue, the feelings for which are then deliberately and repeatedly held in one’s mind as the mechanism for value change. The positive outcome of repeated practice is claimed to be upon the quality of one’s intuitive, every-day, non-reflective activity. Whether these claims can be substantiated is considered next.

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19 Intuition and ethical know how are discussed further in Section 3.5.
3.4 Self-reflective practice as a science of the mind

This section explores the adaptation and secularisation of meditation into professional development regimes by first introducing what is known about the efficacy of meditation from across the mind sciences, specifically psychology, psychotherapy and neuroscience. A considerable amount of academic research literature now exists on meditation (Ludwig and Kabat-Zinn 2008). This has led to an increasing interdisciplinary respect for certain similarities between neuroscience and Buddhism. Both ‘take an empirical approach to knowledge’ and both ‘prefer to account for the emergence of life in the world in terms of the natural laws of cause and effect’ (Begley 2007:vii). The Buddhist discipline of experiential inquiry into the nature of the mind ‘has particular relevance to philosophical and psychological theory and practice because of its intensive exploration of the mind and its psychological methods to cultivate sustained well-being’ (Wallace and Shapiro 2006:690).

3.4.1 Self-reflective practice and neuroscientific research

The principle Buddhist understanding that the human mind can be transformed through training has found recent confirmation via research into the neuroplasticity of the brain. One characteristic of consciousness is that its coherence is linked to neural phase-locking or synchronisation across regions of the brain (Varela et al. 2001). Tracking these electro-chemical synapses has allowed neuroscientists to correlate various modes of cognition to brain architecture. Findings from two major studies, one into the development of compassion through compassion meditation (Lutz et al. 2004), the other into

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20 For instance, a simple web search across all EBSCO host databases of peer-reviewed journals between 2004 and 2009 discussing the topic “meditation” produced 5,877 hits. However, this was reduced to 75 hits when the topic was confined to “meditation practice”. This could be interpreted as a limitation of academic curiosity in meditation as a method.

stress reduction through the mindfulness-based stress-reduction technique (MBSD) which adapts mindfulness meditation for the relief of medical conditions (Davidson et al. 2003), have produced findings that indicate mental exercises alone can alter brain architecture to turn fleeting states into structural traits. Meditation works by transforming habitual thinking, which in turn alters brain architecture. These findings are considered ground-breaking as they overturn long-held beliefs about the immutability of brain architecture. In fact the brain is now recognised as inherently plastic, which suggests that life experiences mould brain architecture to a far greater extent than commonly thought.

Due to mounting evidence that mental events cause physical changes in the brain, meditation as a mental training technique has become of great interest to neuroscience (Begley 2007; Ludwig and Kabat-Zinn 2008; Schwartz and Begley 2002). The initial research shows that it ‘may be an effective way to positively regulate brain, endocrine, and immune function, influencing physiological and psychological variables important to wellbeing’ (Aftanas and Golosheykin 2005; Brefczynski-Lewis et al. 2007; Creswell et al. 2007; Davidson and Lutz 2008; Davidson et al. 2003; Hölzel et al. 2008; Jones 2007b; Ludwig and Kabat-Zinn 2008:1351; Lutz et al. 2008; Slagter et al. 2007; Slagter et al. 2009). According to Davidson and Lutz (2008), these studies indicate that (i) attention is a trainable skill that can be enhanced through meditation; (ii) improved attention is associated with a significant decrease in emotionally reactive behaviors (iii) better attention leads to better coping skills in demanding situations; and (iv) positive emotions, such as compassion, are trainable skills that can result in permanent brain changes.

The significance of these findings to this thesis is that they confirm that fundamental changes are possible through mental training because of the brain’s inherent plasticity. Therefore, assimilating self-reflective practice into architectural practice can provide a profound method for improving coping skills
and increasing positive emotions, such as compassion, necessary for carrying out the transformative agenda of sustainable design (Section 2.3).

3.4.2 Self-reflective practice and psychotherapeutic research

Meditation is now considered ‘one of the most enduring, widespread, and researched of all psychotherapeutic methods’ (Khong 2009; Walsh and Shapiro 2006:227). A number of reviews of the research literature (Baer 2003; Grossman et al. 2004; Jennings 2005; Kabat-Zinn 2003; Ludwig and Kabat-Zinn 2008; Ospina et al. 2007; 2008; Roemer and Orsillo 2003; Toneatto and Nguyen 2007), confirm Kristeller and Johnson’s (2005:396/7) observation that, while the methodological quality of investigation into meditation still requires improvement, ‘meditation is gaining recognition as a tool to attain a variety of goals, including physical relaxation, reduction in anxiety, amelioration of depression, and improvement in behavioral self-regulation’. Behavioural self-regulation includes ‘psychosis, borderline personality disorder and suicidal/self-harm behaviour’ (Hayes 2006; 2002; Hayes et al. 1999; Ivanovski and Malhi 2007:76; Lau and McMain 2005), chronic pain control and binge-eating disorders (Chang et al. 2004; Kristeller and Hallett 1999; Salmon et al. 2004), habitual responding (Wenk-Sormaz 2005) and relapse prevention for depression (Begley 2007; Lau and Segal 2007). Ludwig and Kabat-Zinn (2008:1352), list the research currently underway on the use of meditation to ameliorate ‘pain, hypertension, myocardial ischemia, inflammatory bowel disease, human immunodeficiency virus, and substance abuse’.

According to a review of the psychotherapeutic literature by Khong (2009:118), for many therapists and clients, there is still a perception of meditation as simply ‘a good therapeutic tool’, when in fact, it is ‘a profound way of being’ that encourages those who engage in it to ‘take responsibility for their psychological and emotional well-being’. Yet, the research supports meditation as a value-change mechanism, not just in terms of the positive psychological outcomes (Luskin 2004; Warren Brown and Ryan 2003; Williamson 2003), but specifically
in such areas as spiritual wellbeing (Chiesa and Serretti 2009; Richards et al. 2006; Wachholtz and Pargament 2005), love and compassion (Carson et al. 2004; Dimidjian and Linehan 2003; Fredrickson et al. 2008; Khong 2009; Kristeller and Johnson 2005), altruism (Brosse 1954), empathy (Nielsen 2004; Nielsen and Kaszniak 2006) and forgiveness (Oman et al. 2008a). These studies, together with neuro-cognitive research on the effect of compassion meditation to bring about structural changes to the brain (Lutz et al. 2004; Pace et al. 2009), support the wider application of meditation as a value-change mechanism for enhanced human wellbeing. The significance of these findings to this thesis is that meditation engenders value-change by encouraging the practitioner to take responsibility for their own wellbeing. Considering that architects have been called upon to engage in sustainable design through a range of virtues they may or may not already possess, the evidence suggests that meditation can engender the changes they may need to make in a way that is profound and, thus, conducive to their own wellbeing.

### 3.4.3 Self-reflective practice and professional development

From a review of the literature on the cognitive and perceptual benefits of meditation, McCown (2004:148) surmises that ‘meditation is beginning to be considered valuable not just for therapeutic applications, but for performance enhancement’. Within the neurocognitive sciences, those researchers pioneering research into the effects of meditation upon brain neuroplasticity are also developing neurophenomenology as a scientific method to ‘incorporate phenomenological investigations of experience into neuroscientific research on consciousness’ (Lutz 2002; 2003; Mind & Life Institute 2003; Rudrauf et al. 2003; Thompson 2007:312; Varela 1996; Varela and Shear 1999b). The concern is ‘not to reduce consciousness but “re-enchant” the concrete of biology itself’ (Rudrauf et al. 2003:47). Attributed to the biologist, neuroscientist, phenomenologist and philosopher, Francisco Varela (1996), neurophenomenology is concerned with ‘naturalizing phenomenology as well as “phenomenologizing” neuroscience’ (Rudrauf et al. 2003:47; Varela 1999b). It
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constitutes a deliberate attack upon the taboo of subjectivity from within science’s own ranks as scientists struggle with the ‘hard problem’ (Chalmers 1996) of examining conscious experience. In effect, neurophenomenology enhances the ‘scientist as instrument’ by utilising a rigorous method of first-person methodology developed from Husserlean\(^\text{22}\) and Heideggerian\(^\text{23}\) phenomenology and Buddhist meditation techniques.

The development of neurophenomenology in the cognitive sciences can be traced back to the theory of autopoiesis, developed in biology in the 1970s, to explain living systems as cognitive systems (Maturana and Varela. 1973; Maturana and Varela 1987). Autopoiesis\(^\text{24}\) defines living systems as autonomous systems of self-production with cognition as ‘the behavior or conduct of a system in relation to its environment’ (Thompson 2001:124). Thus, cognition ‘as the ‘sense-making’ capacity of life’ can be found in ‘its minimal biological form’; that is, as an inherent aspect of metabolic activity (Thompson 2001:66). In this manner, mind and body emerge together through an irreducible circularity of self-production. The recognition of mind and body as an irreducible autopoietic system radically challenges the Cartesian split between mind and body while also establishing cognition as ‘immanent in matter at all levels of life’ (Capra 2002:30). The key ideas behind autopoietic living systems are that of autonomous systems and emergent processes. These ideas have re-oriented the cognitive sciences through the theory of the embodied mind. This theory explains how ‘the human mind emerges from self-organizing processes that tightly connect the brain, body, and environment at multiple levels’ (Thompson 2007). Autopoiesis

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\(^{22}\) Husserl developed a phenomenology that distinguished between the content of a mental act and the processes through which such content appears (Section 2.4.1).

\(^{23}\) Heidegger stressed the transparent nature of consciousness e.g.: turning lights on and off, walking on the street, etc. For Heidegger, cognition as deliberation only appears when some situation of dysfunction occurs, e.g. my key doesn’t work in this lock, I don’t find my wallet in my pocket, etc. His impact upon architectural theory will be discussed in Chapters 4 and 5.

\(^{24}\) Autopoiesis has also been raised in Chapter 2, page 18, note 9, in terms of its application to ecosystems.
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and the theory of the embodied mind provide scientific accounts of interdependence and autonomy at the deepest levels of the individual. This is of real significance in terms of sustainable design, for they expand upon notions of interdependence already circulating within the sustainable design literature. Autopoiesis and the theory of the embodied mind also explain experience as an *irreducible* act of being-in-the-world\(^{25}\); an idea developed philosophically through phenomenology (Thompson 2007).

Phenomenology is a philosophical method and school of philosophy developed through Edmund Husserl that has acted as an important critique of an overly objectivist orientation in Western philosophy and science (Smith 2009). Husserl developed the phenomenological method to bring rigour to the study of consciousness from the first-person point of view. Varela and Shear (1999a:5) describe phenomenology as ‘the most important western school of thinking where experience and consciousness is at the very heart’. Its methods parallel meditation techniques in being a ‘trainable mental skill [in] meta-awareness’ (Thompson 2007:19). Thompson (2007:19) explains that the aim of the phenomenological method is ‘not to break the flow of experience, but to reinhabit it in a fresh way, namely, with heightened awareness and attunement’. These are features which ‘closely parallel the basic mental skills cultivated in Buddhist mindfulness meditation’ (Thompson 2007:445). The difference between phenomenology and meditation comes down to objectives. Whereas phenomenology stops at the study of the mind, meditation uses the study of the mind in order to achieve value-change.

The uptake of meditation by health professionals emphasise two main concerns: the need to engage as healers rather than as technicians of health care (Schmidt 2004), and the need for their own self-care strategies (Schure et al. 2008; Shapiro et al. 2007; Shapiro and Schwartz 1998). Meditation has infiltrated professional

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\(^{25}\) Being-in-the-world has had an enormous impact upon architectural theory, especially as it was developed by Heidegger, and will be discussed in detail in Chapter 5.
development regimes through two main pathways. First, a number of therapeutic programmes demand of the medical practitioner that they be accredited meditators in order to administer the programmes (Centre for Mindfulness). The Mindfulness-Based Stress Reduction (MBSR)\textsuperscript{26} and Mindfulness-Based Cognitive Therapy (MBCT) programmes are examples of this approach. Central to these programmes are two particular types of meditation and yoga - mindfulness meditation (Section 3.2.2(i)) and Hatha yoga – that together activate a full-bodied transformative practice (Kabat-Zinn 2003). In being ‘fully attentive, without judgment, of whatever arises in the field of attention’ (Kristeller and Johnson 2005:394), mindfulness meditation encourages a dispassionate mode of awareness ‘that seems particularly critical to emotional self-regulation, and to be the critical factor in its effective application’ (Schwartz et al. 2005:1312). The benefits of the yoga practice attached to MBSR programmes have been relatively under-researched, however, this is changing (Christopher 2006; Salmon et al. 2009). The combination of mindfulness meditation and yoga seem to satisfy the conditions for profound change through cognitive, affective and somatic engagement; that is, a full-bodied engagement.

It is noted by a number of researchers that there is little quantitative evidence from good research on practitioner performance (Allen et al. 2006; Grepmair et al. 2006; James et al. 2009; Kabat-Zinn 2003). Follow-up studies on practising psychotherapists are usually limited to ‘videotaping therapeutic sessions for fidelity-checking and supervision … [of] the therapist in action …’ (Allen et al. 2006:291). However, while ‘psychotherapeutic research has long neglected the “psychotherapist as an instrument” in favor of psychotherapeutic techniques’, attitudes are changing (Grepmair et al. 2006:649). Grepmair et al.’s series of ongoing studies of meditation practice by professionals (2007; 2008; 2006:649)

\textsuperscript{26} Accreditation as an MBSR teacher requires at least one 5-day or 10-day silent residential retreat, as well as 66-70 hours of MBSR-accredited courses. Ongoing meditation practice is expected.
Self-reflective practice indicate that the promotion of mindfulness in therapists ‘could positively influence their patients’ therapeutic courses and treatment results’.

The second method through which meditation has infiltrated professional development regimes over the past three decades, is through the rise of a more holistic, systems-based model of health-care practice. The Biopsychosocial model of clinical practice exemplifies this approach. It is ‘both a philosophy of clinical care and a practical clinical guide promoting a more participatory clinician/patient relationship in keeping with current Western cultural tendencies’ (Borrell-Carrió et al. 2004:576). In this respect it shares the same concerns as sustainable design for a more participatory approach to design in architecture. In pioneering this model into clinical practice, Epstein (Epstein and Hundert 2002; 1999; 2000; 2003; 2006; Epstein and Borrell-Carrió 2005; Epstein et al. 2004) brought together major advances in the study of professionalism and mindfulness especially through the seminal works of Engel (1977) Polyani (1975), Schön (1983), Langer (1972), Varela (1991), and Kabat-Zinn (1994). It identifies a number of core attributes required of an holistic approach to clinical practice:

(1) self-awareness; (2) active cultivation of trust; (3) an emotional style characterized by empathic curiosity; (4) self-calibration as a way to reduce bias; (5) educating the emotions to assist with diagnosis and forming therapeutic relationships; (6) using informed intuition; and (7) communicating clinical evidence to foster dialogue, not just the mechanical application of protocol’ (Borrell-Carrió et al. 2004:576)

Essentially practitioners are encouraged to make explicit what are normally tacit forms of awareness regarding knowledge and feelings, identify personal biases and to remain mindful of them in the normal course of daily activity (Epstein 1999). The research literature on this model emphasise that meditation practices are often used to activate this level of awareness (Beddoe and Murphy 2004; Bruce and Davies 2005; Galantino et al. 2005; Oman et al. 2006; 2008b; Praissman 2008). The consensus opinion from studies into the Biopsychosocial
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model is for ‘reduced stress, increased coping, and improved empathy among healthcare professionals after completing an MBSR program’ (Praissman 2008:216). Krasner (2004) highlights the richness of the healing experience as a qualitative dimension that significantly contributes to the success of patient treatment and also a deepened empathy between doctor and patient.

The review of neuroscientific research into meditation as a self-reflective practice has shown it to be efficacious in bringing about structural brain changes that affect positive psychological outcomes. This research corroborates various psychotherapeutic studies of health and wellbeing. Meditation has also infiltrated professional practice to advance neuroscience in examining the experience of consciousness, to ensure authenticity in conducting meditation-based therapeutic programmes and to practice a more holistic model of participatory health care.

The major finding to be gained from this research within the health arena is the growing awareness of the need to switch professional emphasis. Whereas traditionally, improvements in health service have centred on a technical or task-oriented approach, there is now recognition of the need to improve the practitioner in a holistic way through self-oriented aspects of professional expertise. The opportunity is to re-orient sustainable design practices to take these findings into consideration. The next section reviews studies into the effect of meditation upon intuition before being discussed further in Chapter 5.

3.5 Self reflective practice and intuition

Studies suggest that meditation enables a whole system transformation of mind and body through the powers of both conscious and unconscious cognitive processes. Once embedded, its positive effect is claimed to be upon the quality of one’s intuitive, every-day, non-reflective activity. While this outcome is implied from the research already reviewed in Section 3.4, there are other studies that specifically target the impact of meditation upon intuition and the impact of intuition upon creativity. These are aspects of design valorised as its essential
features in synthesising ideas into images that provide a design solution\textsuperscript{27}. Intuition is considered an important aspect of cognition, whether in terms of the spontaneity and creativity of non-reflective experience or as part of one’s flexible attention skills (Section 3.2). This section reviews the research literature on intuition and the effects of meditation upon intuition in developing ethical know how.

3.5.1 Intuition and experimental research

From a review of the literature on meditation, McCown (2004:148) observes that ‘meditation is beginning to be considered valuable not just for therapeutic applications, but for performance enhancement [and that] …a large body of research attempting to demonstrate such cognitive and perceptual benefits already exists’. McCown states the research so far suggests ‘the capacity for applied meditation to help meditators achieve greater focus in the face of distractions, solve complex problems, and make confident decisions’ (McCown 2004:148). From this, McCown (2004:148) extrapolates 'that meditation … may actually enhance intuition, which is a valuable resource in problem solving and decision making’. Within the research literature on intuition, current debate is over recent studies that suggest that ‘unconscious thought processes are more powerful than conscious thought processes in connecting remotely associated elements’ (i.e. lateral and synthetic thinking) (Dijksterhuis 2004; 2007; Dijksterhuis and Meurs 2006; Zhong et al. 2008). While these findings are challenged (Acker 2008; Rey et al. 2009; Schultz 2009; Thorsteinson and Withrow 2009), Zhong et al. counter that the real dilemma is in bringing unconscious thought processes to consciousness. They have demonstrated in follow-up studies that ‘processes that increase the mental activation of correct solutions do not necessarily lead them into consciousness’, thus leaving their original findings intact (Zhong et al. 2008:912). Their research advances Guilford’s (1967) model of convergent

\textsuperscript{27} Intuition and creativity are discussed in detail in Chapter 5.
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thinking and divergent thinking as the essential features of human creativity and problem-solving. Zhong et al. argue that:

Conscious thought is adept at analytic and derivative processing that primarily isolates and discriminates, but unconscious thought excels at integrating and associating information and is capable of carrying out associative searches across a broad range of background knowledge.

(Zhong et al. 2008:913)

Lending support to this proposition are a number of research reviews that emphasise the importance of intuition across a variety of cognitive processes. Intuition is seen to inform decision making, creativity and learning, and provide inspiration in medical diagnosis, technological innovation, business decisions, artistic achievement, and scientific discovery (Dijksterhuis 2004; Dijksterhuis and Meurs 2006; Hodgkinson et al. 2008; Radin 2008).

Hodgkinson et al. (2008) note that intuition is often interchanged with a number of related concepts such as insight, creativity, tacit knowledge, implicit learning and implicit memory. They argue however, that insight involves “incubation” before a distinctive moment of realisation, whereas intuition occurs almost instantaneously. Also ‘implicit learning and implicit knowledge contribute to the knowledge structures upon which individuals draw when making intuitive judgments, however, … they are not equivalent to intuitions’ (Hodgkinson et al. 2008:2). These are important differences that signal that intuition can no longer remain modelled simply as the accumulation and reconstruction of life’s experiences (Niemeyer 1995). It is something fundamentally more creative and inventive. Further research implicates quantum mechanics in cognition (Radin 2008; Schwartz and Begley 2002; Schwartz et al. 2005; Stapp 2007). According to Schwartz et al. (2005:1313), ‘the profound twentieth century development in physics [quantum physics] assigns a subtle but essential causal role to human
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consciousness. The quantum theory of mind/consciousness-brain provides ‘a single rationally coherent theory of an evolving cosmos that is constituted not of matter but of actions by agents’ (Schwartz et al. 2005:1321original italics).

