THEORY FOR THE PRACTICE OF ENVIRONMENTAL ASSESSMENT:

MUTUAL ADJUSTMENT, CRITICAL RATIONALITY, AND POWER IN PLANNING AND DECISION MAKING

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Thesis Presented for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Environmental and Geographical Science

Faculty of Science

UNIVERSITY OF CAPE TOWN

March 2004

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ABSTRACT

This thesis develops theory for the practice of Environmental Assessment (EA) by integrating philosophies with theories and models from the fields of EA, decision making, and city and regional planning.

The thesis articulates a theory of the political economy of EA (a macro theory), which describes why and how EA works to regulate proposals through a set of relations between the state, the economy, and civil society.

Implicit and explicit theoretical models from the EA literature are analysed to identify facets of EA vital to its success in influencing planning and decision making. The facets are used together with a range of philosophical insights to develop a theory of the EA planning process (a middle range theory). This theory interlinks two primary concepts, namely, critical rationality and mutual adjustment. Derived from modernist planning theory, critical rationality is most pertinent to the assessment and decision taking stages of EA. Poststructural and postmodern critiques have disparaged rationality as an inappropriate approach to decision making. The thesis argues that a reinvigorated, intersubjective, and critical approach to rationality is essential in EA, and may be beneficial in planning. A formalised process of mutual adjustment, sourced from theories of public sector decision making and the impact statement strategy of the United States, is most appropriate in the decision making (or decision shaping) that occurs in scoping and evaluation. In multi-actor decision making, participants adjust to each other's interests in agreeing on a course of action, in a process that embodies social learning. Where mutual adjustment fails and consensual action is not possible, a decision must be imposed subject to the conditions of critical rationality. Two further concepts from theories of decision making have a subsidiary role in this theory. The extent of inquiry in an EA is decided somewhere on a continuum from comprehensive to satisficing, as a function of the significance of impacts and a desired level of precaution; and mixed scanning provides advice on how to go about the iterative processes in EA.

The theory of the EA planning process is elaborated for each of the stages of scoping, assessment, evaluation, and decision. A significant addition to the theory is the notion that sequential versions of a continuously evolving, living document should be prepared as the EA process advances, eventually forming the basis for an EA report.

The theoretical models sourced from the EA literature are synthesised into two main models that reflect the dialectic of EA – its inherent contradiction. The inquiry-in-politics model provides an aspiration for practice as the way in which the EA planning process ought to work. The second EA model – the power-in-politics model, acknowledges that power determines the extent to which rationality will be respected, or corrupted. The model draws attention to the need for EA to address issues of environmental justice and environmental democracy. A number of measures to curb power and advance justice in EA are presented, including analyses of actor configurations and power relations, and the adoption by EA professionals of a moral obligation to the disadvantaged and to the environment.

ACKNOWLEDGEMENTS AND DEDICATION

I gratefully acknowledge the role and assistance of the following persons:

Professor Richard Fuggle, principal co-supervisor, whose advice and patience were a great support.

Professor Paul Bowen, co-supervisor, for guidance, particularly in the logic and art of thesis writing.

Lionel Hill and Joyce Hill (né Whittemore), my parents and proof readers, for their love and generosity.

Anne Westoby, artist, for producing the figures.

I dedicate this thesis to my family, Monique Nauta and Tayo Hill,
in recognition of their loving support and sacrifices.

THESIS OVERVIEW

The following information is presented for readers wishing to gain an overview of this thesis.

Chapter 8 is a synopsis of the main conclusions of the thesis. The last section of Chapters 3, 4, and 5, and the last two sections of Chapter 6, contain summaries and conclusions of the topics discussed. The framework for the theory of the EA planning process is contained in the first seven pages of Chapter 7.

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CHAPTER 1: RATIONALE AND METHODOLOGY FOR BUILDING EA THEORY

The formal practice of Environmental Assessment (EA) is now in its fourth decade. The National Environmental Policy Act (NEPA) of the United States of America, which was the forerunner of EA systems around the world, was signed into being on the first day of 1970. By 2003, there were more than 100 EA systems in existence (Wood, 2003), in countries, international banks, aid agencies, and state and provincial jurisdictions. South Africa joined the group of nations with a legal requirement for compulsory EA in 1997.