Testing this theory further, research building upon the phenomenon of ‘non-locality’ in quantum physics suggests that ‘the source of creativity is non-local – an aspect of consciousness not constrained by space time’ (Schwartz 2009:16). Radin’s particular study highlights ‘intuition as a direct means of gaining knowledge about the world’ (2008:25), and meditation as ‘a means of gaining information that is not mediated by the ordinary senses’ (2008:34). Within Buddhist discourse, ‘consciousness is neither “inside” nor “outside”. It is “nowhere” and it is everywhere’ (Snodgrass and Coyne 2006:257).

The consensus view to emerge from the research on intuition allows that it is ‘a complex set of inter-related cognitive, affective and somatic processes, in which there is no apparent intrusion of deliberate, rational thought’ (Hodgkinson et al. 2008:4; Radin 2008). This distinction can be better understood through a temporal approach to cognition. Intuition is considered primary process thinking while logic is relegated to a secondary (as in later) process of cognition (McCown 2004:150). The temporal aspect of cognition is well recognised within the cognitive sciences via an account of ‘cognition as enaction’. In this account


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cognition arises in conjunction with the autonomous nervous system in linking sensory and motor surfaces as sensorimotor structures (Gallagher 2005; Varela 1999a:8; Varela and Depraz 2003; Varela et al. 2001). It is these ‘experiential, sensorimotor structures that then “motivate” rational and abstract thought’ (Varela 1999a:16). The temporal nature of cognition is also well supported via phenomenological investigations (Gallagher and Zahavi 2005; Varela 1999b; Varela and Depraz 2003; Varela and Shear 1999b) and Buddhist meditation insights (Guenther 1984; 1989a; 1989b). Ethics, when argued from this temporal view of cognition, emphasises the importance of intuition as ethical know-how (Redding 2008; Taylor 1989; Varela 1999a).

3.5.2 Self-reflective practice, intuition and ethical know-how

The discussion in ethics centres on the difference between moral judgement and moral behaviour (Varela 1999a). The Kantian Enlightenment tradition is detached and critical, emphasising secondary processes of deliberation, while the post-Kantian tradition of Hegel and Taylor is active and engaged, emphasising primary processes of non-reflective thinking (Varela 1999a). The post-Kantian tradition recognises everyday thinking as an ongoing and ‘immediate coping’ or ‘moral situatedness and expertise’ that arises because ‘our lived world is so ready-at-hand that we have no deliberateness about what it is and how we inhabit it’ (Varela 1999a:5-9 original italics). Through this everyday reality one develops moral expertise. While many social interactions originally require learning, as a skilled behaviour they become as transparent as

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31 According to Tiberius, for Kant, the motive of duty is the only morally worthy motive. For utilitarianists, the value of general happiness is supreme and one’s own happiness is justifiable only in virtue of this connection to the greater good. (Tiberius, V. (2005). Value Commitments and the Balanced Life. Utilitas: A Journal of Utilitarian Studies, 17, 24-45.)

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Heidegger’s examples of turning lights on and off, walking on the street, etc. Varela (1999a) stresses that this moral expertise, or ethical know-how, comprises the bulk of a person’s ethical behaviour. In arguing from this view, ethics is seen to be ‘closer to wisdom than to reason [and] closer to understanding what is good than to correctly adjudicating particular situations’ (Varela 1999a:3). This understanding emphasises the ethical nature of living the good life promoted by Tiberius’s account of reflective wisdom (Section 3.2). Phenomenological investigations into the creative and spontaneous nature of imagination and perception clarify how one’s moral expertise is constituted and how meditation can manipulate it (Davidson 1984; Varela 1999a; Varela and Depraz 2003).

Varela and Depraz (2003:210) contend that perception is more than ‘positionality’; it ‘includes our doubts, our confusions, our illusions and our hallucinations’. Perception is, ‘to an essential degree, sensorimotor constrained imagination’ (Varela and Depraz 2003:202). Therefore imagination is central to life itself. Varela and Depraz (2003:204/212) argue that:

… contrary to common sense and the empiricist tradition (namely Hume), imagination belongs to the very core of human consciousness, in close relation with memory and remembrance, fantasy, dreams, and perception itself. … Imagination is grounded on a prereflexive (or prenoetic, unconscious) level of consciousness from which it shines forth … [and] is the privileged place for the manifestation of unconscious, sedimented, habits and desires.

From this description of perception and imagination a number of observations can be made. First, imagination is an innate expression of one’s autonomous,

33 (see Section 3.4.3, Note 11)

34 Prenoeitic refers to ‘aspects of the structure of consciousness that are more hidden, those that may be more difficult to get at because they happen before we know it. They do not normally enter into the phenomenal content of experience in an explicit way, and are often inaccessible to reflective consciousness’ (Gallagher, S. (2005). How the Body Shapes the Mind. Oxford: Oxford University Press. p.2)
prereflexive, sensory-motor enabled, primary thought processes. Second, perception is permeated by imagination. Third, habits and desires are manifested through imagination. It can be surmised from this that one’s ethical know-how is composed from this milieu and attempts to bring about value-change must accommodate the role of imagination upon ethical know-how.

At the heart of Tiberius’ (2008) account of reflective wisdom (Section 3.2) are concerns about the vulnerability of self-reflective practice to the vagaries of imagination. Tiberius (2008) accepts that value-judgments are drawn from one’s deepest desires, along with the conviction that there is something good about such judgements. But she is concerned about ‘the ways in which explicit reflection tend to go wrong’ on these matters (2008:7). For self-reflective practice to be effective, it must contend with the vagaries of one’s imagination. According to Varela and Depraz (2003), mindfulness meditation and meditative quiescence offer this opportunity. They contend that, because of ‘the loose boundary of imagination and perception’, there arises the pastime of daydreaming (2003:210). Not only does ‘(d)aydreaming play the role of an intermediate condition between dreaming as such and everyday perception’, it constitutes ‘most of human life in the flow of consciousness’ that is one’s everyday, non-reflective mode of perception replete with ‘imagined emotional meaning’ (Varela and Depraz 2003:210 original italics). It is through the skilful use of imagination and visualisation in manipulating one’s everyday stream of consciousness/daydreaming, complete with its imagined emotional meaning, that meditation works in bringing about ‘emotional training and moral transformation’ (Varela and Depraz 2003:223) (Section 3.2.2).

Whereas ‘modern Western culture has neglected the intelligent unconscious [seeing it] as a wild and unruly “thing” that threatens our reason and control’ (McCown 2004:150), meditation practices, by contrast, deliberately gain access to the unconscious through manipulation of imagination and visualisation. Without denying the crucial role of ‘study [and] intellectual analysis’ in achieving
the ‘comprehension [that] leads to meditation’ (Ricard and Thuan 2001:20), the effect of meditation is to ‘undermine the hegemony of analytical thought’ (McCown 2004:151). By ‘inhibiting cognition in favor of perception, the active intellectual style is replaced by a receptive perceptual mode’ (McCown 2004:150). It is by tapping into the unconscious, described by Zhong et al. (2008:913) as that which ‘excels at integrating and associating information’, that ‘we thus pass directly from knowledge to inner accomplishment and finally to active ethics’ (Ricard and Thuan 2001:20).

3.6 Conclusion

In this chapter, approaches to self-reflective practice have been assessed in terms of wellbeing and value change. The first concern was to identify self-reflective practice in the larger scheme of living life well. Section 3.1 presented research that identified the trend towards self-expression as a characteristic of human development practices. Self-expression was defined in terms of autonomous choice-making. The Reflective Wisdom Account, reviewed in Section 3.2 on the basis of its claim to improve autonomous choice-making as a life-long strategic moral practice, was found to offer a useful guide for patterning one’s self-reflective practices according to life’s contingencies. Importantly, it clarified the need for self-reflection to establish value commitments and also sense of perspective in judging between competing values. It also highlighted the need to move in and out of self-reflection in order to preserve the spontaneity and creativity of non-reflective experience as a vital source of wellbeing. Non-reflective experience defines one’s practical engagement in the events of the day, whatever they may be. Intuition was promoted as part of one’s flexible attention skills and the means for shifting from a practical mode to a reflective mode of behaviour in managing these events. This balancing act implicitly refers to work events as well as non-work related events.

However, while the Reflective Wisdom Account values self-reflectivity and intuition, it does so without advancing upon the known shortcomings of self-
reflective practice. To move beyond this limitation, Section 3.3 provided a
review of recent studies of self-reflective practice from across the mind sciences.
The first concern was to locate self-reflective practice as a function of meta-self-
awareness. This was identified, according to the Social/Personality model used
within experimental social psychology, as the capacity to become the object of
one’s own attention. However, this model does not explain the significance of
the subconscious or unconscious in information processing, nor the effect of
emotion upon such processing. The Interacting Cognitive Subsystems model of
mind, developed within the cognitive sciences, provided a better model for
explaining how information processing works through two meaning-making
subsystems - critical thinking and emotional sensibility – and that both are
equally important for wellbeing. Self-reflective practice, especially in the form of
mindfulness meditation, is promoted in this model as a useful technique for
managing the balance between these two cognitive subsystems.

The second task in Section 3.3 was to identify the mechanics of self-reflective
practice. The most well developed form of self-reflective practice is meditation.
It has come to Western attention, along with a vast literature on its psychology,
philosophy and practice, in a number of culturally specific types and waves
throughout the 20th Century. A very brief introduction to a generic form of
Buddhist meditation was presented essentially to review how meditation balances
critical thinking and emotional sensibility to bring about value change. Within
the Buddhist meditation literature, it is claimed that, when practised regularly and
followed up through mindfulness, meditation leads to greater control over the
formation of one’s intuition and therefore, the quality of one’s intuitive, every-
day, non-reflective activity.

Section 3.4 reviewed the substantiation of this claim. Meditation is widely
studied within the mind sciences, specifically psychology, psychotherapy and
neuroscience. The neuroscientific research into meditation has shown it to be
efficacious in bringing about structural brain changes that affect positive
Self-reflective practice

psychological outcomes. This research corroborates various psychotherapeutic studies on the effect of meditation on mental and physical health and wellbeing. Meditation has also infiltrated professional practice in order to advance researcher and practitioner skills in practising a more holistic model of research through neurophenomenology and participatory health care through the Biopsychosocial model. The major finding from this review is of the growing awareness of the need to switch professional emphasis. Whereas traditionally, improvements in health service have centred on a technical or task-oriented approach, there is now recognition of the need for a more holistic approach that supports practitioner wellbeing. Meditation is now a recognised strategy for this that specifically aims at the self-oriented aspects of professional expertise.

In Section 3.5, a review of research into intuition and ethical know-how highlighted imagination as intrinsic to cognition. Perception is sensorimotor constrained imagination with rational and abstract thought “motivated” by the imagination as secondary processing. Intuition is considered a complex set of cognitive, affective and somatic processes with no apparent intrusion of deliberate, rational thought. Phenomenological accounts define intuition as a phenomenon of the unconscious processes of imagination/perception brought to consciousness as inspiration and ethical know-how. Moral expertise is a learned process that becomes intuitive through the habituation of one’s immediate, and therefore largely unselfconscious, coping skills. As a skilled behaviour it is relied upon far more consistently than explicit ethical deliberation.

Meditation has wide claims to performance enhancement that may be of practical benefit to architects looking to transform their own practice to suit the new paradigm of sustainable design. The role of meditation in improving intuition, whether as a mode of non-reflective experience or as part of one’s flexible attention skills, has implications for balancing task-oriented and self-oriented aspects of architectural design practice. How this might be so is taken up in Chapter 4.
Chapter 4

Sustainable design and Modernism

4.0 Introduction

In Chapter 3, the adaptation of meditation and yoga within cognitive / behavioural therapy and clinical medical practice to manage a wide range of medical conditions was reviewed for evidence of value change. It was found that meditation is effective in encouraging those who engage in it to take responsibility for their psychological and emotional well-being. Studies of uptake amongst health professionals indicate that meditation has led to enhanced performance and enriched experiences by broadening skill development from a narrow focus on technical expertise to an attuning of the practitioner, through mindfulness meditation, to a wider range of factors that can reduce their performance in daily practice. The effectiveness of meditation is in utilising imagination and visualisation over intellectual rumination to embody new values as intuitive insights.

Studies of intuition within the behavioural-sciences concur that it is a complex set of interrelated cognitive, affective and somatic processes, in which there is no apparent intrusion of deliberative, rational thought. These studies also emphasise the importance of intuition to performance enhancement. Phenomenological and philosophical traditions were drawn on to identify this aspect of cognition as ethical know-how. Ethical know-how was characterised as the spontaneous coping strategy that underlies all experience. By extension, this necessarily includes design as subjectively experienced by the designer. Before reviewing the self-oriented aspect of design in Chapter 5, this chapter provides the architectural context for that discussion. The ontological and cultural roots of Modernism in architecture are identified for their effect upon sustainable design as it is currently pursued.
The new paradigm of sustainable design requires that architects practice according to urgent environmental, economic and social obligations (Chapter 2). That these obligations have become so urgent reflects the shortcomings of the Modernisation project to transform the world according to Western Enlightenment values. In order to discuss these shortcomings in terms of architecture, Section 4.1 introduces phenomenology as it has been interpreted in architecture. Section 4.2 draws on various phenomenological interpretations of the traditional role of architecture within Western culture. These interpretations emphasise the existential role of architecture in human development, the tacit knowledge articulated via this role and how such knowledge has been transformed by Enlightenment thinking. In Section 4.3, a critical reading of the architectural ethos behind the unsustainable practices that beset Modernism provides an introduction to sustainable design, presented in Section 4.4 as both a critique and a condition of Modernism.

4.1 Architecture and phenomenology

Phenomenology, as the study of the mind through bodily, lived-world experiences, is, in essence, a study of ‘what it is like to be’ (Varela and Shear 1999b:3). While Husserl’s phenomenological method has been re-invigorated in the cognitive sciences through neurophenomenology (Section 3.4.3), it is the philosophical stream of phenomenology developed through Heidegger, Merleau-Ponty and Bachelard in particular, which has most influenced architecture in the twentieth century (Sharr 2007). Phenomenology is rooted in the German romanticist concern for synthesising art, philosophy, and science; a tradition that opposed itself to the diminishment of subjectivity within Enlightenment thinking (Dreyfus and Wrathall 2006).

Phenomenology critiques the normative view of critical thinking as an incomplete view because it does not acknowledge the existential fact of being-in-the-world as the primary condition of lived experience that enables awareness and reflection and critical thinking in the first place. This criticism is especially targeted at
dualistic and reductionist thinking that typifies the normative view generally and
the scientific method in particular. In turn, the phenomenological philosophy
developed through Heidegger, has been strongly criticised for encouraging an
uncritical nostalgia for intuition and tradition. At issue is the idealism and
dogmatism inherent in their romanticisation. Yet, the influence of
phenomenological philosophy within the current criticisms of architecture is
pervasive in bringing to the fore non-material existential needs as an essential
criterion for sustainable design as holistic practice. These critiques give insight
into current understandings of the self-oriented aspect of design and are pursued
in this chapter for this reason.

Phenomenology has found expression in architecture essentially through
Heidegger’s philosophy of building and dwelling as an existential condition of
being-in-the-world (Dodds and Tavernor 2002; Dovey 1979; Holl et al. 2006;
Low 2003). Phenomenology emphasises the experience of living, such that,
before being an architect, the architect is first a living being with existential
needs. It is, therefore, these existential needs that are to be served by architecture,
by virtue of it being a human endeavour.

Heidegger’s logic informs such architectural concepts as place-making and
critical regionalism (Caicco 2007; Frampton 1996a; 1996b; Norberg-Schulz
1979; Pérez Gómez 1987; 1994; 2006; Seamon 2007; Vesely 1985; 2004). It has
given rise to a reappraisal of traditional and vernacular architecture as
unselfconsciously authentic modes of dwelling (Harries 1997). Within
architecture, phenomenology provides a critique of modernism as an a-historical
and techno-rational interpretation of building and dwelling that, in overlooking
the virtues of tradition, has become insensitive towards site, dwelling,
inhabitation and place (Sharr 2007).
4.2 The ontological and cultural roots of architecture

Anthropologically-informed accounts propose that the advent of permanent settlement ‘marks a major development in cosmological thinking’ with architecture providing the means by which to harmonise human relations within the cosmic order in ‘serving as smaller-scale reproductions of the structure of the universe’ (Schwaller de Lubicz 1981b; Scully 1979; Wilson 1988:58). By linking the daily cycle of human life with cosmic conditions and movements, ‘the anonymous cosmic movement becomes a communicative movement that, in different degrees, penetrates and determines all areas of culture’ (Vesely 2004:376). As human civilization advanced, so too did the interpretations of celestial, seasonal and corporeal periodicities that were seen to order reality (Lawlor 1982). European architecture is founded on the study of universal order formalised into the ancient Quadrivium of geometry, arithmetic, astronomy and musical harmony, which ‘constituted the major intellectual disciplines of classical education’ (Lawlor 1982:6). According to Lawlor (1982:6):

The implicit goal of this education was to enable the mind to become a channel through which the ‘earth’ (the level of manifested form) could receive the abstract, cosmic life of the heavens ... Thus a seemingly common mathematical activity can become a discipline for intellectual and spiritual insight.

Herein lies the full communicative power traditionally ascribed to geometry and number (and by extension, architecture) as the ideal philosophical language replete in both its exoteric and esoteric aspects. Its exoteric aspect describes ‘a definite, finite, particularising power’ associated with tangible things in all their diversity and variability (Lawlor 1982:12). Its esoteric aspect describes a ‘universal synthesising power’ associated with human intuitions of archetypal relationships that are universal and invariable (Lawlor 1982:12). From a review of cross-cultural examples, Lawlor (1982:15) identifies how sacred geometry, along with yoga, meditation, the arts and the crafts have traditionally been used as
‘psycho-physical techniques’ for both esoteric and exoteric purposes. The fact that these techniques are psycho-physical is a crucial point. This will be pursued in more detail in Chapter 5, for this pathway to human development has been usurped in the modern era by the psycho-industrial and now the psycho-digital; a situation much debated in efforts to define sustainable design practices (Hagan 2008).

Architecture is fundamental to human development and wellbeing. It has always been appropriated to ‘mediate and synthesize the natural symbols of both the body and the landscape [while] at the same time provid[ing] the environment and context for social life’ (Wilson 1988:58). In this manner, it has acted as ‘a mode of existential and metaphysical philosophising through the means of space, structure, matter, gravity and light’ (Pallasmaa 2009:19). It is, therefore, ‘concerned with far more than fashionable form, affordable homes, and sustainable development; it responds to a desire for an eloquent place to dwell … a gift contributing to our self-understanding as humans inhabiting a mortal world’ (Pérez Gómez 2006:3/4).

Pérez Gómez’s (1985; 1995; 2006) accounts emphasise the profoundly emotional relationships fostered through architecture. He argues that ‘an appropriate engagement of desire articulating ethical and political positions in the form of seductive projects is the fundamental responsibility of architecture’ (Pérez Gómez 2006:5). This requires manipulation of the basic human emotions of passion and desire, in recognition that they are the unabashed currency through which society flourishes. However, Pérez Gómez (2006:4/5) argues that the functionalist utopia pursued within modernism confuses happiness with hedonism and has led to an ‘emphasis [on] maximum efficiency, economy, commodity, and entertainment value’, wherein all desires are supposedly fulfilled through material means. So how did happiness become confused with hedonism and how may this fundamental relationship be re-oriented through sustainable design?
4.2.1 Enlightenment values and the impetus to Modernism

According to Vesely (2004:176), by the time of the Enlightenment, Europe was in ‘deep cultural crisis’ characterised by ‘fragmentation, relativism of values, scepticism, and pessimism’. The crisis centred on the ‘representation of reality’ as society strove to demystify the primeval relationships binding humanity to the cosmic order (Vesely 2004:176). While there has always been a desire to participate more self-consciously in such relationships and, increasingly, to exert greater control over them, they are deeply corporeal and existential, in being conditioned by evolutionary processes and cosmological rhythms (Dodds and Tavernor 2002; Holl et al. 2006; Lakoff and Johnson 1999; Low 2003; Pallasmaa 2009; Vesely 2004). That these relationships manifest spontaneously as intuitive sense-making to provide meaning, order and coherence not available via discursive thought is a fundamental aspect of human nature. To explain this aspect of human nature, Vesely (2004:18) highlights how ‘[a] line of poetry or a single painting very often can tell us much of the hidden meaning and beauty of a landscape, just as a light in a sacred space tells us of the intelligibility of the sky and the divine’. Yet, we are unable to explain conclusively how such communication is possible or even why it is necessary without drawing on inherently non-logical premises.