Whether the performance of EA is cause for celebration or concern, depends on one's view of the effectiveness of EA. This thesis focuses on two categories of objectives that have been identified as key indicators of the effectiveness of EA: the extent to which EA influences the formulation of proposals and its influence on decisions. The second category includes objectives pertaining to the shaping of decisions in the EA process and the taking of decisions in the formal approval process.

This chapter introduces the topic of EA and outlines why the attainment of these objectives is essential in advancing towards the goal of a sustainable society in a habitable biosphere. Critiques and weaknesses of EA are discussed together with the improvements that have been brought to bear on the EA planning process over time. The aim and objectives of this thesis are introduced as part of these ongoing efforts to improve the theory and practice of EA. The chapter further describes the methodology, scope, structure, and a key assumption of the thesis.

1.1 The goal of sustainability

In his book, *Small is Beautiful*, Schumacher (1973) gave voice to growing societal concerns about the nature of human activities and associated environmental and social costs. He proposed that these concerns could only be addressed through the steering of society "*towards a permanent and sustainable equilibrium*" with nature and each other (Schumacher, 1973: p. 248). Schumacher suggested that this requires a revision of values and a change in political objectives.

Deciding on the way forward, in the context of general or specific problems, requires the consideration of a range of options and the choice of a course of action from amongst these alternatives. Choice amongst proposals is an intrinsic part of EA, which

is made more complex by the wide range of attitudes that people have towards the environment. O'Riordan (1981) characterises the attitudes of two main groups – ecocentrists and technocentrists – with two variants in each group. He typifies the ecocentric view as embracing "*community scale, natural rhythms, and a morality based on ecological principles*", while the technocentric view is "*hierarchical, manipulative and managerial*" (O'Riordan, 1995: p. 7).

While these two groups would promote differing solutions to global developmental and environmental problems, both would acknowledge the prevalence of a widespread search for "*alternative lifestyles and development patterns*" (UNEP, 1980: p. 7). UNEP suggested that the practice of development should aim to harmonise social and economic aspirations with environmental goals and objectives, leading to "*sustained development*" (UNEP, 1980: p. vi). Such development should be based on a number of principles, including:

- sustaining the natural resource base and ecological stability, which requires a "*transition from a consumer society preoccupied with resource exploitation to a conserver society*" (UNEP, 1980: p. 24);
- encouraging the poor to productivity through improved access to resources, which involves a "*re-ordering of consumption patterns*" (UNEP, 1980: p. 24) and increased recycling of resources in the industrialised societies; and,
- increasing levels of self-reliance, use of local resources, and popular participation in development.

These principles are clearly related to the environmental, economic, and social principles that underpin what the Brundtland Commission was later to call sustainable development (World Commission on Environment and Development (WCED), 1987). O'Riordan and Preston-Whyte (1998) argue that the awakening of the concept of sustainable development (WCED, 1987; World Conservation Union, 1991; United Nations Conference on Environment and Development, 1992) and its subsequent evolution (e.g., Goodland, 1995; O'Riordan and Voisey, 1997; O'Riordan, 2000a; United Nations World Summit on Sustainable Development, 2002) may be the single most important factor to advance civilisation in the 20th century. The following two quotes capture, firstly, the gist of this concept and, secondly, a definition of sustainable development formulated at a workshop organised by the International Association for Impact Assessment at its 1993 annual meeting in Shanghai.

> "*Beginning in the 1960s, a set of beliefs, values and concepts have emerged that gave shape and form to a philosophy of human conduct that argues for a development ethic that is environment-friendly, equity orientated, and future directed. The concept that is taking shape is called sustainable development or, more recently, sustainability.*" (O'Riordan and Preston-Whyte, 1998: p. 1)

> "*Sustainable development ... (is) quality of life improvement through development that stabilises global consumption and therefore energy*" and material "*throughput within the earth's carrying capacity.*" (Boothroyd, 1995: p. 93)

While this thesis is not essentially about sustainability, EA has been promoted as a key instrument (albeit one among others) through which society is seeking to achieve sustainability, by directing development away from unsustainable alternatives. This was the case in 1970, as elucidated in the intentions of NEPA – see section 1.2 below, and has become the focus of efforts to:

- "*address emerging issues facing the use of EIA to achieve sustainable development*" (Bisset, 1996: foreword);
- sharpen EA as a tool for "*sustainability assurance*" (Sadler, 1996: p. ii);
- place sustainability at the pinnacle of a hierarchy of objectives for the practice of EA (Lawrence, 1997a); and,
- move EA towards the next generation of Sustainability Appraisal (Dalal-Clayton and Sadler, 2003).