For knowledge to be beyond the reach of logic was a situation that had become untenable by the time of the Enlightenment. (Gay 1966). The radical spirit of the Enlightenment was vested in a determination ‘that the only reliable road to knowledge ... was through science, not religion, through observation and experiment, not dogma and revelation’ (Gay 1966:12). This underlying principle was formed through a ‘coalition of science and philosophy’ which ‘led the best minds of the age into scientific inquiry and gave science the sanction of reason’ (Gay 1966:15). Under this coalition ‘the passions, ethics and politics of man’ became suitable subjects of the Newtonian experimental method (Gay 1966:102). Whereas religion works through acceptance of its metaphysical basis, modern science arose ‘by claiming to be grounded in experience and not on a metaphysics
derived from first principles’ (Polyani and Prosch 1975:90). This has resulted in the ‘hyper-separation’ of ‘fact-driven scientific thinking’ from ‘value-laden intuition’ (Polyani and Prosch 1975:64/5).

The value of non-rational modes of communication cannot be dismissed without risk of damaging the human psyche through disorientation and alienation (Niemeyer 1995; Vesely 2004). Niemeyer (1995:43-5) argues that as the reasoning mind was wrested from ‘a partnership between the human soul and the divine inspiration’ it became ‘man’s exclusive possession and favorite and powerful tool’. While the reformist momentum inherent in this attitude has enabled conditions wherein ‘modern science and technology, human liberty and prosperity have flourished’ (Niemeyer 1995:50), it has also led to the cult of reason and the hubris of ‘the superman’ characterised by the will to power, a loss of deference towards nature and the emergence of nihilism (Niemeyer 1995:45).

The cult of reason and the valorising of techno-rationality are seen as the great dangers of modernism (Alexander 2001-; Pallasmaa 2009; Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). As a counter to the ‘totalitarian sovereignty being invested in the essence of technology, its rationality’, architects are encouraged to value ‘spontaneous rather than contrived and controlled action’; a practice discussed further in Chapter 5 (Snodgrass and Coyne 2006:219).

From the Enlightenment onwards, the privileging of reason over intuition, the separation of the intellect from the corporeal and the re-presentation of reality, stripped of both its esoteric aspect and its erotic human dimension, have found their respective foils in various complex and contradictory reactions that emerged in full force, by the beginning of the modern era, under the rubric of the avant-garde.
4.3 Architecture and modernism

As an architectural movement, modernism valorises ‘rationality, scientific innovation, progress and the end of tradition’ (Adam 2008:74). Existential and metaphysical priorities has been transformed by these values (Dodds and Tavernor 2002; Holl et al. 2006; Low 2003; Pallasmaa 2009; Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). Through a complex dynamic between the rationalist priorities of enlightenment thinking, and expressionism, as inspired by romanticist thinking, architecture absorbed ‘the elevation of technology as a universal metaphysical foundation for a new era of culture’ (Vesely 2004:16).

Freed from historicist conventions, architects drew, not on classical principles, but on revised interpretations of first principles as synthesised through the avant-garde movement; a movement that arose with the demise of the Classical tradition (Gelernter 1995). The avant-garde ideal was to express the new secular and technological age through the integration of the arts and technology. Gelernter (1995:231) argues that, through functionalism, design inspiration drew from ‘purely material determinants like structure, climate and purpose’, while, through expressionism, inspiration was derived either ‘purely from inner sensibilities and feelings, [or as] the physical manifestation of a transpersonal Spirit’. Within modernism, materialist concerns have come to dominate modern building practices, yet, the architect, none-the-less, is still encouraged to ‘read the spiritual parallels of [the] time and represent them in pure form’ (Gelernter 1995:240).

4.3.1 Modernism, the avant-garde and techno-rationality

According to Vesely (2004:29), with the loss of tradition and the move towards autonomy, the romanticist impulse transformed into a distorted and dysfunctional inwardness; a personal, introverted striving for wholeness that ‘reduce[d] the traditional complexity of culture to a single, creative gesture and to direct communication with the assumed creative powers of nature’. It produced a
‘mentality that the architect see him or herself as a sole agent, fully responsible for everything related to creativity’ (Vesely 2004:30).

In a further twist, Pérez Gómez (2006:22) argues that as the ‘rational and taxonomic impulse progressively demystified the world … the creative spark of genius became regarded as a supreme form of rationality’. This evolved into an ethos, within Modernism, of ‘production [a]s the true capacity of a genius’ (Pérez Gómez 2006:22). The avant-garde combined the valorisation of productivity with ‘attempts to transcend the confines of traditional culture and the existing human condition’ (Vesely 2004:20). This resulted in a ‘productive attitude to art and architecture’ to a point where ‘many structures and buildings – industrial plants, supermarkets, schools, hospitals, and the like – but also many artworks are produced in the same way as any other industrial product’ (Vesely 2004:23).

Vesely (2004:20) goes on to explain the inherent poverty and ambiguity of the techno-rational approach to art and architecture, in that ‘such a product is typically designed for a precise purpose, and at the same time for any place, people, or culture’. It has led to an ‘emancipated representation’ of reality that ‘has no communicative relation with its cultural setting’ (Vesely 2004:20). The ‘space of real possibilities’ has been transformed into ‘the space of possible realities’ resulting in a loss of ‘continuity of meaning’ that would once have ensured architecture remained relevant within its cultural context (Vesely 2004:21). For Vesely (2004:24/25), these preoccupations of the avant-garde have led to a ‘deep gap in communication, not only between people or between people and buildings, but between different areas of culture itself’ and is ‘reflected most clearly in the difficulty of reconciling the abstract, conceptual representations of our world and the particular conditions and aspirations of our lives’ whether it be science, architecture or art.

Vesely’s concern is to recapture ‘the capacity of architecture to create, or at least initiate, the formation of a communicative space – structured not mechanically, to fulfil predictable functions, but more in the fashion of a musical instrument,'
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which can send reverberations through other levels of culture and help to embody them’ (Vesely 2004:8). Yet, Vesely (2004:30) admits that the original capacity for architecture to communicate in this manner evolved through a ‘culture that was publicly cultivated and shared for many centuries’. Such a culture drew on prenoetic and “erotic” intuitions sanctified through religion and tradition; whereas today, the rational discourse of the Enlightenment has created a situation where it is no longer possible ‘to fully grasp embodied erotic experience as the ground of artistic meaning’ (Alexander 2001-; Pérez Gómez 2006:23; Vesely 2004).

4.4 Architecture and sustainable design

Hagan (2008), in her critique of environmental design, moves on from Vesely’s bleak scenario. She argues that sustainable design is on course towards a high level of calibration in the art of tuning a building to ‘complex behaviours in nature and culture’ (Hagan 2008:128 original italics). In her estimation, there are now two movements within the avant-garde: one, an autonomous movement that remains, as Vesely describes; disengaged from real world considerations. The wish ‘to remain aloof from the status quo by refusing to take it seriously’ disengages this stream of the avant-garde from ‘any analysis of conditions crying out to be taken seriously: the widening chasm between rich and poor, the lethal self-interest of political elites worldwide, the physical, social and economic effects of environmental brittleness, etc’ (Hagan 2008:36). The second group of innovators in architecture comprise an engaged avant-garde represented by participatory design and environmental design. These movements in architecture are deeply committed to the specifics of the real world.

The engaged avant-garde has been represented, first and foremost, since the 1970s, by a participatory architecture that seeks to undermine the profession’s paternalism through a heavy emphasis on user/community consultation, and second, by environmental design, itself as much concerned with the social effects of a dysfunctional environment as it is with the dysfunctional environment itself. (Hagan 2008:127)
Sustainable design is both a condition and a critique of the ambiguous legacy of Modernism. The history of sustainable design in architecture can be traced through a number of movements (Gordon 2008; Sassi 2006; Steele 2005; Williamson et al. 2003). Environmental concerns have always permeated architecture, but were almost overwhelmed by the mid-twentieth century within a culture dominated by a post-war industrial hubris, which saw widespread displacement of natural systems for artificial ones, and a will to power over nature that can be traced to a techno-rational impulse (Steele 2005). The embrace of the industrial model, along with its universalising agenda, led to an ideologically driven architecture that was highly introverted and environmentally and socially insensitive (Hagan 2008; Vesely 2004). It took the emerging environmental movement, the counter-culture movement of the 1960s and 1970s and the oil shocks of this time, which also galvanised mainstream attention for a short period, for a re-evaluation of this trend and the emergence of sustainable design as a valid architectural concern (Gordon 2008).

In establishing its credentials within a profession dominated by an ethos eulogising the avant-garde, sustainable design has been derided as overly scientistic (Hagan 2008; Owen 2003; Owen and Dovey 2008). Yet, within broader society, the need for credible evidence of sustainability through scientific rigour is paramount (Hagan 2008; Hamilton and Watkins 2009). This conundrum is seen to be rooted in the fragmentation of existential and cosmological cohesion under enlightenment and romanticist impulses (Hagan 2008; Pérez Gómez 2006; Vesely 2004).

The sustainable design movement has arisen within this cultural paradigm at a moment in history dominated by techno-rationality. This has led to a particular interpretation of the transformative agenda of sustainable design. Consequently,

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there is an overt commitment to quantification and measurement of building performance (ACE 1999; Battle and McCarthy 2001; Brandon and Lombardi 2005; Chhetri and Islam 2008; Drake 2007; 2009; Fernandez 2006; Gauzin-Müller 2002; GreenSource 2008; Halliday 2008; Marras 1999; Szokolay 2004; Wood 2003). This requires monitoring of design, construction, post-construction and end-of-life-cycle options. Its quest is comprehensive; seeking to quantify sustainability from the vernacular to hi-tech building types and extending beyond buildings to wider neighbourhood, urban and environmental interactions (Birkeland 2002; 2008; Cole and Lorch 2003; Downton 2008; Ecologically Sustainable Design Pty Ltd 2006; Gauzin-Müller 2002; Girardet 2008; Girling and Kellett 2005; Mostaedi 2002; Pearson 2005; Yang et al. 2005). Renewable resource stewardship certification is bringing greater transparency to design and construction decision-making, while at the same time, promoting the interests of indigenous culture and traditions in resource stewardship (Lindenmayer and Franklin 2003; Menzies 2007). Design practices are also changing to accommodate greater transparency through team-based and community-based participation (Caicco 2007; Feireiss and Feireiss 2008; Kibert 1999; Palleroni 2004; Papanek 1995; Tanzer and Longoria 2007; Wheeler 2004). Re-thinking manufacturing and construction from their chemical properties upwards has reconceptualised the quest for transparency first developed through concepts of material toxicity and embodied-energy and embodied-water properties (Harvey 2006; McDonough and Braungart 2002; Rushton 2006; Treloar 1998).

The reappraisal of technology to mimic nature’s sustainable processes and products inform the design movement known as Biomimicry (anon 2007; Benyus 1997; Morris-Nunn 2007; Oberndorfer et al. 2007; Post 2007; Ramaswamy 2007). This movement may be problematic however, for the danger is in the nature of any artificial process. Not only is there the risk of unforeseen consequences, but also it may continue to harbour a functionalist attitude and a will to power over nature, by seeing it as both a standing reserve and as something that can be superseded. Another related design movement, Biophilia,
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describes a growing body of social science research into human health and nature interdependency; knowledge which may help to check the exploitationist tendencies inherent in Biomimicry (Day 2001; Kellert 2005; Kellert and Farnham 2002; Kellert et al. 2008; Kellert and Wilson 1993; Moore and Cooper Marcus 2008; Wilson 1984). Findings on the psychological and spiritual dimensions of the human/nature interdependency provide for evidence-based advances in building and urban design. As a scientific approach to humanity’s existential condition, Biophilia re-interprets an area of concern that is timeless in the history of architecture (de Botton 2006; Nasar and Preiser 1999; Ruan and Hogben 2007; Wilson 1988).

As a critique of the modern movement and its impact upon the architecture profession, sustainable design is itself rooted in a techno-rational ethos. Within this ethos there is an overarching concern for transparency and participation, which has come to be expressed, not only through technical means, but also through a rational and empathetic concern for spiritual and existential well-being.

4.5 Conclusion

This chapter presented phenomenological interpretations of the transformation of architecture in response to enlightenment values and how this led to the rise of the avant-garde within modernism. Sustainable design could then be discussed in terms of the influence and fear of the techno-rational paradigm as the universal metaphysical foundation for a new era within architecture. In pursuing the ontological and cultural roots of Modernism, an interconnected dynamic between functionalism and expressionism have been uncovered.

The role of architecture in the development of civilization was found to be fundamental. It has always provided a mode of existential and metaphysical philosophising about human/nature relations through which to establish social and cosmic order. Attitudes toward self, society, technology, nature and the cosmos are invariably structured into built form.
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By the time of the Enlightenment, a profound revolt was underway against the existing world order. In search of truth and freedom, a coalition of science and philosophy emerged utilising observation, experiment and reason to combat the prevailing tyranny of dogma, superstition and absolute privilege.

From the Enlightenment onwards, the privileging of reason over intuition, the separation of the intellect from the corporeal and the re-presentation of reality, stripped of both its esoteric aspect and its erotic human dimension, have found their respective foils in various complex and contradictory reactions that emerged in full force, by the beginning of the modern era, under the rubric of the avant-garde. Within this dynamic, the avant-garde impulse came to valorise a dysfunctional inwardness investing ultimate creativity in the individual and away from a publicly cultivated and shared culture.

In the course of these transformations, architecture has been emancipated from its traditional role articulating a cosmologically attuned world order. Via the rise of the avant-garde, it now expresses a techno-rational world order along with the will to power over nature this has generated. While the valorisation of technorationality has led to the privileging of possible realities over real possibilities, and with this, an autonomous and anonymous architecture, within this paradigm, a counter movement has emerged that has led to the re-engagement of architecture with real-world concerns through environmental science and participatory design.

Sustainable design was identified as a critique and a condition of modernism trending towards holism, as greater links are forged between technical, environmental and social initiatives and spiritual and existential well-being. Yet, this account of sustainable design does not give any insight into the self-oriented aspects of design implicit in this trend. To pursue this further, the following chapter reviews what is known about design in order to tease out its potential as a self-transformative practice.
Chapter 5

Design as self-transformative practice

5.0 Introduction

In the preceding chapter, phenomenological critiques of Modernism were pursued that link the valorisation of the autonomous, rational individual with a level of dysfunctionalism that has spread from the human to the environment. They raise the charge that a complex dynamic between the rise of techno-rationalist thinking and the contraction of creative expression to within the confines of the autonomous individual has fostered a will to power over nature in a world divested of its esoteric meaning.

These charges can be set against the overall trend in human development towards greater self-expression in terms of individual autonomy and the internalisation of authority by the individual (Section 3.1). This trend has also been discussed in terms of the need for training specifically in relation to reasoning about subjective values (Section 3.2).

Meditation was found to be a technique for accessing and transforming subjective values which deliberately balances rational thinking and emotional sensibility (Section 3.3). The logic behind this method is that both modes of cognition are necessary in achieving value change; therefore, neither can be valorised over the other. To achieve this balance, rational thinking is a necessary preliminary step to the deliberate use of one’s imagination and visualisation for embodying new values as intuitive insights (Section 3.3.2). Research suggests that, when practised regularly and followed up through mindfulness, meditation leads to greater control over the formation of one’s intuition and therefore, the quality of
one’s every-day, intuitive, non-reflective ethical know-how (Section 3.4 & 3.5). It is, in effect, a method for developing autonomy.

The aim of this chapter is to investigate design as praxis in order to grasp how the designer embodies the transformative process and how it re-emerges as his/her intuitive ethical know-how or praxis. Phenomenological, experimental, historical and hermeneutical readings of design that emphasise its self-oriented aspect are drawn on. The philosophy of phenomenology rests on the observation that to live and, therefore, to be engaged in any activity, one is already embedded in one’s life-world (Husserl 1939/1973). Because of this raw fact of being, any activity, such as being an architect, is primarily a phenomenological or pre-intellectual, as opposed to cerebral, one. The self-oriented aspect of design, therefore, incorporates pre-intellectual activity, a situation already identified as being an immediate coping skill or ethical know-how (Section 3.5). The philosophy of hermeneutics defines the act of being-in-the-world as an inherently interpretive act based on lived experience (Gadamer 1988). It leads to the observation that self-understanding is basic to one’s identity and activity in the world.

In the second half of the twentieth century, experimental research into design as creative practice emerged as a systematic field of enquiry (Cross 2001; Friedman 2006). The controversies that have arisen in its short history reflect the ambiguous legacy of Modernism. Cross (2001; 2004; 2006) identifies these controversies as problems of paradigm setting, alternating between an urge to pursue design as a logical, problem-solving exercise processed through generic rules and formulae and a humanities-oriented stance where the emphasis is on design as an intuitive and subjective art. Cross (2001:49) notes that this dynamic has swung between the two extremes as a ‘40-year cycle’ throughout the course of the twentieth century and he ‘expect(s) to see the re-emergence of design-science concerns in the 2000s’. Science–based design concerns have re-emerged with calls for more rigour in terms of evidence-based design (Hamilton and Watkins 2009), computer-aided environmental modelling (Hagan 2008) and with
the push towards artificial intelligence in designing (Dollens 2006; Kwinter 2007; Turkle 2009). Proponents are optimistic about the contribution that the scientific method and science-based computer technology can make, not just to the practical concerns of environmental design, but also to the avant-garde quest for novelty (Section 4.4). Controversy surrounds both these approaches to design.

Further controversy surrounds the relationship between design and aesthetics. Aestheticisation has come to be seen as ‘an escapist domain that fails to engage with ontological reality’, which has led to what Ray (2005:137) terms an ‘anaesthetisation of [architecture’s] social, political and economic dimensions’. Yet, aesthetics remains a fundamental aspect of design. This controversy has flowed into a concern over the symbiotic relationship that has emerged between sustainable design, evidence-based design and digital design (Cama 2009; Hamilton and Watkins 2009; RAIA 2001a). To understand why this approach is resisted within the architecture profession as being too scientistic (Owen 2003), Section 5.1 outlines the pre-lingual nature of design as a third way of knowing with its roots in art and craft. In this way, design as praxis is recognised as a haptic event reliant on intuition; a situation often overlooked in accounts of design but found to be important in its existential implications (Section 4.1). Section 5.1.1 presents an explanation of design as praxis through an understanding of practice derived from Greek philosophy that accommodates its embodied, intuitive and ethical dimensions. Design as reflection-in-action is reviewed in Section 5.1.2. Reflection-in-action explains the dynamic nature of design while reiterating the foundational importance of praxis in design. This establishes a context for a review, in Section 5.1.3, of the promotion of evidence-based design as a hypothesis-testing exercise; an approach which is challenged in Section 5.1.4 by a hermeneutical account of design as dialogue. Snodgrass and Coyne (2006) argue that design, when understood as a hermeneutical event, is neither a logical problem-solving strategy and thereby wholly reducible to rational processes, algorithms and computer technology, nor mysteriously intuitive and thereby beyond rational discourse and computer simulation. Rather,
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it is a self-edification through processes of ‘involvement, participation, dialogue, play, responsibility and judgement’ (Snodgrass and Coyne 2006:114). In de-mystifying the processes of self-edification, Section 5.1.5 reviews design as a creative play. In Section 5.1.6, this dynamic is considered in terms of its application to digital design. The argument for adapting design to digital processes emphasises a relationship with technology that is explored further in Section 5.1.7 as a form of ‘letting-be’. Letting-be is drawn from both phenomenology and Zen Buddhism and is the key to a design philosophy that embraces technology without subscribing to an instrumental attitude. Through letting-be, design is practised as a conscious awareness of spontaneity. This highlights its paradoxical nature; a characteristic of design compared against a review, in Section 5.2, of paradoxical logic and process thinking. In Section 5.3, participatory design and Action Research are discussed as value-change/research methodologies. All these interpretations of design focus on its personal dynamics. This is not to deny its interpersonal dynamics, but to explore opportunities for self-reflectivity and openness to value-change in ways that allow comparison with the self-reflectivity of meditation as a value-change mechanism. In Section 5.4 conclusions are drawn from the discussion about design as a self-transformative practice.

5.1 Design as a third way of knowing

Design as a creative mode is the key activity of the architecture profession. It has the distinction of being considered ‘a third way that human beings know their world’ in contrast to science and humanities, in being far older than these disciplines and linked to primeval, pre-lingual forms of knowledge channelled through the arts and crafts (Friedman 2006:103; Pallasmaa 2005; 2009; Whitfield 2005). That design as an artform remains profoundly meaningful is because it remains pre-lingual, in the sense that it is a primary process of embodied cognition; an understanding of cognition that acknowledges the body as a knowing entity (Section 3.5.2).
The architect and academic Juhani Pallasmaa (2009:17) notes that, while ‘the capacity to imagine, to liberate oneself from the limits of matter, place and time, must be regarded as the most human of all our qualities’, the fact remains that ‘(a)ll our senses ‘think’ and structure our relationship with the world’. For him, the ‘sensory and embodied mode of thinking is particularly essential in all artistic phenomena and creative work’ (Pallasmaa 2009:17). Designing, as a form of practical enquiry through drawing/modeling/thinking, requires that ‘the entire personality and body of the designer become the site of the design task, and the task is lived rather than understood’ (Pallasmaa 2009:15). Within this dynamic, ‘(e)xistentially essential knowledge, [which] is not primarily a knowledge moulded into words, concepts and theories’ comes to the fore as a non-conscious guide (Pallasmaa 2009:15). Designing articulates ‘the biological and unconscious realms of the body and mind [and] in so doing, maintain vital connections with our biological and cultural past, the soil of genetic and mythical knowledge’ (Pallasmaa 2009:20).

Pallasmaa considers that the activity of designing, when practised as a manual art reliant on the embodied wisdom of all the senses, allows the practitioner access to existentially meaningful roots and traditions. While Pallasmaa’s (2009:20) assertion that such grounding makes the practitioner ‘less vulnerable to manipulation and exploitation’ is a moot one, since he offers no empirical evidence to support it, the arts and crafts are well recognised as therapeutic tools (Edwards 2004; Killick and Schaverien 1997) including as an existential therapy (Alper 1992; Moon 1995). This argument for the therapeutic potential of embodied wisdom has its parallel in the argument for meditation. Meditation, like art, deliberately activates unconscious dimensions of the mind through intense and sustained emotional experiencing (Section 3.3.2). This state of heightened emotion is the key to meditation as therapy (Section 3.4.2). Pallasmaa emphasises the reliance on haptic movement to access the unconscious, intuitive aspects of embodied mind as a distinctive feature of the arts and crafts. Meditation, too, can be practiced as a haptic art. This is particularly evident
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within such traditions as Chinese Taoist and Japanese Zen art (Baggott 2005; Chang 1963; Davey 1999; 2007). These parallels between meditation and design indicate design can be practised as a deliberative meditation on value-change to make the design process more rigorous in its transformative potential.

In arguing for aesthetics as pre-linguistic knowledge and, therefore, a fundamental, non-discursive mode of meaning-making, the design academic Allan Whitfield (2005:3) notes that this understanding of design as art ‘does not fit comfortably with the current emphasis on the social and cultural analysis of design ...’. He surmises that it ‘may account for the difficulty of analyzing the processes by which designers arrive at a design, and why a scientific approach to design may be implausible’ (2005:15). Drawing on experimental psychology, Whitfield (2005:16) argues for the categorical-motivation model of aesthetics; an understanding of ‘aesthetics not as an “artistic” aspect of design, but rather as a fundamental process for acquiring and creating knowledge – prelinguistic knowledge’. In this model, categorisation, especially in terms of ‘preference-for-prototypes’ is promoted as ‘one of the elemental ways in which we form meaning’ (Whitfield 2005:9). Categorisation through prototyping reinterprets, in scientific terms, esoteric communication with ectype36 (Section 4.2).

Motivation, in the categorical-motivation model is understood to be ‘built into humans as the need to explore and, in so doing, assimilate new information’ (Whitfield 2005:6).

Aesthetic activities such as creative design can then be seen as ‘an elaborate form of play in which a mild form of pleasure would be induced’37 (Whitfield 2005:6). Play functions as a way of ‘elaborating our category system via the attachment of emotion to cognition’ (Whitfield 2005:11). The development of an emotional register ‘enables us to anticipate how the effect of possible alternative decisions

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36 Communication with archetypes is reinterpreted as process thinking within the review of paradoxical logic in Section 5.2.

37 This idea of play is pursued further in Section 5.1.5.
would “feel” ... as [an] aid to decision-making’ (Whitfield 2005:16). This model ‘acknowledges the sensory-perceptual as the dominant form of knowledge, and the intellectual/linguistic as an evolutionary add-on’ (Whitfield 2005:16) (Section 3.5). In so doing, it seeks to redress ‘the disassociation of emotion from cognition by both behaviorism and cognitivism’ that has dominated psychology since the early twentieth century’ (Whitfield 2005:4). The fundamental relationship of embodiment to cognition and emotion to intellect is re-established via a hierarchy of knowledge, which moves ‘from the sensory-perceptual to the linguistic, and from this to the cultural’ (Whitfield 2005:17). Sensory-perceptual knowledge is no longer seen as trivial; it involves not only object recognition but performance evaluation as well, and it is conscious thought that is now ‘the exception and not the rule’ (Whitfield 2005:10). The categorical-motivation model considers that the function of aesthetics predates language acquisition, “decoration” and social organisation. As language evolved and social organisation arose, aesthetics was applied ‘to satisfy social goals’ as well as ‘the new forms of communication and display brought about by the evolution of language’ (Whitfield 2005:12). Whitfield, in drawing from experimental psychology, emphasises aesthetics as an ability to recognise and evaluate via sensory-perceptual awareness that is experienced as a mild form of pleasure prior to conscious thought.

The aesthetic appreciation of beauty as an intuitive, corporeal experience is a mode of communication all artistic and creative work evokes to varying degrees. The historical evidence confirms for Pérez Gómez (2006:149) that ‘architecture’s communicative and ethical dimension is directly related to its capacity for seduction (venustas), translated as beauty’. This is because of ‘the primary human capacity to experience beauty as meaning’ (Pérez Gómez 2006:26); a capacity which is described by Richards (2001:62) as ‘a sense of joy and a sense of peace simultaneously’. The desire for, and experience of, beauty as one of peace and joy is because, according to Pallasmaa (2009:12), (b)eauty is not a detached aesthetic quality; the experience of beauty arises from grasping the
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unquestionable causalities and interdependencies of life’. Grasping is in the sense that, according to Richards (2001:62), ‘(w)e are there with the object, there in its totality, and our seeing and the object become one in a deeper and a holistic knowing … [that] is nonconceptual, nonimaginal, nondiscursive, and extremely brief’.

Thus, through beauty, architecture provides a profound way to ‘articulate the experiences of our very existence’ (Pallasmaa 2009:19). This urge to grasp the whole through the commensurability of its parts is a form of truth-seeking that is poetic rather than rational. As a poetic experience it is hermeneutical rather than logical. Pérez Gómez (2006:142) is arguing for a discourse on ethics that recognises its tradition in architecture as a poetic discourse concerned with the ‘confluence of truth and beauty’. For Pérez Gómez, beauty sustains humanity as an intuitive mode of truth-seeking that cannot be otherwise reproduced.

Snodgrass and Coyne (2006) however, in explaining the relevance of beauty and works of art in Buddhist thought, warn against attachment to beauty, when ultimately, the true nature of reality is of transience and flux. They note that ‘Buddhism only points to beautiful things if they act as expedient means conducive to a seeing of all things, whether monstrous or beautiful, benign or threatening, as they are in themselves and as they are in their emptiness’ (Snodgrass and Coyne 2006:219 original italics). For Pérez Gómez (2006:212), his argument ‘is not to deny the reality of desire itself which is characteristic of human embodiment’; the ultimate purpose of desire ‘is to disclose that beyond desire, our minds (not our bodies) are already capable of communion with a universal mind’; an understanding that draws on the deepest traditions of Western architecture (Section 4.2).

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38 This situation is discussed further in Section 5.1.4.
39 Buddhism maintains that all phenomena are contingent and therefore empty of intrinsic value. To see them otherwise is to be mistaken as to their true nature.
Pérez Gómez (2006:213) describes the aesthetic and ethical dimensions of architecture as ‘the embodiment of compassion and seduction through beautiful form and responsible program’. To achieve this ‘is not an intuitive operation or unreflective action, but rather the continuation of a practical philosophy and a meditative practice’ involving personal and social issues best understood as praxis (Pérez Gómez 2006:210).

In this discussion of design as a third way of knowing, its artistic roots are seen to be linked to primeval, pre-lingual forms of knowledge. This knowledge is existentially essential and therefore profoundly meaningful. It is captured through an aesthetic response to beauty and is, foremost, a sensory-perceptual experience. Beauty is experienced as a poetic form of truth-seeking replete with such emotional qualities as a sense of joy and peace. To design architecture that can evoke meaningful aesthetic responses requires the architect to strive for beautiful form and responsible program through a practical philosophy and a meditative approach to design.40

5.1.1 Design as praxis

The ethical relationship between love and beauty is contained within the idea of praxis (Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). Praxis expands upon the notion of practitioner-as-instrument (Section 3.4.3). In its Classical Greek sense, praxis corresponds to ethical know-how (Section 3.5.2) because it involves the exercise of phronesis; a form of judgement based on ‘practical reasonableness acting by way of tacit understandings gained from experience and within a context of ethical behaviour’ (Snodgrass and Coyne 2006:112). Phronesis is similar to prohairesis: ‘the exercise of choice between various things or courses of actions, [which] is at one and the same time a preferring and a choosing’ (Snodgrass and Coyne 2006:112). Praxis is, therefore, a concomitant preferencing and choicemaking based on aesthetic judgement that

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40 Sections 5.1.1 to 5.1.7 discuss this strategy further.
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is embedded in ethical know-how to guide the flow of designing as a practical activity.

*Praxis* is distinguishable from *techne* in being more than the application of technical rules (Pallasmaa 2009; Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). *Techne* is related to *episteme*, which is a ‘knowledge that is consciously known, and can be directly communicated to others’ (Snodgrass and Coyne 2006:111/2). *Techne* and *episteme* are therefore a secondary process of cognition in being related to rational thought (Section 3.5.2). Because *techne* is ‘an act of producing something that answers to a prescribed need’ (2006:111/2), Snodgrass and Coyne conclude that ‘[t]echnical ‘choice’ is the determination, by means of pre-given rules, of the best way in which to achieve a pre-given end’ (Snodgrass and Coyne 2006:113). *Techne* is, therefore, subject to, and separate from, *praxis*.

According to Snodgrass and Coyne (2006:113), within the techno-rationalist paradigm of Modernism, ‘[p]raxis has been totally subsumed within *techne*’, thereby relegating ethics to a rule-based, rational and intellectualised process. Two profound problems have emerged from this. First, in terms of aesthetics, a techno-rational approach has reduced the foundations of architecture from a sacred geometry, replete with cosmological/ethical *intent*, to mathematical rules and formulae devoid of such existential awareness and consequently, any significant connectivity (Pallasmaa 2009; Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). Second, the challenge of making architecture sustainable, according to Snodgrass and Coyne (2006:113), has been assigned to ‘the province of technical experts … thereby deny[ing] our own practical, ethical and political experience’ with its genesis in *praxis* and embodied existential wisdom. As a corollary to this second problem:

Techno-rationalist theory tends to see the world exclusively in terms of mathematical, which is to say, abstract relations, so that theory becomes the handmaiden of quantification, and aims for the attainment of
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quantifiable results. Theory subjects all decision-making to the criterion of ‘efficiency’, which is defined exclusively in terms of utilitarian, quantitative and, increasingly, monetary outcomes.

(Snodgrass and Coyne 2006:113)

So, when Thackera (2005:9) assumes, in his instructions for designing in a complex world, that ‘ethics and responsibility can inform design decisions without impeding social and technical innovation’, his thinking neatly illustrates Snodgrass and Coyne’s concerns. For Thackera to advise that ethics must not impede social and technical innovation, is to make ethics subordinate to innovation in a relationship where ethics must surely guide. Because of the uncertainties inherent in any ethical deliberation and the nature of deliberation itself as a secondary process of cognition (Section 3.5.1), guidance is ultimately as much by intuition as by logic. Herein lies the problem; for this is an anathema to techno-rationalist thinking. In architecture, bridging the gap between intuition and logic via the manual arts is severely challenged with their subjugation to industrial processes. The resulting loss of existentially meaningful relationships that comes with such an elemental change to the building paradigm highlights the depth of the ethical problem sustainable design must address (Pallasmaa 2009; Pérez Gómez 2006; Snodgrass and Coyne 2006; Vesely 2004). The challenge for the architect is to utilise technical know-how through a rigorous appraisal of her/his ethical know-how in the knowledge that it is ethical know-how that guides design decision-making. This requires separating out ethical know-how from technical know-how for special attention. It demands practising design self-reflectively as a mindful meditation (Section 3.5.2).

5.1.2 Design as reflection-in-action

Observations of architectural design as reflection-in-action stem from wider studies investigating a crisis of legitimacy within professional practice that emerged post-1960 (Schön 1967a; 1967b; 1983; 1985; 1990). In coming to an understanding of the practical constraints of professional knowledge, Schön
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(1983:39) found in favour of ‘professional artistry’ over ‘Technical-Rationality’ in handling the phenomena of actual practice such as ‘complexity, uncertainty, instability, uniqueness and value-conflict’. Further research continues to identify one of the most ‘problematic dialectics’ in architectural practice to be one in which ‘design is believed to sprout from a series of independently made decisions rather than from the emergent sense made of a dynamic situation’ (Cuff 1991:249).

Schön (1983:52) refuted a techno-rational approach to design practice on the basis that it encourages ‘our bias toward thinking [which] blinds us to the non-logical processes which are omnipresent in effective practice’. His argument against defining intelligent action simply in terms of ‘an application of knowledge to instrumental decisions’ (1983:50 original italics) reiterates the original understanding of praxis. His research highlighted ‘a kind of knowing inherent in intelligent action … the category of know-how … that is in the action’ (Schön 1983:50 original italics). His defence of professional artistry as ‘an exercise of intelligence … rigorous in its own terms’ (1990:13) can be analysed in light of what is known about intuition. First, Schön made the distinction between primary and secondary processes of cognition (Section 3.5). His understanding of professional artistry aligns with one’s immediate coping skills or praxis, while techno-rationality aligns with deliberative knowledge or techne (Section 5.1.1). Schön identified the practitioner’s moral situatedness through which secondary processes of techno-rationality are directed.

Schön’s (1983:147) definition of design as reflection-in-action emphasises its experimental nature in that it ‘is at once exploratory, move testing and hypothesis testing’. But this form of experimentation ‘consists of moves that change the phenomena to make the hypothesis fit’ and thus ‘violates the cannon of controlled experiment’ (Schön 1983:149). The hypothesis-testing experiment becomes more a game where the designer ‘seeks to make the situation conform to the hypothesis but remains open to the possibility that it will not’ (Schön 1983:151).
In exploring ‘the situation’s potential for transformation’ (Schön 1983:165) designers seek a transactional relationship with a problematic situation in which ‘problem solving is a part of the larger experiment in problem setting’ (Schön 1983:165). Inquiry turns into a continual reframing of the design problem:

> What allows this to happen is that the inquirer is willing to step into the problematic situation, to impose a frame on it, and yet to remain open to the situation’s talk-back. Reflecting on the surprising consequences of his efforts to shape the situation in conformity with his initially chosen frame, the inquirer frames new questions with new ends in view (Schön 1983:269)

From this understanding of design, it can be seen that ‘the values of control, distance and objectivity, central to the model of Technical Rationality, take on new meanings in the reflective conversation’ (Schön 1983:166).

Experimental studies confirm that ‘creative design is not a matter of first fixing the problem and then searching for a satisfactory solution concept’ (Dorst and Cross 2001:434). It is a co-evolution between ‘the formulation of a problem and ideas for a solution, with constant iteration of analysis, synthesis and evaluation processes between the two notional design ‘spaces’—problem space and solution space’ (Dorst and Cross 2001:434). The emergence of key concepts provides the bridging events between the two ‘spaces’. This means that defining and framing the design problem out of a problematic situation is a key aspect of creativity (Dorst and Cross 2001; Harfield 2007; Schön 1983; Schön 1985). This links with a further observation that design expertise is very much a product of maturity in terms of exposure, preparation and experience (Cross 2004). This finding reflects phenomenological and hermeneutical observations of *praxis* as the core feature of design (Section 5.1.1). Because designers co-evolve problem and solution, they appear to leap to conclusions; a situation that can lead to misinterpretation in the wider community (Sutton and Kemp 2006). This dynamic is often the root cause for the perception of designers as unresponsive or self-indulgent (Cross 2004;
Hamilton and Watkins 2009; Sutton and Kemp 2006). Efforts to redress this perception have led to an emphasis on evidence-based design.

5.1.3 Evidence-based design

As proponents for evidence-based design, Hamilton and Watkins (2009:4) argue that, in practice, the bulk of architectural creativity is team-based and founded on ‘an enormous legacy of information gained over centuries … drawn from many branches of knowledge … [and developed] within the constraints of codes and regulations’. They are concerned to counter the damage to architecture incurred by way of its association with ‘the aesthetic genius myth of independent creativity uninhibited by rules, regulations or standards’ (Hamilton and Watkins 2009:4). They argue that the key stratagem in countering this myth is one of rigour. To make the process more rigorous requires evidence-based design because it can provide a means to ‘base design decisions on a chain of logic that can be directly linked to facts, research findings, or field observations’ (Hamilton and Watkins 2009:5).

This approach to design encourages an enlarged evidence base from which to proceed. In so doing, it provides a compelling argument for participatory design as the most appropriate design strategy to achieve this (Hamilton and Watkins 2009). Documentation is essential, not just for the typical design and construction phase, but also for evidencing all the steps taken to establish and then test the design/hypothesis.

Evidence-based design requires of the architect a new emphasis on research methods that ensure the design process conforms to a more measurable, hypothesis testing exercise. A step-by-step guide drawn up by Hamilton and Watkins (2009:210) is reproduced as Table 5.1.
Table 5.1: Evidence-based design process (Hamilton and Watkins 2009:210)

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify the client’s goals</td>
<td>Note most important and facility-related global and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>project-based goals</td>
</tr>
<tr>
<td>2</td>
<td>Identify the firm’s goals</td>
<td>Understand the firm’s strategic, project and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>evidence-based design objectives</td>
</tr>
<tr>
<td>3</td>
<td>Identify the top 3-5 key design issues</td>
<td>Narrow the possible choices; work on high impact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>decisions</td>
</tr>
<tr>
<td>4</td>
<td>Convert design issues to research questions</td>
<td>Reframe statement of design issues to become</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research topics</td>
</tr>
<tr>
<td>5</td>
<td>Gather information (benchmark examples,</td>
<td>Infinite possibilities must be narrowed; limited</td>
</tr>
<tr>
<td></td>
<td>literature sources, internal studies)</td>
<td>perspectives must be expanded</td>
</tr>
<tr>
<td>6</td>
<td>Critical interpretation of the evidence</td>
<td>No direct answers; requires open-minded creativity,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>balance, and critical thinking</td>
</tr>
<tr>
<td>7</td>
<td>Create evidence-based design concepts</td>
<td>Based on creative interpretation of the implications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of research findings</td>
</tr>
<tr>
<td>8</td>
<td>Develop hypotheses</td>
<td>Predict the expected results of the implementation of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>your design</td>
</tr>
<tr>
<td>9</td>
<td>Select measures</td>
<td>Determine whether your hypothesis is supported</td>
</tr>
</tbody>
</table>

Upon extracting the key design issues from initial meetings with the client and other interested parties (Table 5.1, Steps 1,2&3), the crucial new skill required of the architect is identified as converting these key issues into research questions (Table 5.1, Step 4). Each key issue must be converted into ‘specific questions that allow research to be performed … [and that] permit the possibility of an answer’ (Hamilton and Watkins 2009:212). Evidence related to the questions is then sought and documented (Table 5.1, Step 5), before its interpretation and evaluation (Table 5.1, Step 6). Such evidence provides the foundations of the conceptual design process (Table 5.1, Step 7). Conceptual design is carried out through a set of predictions about design outcome (Table 5.1, Step 8). At the end of the process, further evidence is collected, this time from measuring the
performance of the built outcome against the design predictions (Table 5.1, Step 9). This prescription is not as straight-forward as it seems however, for it involves questions of judgement based on interpretation and evaluation throughout all the steps, a situation of reflection-in-action subject to *praxis* (Section 5.1.1). *Praxis* pertains to a situation in which the architect is already enmeshed in what Snodgrass and Coyne explain as the hermeneutical circle.