Debate around issues of planning and decision making in EA is likely to intensify as a result of a renewed emphasis on sustainability. The operationalisation of the concept of sustainability is both difficult and contentious. Differing perspectives of sustainable development have been grasped by ecocentrists and technocentrists, leading Caldwell (1992) to caution against the rhetoric of sustainable development. Caldwell challenges the focus of sustainable development as means over ends: the focus should not be on how to make development sustainable, he argues, but rather to ascertain "*what kind of environment is good for human life?*" (Caldwell, 1992: p. 183) – and, one should add, for other forms of life. The more recent term sustainability is preferred in that it provides desired ends to guide policy choice. Terminological debates aside, there are usually differing conceptions as to what constitutes the ends of sustainability in a particular context. These differences may be linked to inherent tensions between the social, economic, and environmental components of sustainability, for instance, between human health issues and energy efficiency in buildings (Hill and Bowen, 1997). It is even possible to experience tensions between different aspects of environmental sustainability, for instance, between financial expenditure on ecosystem restoration or noise mitigation measures.

EA was devised to insert environmental concerns into the balancing of factors in decision making. The following section provides a brief introduction to the topic of EA.

1.2 Goal, aim, and objectives of EA

It is remarkable how closely the intentions or goal of NEPA accord with the concept of sustainability. The United States (US) Congress declared that it is the continuing policy of the Federal Government

> "*to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans*" (US: NEPA, 1969: Sec. 101a).

This policy is to be achieved, *inter alia*, through a requirement that all agencies of the Federal Government shall

> "*include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on –*
> *(i) the environmental impact of the proposed action,*
> *(ii) any adverse environmental effects which cannot be avoided ... ,*
> *(iii) alternatives to the proposed action,*
> *(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and*
> *(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented*" (US: NEPA, 1969: Sec. 102C).

The detailed statement (or EA report) referred to in the quote above was not included in the version of the Act emanating from the House of Representatives, but was added "*almost as an afterthought in a Senate committee*" (Twelker, 1990: p. 120). This addition was accepted with the expressed concern that the process should not be unduly burdensome (Twelker, 1990).

EA reports have been given various names in different jurisdictions, including an Environmental Impact Statement (EIS) in the US, and an Environmental Impact Report (EIR) in South Africa. The EIS was conceived as the "*action-forcing*" provision of NEPA (US: Council on Environmental Quality (CEQ), 1978: Sec. 1500.1). The information contained in EA reports does not necessarily have to be accepted by decision makers, but in some applications the courts and community pressure can be effective in ensuring that it is (Ortolano *et al.*, 1987; Ferester, 1992).

Further terminological definition is appropriate here. The term EA is defined as the general form that includes Strategic Environmental Assessment (SEA) of policies, plans, and programmes, and Environmental Impact Assessment (EIA) of projects, as per usage in the International Study of the Effectiveness of EA (Sadler, 1996). Although the term SEA has only been widely used since 1992 (Lee and Walsh, 1992; Wood and Djeddour, 1992; Therivel *et al.*, 1992), the concept of strategic assessment has its origin in NEPA.

NEPA requires the environmental improvement of "*Federal plans, functions, programmes and resources*" (US: NEPA, 1969: Sec. 101b). An EIS is to be produced for "*proposals for legislation and other major Federal actions*" (US: NEPA, 1969: Sec. 102(1)C). As early as 1972, CEQ endorsed the concept of EISs for federal programmes that require a multiplicity of individual actions (Sigal and Webb, 1989). The 1978 Council on Environmental Quality (CEQ) regulations define major federal actions to include (US: CEQ, 1978: 40 CFR 1508.18):

- the adoption of policy, rules and regulations, treaties and international conventions;
- formal plans for the use of Federal resources that will guide future actions;

- adoption of programmes such as a group of actions to implement a policy or plan; and,
- approval of projects.

Canter (1996) noted that the vast majority of EISs prepared in the first 25 years of NEPA were on projects. This is an interesting outcome, given that the 1978 CEQ regulations contain nine references to policies and programmes and only one to projects (Bass and Herson, 1993). Project EIA is likely to continue as the most common form of EA in future, in conjunction with more widespread but selective use of SEA.

A statement of the aim of EIA is given below, followed by a definition of the concept and aim of SEA.