### 5.1.4 A hermeneutical critique of an evidence-based design model

Stephan Jay Gould (2003), in his deconstruction of the misconceived gap between science and the humanities as ways of making sense of the world, makes particular reference to Francis Bacon, one of the founding fathers of modern science, as being the quintessential nondualist. Bacon, in his original exposé of the myth of objectivity that attached to the scientific method, argued for a joining together of observation of externalities with scrutiny of internal biases, both mental and social to insure the credibility of scientific knowledge acquisition. Gould (2003) acknowledges Bacon as providing one of the first and best analyses of the inherent mental biases underlying all scientific work.

Gould (2003:104) argues, on the basis of his own science of palaeontology, that the scientific method is an ‘objectivist myth that only generates indifference to self-examination’. This myth ‘drives a wedge between science and the humanities, because historians, sociologists, and philosophers of science know that such a mental state cannot be achieved’ (Gould 2003:107/8). He argues, instead, for recognition of ‘the intrinsic embedding of science, and scientific practice into the changing norms of surrounding culture’ (Gould 2003:99). In terms of objectivity, only ‘rigorous self-scrutiny [can achieve] ... fairness and maximal objectivity in scientific research’ (Gould 2003:116).

Embeddedness is the crucial insight that Snodgrass and Coyne (2006) also emphasise in their critique of the tendency within sustainable design towards a scientistic approach to design thinking. They cite Gadamer and the insights...
developed through hermeneutics to substantiate their assertion that bias in architectural design thinking is nothing other than the condition of embeddedness in one’s lived-world. The hermeneutical circle rejects any possibility of objectivity in that there is always a minimal pre-knowledge necessary for understanding. Heidegger call this ‘forestructures of understanding’ and Gadamer, concerned to highlight the Enlightenment’s false interpretation of objectivity, referred to pre-knowledge as ‘prejudices or foremeanings that are not fully objectifiable’ (Snodgrass and Coyne 2006:38). These terms equate to one’s imaginative, intuitive, primary processes of cognition and, therefore, one’s ethical know-how (Section 3.5.2). Snodgrass and Coyne quote Heidegger to explain embeddedness:

… before we begin consciously to interpret, we have already placed the matter to be interpreted in a certain context, viewed it from a pre-given perspective, and conceived it in a certain way.

(Snodgrass and Coyne 2006:37)

Within the hermeneutical circle, understanding develops through an iterative process reliant on ‘a dynamic dialogue between the parts and the whole’ (Snodgrass and Coyne 2006:13). This relationship is not a logical and sequential movement from partial to full understanding as might be implied by the 9-step process of Table 5.1, but a cycle of anticipation and revision in which ‘a projection of the meaning of the whole occurs even as we begin to understand the parts accordingly’ (Snodgrass and Coyne 2006:37). Understanding the whole and the parts concurrently through hermeneutical projection is, therefore, an inherently non-logical process. Based on this interpretation, design as a hermeneutical process can be seen to be more than logical sequences of operations. It is ‘a dialectic, in which presuppositions and pre-understandings are

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41 This paradox is explored further in Section 5.2.
continually brought into question and are revised, expanded or rejected as responses to that questioning’ (Snodgrass and Coyne 2006:48).

Because design is a dialogical and interpretative activity, it actually ‘has nothing in common with methodological analysis’ (Snodgrass and Coyne 2006:51). Also, hermeneutic projection in the design process ‘has nothing in common with the formation of a scientific hypothesis, nor is dialogical questioning in any way akin to the processes of verification or falsification of a hypothesis’ (Snodgrass and Coyne 2006:51). Snodgrass and Coyne’s hermeneutical account of the design process directly challenges Hamilton and Watkin’s hypothesis testing account.

When it comes to assessing the truth or falsity of one’s interpretations (as advised by Hamilton and Watkin as part of Step 6) this is also an interpretive act, because ‘the criteria by which we assess interpretations are nothing more or less than other interpretations’ (Snodgrass and Coyne 2006:39/40). This ‘includes the act of establishing scientific criteria of validation’ (Snodgrass and Coyne 2006:39/40). This is problematic, especially within the mind sciences, where researchers struggle to validate the experience of consciousness and are developing neurophenomenology, which teams first-person phenomenological methods with traditional third-person methods, in order to advance knowledge in this area (Section 3.4.3 and 3.5.1).

Because the model of evidence-based design promoted by Hamilton and Watkins requires the architect to interpret the collected evidence prior to conceptual design, confidence in the evaluation hierarchy is crucial in order to resolve any ambiguity in the evidence. For example, when they advise the adoption of an evaluation hierarchy to ‘identify which types of evidence are more reliable than others’, they emphasise, the double-blinded, randomised clinical trial at the top of a hierarchy, which is then limited, in descending order of reliability, to field observation, focus group and survey methods (Hamilton and Watkins
This restricted view of what is admissible evidence illustrates the problem of paradigm-setting, and may help to clarify a bias in evidence-based design of concern to Hamilton and Watkins. They observe that while technical knowledge of building performance continues to expand, ‘oddly, we have only begun to acknowledge and understand the impact that all of this knowledge can have on those who occupy these buildings and the environment in which they are built’ (Hamilton and Watkins 2009:257). It is considered an area of knowledge that is least understood by most designers, while at the same time, designers are hampered by an absence of information pertaining to it. The problem could well be one of paradigm setting for admissible evidence pertaining to human/built environment interactions.

The problem with elevating reductionist scientific thinking as a universal method is that it is unable to account for the role contingency plays in complex systems such as human/built environment design process (Gould 2003). Gould (2003) instead, promotes consilience. Consilience describes ‘a strategy for devising general theories in difficult sciences of complex systems, which tend to be data-rich and theory-poor’ (Gould 2003:257). The importance of this concept to design thinking is in explaining how disparate ideas are distilled into form-making, for:

The intellectual beauty of such Whewellian consilience lies largely in the thrill, even the eeriness, of what current fashion calls an “aha!” experience – the sudden conversion of confusion into order, not by systematic, stepwise, deductive sequences of logical extensions from existing hypotheses, followed by predictions and tests, but rather by an immediate insight that we usually cannot reconstruct in our own psyches because the consilience hits us all at once as from the blue … (Gould 2003:258)

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42 This restricted view of what is admissible evidence is discussed further in the review of research methodology presented in Chapter 6.
Consilience allows for a ‘jumping together [of] masses of independent items, each separate but equal ...’ (Gould 2003:258). One ‘cannot specify a higher or lower, a chain of command, or a sequence of reduction or subsumption (Gould 2003:258). Through the concept of consilience, Gould (2003:258) acknowledges that there are ways of thinking that are ‘immiscible in the logical sense that a satisfactory explanation of one cannot be achieved by modes of resolution favored for the other’.

Hamilton and Watkins (2009) cite evidence-based medicine as their source of inspiration for best practice. Yet, within the medical profession, calls to reassess the overly authoritative aura that evidence-based medicine tends to convey (Engel 1977; Feinstein and Horwitz 1997) have led to a critical revisiting of the emphasis placed on evidence-based medicine (Brokensha 2002; Welsh and Lyons 2001). The Biopsychosocial model of clinical practice has arisen in response to concerns amongst practitioners ‘to reverse the dehumanization of medicine and disempowerment of patients’ that an over-reliance on the bio-medical model of medicine had fostered (Borrell-Carrió et al. 2004:576; Engel 1977; Epstein 1999; 2000; Epstein and Borrell-Carrió 2005) (Section 3.4). At the same time, concerns have also been raised that ‘medicine had failed to move beyond the biomedical model, in part because of lack of exposure to the evidence base supporting the biopsychosocial model’ (Astin et al. 2003:131). This is in spite of the fact that the Biopsychosocial model ‘has extraordinary merit for explaining and predicting health and well-being’ (David and Holloway 2005:422).

The criticisms of evidence-based medicine are not intended to disparage the important advances in medicine that it has engendered, but to raise concerns regarding ‘its excessively narrow (biomedical) focus ... and for ignoring the possibility that the subjective experience of the patient was amenable to scientific study’ (Borrell-Carrió et al. 2004:576). These concerns are just as applicable to architecture, especially in light of its deeply existential role in structuring social and cosmological relations; a responsibility which must be taken into
consideration along with its other performance requirements. The cautionary tale here is two-fold. An evidence-based approach to design must recognise that evidence gathering needs to be rigorous but not narrow in its methods to ensure existential wellbeing is accommodated. Also, an evidence-based approach encourages the designer to collect evidence of his/her own presumptions and biases while practising design, thus ensuring congruence between the aspirations of the designer and the task of sustainable design.

Hamilton and Watkins (2009:10-12) argue against the presumption that evidence-based design provides ‘ready-made answers to complex problems’ and argue instead that its purpose is to ‘improve individual, idiosyncratic, and unique design decisions’. To consider design as idiosyncratic infers that it is also subjective and irrational. According to Snodgrass and Coyne (2006:72), this indicates a ‘dual knowledge thesis’ which posits that there are two ways of thinking; the other way being ‘logical, analytical and rational’. The dual knowledge thesis is refuted by Snodgrass and Coyne (2006) as the continuation of dichotomous thinking fuelled by the Enlightenment and the Romanticist legacies regarding genius (Section 4.2). They argue that ‘there are not two kinds of thinking’, that ‘design does not draw on some mysterious impulse, split brain, genius or sensitivity to place’ (Snodgrass and Coyne 2006:74-77). Nor is it a disembodied and disengaged cognitive function divorced from somatic and situational interactions reliant on immediate coping skills.

Snodgrass and Coyne draw on phenomenology, hermeneutics and the pragmatic movement of John Dewey to argue that ‘(p)rior to the concept of the individual creative genius, is the concept of beings totally engaged in a world, without differentiation’ (Snodgrass and Coyne 2006:79/80). We are also engaged in ‘the indivisible nature of thinking’ wherein ‘every act involves us in some kind of aesthetic appreciation, involving the imagination, ethical sensibility and the emotions’ (Snodgrass and Coyne 2006:79/80). Therefore, design is not a mysterious and different type of thinking, but an interpretative and dialogical way
of thinking grounded in praxis. Snodgrass and Coyne (2006:52) argue against considering design as strictly an answering of a research question ‘to arrive at a “solution” of a design “problem”’. In promoting design as a speculative kind of research more akin to play than a problem-solving exercise, Snodgrass and Coyne specifically reference Johan Huizinga, one of the more influential cultural historians of the 20th Century who defined game-playing as the meaningful basis for work that underpins all of culture (Huizinga 1970).

5.1.5 Design as creative play

Designing proceeds as a questioning of the question in order to ‘open up new expectations and trigger further projections’ (Snodgrass and Coyne 2006:51). Designing is not instrumental, it does not employ inductive logic, but is disclosive in the sense of creative play (Ochsner 2000; Pallasmaa 2009; Pérez Gómez 2006; Schön 1985; Snodgrass and Coyne 2006; Whitfield 2005). This aspect of design is its crucial feature. Within developmental psychology, creativity has been identified as a form of intense experiencing; something which we have all encountered in childhood and grown up with through play (Winnicott 1971). This understanding of creativity relieves it of its exclusivity and keeps it in the domain of common sense. Ochsner’s (2000:197) account of design-as-play is that it occurs through projection and within a transitional realm identified as ‘that which exists between the inner reality and the outer reality’. Projection is identified ‘as the unconscious act of ascribing to something outside oneself one’s own ideas or impulses’ (Ochsner 2000:197). Ochsner’s description of projectioning gives to Snodgrass and Coyne’s definition of hermeneutical projection its psychological quality. According to Ochsner (2000:196), because it is an unconscious act, projection sets up the possibility of discovery beyond wilful conscious thought; ‘it is this experience that allows us to see the external world as we rationally know it to be, but also allows us simultaneously to imagine the world as it might otherwise be’. The absence of wilful consciousness is the critical feature of creativity stressed time and again. It is a condition which
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augers against pursuing design as a prescriptive, problem-solving exercise but as a way of disclosure.

In explaining the link between game-playing and creativity further, Snodgrass and Coyne (2006:66) first describe designing as ‘a back-and-forth rhythm that is not rule-dependent; it follows its own lead, revealing new possibilities at every turn’. Rules are only there to give structure to an absorbing flow of move-testing that comes from reading the play while in play. The designer, absorbed in the game of designing, ‘is not a subject who manipulates and controls rules and uses methods, but is a medium in and through which the design process unfolds itself’ (Snodgrass and Coyne 2006:66). Design understanding comes from absorption in, rather than control of the game, and creativity comes from reading the game well. Reading the game well depends on factors such as experience and knowledge, but this does not fully explain outstanding performance or the spontaneous emergence of the unexpected. Such occurrences are more the product of interactivity and situatedness mediated through embodied cognition inclusive of existential awareness. How the full dynamic of game-play may be replicated within the digital domain is an important consideration for sustainable design, dependent as it is on environmental science and computer-aided simulations in optimising building performance design. Digital gaming has become a major feature of technologically advanced society and a major driver in advancing technological interactivity (Castronova 2007; Kwinter 2007; Leach 2002; Slouka 1995).

5.1.6 Digital design and artificial intelligence

A compelling argument, one based on the increasing complexity of building and environmental design considerations combined with the need for speed and certainty, underlie the move toward computer-based modelling (Dollens 2006; Drake 2007; Hagan 2008; Monto 2005; Olson and Rejeski 2005) and generative design in architecture (Avital and Te'eni 2009; Caldas 2008; Shea et al. 2005; Soddu 2002; 2003; Soddu and Colabella 1995). Generative design is the next
wave of interactive computer-based design moving into the realm of conceptual design. According to Shea et al. (2005:253), its use is set to blur lines between the creativity of the architect and the computer:

Performance-driven generative design methods are capable of producing concepts and stimulating solutions based on robust and rigorous models of design conditions and performance criteria. Using generative methods, the computer becomes a design generator in addition to its more conventional role as draftsperson, visualizor, data checker and performance analyst.

While design conditions and performance criteria can be made explicit and therefore available for modelling (Section 5.1.3), the critique of design as a haptic and hermeneutical process exposes certain natural limitations to a logic-based representation of the design process. When Pallasmaa (2009:15) argues that ‘[a]rchitectural ideas arise ‘biologically’ from unconceptualised and lived existential knowledge rather than from mere analyses and intellect’, he articulates a concern not to reduce design to a disembodied phenomenon in which the body makes no contribution to mental processes. When a fundamental grounding in the material world is not acknowledged, a level of hubris emerges that is antithetical to the sustainable design agenda:

Imagine a technological frontier where people’s wildest dreams are about to unfold in a world unlike anything we could have ever imagined. The study of generativity sets course to the development of platforms that enhance creativity, unleash unconventional design, promote innovation and are instrumental in revitalizing our epistemic stance. With generative design, ordinary people can achieve extraordinary results

(Avital and Te'eni 2009:364)

This sort of hubris exemplifies ‘the adulation of science and hope in a technological utopia that characterised the modern movement’ (Snodgrass and Coyne 2006:219). It promotes the self-referentiality and autonomy of
emancipated representations; the root cause of the crisis of representation already discussed as antithetical to sustainability (Hagan 2008; Vesely 2004). Also, there is a clear strategy to make manageable, through techno-rationality, that which is regarded as an ineffable part of design hermeneutics. The proponents of this approach consider that ‘the quality of a design is strongly linked to logic’; a consideration that allows them to equate ‘the ambiguity of the computerised simulation of virtual reality’ to human creativity (Soddu and Colabella 1995:1-2).

Without condoning such hubris, Hagan (2008) argues against the privileging of the material over the immaterial and hapticity over the computer mouse in her critique of digital environmental design. First, she notes that:

Fashion has shifted in architectural theory from the phenomenological privileging of the material in the late 1970s and 1980s, to an infatuation with the digital that began in the late 1980s and continues to grow in ardour, as the power and presence of the digital increases.

(Hagan 2008:6)

For her, ‘[t]he argument is tired; the tide can’t be ordered back, ... it’s growing and what needs urgently to be addressed is how it might best be deployed’ (Hagan 2008:7). Her concern to manage the deployment of digital design into architectural design is realistic and beyond dispute, considering the digital revolution under way. She argues that design has always been a type of virtual prototyping. The computer offers a much better way to do this as part of the iterative design process. Furthermore, Hagan (2008:77) sees no reason to fear any usurpation of the design process by the computer, as ‘[t]he relationship is much more one of a dialogue between architect and digital model than a monologue by the model’. However, her reading of phenomenology does not acknowledge its contribution to an understanding of design as a haptic and hermeneutical process that is not only deeply somatic but deeply existential in being conditioned by evolutionary processes and cosmological rhythms. Also, phenomenology, through its incorporation in the neuro-cognitive sciences
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(Section 3.4) and its ongoing contributions to the philosophy of ethics (Section 3.5), remains a potent means for re-presenting reality. Therefore, dismissing phenomenology from architectural discourse as the province of the unfashionable may be short-sighted.

Second, Hagan (2008:2) bolsters her dismissal of phenomenology by arguing that digital representation is, in one sense, no different from hand-drawn representation, in that ‘the designer is again at a remove from the objects(s) being designed’. This point undermines Pallasmaa’s (2009) plea to privilege less technological modes of design as a superior haptic event that brings forth tacit knowledge that remains otherwise unavailable. Pallasmaa’s (2009:51) concern in the ‘loss of the touch of the human hand in our mechanically mass-produced products and environments’ is nostalgic for an era that is passing. He sees an inexorable impoverishment of architectural design with its continual removal from the construction site and processes of construction, at one level, and from the haptic to the mental to the digital, at another level. For him, ‘the growing practical as well as mental distance between the architect’s studio and the construction site have decisively weakened the craft essence of the architect’s work ... [till] Finally, the use of the computer has broken the sensual and tactile connection between imagination and the object of design’ (Pallasmaa 2009:65).

Hagan counters this concern by seeing, in the appropriation of technology from its original engineering/manufacturing purpose into an architectural design/manufacturing purpose, ‘a new dawn of architect-led control over the construction process, a return to the model of the medieval Master Builder, with his hands on the production of architecture from idea to finished product’ (Hagan 2008:45). She notes that ‘[t]his echoes the desire of the Modern Movement to do the same thing: to get out of the studio and onto the factory floor’ (Hagan 2008:45). However, from Pallasmaa’s (2009:12) point of view, what is missing from this scenario is ‘the intimate contact with work, production, materials, climate and the ever-varying phenomena of nature [to] provide ample sensory
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interaction with the world of physical causalities’. The digital simulations of real world conditions remain profoundly immaterial, no matter how visually convincing. The need for experiential feedback is critical, for such feedback contains an emotive quality that guides design aesthetics and, therefore, design praxis (Section 5.1.1 and Section 5.1.2). Both arguments for and against the value of hapticity reflect the difficulty in practicing a truly participatory form of design within the contemporary milieu that takes full account of the knowledge embodied in the person of the designer. The potential to overcome this difficulty is discussed further in Section 5.3.1.

The crucial point concerns the loss of experiential knowledge – real contact with real conditions - in a design world for which, as Hagan points out, paradoxically, the human senses are now considered too limiting. The digital is valorised as a much more powerful medium than the human, in being able to process information at speeds and on a scale that, within a techno-rational paradigm, the human cannot match. The same thing happened earlier with the demise of craft under the pressures of industrialisation. Driven by the productiveness of technology there is an inexorable momentum away from the human in representing, evaluating, and increasingly, in generating designs for humanity. For Hagan, the reality is that the designer’s knowledge of the natural world is increasingly mediated through cyberspace. Digital environmental design allows the architect to make the most of such a mediation, for through it ‘we can directly bind cyberspace to the world our bodies will presumably have to inhabit for the conceivable future’ (Hagan 2008:76).

In countering the fear that permeates architectural discourse concerning such a techno-rational approach to design, Hagan argues that, when transformed into binary code and thus the computational muscle of environmental science, technorationality is a good thing. Environmental design is not only ‘peculiarly well suited to parametric design ... it is perhaps the least arbitrary, most researched datascape to begin with’ (Hagan 2008:73). The high degree of certainty this is
thought to engender also provides the necessary political clout to promote its benefits in a world resistant to change (Chapter 2).