> "*The most important aim of EIA is to introduce effectively a systematic consideration of environmental issues into all important decision-making stages on specific proposed development activities.*" (Bisset, 1996: p. 18)

> "*SEA is a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations.*" (Sadler, 1998: p. 12)

In keeping with these aims, the primary objective of EA is traditionally viewed as the provision of environmental advice to decision makers. Numerous authors have noted that EA has multiple objectives (Clark, 1984; Hollick, 1986; Ortolano *et al.*, 1987; Caldwell, 1988; and Turnbull, 1992). Brown and Hill (1995) divided these objectives of EA into four main categories: these categories and objectives have been further refined and are presented in Table 1 (overleaf).

Lawrence (1997a) has called for a re-ordering of EA objectives, with environmental sustainability as the overarching goal. He proposes that environmental planning and design objectives, such as formulating more environmentally sound undertakings, are more important than decision making and institutional objectives such as the provision of environmental advice to decision makers. Table 1 is structured accordingly, with environmental planning and design objectives at the top of the table. Lower level objectives are only desirable, Lawrence (1997a) notes, if they do not detract from the attainment of higher order objectives. For instance, he bemoans the "*tendency for the substance of EIA to be lost in the welter of paper and process*" (Lawrence, 1997a: p. 10).

This thesis aims to improve conceptual understanding of why and how the EA process works towards the attainment of these objectives. The first two categories in Table 1 – the environmental planning and design, and decision making objectives – are considered most important in this regard, but not to the exclusion of the other objectives, which are inevitably interlinked. Section 1.3 provides a preliminary critical review of the performance of EA in achieving its planning and decision making objectives.

Table 1: Categories of EA objectives (adapted from Brown and Hill, 1995; Sadler, 1996; Lawrence, 1997a; Brown and Thérivel, 2000; and Sadler, 2001)

Environmental planning and design objectives:

- Improve integration of policies, plans, programmes, and projects into their environmental and social setting, through better planning, siting (where appropriate), and design.
- Identify and formulate alternatives, including environmentally preferable yet practically feasible options, and other mitigation measures that enhance benefits and minimise or avoid adverse environmental and social impacts.
- Formulate environmental management plans to minimise or avoid adverse environmental and social impacts during proposal implementation.
- Enhance environmental conditions through restoration of previously disturbed ecosystems, built environments, and human communities.

Decision making objectives:

- Clarify and evaluate the need or justifications for proposals.
- Incorporate environmental objectives and constraints into proposal formulation.
- Improve stakeholder and public participation in proposal formulation and decision making, thereby advancing environmental democracy.
- Identify, clarify, and manage conflicts.
- Provide anticipatory information about the beneficial and adverse environmental and social consequences of proposals, to proponents, multiple decision makers (those who shape decisions), and the decision takers responsible for proposal approval.
- Provide early warning of cumulative effects and large-scale changes.
- Reconcile environmental, social, and economic objectives in decision making.
- Internalise environmental costs in decision making, consistent with the polluter pays principle.
- Choose environmentally sound proposals, and prevent unsound proposals.

Institutional objectives:

- Improve the environmental data base.
- Increase cooperation between government agencies, and coordinate decision making on issues relating to the environment.
- Reinforce administrative accountability and transparency by requiring that the assumptions used, and judgements made, in taking decisions are made explicit.
- Introduce changes in organisational values and behaviour toward the environment, through mutual social learning among participants.
- Change the way decisions are made in future.

Societal objectives:

- Enhance environmental understanding and develop the environmental ethics of the participants in the EA process – proponents, engineers, planners, environmental assessors and specialists, decision takers, and the public.
- Empower individuals and communities participating in EA.
- Ensure that proponents do not impose environmental and social costs on society.

1.3 Critiques of EA effectiveness and improvements to procedures and application: from better documents to due process to environmentally preferable alternatives in decisions

Critical evaluation of the effectiveness of EA is not a recent phenomenon. Calls for the achievement of more substantive outcomes from the application of the EA process have been made repeatedly, throughout the life of EA. Earlier calls for improvement focused on making EA more useful to decision makers (e.g., US: CEQ, 1978; Erickson, 1979). More recent calls have stressed the need for a shift in focus from prediction to proposal modification, by better integration of EA with the planning and design process (e.g., Hollick, 1981; Graybill, 1985; Armour, 1991; Brown, 1990; Republic of South Africa (RSA): Department of Environment Affairs, 1992a; Brown and Hill, 1995; Boothroyd, 1995; Lawrence, 1997a). These calls to strengthen EA are discussed in this section as an introduction to the issues considered in this thesis.

Wood (2003, citing Sadler, 1996) characterises the effectiveness of EA systems according to three components:

- procedural – does the system satisfy the norms of good process and procedure?
- substantive – does it realise the objectives of EA? and,
- transactive – is it efficient in delivering these objectives at least cost within reasonable time frames?

This section examines crucial changes that have been made to the EA process and procedures, over time, that aim to improve its substantive and transactive effectiveness.

1.3.1 The 1978 US regulations that introduced scoping and the Record of Decision into EA procedures and parlance

In response to problems experienced in the early years of NEPA in the US, the Ford Administration commissioned a review of the NEPA process (US: CEQ, 1995). This review was presented to newly-elected President Carter who subsequently issued an Executive Order calling for regulations to streamline the EA process (US: Executive Order 11991, 1977). The Order aimed to make EA more useful to decision makers through emphasising the need to focus on real environmental issues and alternatives (US: CEQ, 1995).

The 1978 CEQ regulations for implementing the procedural provisions of NEPA sought to change the focus of EA from being overly product-orientated (in focusing on the EIS) to a more process-orientated approach. The regulations, which still apply in largely unaltered form, have three principal aims: "*to reduce paperwork, to reduce delays, and to produce better decisions*" (US: CEQ, 1978: preface).

The regulations introduced the concept of scoping to EA. Scoping is described in the regulations as "*an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action*" (US: CEQ, 1978: Sec. 1501.7). Scoping requires early and ongoing intervention by the EA

team in the planning and decision making process. Scoping recognises that the decision process starts with a review of the need that a proposal seeks to address. This review is followed by an identification of the factors that will be used in making decisions later in the process. Once the important factors have been identified, the EA team can undertake the necessary studies to provide information on each of these factors (RSA: Department of Environment Affairs, 1992b).

The evolution of scoping sought to strengthen the EA process by moving away from an emphasis on methods and the report. Armour (1991) argues that a further shift is required, and that due process is only valuable if it results in more substantive outcomes. Supporters and sceptics alike have long charged that EA fails to exert significant influence on the nature of proposals. In musing on the development and refinement of the EA process, Erickson (1979) describes the need to place, *inter alia*, increasing emphasis on

> "*the conformity of actual decisions to the goals and objectives of NEPA, and decreasing emphasis on mere procedural compliance to NEPA*"; and,
>
> "*the assessment process as a means for evaluating alternative actions ... and decreased emphasis on the assessment process as a means for justifying decisions already made*" (Erickson, 1979: p. 357).

Weiner (1979) notes that the 1978 regulations stipulate a stronger role for alternatives in EA, which is essential to "*Desegregating NEPA*" from the fringes of planning and decision making.

> "*The role of "options" or "alternatives" provides a fulcrum for enabling environmental considerations to be lifted up into the mainstream of the planning and decision-making process.*" (Weiner, 1979: p. 65)

The action forcing device of the CEQ regulations is the requirement to discuss alternatives in the Record of Decision (ROD) (Weiner, 1979). The regulations require substantial – but not necessarily equal – treatment of each alternative. The ROD shall identify all alternatives considered; specify the environmentally preferable alternative; discuss preferences among alternatives; and discuss the factors balanced in making a decision (US: CEQ, 1978). Like the action forcing mechanism of NEPA (the EIS), the ROD is a disclosure provision – "*it does not require the environmentally preferable alternative to be selected*" (Weiner, 1979: p. 71).

1.3.2 The relation between EA and planning and decision making: separate, scrutinising, and once-off; or integrated, intrinsic, and continuous assessment?

Two decades after the 1978 CEQ regulations, the EA literature offers a liturgy of the same criticisms, and the same solutions. For instance, Lawrence (1997a: p. 10) proposes that, rather than limiting "*EIA to 'polishing' of pre-determined capital projects*", more attention should be given to proposal "*need and non-structural alternatives*". Given that

most of the procedural rules of EA have been in place since 1978, where does the problem lie in accounting for inadequate outcomes – in inappropriate procedures, or in inept application? Section 1.3.4 summarises the preliminary response to this question.