However, Hagan’s (2008:76) argument that digital design provides ‘a more powerful calculating tool than our brains’, which is seen as ‘the key to enriching and extending our experience in the physical world’ overlooks the call for spontaneous action to resist the totalitarian sovereignty of rationalism and denies the input of tacit knowledge implicit in the thinking process (Section 4.2.1). Without accommodating such concerns, Hagan is in danger of reducing design to a decision-making process; a reduction already critiqued as only part of design as experienced.

Hagan (2008:76/7) argues that the computer, in extending human capacity ‘to model the operations of the physical world in a virtual world’ also ‘extends our capacity to understand and act within it’. The will to power this potentially kindles can be transmuted into ‘the task of establishing a less damaging relationship between built and natural environments, [and the ability] to configure a built fabric that actively produces benefits’ (Hagan 2008:73). This is because environmental design is predicated on extreme sensitivity to initial conditions which therefore, ‘helps us see things which, in the real world, would be forever invisible, or, more accurately, incalculable’ (Hagan 2008:18). Thus, it not only extends knowledge, it provides the certainty associated with prediction while avoiding any universalising tendency by dealing with highly differentiated contexts to produce highly differentiated solutions. The expectation is that, as digital environmental design software becomes increasingly sophisticated, it will allow the architect to achieve higher level of calibration in tuning a building to ‘complex behaviours in nature and culture’ (Hagan 2008:128 original italics).

Ironically, Hagan’s argument parallels Heidegger’s phenomenological argument for letting-be.
5.1.7 Letting-be

There are ways to make diffuse the tendency toward an excessively rigid application of rationality that threatens the humane aspirations of evidence-based and technological approaches to sustainable design. One strategy, promoted by Snodgrass and Coyne (2006), combines Aristotelian philosophy, hermeneutical and phenomenological accounts of dwelling and being drawn from Heidegger and Gadamer, Schön’s accounts of design as reflection-in-action and Buddhist psychology as evidenced through the ‘New Wave’ of modern Japanese architecture. This strategy emphasises “letting-be” as an antidote to the hubris attached to techno-rationality by exposing perception as an essentially ineffable dimension.

Heidegger’s principle of “letting-be” (*Gelassenheit*) emphasises how to respect that-which-is, be it natural or artificial. Heidegger advanced this strategy for dealing with the technological epoch that is now the dominant means of being in the world. Snodgrass and Coyne interpret Heidegger’s concept of letting-be as a form of disclosure:

> Letting-be allow(s) things to disclose themselves to us as they are, without asking what is their reason for existing or to what use they might be put; and this letting-be is not only to apply to things in general but also to technology itself. (Snodgrass and Coyne 2006:211)

The purpose of adopting this profoundly anti-instrumental attitude is to free oneself from entrapment through ‘a non-willing, a renunciation of the will to control things, and instead respecting them for what they are in themselves’; their ineffability in other words (Snodgrass and Coyne 2006:211). Entrapment occurs through adopting a techno-rational mode of thought to critique techno-rationality – a task Heidegger argued as profoundly futile and nihilistic. Letting-be steers a

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43 Heidegger’s argument is that Leibniz’s principle of sufficient reason, which underlies instrumentalist, techno-rational thought, itself lacks reason. Snodgrass and Coyne summarise the argument thus: ‘when we ask for the reason for reason, there is no reply’
neutral course between fear, apathy or hubris; situations that can arise when techno-rational thought is assumed to be the only mode of being in the world. “Letting-be”, as a non-judgemental mode of thinking, has similarities to the Buddhist philosophy behind mindfulness meditation practice (Section 3.3.2).

Snodgrass and Coyne argue for further similarities between Heidegger and Buddhism before noting fundamental differences that have raised the spectre of nihilism for Heidegger, while not for the other. Similarities lie in their independent critiques of the foundation of logic.\(^44\) Their differences lie in the fact that Western scientific thinking, which underlies contemporary Western culture, is predicated on the need for certainty, whereas Buddhist thinking is based on ‘a non-foundation of the voidness of all attempts, rational or otherwise, to grasp the nature of reality’, a voidness highlighted through quantum physics but as yet to register in wider Western thinking\(^45\) (Snodgrass and Coyne 2006:213).

Snodgrass and Coyne (2006:212) further argue that design thinking can provide the antidote to techno-rational thought if approached through such Buddhist logic. Developing Schön’s (1983; 1985; 1990) observations of reflection-in-action (Section 5.1.2) and game-play (Section 5.1.5), they explain design as a ‘letting-be that escapes the “enframing” of techno-rationality’:

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\(^44\) Snodgrass and Coyne cite the Buddhist logic of Nāgājuna dating from around the second century CE as the opening gambit taken up by ongoing thinkers leading Buddhist logic ‘further and further into the Reality of Emptiness’ (Ibid. p. 213)

\(^45\) Energy and matter are now viewed in quantum physics ‘as oscillations of abstract field quantities in space [yet] not even oscillation of space proper, for nothing actually oscillates. … Real systems are, in this sense, “excitations of the vacuum”’ (Wallace, B. A. (2006b). Energy Dynamics, Life Positive (pp. 63-66). p. 64)
In these types of human interaction a truth emerges that is not subject to utilitarian imperatives or control or to the principle of sufficient reason. Things simply happen; truth simply appears.

(Snodgrass and Coyne 2006:212)

According to Snodgrass and Coyne (2006:217), Japanese architecture of the New Wave represents this approach to design. It exhibits a disciplined design thinking comprising ‘a conscious awareness of spontaneity [along with] subtle and sophisticated aesthetic theories to accommodate its presence’ that have been refined over many centuries. These design practices equate to the esotericism of the Japanese tea ceremony or Nô drama in rigour and intent. The Japanese approach toward letting-be leads not to quiescence or acquiescence but to spontaneous action minus personal agency. Achieving selflessness is the key to this design approach; it renders the design act free of the will to power so problematic for Western thinking (Section 4.2).

To practice design as a self-edifying process while also practising it selflessly summarises Snodgrass and Coyne’s argument. To perform this paradox requires developing a conscious awareness of spontaneity during design activity; another paradox in being a mental discipline that requires willpower to deny wilfulness. Snodgrass and Coyne push the paradox further by arguing for the practice of design through its self-oriented aspect in order to achieve selflessness. In effect, this is an argument for a paradoxical practice that would seem to require an overarching philosophy of complementarity to make sense of it. This is a direct challenge to Western orthodox thinking. However, paradoxical logic is not new to Western culture. While Aristotle’s theoretical philosophy of being (ontology) and knowing (epistemology) is the fundamental orthodox view in Western culture, it was developed in contrast to the much older paradoxical logic of Heraclitus (500BCE), considered the founder of Western process philosophy with its emphasis on complementarity (Fromm 1957; Graham 2008; Whitehead 1933).
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Paradoxical logic and process philosophy dominate Eastern thinking (Guenther 1984; 1989a).

5.2 Design as paradoxical logic

The system of logic Aristotle employed to verify his thinking is based on ‘the law of identity which states that A is A, the law of contradiction (A is not non-A) and the law of the excluded middle (A cannot be A and non-A, neither A nor non-A)’ (Fromm 1957:63-64). As Cohen (2009:6) explains, this system of logic underpins Western logic as ‘indubitable’ truths and is still dominant as the foundational criteria through which all further reasoning is judged.

According to Fromm (1957:64), paradoxical logic ‘assumes that A and non-A do not exclude each other as predicates of X’. Heraclitus’ logic was dismissed by Plato and Aristotle as ‘violating the law of non-contradiction and propounding an incoherent theory of knowledge based on a radical flux’ (Graham 2008:12). Essentially, the theory of radical flux is as an argument for the unity of opposites that reveals ‘the interconnectedness of contrary states in life and in the world’, and leads to a subtle understanding of being as ‘the process of change more real than the material substances that undergo change’ (Graham 2008:7-8). This ontology of being that prioritises process over substance has led to Heraclitus being regarded as the paradigmatic process philosopher (Graham 2008). The manner in which Heraclitus couched his philosophy - that being in the form of puzzles, riddles, aperçus - was deliberately designed to provoke an experience of understanding beyond logic (Graham 2008). This approach resonates beyond the Greek tradition especially in Chinese and Japanese philosophy.

Paradoxical logic posits ultimate reality to be unity; a state which could be perceived only in contradictions and never in thought. According to Heraclitean logic, the only certainty available through thought is that it cannot provide the ultimate answer. The only way in which reality can be grasped ultimately lies in the act, in the experience of oneness (Benoist 1988; Chang 1963; Cooper 2002;
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Fromm 1957; 1964; Guenther 1984; 1989a). This insight is central to the teachings of Taoism and Buddhism and is the ultimate pursuit of meditation. Experience of oneness is not the same as contemplation of oneness. Feelings, their refinement and articulation, are central to meditation as the practical method for engaging in a paradoxical world-view. Compassion and love are cultivated essentially because they are the only emotions through which oneness can be experienced (Fromm 1957; Pérez Gómez 2006).

Experiencing oneness through designing has been revealed in a number of guises: as a haptic experience of making, as the spontaneous recognition of beauty and as a state evoked through creative-play (Section 5.1). These experiences are profoundly emotive, spontaneous, non-logical and non-reflective in being intuitive processes of ethical know-how. Snodgrass and Coyne’s argument for developing a conscious awareness of spontaneity during design activity can therefore be interpreted as an argument for enhancing ethical know-how specifically through mindfulness meditation (Section 3.5).

5.3 Design and value change

To practice design as a self-edifying process while also practising it selflessly can now be compared with the prevailing view within ethical discourse on design and sustainability. The agenda set up by the UIA and disseminated through the AusIA is to promote and defend sociocultural and intrinsic values within the utilitarian paradigm of human rights (Chapter 2). Participatory design has evolved as the natural vehicle for promoting these values. As a self-oriented practice, architects are being asked ‘to question their conventional habits of individual creative self-fulfilment ... in favour of an ethic with a wider horizon which privileges collective social consequences’ (Hagan 2008; Palleroni 2004; Ray 2005:113; Tanzer and Longoria 2007; Vesely 2004; Wheeler 2004). In taking up this advice it can now be argued, through paradoxical logic, that there is a danger in seeing value-change in dualistic terms rather than in terms of complementarity wherein both self-fulfilment and prioritising the collective can
be accommodated (Section 5.1.7 and 5.2). This suggests a deeper critique of value change. Williamson et al. (2003:47) note further, the need to move beyond a ‘totally anthropocentric view of moral considerability that [has] persisted for about 2500 years’ to include, not only future generations of humans but non-human phenomena as well. This challenge to the dominant world-view (in Western culture in particular) has arisen only ‘in the last twenty-five years or so’ (Williamson et al. 2003:47). The challenge to mainstream architectural thinking is therefore profound.

While the logic for value change is indisputable, the reality is that ‘ethics are the product of habits’ and dualistic thinking, reductionism and positivism must be considered, along with anthropocentrism, as ingrained Western thinking (Hagan 2008; Ray 2005:113; Williamson et al. 2003). Because ethics are the product of habits, ethical know-how is deeply conditioned by these fundamental preferences (Section 3.5). Habits ‘do more than predispose us to do and think certain things; ... they actually constitute who we are’ (Ballantyne 2005:116). This means that efforts to change one’s habits are actually efforts to change one’s identity; a challenge instinctively resisted through various ways of thinking (Argyris and Schön 1974; Ballantyne 2005).

It is a truism of design praxis that architectural ethics ‘will be formed from pre-architectural concerns, learnt as very basic lessons in growing up and from experience in other parts of life’ (Ballantyne 2005:116). This means that ‘the things we know most firmly are the things that we have ceased to think about as principles’ (Ballantyne 2005:116; Tiberius 2008) (Section 3.2). Therefore, value-change requires challenging the things architects/designers are most certain about. This includes such first principles in Western thinking as dualistic thinking, reductionism, positivism and anthropocentrism. Some other ways of thinking that are barriers to value-change have already been identified: rules of thumb logic, pre-empting of one’s options, conservatism and short-sightedness (Section 2.2.4).
Ballantyne argues that resistance is not only profoundly conditioned but that conditioning is profoundly interpersonal. An architect’s ethical principles ‘must be adduced from the ways that architects behave when they feel that they are doing the right thing, or the best possible thing that can be done in the circumstances’ (Ballantyne 2005:116). Doing the right thing is invariably attached to wider social mores in that it often means doing the same thing as the wider grouping (Ballantyne 2005). This dynamic provides security and lends conviction to one’s ethical stance (Section 3.2). Participatory design, therefore, provides a potential vehicle through which individual and interpersonal dynamics can be challenged within a group setting.

5.3.1 Participatory design

Participatory design has arisen as an activist critique of the status quo challenging professionalization of knowledge and the expert-community divide this encourages (Bell and Wakeford 2008; Blundell Jones et al. 2005; Gandolfi 2008; Lee 2008; Martens and Keul 2005; Sanoff 1990). It is seen as an opportunity to ‘incite a new political role for architecture’ where architects are engaged in ‘a sensitisation campaign that involves the community at the local level and that stimulates collective processes, spontaneous creativity and activism’ (Gandolfi 2008:125). For Gandolfi (2008:132) architecture can then become ‘an instrument for legitimising people’s role in our society’. It thus provides a means for breaking down exclusionist paradigms and the dualistic and reductive thinking that supports it.

The challenge of participatory design is twofold. It not only challenges the design community to transform their elitist thinking as professionals, but its challenge is also to encourage aesthetic appreciation at a community level within an activist tradition whose main focus is on more political or social justice issues (Lee 2008; Scrivener 2007). The challenge for the architect is to become a mediator or ‘design developer’ between situations, places and the people who inhabit them, with the specific aim of achieving aesthetic quality (Lee 2008:36).
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The idea is not so much to find solutions as to generate new cultural models of co-designing that ‘emancipate people to enjoy designs and designing’ (Lee 2008:48/9). Game-play and “hands-on” haptic design tools are vital tactics in achieving co-design (Gandolfi 2008; Lee 2008). Designers are being asked to transform abstract design thinking into concrete design tools as part of their design expertise. The tools thus ‘stimulate the imagination, [while remaining] closely related to the real world, in contrast with fantasy’ (Gandolfi 2008:132).

In this manner, participatory design addresses a number of issues raised throughout this thesis. First, it addresses the alienating tendencies of the avant-garde and techno-rationality in grounding design outcomes in the space of real possibilities (Section 4.2). Second, it counters misunderstandings of design as something mysterious and idiosyncratic (Section 5.1). Third, it encourages a critique of the will-to-power inherent in design expertise by encouraging the designer to use their own design skills to enhance the design skills of the co-designers (Section 4.2). Finally, design remains a self-edifying process while also being practised selflessly (Section 5.1.7).

New technology development is increasingly utilising this cultural model of design while co-design is increasingly utilising new technology. As Lee (2008:32) notes, design is seen to be ‘separating with traditional art and design domains, and moving into the areas of engineering- and service-oriented design, which is process- and function-oriented’. For Lee (2008:34), the technological revolution is revolutionising the world of design to such a degree that ‘design is becoming an everyday activity rather than a professional study’. One of the key findings of the participatory design process is of user satisfaction. However, ‘user satisfaction is not the degree to which a person’s needs have been met, but the feeling of having influenced the decisions’ (Sanoff 2006:140). In other words, the opportunity for self-expression has been provided (Section 3.1). This finding demonstrates two things: the importance of harnessing technology as a tool for inclusion and the importance of the non-instrumental value of design in enhancing people’s lives. It emphasises again, the challenge of design to techno-
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rational logic that reduces design activity to a means of control through productivity values or through a problem solving paradigm.

Participatory design is essentially about change through _praxis_ and as such is closely aligned to action research in intent (McCorquodale 1998; Swann 2002). While some participatory design has been conducted as action research, Lee (2008:32) notes that ‘there are gaps between scientific design research and creative design practice because of a lack of collaboration between the two groups in design’. Yet, action research offers a well-researched theory of resistance to value-change that can help explain complaints of tokenism aimed at current participatory design initiatives within the architecture profession (Gandolfi 2008; Lee 2008).

### 5.3.2 Action Research as self-reflective practice

Action Research is a sociological model for identifying the depth of resistance to change based on the theory of single-loop and double-loop learning (Argyris 1993b; Argyris and Schön 1974; 1978; 1996). Action Research theory states that ‘human beings are skillful at non-learning’ and prefer to ‘create systems that support self-defeating actions’ by engaging in single-loop learning rather than the much more deconstructive task of double-loop learning (Argyris 2003:1178-1179). Whereas single-loop learning ‘occurs when a mismatch is detected and corrected without changing the underlying values and status quo that govern the behaviors, double-loop learning occurs when a mismatch is detected and corrected by first changing the underlying values and other features of the status quo’ (Argyris 2003:1178). What differentiates single-loop learning from double-loop is that one remains within the accepted routines while the other requires that new routines be created based on ‘a different conception of the universe’ (Argyris 2003:1179). Argyris concludes that the refusal to engage in double-loop learning is endemic and ongoing across social institutions and that this results in ‘ultra-stable systems that are self-sealing and anti-double-loop learning’ and thus highly resistant to fundamental change (2003:1184).
Resistance to value change is both a function of wider social mores as well as problematic of the individual. Action researchers characterise the resistance as social-psychological and promote practices aimed at breaking down emotional barriers (Argyris 1990; 1993a). They acknowledge that ‘[e]motion is a fundamental adaptive mechanism of human beings’ and that, in resisting practices of change, ‘feelings and whole nervous systems are working against those practices’ (Seo 2003:9). Methods have changed from handling emotions in ‘an objective, detached, analytic, and confrontational manner’ in favour of empathy and accommodation of feelings and experiences that encourage self-awareness and self-reconciliation (Seo 2003:15; Winter 2003). In a review of action research methodology, Winter (2003:142) notes that, while action research is founded ‘on a variety of Western intellectual traditions, such as Marxism, critical social theory, postmodernism, phenomenology, organizational relationships theory, ‘reflective practice’ and the literature on developing service-user-controlled inquiry’, there are many ‘parallels with the complex synthesis of philosophy, psychology, ethics and moral practice represented by Buddhism’. The critical junction is in their respective ‘person-centred, experiential, creatively co-operative aspect[s]’ aimed at ‘transcend[ing] ego-awareness and instrumental rationality’ (Winter 2003:142).

Thus, the contribution that action research can bring to participatory design is in highlighting the need for a more self-reflective stance by all involved so that each member take personal responsibility for their own value-change. The self-reflectivity recommended is one that engages all the senses to bring about self-awareness and self-reconciliation. This is a model moving increasingly toward a confluence with meditation.

### 5.4 Conclusion

To begin this thesis, design was hypothesised as having two orientations: one is explicit, outward-and task-oriented, while the other is implicit, inward- and self-oriented. This allowed for the further observation that the designer embodies the
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transformative process, which re-emerges as his/her intuitive ethical know-how or *praxis*. The concern is that, while some self-transformation naturally occurs through design as reflective practice, this is of a limited nature when self-reflective practice is neither a deliberate part of design practice, nor practised as a full-bodied process.

The aim of this chapter has been to investigate design as *praxis* in order to grasp how the designer embodies the transformative process and how it re-emerges as his/her ethical know-how or *praxis*. Design as *praxis* was analysed according to experimental, phenomenological, hermeneutical, and historical readings that established its lived-world nature. On the basis of these readings, design as *praxis* utilises a third way of knowing triggered by spontaneous, non-logical, prereflexive modes of awareness. Three spontaneous triggers were identified: hapticity triggers embodied knowledge, sensory-perceptual knowledge triggers aesthetic preferences, while creative flow is triggered by a non-instrumental openness to discovery, akin to game-play. The absence of wilful consciousness is the critical feature of such spontaneities stressed time and again. As Whitfield observes, this may explain the difficulty of analysing the processes by which designers arrive at a design, and why a scientific approach to design may be implausible. The onus, then, is on ensuring trends in sustainable design, that are moving toward a more scientific approach, do not overlook these processes but find ways to accommodate them. It also raises the concern that value-change mechanisms also accommodate *praxis*, for the literature review has established the need for value-change in order to honour the transformative agenda of sustainable design.

From a historical reading of architecture, Pérez Gómez concludes that the desire for, and experience of, beauty sustains humanity as an intuitive mode of truth-seeking that cannot be otherwise reproduced. To design architecture, then, that is both meaningful and sustainable requires the architect to strive for beautiful form and responsible program through a practical philosophy and a meditative
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approach to design. Snodgrass and Coyne are adamant that design thinking can provide the antidote to techno-rational thought if approached through such Buddhist logic.