Unsatisfactory outcomes are commonly a result of EA being applied too late in the planning and design process of proposals (Hollick, 1981; Graybill, 1984; Graybill, 1985; Hill and Fuggle, 1988; World Bank, 1991; Brown and Hill, 1995; Steinemann, 2001). When planning is at an advanced stage, key decisions have been made and designs fixed, leaving scant opportunity to make even minor, let alone fundamental changes to a proposal. This problem may be summed up as 'too little, too late'. While this inadequacy is most commonly associated with EIA, it also applies in those situations where SEA is used in a scrutinising role after policy has been formulated, rather than being integrated with the creative process of policy formulation (Boothroyd, 1995). With regard to this issue, it is not the EA instrument that is defective, but its delayed timing and additive application after the process of planning and design is complete.

Another salient factor that has militated against integration of EA and planning and design is the stated need for objectivity in reporting on potential environmental impacts (Munn, 1979; Wathern, 1988). The emphasis on objective assessment has resulted in EA teams maintaining a distance between themselves and the policy makers, planners, and engineers engaged in developing proposals, even when separation of the teams is not explicitly mandated by EA procedures. In some EA systems, the quest for objective evaluation has resulted in a procedural requirement that EA consultants must be independent of the proponent. In South Africa, for instance, the 1997 EIA regulations require the use of independent consultants that have "*no financial or other interest in the undertaking of the proposed activity*" (RSA: Government Notice R.1183, 1997: Sec. 3(1)c).

The view of EA as a stand-alone activity, independent of planning and decision making, is epitomised by the following definition of EA as

> "*an activity designed to identify and predict the impact on the biogeophysical environment and on man's health and well-being of legislative proposals, policies, programmes, projects, and operational procedures, and to interpret and communicate information about the impacts*" (Munn, 1979: p. xvi).

In terms of Munn's definition, the focus of EA is on analysing and evaluating proposals prepared by others – not on helping to develop environmentally preferable proposals.

With EA defined in this way, it is perhaps understandable that the preparation of the EA report became an end in itself, resulting in a trend towards encyclopaedic reports. This trend was most noticeable in the United States in the middle 1970s, and was partly a result of the role of the US Courts under NEPA. Environmental groups challenged the adequacy of EISs in the courts, and won many cases in which the court ruled that an inadequate EIS had to be improved before satisfying the procedural requirements of NEPA. The problem of extended EA reports is not unique to the US: it has been noted

that EA "*can all too readily be misinterpreted as being a technique for amassing information*" (O'Riordan and Sewell, 1981a: p. 22).

The focus on comprehensive EA reports and the practice of maintaining a separation from the design process were predisposed by the scientific disciplines of many of the early EA practitioners who had little understanding, initially at least, of both the planning and design process and the politics of decision making. For instance, Beanlands and Duinker (1983) recommended that EAs ought to be considered as experiments, in which predictions are made and information collected to confirm or deny impact hypotheses. Holling *et al.* (1978), in their book on adaptive environmental assessment and management, note that

> "*prediction and traditional 'environmental impact assessments' suppose that there is a 'before and after', whereas environmental management is an ongoing process*" (Holling, 1978: p. 133).

The above quotation offers another explanation for the often inadequate integration of EA and planning: the one-stage nature of EA is at odds with the ongoing formulation of proposals.

> "*One major criticism of EIA is that it occurs at only one point in time whilst a project changes over time – the process fails to recognise, or allow for, the iterative nature of engineering design.*" (Ortolano and Shepherd, 1995: p. 15, citing Ridgway and Codner, 1994: p. 4)

Boothroyd (1995) makes the same point with regard to policy assessment, in contrasting the additive or scrutinising nature of much SEA practice with the ideal of intrinsic, integrated, and even continuous assessment.

A more recent definition of EA, not dissimilar to that proposed by Munn (1979), is provided in the International EA Effectiveness Study:

> "*EIA is the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of proposed projects and physical activities prior to major decisions and commitments being made.*" (Sadler, 1996: p. 13)

The refinements in this definition are that EA is recognised as a process rather than an activity, and is involved with mitigating impacts. Sadler's more recent definition has, however, lost Munn's component of communicating information, which is crucial if EA is to facilitate environmentally sound decision making. Sadler did identify "*communicating the results of EA to decision makers, and the public in clear, user-friendly language*" (Sadler, 1996: p. 225) as one of six key areas that need attention in upgrading EA processes and activities. Hickie and Wade (1998) similarly conclude that the clear and concise communication of information is paramount in improving the effectiveness of EA.

Hollick (1986) explains why EA and planning processes are, to some extent, incompatible. He notes that planning may be described as a convergent process, which differs markedly from the rational comprehensive view of decision making on which EA is based. In a convergent process

> "*general decisions are made on the basis of sketchy information, leading to further decisions on progressively more specific matters that require more and more detailed information*" (Hollick, 1986: p. 163).

Hollick (1986) illustrates this process with reference to a site selection process in a feasibility study, followed by more detailed studies to determine site layout and process design. This process requires a flexible approach: the design and assessment teams must be prepared to revise earlier decisions if new information shows that assumptions were invalid, or if problems emerge. He contrasts this process with the supposed ideals of EA in which a wide range of options are kept open, and all studied in detail to inform a comprehensive evaluation.

The answer to the question posed in the heading of this section is that EA should be integrated with the planning process, as envisaged in the process-orientated focus of 1978 regulations. The once-off, scrutinising EA report is just one part of this continuous process.

1.3.3 Mechanisms to enhance the integration of EA and planning: decision-scoping and a mandate to choose environmentally preferable yet practicable alternatives

Holling's explanation of the convergent nature of proposal planning begs a question: are the action-forcing mechanisms devised for one set of primary objectives (those focusing on decision making) effective and efficient in achieving another set of objectives (the environmental planning and design objectives)?

The World Bank's (1991) approach to EA provides an opportunity to consider this question in that it emphasises the link between environmental review and the project cycle. The stated purpose and objectives of the Bank's EA system are

> "*to ensure that development options under consideration are environmentally sound and sustainable ... Bank EIAs emphasise identifying environmental issues early in the project cycle; designing environmental improvements into projects; and avoiding, mitigating, or compensating for adverse impacts*" (World Bank, 1991: p. 1).

This approach focuses on the environmental planning and design objectives of EA, that Lawrence (1997a) elevates above the decision making objectives. Although the World Bank sets different priorities for its EA system, the sample terms of reference for the EA process and the sample outline of the ensuing report – as per the Operational Directive on EA (World Bank, 1989) – are largely unchanged from the generic approach to EA.

In contrast, Brown and Hill (1995) assert that prevailing EA procedures are not sufficient for the achievement of its planning and design objectives. They propose an addition to EA procedures in the form of decision-scoping, which is initiated as an extra step in the scoping process. The aim of decision-scoping is to transform EA from a passive to an active role in the design process in a way that is congruent with the convergent nature of proposal planning. The following abstract of their paper captures the essence of this concept.

> "*Inadequate attention has been given to integrating EA and project design. To move EA from a negative, adversarial role to a proactive creative role as a design tool, it must transform from being directed at the production of a stand-alone report to a process able to contribute apposite environmental advice in good time for each of the decision-points in the planning process. We introduce the concept of decision-scoping into the standard scoping exercise as the essential precursor for this integration. Decision-scoping develops a schedule of all planning and design decisions to be made during the planning and approval cycle, and identifies the information on environmental constraints and opportunities that will be pertinent before each decision-point. This schedule becomes the framework around which the EA manager can creatively design each EA process.*" (Brown and Hill, 1995: p. 223)

Decision-scoping recognises that there is not one, but many decisions that are made in planning and design. In response to staged requirements for information, the EA team would produce a number of shorter, staged reports, which is not without precedent in EA theory. Hollick (1986) proposes a two stage assessment, whereby a wide range of alternatives would be screened during a feasibility study, followed by more detailed assessment of one or two of the most viable alternatives. Similarly, Beanlands (1988) describes four critical decision stages:

- a primary decision on whether or not a project will be undertaken;
- a siting decision;
- a decision on how a project is to be built; and,
- a decision on how a project is to be operated.

The notion of numerous environmental planning reports may be misconstrued. The nature and extent of the environmental information required at each decision-point would be determined during the scoping process. One decision might only require an afternoon site visit and a two page fax the following day; another decision might require a two week study and a 15 page report. Graybill convincingly demonstrates the usefulness of staged environmental input to planning by noting that

> "*a change that might have been well received and initiated on the basis of a 10-minute telephone call to the project manager, earlier in the feasibility stage, may be vigorously opposed at the end of the design stage or in the construction stage, even if supported by field studies and thick reports*" (Graybill, 1985: p. 349).