Parallels between design and meditation have been found. They both emphasise imagination and intuition as their practice mode (Section 5.1). Cultivating feelings are central to meditation. Compassion and love are cultivated essentially because they defuse the will to power so problematic in human relations. The absence of wilful consciousness while absorbed in design has already been noted. Design as praxis, being profoundly emotive, spontaneous, non-logical and non-reflective, has the potential to be strengthened, especially through meditation on mindfulness, by developing meta-awareness of one’s ethical know-how while engaged in the practical activity of design.

The call to respect design as praxis reflects a desire to re-affirm the humaneness of the design process. Trends in sustainable design towards evidence-based design and science-based computer-aided environmental design were critiqued in light of this call. These trends are based on a need to ground design thinking on carefully evaluated evidence and to show a decision-making trail that accords with the evidence. Such a rigorous approach to design is seen to provide a level of confidence upon which to promote sustainable design within the wider community. Within this paradigm of design, however, acknowledging one’s praxis within a hermeneutical cycle is critical. The concept of consilience emerged as a suitable explanation of the resolution of different and often immicible ideas (or ‘aha’ moments) in design, as well as for accommodating the contingency that is characteristic of complex systems like human/built environment interactions.

The technical computing power now available to designers provides for a different type of engagement in real world conditions that is beyond human capabilities. While it is thought to enhance human capabilities, such euphemisms hide a loss of experiential knowledge – real contact with real conditions. Yet,
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many real-world conditions that are beyond human comprehension are critical factors in achieving real-world sensitivity. The success of environmental design is increasingly reliant on the sensitivity of the digital medium in simulating these critical environmental factors. The concern is to take advantage of both the fullness of the human dimension and the prowess of the technical dimension to optimise the design response.

Participatory design addresses a number of issues raised throughout Part One of this thesis. First, it counters the alienating tendencies of the avant-garde and techno-rationality in grounding design outcomes in the space of real possibilities (Section 4.3.1). Second, it counters misunderstandings of design as something mysterious and idiosyncratic by opening up the design process and encouraging the designer to develop design skills that allow interaction with co-designers (Section 5.1.2 and 5.1.3). Third, it encourages a critique of the will-to-power inherent in design expertise (Section 4.3.1). Fourth, by breaking down exclusionist paradigms set up by professionalisation, it also undermines the dualistic and reductive thinking that supports it. Fifth, this approach to design remains a self-edifying process while also being practised selflessly (Section 5.1.7). Sixth, its focus on interactive participation encourages the use of haptic forms of game-play and supporting technologies to make design thinking explicit and accessible. The value of this approach is that it generates a level of satisfaction beyond its instrumental value. Finally, if it is practised as Action Research, it can contribute to an evidence-based approach to design.

The conclusion to be drawn from these findings is that the self-transformative potential of design can be influenced through two interactive pursuits: participatory design and meditation. Together, they encourage a holistic approach to value-change that recognises the personal and interpersonal nature of design as *praxis*. 
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Chapter 6

Methodology

6.0 Introduction

A review of the literature on ecologically sustainable development, self-reflective practice, architecture and design has established first, what is expected of the designer in terms of value-change, second, what is known about value-change through self-reflective practice that is pertinent to design, third, how sustainable design has come to be as it is currently pursued and, fourth, what is known about design as experienced by the designer.

Design was found to be considered a third way of knowing different from both the humanities and the sciences for two main reasons. First, design deliberately stimulates intuition, essentially to stimulate creativity. In the process, it also answers to existential need. Because design is an intuitive and existential process, the quality of the designer’s ethical know-how is necessarily important.

Second, to stimulate creativity, an attitude more akin to game-play than deliberative thinking is naturally adopted. Through game-play, the designer sets out, not so much to achieve a definitive solution to a problem, as to allow a salient, but necessarily contingent proposition to emerge. This attitude is not so much a wilful one as an accommodating one. Therefore, design as praxis can be characterised as more intuitive and accommodating than deliberative and wilful and, as a consequence, highly dependent on the quality of the designer’s ethical know-how. The questions raised here concern sensitivity. How sensitive are architects to their own needs when designing for ecological sustainability? Do they see their needs only in terms of technical expertise or do they acknowledge other needs that are more existential or spiritual? What is their ethical position? How self-aware of their ethical position are they?
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The principle guidelines for engaging in sustainable design, as set out in the UIA/AIA *Declaration of Interdependence for a Sustainable Future* (1993) and adopted by the profession here in Australia, call for value-change and offer a list of virtues to be inculcated into design practice, but go no further in their recommendations for *embodying* such value-change. The expectation is that such virtues will be inculcated into the designer’s intuitive ethical know-how or *praxis* as a natural consequence of acquiring the necessary technical skills through which to practice sustainable design. The questions raised here concern expertise and commitment. How do architects *actually* commit to sustainable design? Do they demonstrate the expectation that developing technical expertise will bring about value-change? What values are important to them for practising sustainable design? Are their ethical concerns utilitarian, sociocultural or environmental?

Within the phenomenological literatures devoted to design and cognition, it was established that *praxis* actually *guides* logic and technical know-how. It was also established that self-transformation can be enhanced through rigorous methods of self-reflection. In searching out why these considerations are overlooked in the discourse on sustainable design, self-expression in architecture was revealed as suffering from a mix of inwardness, individualism and hubris within the technorational paradigm that dominates Modernism as a human development phenomenon. Yet, self-expression is fundamental to human wellbeing and design activity is necessarily a form of self-expression. The questions raised here concern self-expression. How does the designer tailor self-expression and personal wellbeing to the pressing need to prioritise ecosystem wellbeing? Because wellbeing is as much an emotional state as a physical one, how does the designer *feel* about sustainable design? How much of a factor is their quest for personal happiness?

Sustainable design has risen to prominence within this techno-rational paradigm with a focus on transforming the built-environment through the environmental sciences and with the need for certainty pursued through an evidence-based
approach to design. Within this paradigm, it was found that there is a tendency to overlook how design as a third way of knowing actually happens. It is argued in this thesis that this oversight undermines sustainable design as a rigorously holistic practice of transformation. The question raised here concerns paradigms. Do designers overlook design as a third way of knowing? How objective and rational are they in their design thinking? How do designers close the gap between praxis and the imperative of a techno-rational paradigm? Do they see a gap?

No formal recognition of self-reflective practice as a strategy for self-transformation was found within design methods or professional development regimes for sustainable design. However, various types of formalised self-reflective practice geared to professional development were found outside of the architecture profession, particularly in the health professions. These are currently under development and review, especially in the mind sciences and the psychotherapy. This is in recognition of the need for a more holistic approach to research and clinical practice methods that take into account the subjectivity of the practitioner. The theoretical potential exists, therefore, for the adaptation into sustainable design of self-reflective practice, with the view to enhancing sustainable design as a more holistic practice of transformation. The questions raised here concern self-reflective practice. If opportunities for formal self-reflective practice are not recognised as a strategy for value-change within the discourse on sustainable design, are they practised anyway, either formally or informally? What can be gathered from practising architects about praxis, paradigms and value-change that can inform a model of sustainable design that is holistic in its transformative agenda?

In order to address the questions raised in the literature review, this chapter presents a review of methodology in order to select an appropriate research method for generating satisfactory findings from the research field.
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In Section 6.1, the questions raised by the literature review are reframed to ensure they generate adequate findings from the field of sustainable design regarding self-transformative practice. Sections 6.2 and 6.3 provide background to the logical as well as historical factors leading up to the Modern era that have contributed to what is considered the contested domain of the social sciences (Denzin and Lincoln 2005; Gould 2003; Swoyer 2008; Wallace 2000). The reason for this is to expose the pre-conceptions behind modern research methods that led to the promotion of the objectivist method, employed in the physical sciences, over methods more attuned to the complexities of human behaviour. Of pertinence to this thesis, is that this tendency still exists in the social sciences and is accused of diminishing the effectiveness of the social sciences as an account of human behaviour. Section 6.4 brings the history of the social sciences into the Post-Modernist era where more suitable methodologies now exist to redress this imbalance. Section 6.5 introduces two main approaches to research methods: the quantitative approach and the qualitative approach. Both approaches are assessed for their potential to answer the questions raised by the literature review. From the review of methodology and associated research methods, reasons are given, in Section 6.8, for the selection of a qualitative research method based on in-depth interviews to bring the chapter to its conclusion.

6.1 Drawing questions from the literature review

The questions raised by the literature review cover sensitivities such as intuition, existential need, ethics and spirituality and their influence upon design expertise; strategies for commitment to sustainable design as self-expression involving qualities such as happiness; and whether self-reflective practices are deliberately engaged in by architects as part of their value-change strategies. These questions were reframed in order to tailor them to the existing discourse in sustainable design and still address the main research aim, which is to give proper attention to the designer as a vital component of the transformative agenda of sustainable design. They were grouped into six themes that could elicit personal experiences
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of design practice to generate suitable research material. They are listed below along with the questions they can address:

Expertise

*The need to utilise the understanding of expertise as an attitude of mind.*

Improving capability is known to rely on continual improvements that challenge beliefs, abilities and knowledge base. But there is little discourse on *how* this is done as a professional practice regime aligned to ecological sustainability.

Commitment

The need to promote commitment as a personal experience considering that to commit - place sustainability at the core of (architects’) practices and professional responsibilities - is the first principle upon which the RAIA Environment Policy is based. Yet even while commanding this privileged position it has received minimal explanation as to how to go about it as a core personal experience. How do practicing architects commit to designing for ecological sustainability? How self-aware are they of their strategies?

Spirituality

The need to develop a sensitive discussion about spirituality and its importance to living harmoniously with the world, as architects often express their need to design habitats that work in this manner. Architecture is seen as an opportunity to enhance psychic as well as emotional and environmental energies. How sensitive do architects designing for ecological sustainability consider themselves? How do they develop their sensitivities? How do they describe its experiential qualities?

Familiarisation

The need to personalise the UN Bruntlandt Report definition for ecologically sustainable development: A sustainable society meets the needs of the present
without compromising the ability of future generations to meet their own needs. How do architects consider this in terms of their own needs? How do they embody their understanding?

Happiness

The need to understand that happiness is more than a personal goal but the ultimate goal in life for all living creatures both human and non-human. How are architects extending their sense of self beyond anthropocentrism?

Value-systems

The perceived need for an environmental ethic that transforms the socio-economic development ethic that now powers the devastation of the planet. Our built habitat shows no deference to nature as our sustaining habitat. How does an architect consider this while engaged in the everyday pressure to build? Do they reflect upon the received wisdom?

These issues act as crossover points between private and professional concerns that underscore the everyday thinking of the architect. Answers to these questions can provide a snapshot of current thinking about meaningful and deliberative engagement in designing for ecological sustainability. To capture these views meant choosing a method for eliciting reflections on the power of personal experience behind professional development.

6.2 Backgrounding the social sciences

The debate over research methodology encompasses concerns about the nature and meaning of existence generally. This debate can be traced back to Aristotelian logic and metaphysics. The orthodox view in the sciences is oriented towards a substance-based view of the universe derived from Aristotelian logic and metaphysics. However, the alternative process-oriented world-view, developed in the West through Heraclitus and in the East within Buddhism, has regained status in Western thinking through advances in systems-thinking.
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generally (Whitehead 1933). According to process philosophy, systems are to be seen ‘not as the machinations of stable things; (but as) the stability-pattern of variable processes’ (Rescher 2002:12). If seen otherwise, then a substance-oriented view has been favoured.

The adaptation of systems thinking to the sciences of the mind has led to the development of neurophenomenology in recognition of the need for a more holistic approach to research methods (Chapter 3). A process-oriented world-view is also implicit in phenomenological understandings of design as praxis and approaches to design method as paradoxical logic (Chapter 5). Influenced by systems thinking, the discourse on sustainable design and development increasingly recognises architecture, society and environment as interacting systems in terms of material and energy transfer. This approach conforms to an ecological ethic, which gives value to whole system dynamics and indicates a fundamental value-change is underway within sustainable design, towards a process-oriented world-view. It also implies that the orientation of the designer is structurally important to the whole-system dynamics of design. To discern signs of change in the designer towards this world-view requires a research method attuned to a process-oriented world-view.

Advocates of the process view argue that orthodox research methods are essentially noun-based, static and substance-oriented (Guenther 1989a; Langer 1972; Rescher 2002; Wallace 2000). In their estimation, this bias in favour of things over processes underlies the view of a world made up of physical objects, a view that reached its zenith in the positivist sciences of the eighteenth and nineteenth centuries. Positivism is a rationalist and realist school of philosophy originally aimed at countering the uncertainty of metaphysics and freeing knowledge from superstition (Niiniluoto 2002). It promoted the extreme view that all knowledge is accessible through rigorous intellectual reasoning served by empirically-based experiment and observation (Grbich 2007). The eighteenth century is considered the moment in Western history where positivism combined
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with empiricism took over from Aristotelian metaphysics to deny substance beyond the facts of sense phenomena (Christians 2005). What remained was a substance-oriented, materialist view of the universe guided by a rationalist paradigm within which to overcome metaphysical uncertainty and explain existential need (Wallace 2000). This view had a powerful influence upon the tradition of research that developed into the modernist era.

6.3 The Modernist era

Criticism of orthodox research methods is also aimed at the complex relationship between Christian theology and the emerging sciences of the Enlightenment period to explain further characteristics of Modernist thinking that make metaphysics and the satisfaction of existential need such a difficult research undertaking (Berry 1988; 1991; 1999; Laszlo 2006; Levin 1987; Toulmin 2001; Toulmin and Goodfield 1962; Wallace 2000). According to Wallace (2001:2), while the initial goal of science was ‘to understand the mind of the Creator by understanding His creation’, he argues that by the time of Descartes, dualistic thinking had not only separated Creator from creation but separated out subject/object, fact/value, material/spiritual, mind/body. Such dichotomies critically led to the emergence of the autonomous individual in search of freedom and self-determination, and one radically loosened from the strictures of theological metaphysics by a succession of scientific and technological breakthroughs (Carroll 1998; 2004; Christians 2005; Christians et al. 1993; Gould 2003; Toulmin and Goodfield 1962).

The freedom of the individual, along with concomitant concern for social and other reforms, is considered fundamental to the emergence of liberal democracy and a major achievement of the Enlightenment project. According to Gray (2007:224) the Enlightenment project consisted of ‘refounding morality and society on universal, tradition-independent rational principles’. It was an era dominated by a Positivist approach to social science, where society was seen in terms of self-interested and rational individuals shaped by knowable external
forces (Lukes 1982; Neuman 1997). Positivists were committed to the idea that society could predict and control its own evolution and they modelled their methods on a strictly empirical, experimental methodology, so successful in the natural sciences, through which to pursue social progress. Following this rationale, morality was redefined in terms of utilitarian ethics and the social sciences evolved according to its tenets; that is, in bringing about the greatest amount of good for the greatest number (Mill 1863; Wright 1996). The foremost feature of utilitarian ethics is considered its maxim of impartiality and agent-neutrality, in that when one maximises the good, it is the good impartially considered (Coser 1977b; Driver 2009). Good, in this account is secularised, quantifiable and pursued within a value-neutral mode of enquiry aimed at separating means from ends, fact from value.

This approach has enabled major advances in human understanding and produced an array of significant improvements in social well-being generally. In spite of its many successes, there are domains of human experience that this approach is unable to address. This has led to the pursuit of other, less empirical modes of enquiry into more immaterial aspects of human development. Also, critics argue that a dualist, rationalist, materialist attitude towards social progress, inculcated via the Positivist model, has led to a degeneration of “the common good” into “goods and services” (Alexander 2008; Hamilton 2005; Hamilton and Breakspear 2004; Sen 2000; Sen and Cambridge 1982) and the confusing of happiness with hedonism (Pérez Gómez 2006). With the denial of metaphysics beyond the facts of sense phenomena, material needs have come to subsume existential need, yet not sate this fundamental human drive. This view dominates the debate within environmental ethics, where the distortion of existential need is seen to underlie alienation and indifference towards the natural world characterised by environmental degradation (Bender 2003; Berry 1988; 1991; 1999; Harding 2006; Næss 1986; 1989; 2002; Plumwood 2002; Suzuki and McConnell. 1997).
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This debate strengthens the argument, pursued in this thesis, that sustainable design initiatives pay attention to the existential needs of the designer as an essential dynamic in the transformative agenda of sustainable design. It also strengthens the argument that research into design as a self-transformative process draw attention to the fundamental changes in world-view orientation required of the designer to successfully practice sustainable design.

6.4 The Post-Modernist era

Within the social science research community, a qualitative approach to enquiry has arisen in recognition of the philosophic inconsistencies bound up in objectivity and neutrality and in an attempt to revalue existentialism (Crotty 1998; Denzin and Lincoln 2005; 2008; Gadamer 1988; McMurray et al. 2004; Patton 2002; Wallace 2000). Within this approach are a number of methodological streams of particular relevance to this research: Post-Positivism, Interpretivism, Symbolic Interactionism, Phenomenology, Ethnomethodology, Critical Theory and Action Research. They all illustrate important advances in research methods more attuned to complex human behaviour. Each, in various ways, deconstructs Positivist rationality to take account of the provisional nature of knowledge and the importance of its experiential component. Their relevance to this research is their emphasis on a range of phenomena unique to social systems. Major achievements include recognition of different realisms, development of empathic enquiry, recognising the truth of experience, understanding the social pre-conditioning of mental phenomena and the deep need for social order through meaning-making, uncovering the hidden prejudices and ideologies bound up in analysis, and most importantly, re-grounding research in activism for social change (Argyris 2003; Bohman 2005; Boyatzis 2006; Christians 2005; Crotty 1998; Denzin and Lincoln 2005; Flick 2002; Gadamer 1988; Grix 2004; Guba 1990; Hall 1999; Hughes 1990; Longino 2002; Niiniluoto 2002; Reason and Torbert 2001; Root 1993). A review of these various concerns
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follows for their suitability in drawing out new knowledge about the experiential domain of ecologically sustainable design.

6.4.1 Post-positivism

Post-positivism was instrumental in destabilising the traditional view of scientific research. The idea that scientific knowledge is the result of objective observation has been refuted on the basis that all observation is selective and theory-laden (Thornton 2006). Also, Post-positivists argue that scientific theories are problem-solving exercises contingent upon leaps of the imagination and not the purely inductive methodology claimed by Positivists (Thornton 2006). Finally, they demolished fact / value dualism by showing that conclusions cannot be directly compared with the facts on the basis that there are no “pure” facts available (Thornton 2006). Based on these criticisms, a more realistic approach to epistemology evolved acknowledging the identification of different realisms (Grbich 2007). A clear example of this is the development of the Biopsychosocial model, which links biological and psychosocial models of health care through an understanding that there is an empirical world of biological mechanisms as well as psychosocial influences on these that affect health outcomes (Grbich 2007) (Section 3.4.3). Identification and integration of different realities within a service-delivery model that values subjectivity and objectivity is of real significance to this research project. It provides sound argument for a more realistic and holistic approach to meaningful engagement in sustainable design.

The Post-positivist deconstruction of scientific method led to a renewed call for critical thinking as the lynchpin of rationality in recognition of the existence of multiple realities. Acknowledgement that the only certainty about knowledge was its provisional, conjectural, hypothetical nature (Thornton 2006) is of relevance to this research as a precautionary tale about the need for critical thinking to overcome the innate limits of any methodology in articulating new knowledge about the experiential domain of sustainable design.
6.4.2 Interpretivism

Interpretivist methodology is concerned with an alternative reading of social facts, considering their status as objective phenomena to be an achievement of social construction worthy of study in itself. Research is approached as a dialogue through which to interpret common sense value. It requires of the researcher a mindset defined as *verstehen* which takes an ‘empathetic understanding of another person’s worldview’ (Neuman 1997:522). Analysis of worldview is through a number of different methods that take account of the iterative, subjective and deconstructive nature of this form of research (Feldman 1995; Grbich 2007). Through these various methods, interpretive social science argues for another form of truth; that which ‘resonates or feels right to those who are being studied’ (Neuman 1997:85). Because values are an integral part of social life ‘no group’s values are wrong, only different’ (Neuman 1997:85). This has led to serious criticisms of relativism which will be detailed in a review of Critical Theory. However, it can be seen that Interpretivist philosophy addresses the basic tenor of the research questions drawn from the literature review. It acknowledges multiple realisms and allows for a mode of empathetic inquiry into their construction. This approach provides the methodology behind the Post-Positivist argument for a more realistic and holistic approach to research. It can also provide for a more integrated account of sustainable design.

6.4.3 Symbolic Interactionism

Symbolic Interactionism takes the view that the development of sense of self is pre-eminently social, in that ‘the social process is prior to the structures and processes of individual experience (and therefore) individual psychology is intelligible only in terms of social processes’ (Cronk 2005:wp). This is in opposition to understandings of consciousness ‘in terms of the insulated conception of the Cartesian ego’ or as something that can be reduced to ‘conditioned reflexes and similar physiological mechanisms’ favoured by Behaviorists (Coser 1977a:wp quoting Meade). For Symbolic Interactionists,
consciousness is not a given; it is a socially pre-conditioned emergent. This understanding has its parallels in the Buddhist concepts of “impermanence” and “causal conditioning” which recognise the problematic nature of a relativist sense of self (see Section 3.3.2). According to the Buddhist view, sense-of-self is nothing other than relative. The arisal of the ego is through reification of self, leading to the construction and defence of boundaries between self and non-self when in reality no such boundaries exist. This can be understood as the difference between an egocentric (constructed and thus structural view) and egoless (self-less and thus process view) of self. Symbolic Interactionist theory in conjunction with Buddhist theory of mind can be seen to offer critical insights into self-identity that are essential for analysing material collected from practising architects about design as self-reflective and self-transformative experience.

6.4.4 Phenomenology

As a philosophy, phenomenology has reinstated the body as a non-dual aspect in human reality and ‘the primal condition for the existence of the objective, physicocultural (sic) world’ (Guenther 1984:210). Phenomenologists therefore assert that truth is ‘something we experience … as an explication of what is already understood … stemming from a primordial mode of understanding …’ (Herda 1999:58). As a practice within the cognitive sciences, neurophenomenology has emerged as a combination of the phenomenological method with third-person methods for enquiry into mind and brain as an integrated phenomenon (Varela 1976; 1987; 1995; 1996; 1999b; Varela and Depraz 2003; 1999a; Wallace 2002; 2006a; 2006c; 2007) (see Section 3.3). Twentieth-Century architects who have identified themselves with

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46 Law of Causal Condition: The fundamental doctrine of Buddhism that all phenomena in the universe are produced by causation. Since all phenomena result from the complex dynamics of cause and effect, all existing things in the universe are inter-dependent, i.e., exhibiting no self nature or existence on its own. Moreover, all phenomena and things are impermanent (i.e. changing constantly). (Buddha Dharma Education Association Inc. (2007). glossary of buddhist terms, Buddhanet.net. http://www.buddhanet.net/e-learning/history/glossary_lr.htm: buddhist information and education network.)
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Phenomenology have been instrumental in promoting ‘sense of place’ as a key part of socially and environmentally responsive design (Jarzombek 2000). Phenomenology is a form of communion in the sense of being a reflexive mode of experience and consciousness for extracting micro-world experiences operating between the researcher/designer and the object of research/design (Flick et al. 2004; Seamon 1993; 2000; 2007; Seamon and Buttimer 1980). It provides a system for being aware ‘under the aspect of internality (such that) each thing and event can be understood in terms of a larger whole. (This is in contrast to) consider(ing) the world under the aspect of externality (where) things and events seem disconnected from (self) and from one another’ (Kirkman 2002:29). Its value to this project is twofold. It values experiential modes of understanding and is therefore useful in enquiring into the experiential domain of design. It also highlights an opportunity to practice research as a holistic event by offering a stance through which to view the research field that is inclusive of the researcher.

6.4.5 Ethnomethodology

Ethnomethodology combines phenomenology with traditional sociological theory associated with Positivism. It is an inquiry into how ‘social order is constructed in the minds of social actors as society confronts the individual as a series of sense impressions and experiences which she or he must somehow organise into a coherent pattern’ (Flick et al. 2004; Poore 2000:wp). It is an approach that does not accept the possibility of generalisation. Methods for collecting material from the research field include participant observation, analysis of official records, naturalistic observation and conversation analysis. Its value to this research is that it provides for a deep reading of the UIA and AusIA documents (see Section 2.3). It also allows recognition of the construction of meaning-making and the experiential domain as an important field of enquiry essential to a more nuanced understanding of sustainable design.
6.4.6 Critical Theory

Critical Theory developed over concern to provide society with ‘the descriptive and normative bases for social inquiry aimed at decreasing domination and increasing freedom in all their forms’ (Bohman 2005:1; Christians 2005; Christians et al. 1993). According to Neuman (1997:85) critical social scientists in their activist orientation view people as ‘creative (and) adaptive … with unrealised potential, trapped by illusion and exploitation’. They critique social reality from the position that it is ‘conflict-filled and governed by hidden underlying structures’ with an aim ‘to smash myths and empower people to change society radically’ (Neuman 1997:85). Critical Theory contends that ‘all science must begin with a value position; some positions are right, some are wrong’ (Neuman 1997:85). Therefore truth is exposed through the unveiling of illusions. It is also a critique of the value positions of both Positivism and Interpretivism, arguing Positivists and Interpretivists ‘simply mask their politics and, at the same time, exculpate the scientists from any responsibility for his [sic] product’ (Iowa State University 2005). As a deconstructive mode of enquiry, Critical Theory has real application to the research question in exposing preconceptions about sustainable design as self-transformative practice. It also compels the researcher to re-evaluate and expose personal bias and prejudice that distort critical thinking to improve methodological rigor.

6.4.7 Action Research

Critical Theory has been instrumental in the development of professional development regimes known as Action Research, which are based on the theory of single-loop and double-loop learning (see Section 5.3.2). The theory is that humans ‘create systems that support self-defeating actions’ which can only be deconstructed through double-loop learning (Argyris 2003:1179). Whereas single-loop learning ‘occurs when a mismatch is detected and corrected without changing the underlying values and status quo that govern the behaviors, (d)ouble-loop learning occurs when a mismatch is detected and corrected by first
changing the underlying values and other features of the status quo’ (Argyris 2003:1178). What differentiates single-loop learning from double-loop is that one remains within the accepted routines while the other requires that new routines be created based on ‘a different conception of the universe’ (Argyris 2003:1179). Argyris concludes that the refusal to engage in double-loop learning is endemic and ongoing across social institutions (2003). His findings pertain not just to research subjects but to researchers as well.

Argyris criticises both positivist and interpretive science on three grounds:

[their] scholarly commitment to describe the universe as-is, [their] scholarly commitment to internal and external validity at the expense of implementable validity, and [their] methodologies in good currency ...

(Argyris 2003:1187)

His essential argument is that, in this manner, science structures in its own defensive reasoning. It leads to knowledge about the world (espoused theories) rather than how-to knowledge or ‘procedural knowledge’ to change the world, which is the hallmark of double-loop learning (Argyris 2003:1188). To achieve how-to knowledge, Argyris (2003) suggests, among others, moving from propositions that are descriptive to ones that are normative and prescriptive, and from generalisable propositions to ones that are applicable in the individual case.

This approach to research is especially significant to the transformative agenda of sustainable design. It clearly suggests designer transformation is an essential part of the agenda. It requires that transformation be assessed in relation to double-loop learning and offers a way of enabling this amongst designers engaged in designing for ecological sustainability.

6.5 Field study design

Through a review of the major trends in methodology, various theories about the relative independence of the individual in society and the point at which forces
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acting upon and through the individual reify\textsuperscript{47} into social phenomena have been highlighted for their value in framing ways to answer the research question. Quantitative and qualitative approaches to research employ a range of methods to illuminate both objective and subjective features of the targeted phenomena. Quantitative methods employing experimentation and surveys focus on measuring objective features, while journaling and interviewing are used to generate qualitative data to bring subjective worlds into view. In the following two sections (6.5.1 and 6.5.2), general introductions are given to both quantitative and qualitative methods. Within their respective subsections, typical strategies for collection and analysis of research material are first introduced to be followed by a discussion outlining their respective merits and limitations in drawing material specific to the field of sustainable design that can address the questions drawn from the literature review. Raised within this discussion is the possibility of using mixed methods for their suitability in satisfying the central research aim within the constraints of the research programme.

\textbf{6.5.1 Quantitative research methods}

Quantitative research methods define the traditional scientific approach where measurement is via reductionism and abstraction. Reductionism is characterised by three basic phases: finding variables for concepts, operationalising them in the study, and measuring them’ (Grix 2004). Abstraction is achieved through statistical measurement. Validity and reliability are central concepts. Validity is measured through universality and reliability is measured through generalisability. Rigor is achieved through objectivity. Objectivity involves 3\textsuperscript{rd}-person observation, data collection and analysis in line with Post-positivist qualifications (see Section 6.4.1) (Neuman 1997).

\textsuperscript{47}Reification is the activity of ‘separating or removing yourself from what you have created, until you no longer recognise it as part of you or as something you helped to bring about’. (Neuman, W. L. (1997). \textit{Social research methods: qualitative and quantitative approach}. Needham Heights, MA: Allyn and Bacon. p. 78)
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Surveys and social experiments using control groups aim to emulate the physical sciences for their ability to ‘provide evidence for clear interpretations of cause-effect relations …’ (Jackson 1995:70). They are also used to extrapolate from representative samples to whole populations (Jackson 1995:103). However, when Grix (2004:119) identifies how quantitative research ‘can lead to neglect of the social and cultural context in which the “variable” being “measured” operates’, he is identifying the problematic heart of quantitative research as a social science. And when he advises further that its heavy reliance on concepts becomes difficult to match up ‘with their referents in the social world’, he is referring to the problem of abstraction (2004:119). Action Researchers address this concern by highlighting the need for findings that achieve implementable validity (see Section 6.4.7). They insist on taking an in situ participatory approach to the design and conduct of social experiments in consultation with their research subjects to ensure findings remain useful and practicable in the real world. Within architecture, participatory design utilises some of this template to engage stakeholders in the design process. It provides an excellent opportunity for engaging the designer in more self-reflective practices throughout the design process.

6.5.1.1 Conducting a social experiment

An enquiry into whether designer transformation can be effected reliably through self-reflective practices, and whether transformation through these means can result in improved design activity could be undertaken through a social experiment to measure a pre-practice state and then a post-practice state. The results could then be analysed to measure behavioural change. To conduct such a social experiment would require a longitudinal study of architects practising sustainable design who are also conscientious self-reflective practitioners. It could incorporate a control group of architects practising sustainable design who are not conscientious self-reflective practitioners. How to assess and then measure what level of transformation has taken place would need to be carefully
considered by well-trained evaluators of both sustainable design and self-reflective practice.

Such a study presupposes that either a culture exists within architecture that recognises and supports self-reflective practice generally as professional development, and/or that a professional development regime incorporating self-reflective practice attuned to the rigors of daily architectural practice is already available (such as the Biopsychosocial model – refer to Section 3.4.3). From the literature review, it was found that a culture of support for self-reflective practice does not openly exist within the architecture profession. If it does not exist then the programme would need to find candidates who are willing to take on self-reflective practice who might have no prior experience of it. This could require introductory training sessions and debriefing sessions from experienced self-reflective practitioners in other disciplines to guide the programme.

To fully satisfy the research aim would require further research into the *experiential* domain of transformative practice. This would require a mixed-mode approach incorporating qualitative methods. Assessing the *quality* of behavioural change could be undertaken through Interpretivist methodologies by interviewing the participants pre-and post-practice or setting up a case study to elicit knowledge about *how* the experience felt. This would require a critically informed researcher experienced in self-reflective practice to interpret the data using qualitative analysis methods. A longitudinal study such as this would require a preliminary study to identify suitable conditions for such an undertaking. While it could have been possible to conduct the preliminary study, it was not possible to conduct a longitudinal social experiment within the scope and timeframe of a doctoral thesis.

**6.5.1.2 Surveying**

Surveys are conducted in order to measure behaviour. Data is collected through questionnaires ranging from presentation of closed multiple-choice questions to more open-ended ones. The researcher is in control of the range of possible
responses. The procedure is usually anonymous. It could measure whether or not architects practise self-reflective practice by eliciting which types of practice the respondents consider to be self-reflective; and whether or not they practised sustainable design by eliciting which practices are considered ecologically sustainable. To generate findings of value, the survey would need to be designed in such a way as to differentiate between what one says one does (Argyris’ espoused theories – see Section 6.4.7) and the underlying theories-in-action (what they actually do). Apart from taking a percentage measurement of the phenomenon, it could be designed to identify suitable candidates for more in-depth study. Once the candidates have been located, follow-up interviews could be arranged to elicit richer qualitative data about personal experiences, to address the research question more satisfactorily.

To conduct a survey of practising architects in order to evaluate the potential of self-reflective practices upon the transformative agenda of sustainable design would require more in-depth collection techniques than a simple survey could provide. This would necessitate more open-ended questions. Open-ended questions require interpretation. This leads the researcher into more qualitative procedures for data analysis. It presupposes that self-reflective practice is a recognised approach to sustainable design (in a formal sense) and participants are familiar with the terms, if not the practice. This has not been borne out in the literature review. For these reasons, the survey option was not considered an appropriate method for addressing the questions drawn from the literature review.

6.5.2 Qualitative research methods

Qualitative research originally arose in criticism of the inability of Positivist science to articulate the social world as it is socially, politically and psychologically constructed (Section 6.4). To address this, qualitative research employs in-depth investigations into ‘life-worlds’ set up as case studies, comparative studies, retrospective studies, snapshots and/or longitudinal studies (Flick et al. 2004). Techniques such as participant observation, interviews, focus
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groups and ethnographic studies that involve complete emersion in the field are used. These techniques are deliberately sensitive to context, rely on detail and include self-observation in order to discover meanings that remain grounded in their social reality (McMurray et al. 2004:216).

The iterative, subjective and deconstructive nature of this form of research has led to numerous methods for extracting meaningful results. Grounded Theory and Phenomenology are two iterative methods utilising various modes of feedback to inform the collection and analysis phases of the fieldwork, while Deconstructivist methods set out to uncover hidden meaning and are often employed to deconstruct normative social constructions hidden in discourse and conversation material (Charmaz 2006; Feldman 1995).

Criticisms of qualitative methodology are that its deep investigations are usually based on a small number of case studies. This tends to cast doubt on ‘the representativeness and generality of the piece of research’, leading to concerns about the validity of results based on such research (Grix 2004:121; Patton 2002). To guard against these criticisms, paradigm sensitive evaluation standards and principles for ensuring a critical stance towards researcher credibility and the systematic application of rigorous methods have been developed to promote the utility, feasibility, propriety and accuracy of qualitative research. While a qualitative research paradigm allows for the possibility of a ‘more concrete and plastic image’ to emerge (Flick et al. 2004:5), another concern is the possibility of coming to an open-ended finding. Yet, while ‘qualitative research methods may lack pure scientific rigor as defined by the physical sciences, … the results of qualitative research may still exert a stronger influence on our understanding of everyday behaviour than the quantitative sciences’ (McMurray et al. 2004:222).

6.5.2.1 Journaling

Journaling, as a self-reflective mode of record-keeping, is a fundamental requirement of all qualitative research. It is critical to anthropology and case studies where longitudinal research is conducted. It also provides an important
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method for satisfying the onus on researchers to be transparent and self-critical within a qualitative research approach. Journaling is an extensive form of note-taking in which detailed, systematic observations of the research field, including self-observation, are made. The researcher builds knowledge incrementally through self-reflective dialogue to capture a range of subjective and objective phenomena contributing to the ‘life-world’ under study. Content analysis remains linked to context both in time and place. This option has real merit for this research as it allows the researcher close observation and reflection upon the conduct of the research within its everyday context.

6.5.2.2 Interviewing

There are a number of ways to conduct interviews generally as a semi-structured process aimed at revealing subjective viewpoints accessible to interpretation. They include semi-standardised, problem-centred and expert-oriented interviews (Flick 2002). The semi-standardised interview is a ‘method for reconstructing subjective theories’ (Flick 2002:80). Flick defines subjective theories as the ‘complex stock of knowledge about the topic under study’, both explicit and implicit, that the researcher wishes to uncover. The technique for conducting the interview, the ‘structure laying technique’ involves presenting open questions about a particular issue, followed by ‘theory-driven, hypotheses-driven questions’ and finishing with ‘confrontational questions’ (Flick 2002:81) which ‘have to stand “in real thematic opposition” to the interviewee’s [previous] statements ...’ (Flick 2002:82). An acknowledged problem with this approach to interviewing is its confrontational approach. It requires skilled interviewing and recommended variations include modifying this confrontational element. Its contribution to research is in providing a model for structuring explicit responses from the interviewee and as a way of developing theory through participation with the interviewee (Flick 2002).

The problem-centred interview uses ‘an interview guide incorporating questions and narrative stimuli [to collect] biographical data with regard to a certain
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problem’ (Flick 2002:85/6). The interview guide comprises ‘areas of interest but
does not mention concrete types of questions’ but rather is used to prompt the
narrative (Flick 2002:89). Specific prompting is defended as a way of
‘deepen(ing) the understanding on the part of the interviewer by mirroring what
has been said, by questions of comprehension and by confronting the interviewee
with contradictions and inconsistencies in statements [made]’ (Flick 2002:87). It
is suggested that contextual data surrounding the conduct of the interview also be
recorded to help with interpretation of the data.

The expert-oriented interview is conducted less out of interest in the person per se
but in ‘his or her capacity of being an expert for a certain field of activity’ (Flick
2002:89). The interviewee is regarded as representative of a group of experts and
the interview guide is ‘restricted much more than in other interviews’ (Flick
2002:89). Flick (2002) emphasises the importance of the interview guide to
maintaining focus on producing relevant data and in presenting the interviewer as
an informed participant in the discussion.

The problem-centred and the expert interview methods provide good
opportunities for taking this particular research project into the field of
sustainable design in a time- and cost-effective way. They can both reveal the
experiential dimensions of the research question posed by enabling ‘thick
descriptions’ of an interviewee’s subjective theories about self-reflective practice
and about design as transformative practice. Thick descriptions refer to ‘the
various subjective constructions of reality and their anchoring in self-evident
cultural phenomena and practices in places and organization-specific
environments ...’ (Flick et al. 2004:7). In this manner, they provide snap-shots of
existing conditions that influence an interviewee’s thinking. The questions drawn
from the literature review can provide the basis for setting up a problem-centred
interview, as prescribed by Critical Theorists and Action Researchers, which
allows for deconstruction of normative thinking in order to reveal hidden
presumptions about sustainable design and self-reflective practice.
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6.6 Conclusion

The literature review established that theoretical potential for using self-reflective practice to enhance the transformative agenda of sustainable design. Yet, no formal approaches to self-reflective practice are promoted within the literature on sustainable design. In taking this into consideration, semi-structured, problem-centred and expert-oriented interviews allow enquiry into transformative practices that may be practised informally and un-self-consciously by architects engaged in sustainable design. In order to attend to the main research aim, the questions drawn from the literature review cluster around concepts of expertise, commitment, spirituality, familiarisation, happiness and value-systems. This allows for discussion of subjective views on the nature of design as personal experience as well as professional development. Interviews have been assessed as an appropriate methodology for enquiring into the experiential domain of sustainable design at a number of levels. They could offer a snap-shot of existing conditions in the profession and thick descriptions through which to draw out normative thinking about sustainable design and self-reflective practice. They could enquire into world-view construction and uncover existential concerns underlying normative thinking. At a pragmatic level, they enable research that could be conducted within the time and resource constraints particular to this thesis. Journaling allows the researcher a more engaged stance in the field study, while Grounded Theory and Deconstructivist Theory provide qualitative methods for conducting the interviews and analysing the material drawn from the interview process. These methods enable an iterative and deconstructive method for conducting research as an empathetic mode of enquiry within the field of sustainable design.

A number of concerns were raised regarding the rigour of qualitative research in addressing the research aim. However, the opportunity it provides for enquiring into the experiential domain of the designer is of central importance to this research. Qualitative research attends to the collection of thick descriptions of
sustainable design as a self-transformative practice. It can enable insights into self-identity through an empathetic mode of inquiry into worldview construction, while at the same time, allowing for deconstruction of both. It also looks to manage the impact of the researcher upon the research field in such a way that is inclusive while remaining rigorous.

The main concern however, is to maintain critical thinking in recognition of the innate limits of any methodology, quantitative or qualitative, and to use it as an essential safeguard when articulating new knowledge gained, considering its inherently provisional, conjectural and hypothetical nature. To promote the utility, feasibility, propriety and accuracy of qualitative research, the systematic application of Grounded Theory as a rigorous method of enquiry was followed. This following chapter provides a detailed account of the rigour of this approach through an account of the interview process and analysis of the collected material in generating findings consistent with the main research aim.
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