Some of the staged reports could be made available to interested parties. The scoping process would identify the contentious planning decisions and would allow a period for public review before these decision-points. Ultimately, the individual reports would be combined in a compendium or record of the environmental planning process, to serve as the basis for the EA report required for formal decision making and approval by the authorities.

The concept of decision-scoping can also be applied in the hierarchy of decisions linking SEA and EIA. Decisions earlier in the planning process typically relate to broader alternatives than decisions that are made later in the process. At the broadest policy level, alternatives could imply an about turn in the direction of a specific proposal; at the other end of the hierarchy, later decision making in the detailed design and implementation phases of projects typically compares incremental alternatives that are only slightly different from each other.

In addition to strengthening the integration of the EA and planning processes, another suggestion to improve the influence of EA is to imbue EA laws with more substantive mandates. In an extensive review of NEPA's legislative history and judicial interpretations, Ferester (1992) proposes that NEPA should be modified to accord with the best practice of what are called 'mini-NEPAs', as applied in the states of New York, California, and Washington.

The strongest EA mandate in these three jurisdictions is that imposed by the State Environmental Quality Review Act (SEQRA) of New York. SEQRA requires that agencies

> "*shall use all practicable means to realize the policies and goals set forth in [SEQRA], and shall act and choose alternatives which ... to the maximum extent practicable, minimize or avoid adverse environmental effects*" (Ferester, 1992: p. 249, citing New York SEQRA, 1975: Sec. 8-0109(1)).

Similarly, the chief goal of the California Environmental Quality Act (CEQA) of 1970 is the mitigation or avoidance of adverse environmental impacts, whenever feasible (California: Governor's Office of Planning and Research, 1986). In establishing a duty to minimise environmental damage, CEQA directs agencies to reject or modify projects "*if there are feasible alternatives or feasible mitigation measures available*" (California: Governor's Office of Planning and Research, 1991: Sec. 15021(a)2). In Washington, the State Environmental Policy Act (SEPA) gives agencies a substantive authority to deny a project on the basis of predetermined policies for environmental protection (Ferester, 1992).

In the EA systems of both California and New York, brief documents termed 'findings statements' are required to reveal the rationale underpinning decisions. In decisions where alternatives and mitigation are not applied, the findings statement is required to indicate the social, economic or other considerations that shaped the (environmentally unfavourable) decision (Ferester, 1992). The requirement for findings statements recognises that environmental protection is unlikely to be the dominant factor in many

decisions. The substantive mandates of these mini-NEPAs aim to ensure a regular consideration of alternatives and project modification in EA. The requirement to choose environmentally preferable alternatives or account for reasons why this was not adopted, provides a more substantive mandate for EA, by a degree, than the NEPA regulations on RODs.

Ferester (1992) notes, in conclusion, that courts and commentators have called the Environmental Impact Statement the 'heart' of NEPA. In his recommendations for revitalising NEPA, he urges that this metaphor be taken a step forward, in recognising "*project alternatives and mitigating measures*" as "*the 'soul' of the new NEPA*" (Ferester, 1992: p. 260). This recognition of the importance of routinely considering alternative proposals and the need for EA to be actively involved in proposal formulation applies equally well to EA systems in other jurisdictions.

1.3.4 Summary of improvements to EA procedures and application

The significant changes introduced to EA since its inception, aimed at improving its effectiveness in achieving the planning and decision making objectives of Table 1, are summarised below. The changes are sorted into two lists that reflect the procedural and applied levels of EA; those attributable to the US Council on Environmental Quality regulations of 1978 are identified in parentheses.

Changes to the EA procedures and process are listed below as action to:

- introduce scoping as an initial stage of the EA procedure (CEQ regulations);
- introduce the step of decision-scoping into the conventional scoping procedure, to facilitate an active role for EA that is attuned to the convergent nature of planning and decision making rather than to focus exclusively on a comprehensive evaluation at the approval stage;
- require a stronger role for alternatives and mitigation, with substantial treatment of each alternative, to strengthen EA's active role (CEQ regulations);
- encourage multi-stage environmental planning reports containing focused environmental information for each of the decision-points in the planning and design process, to supplement the EA report produced for the approval stage;
- require an ROD that discusses alternatives and includes an explanation of the factors that prevailed in the decision, as a second action-forcing mechanism to complement the first such mechanism, namely the EA report (CEQ regulations); and,
- stipulate a stronger (more substantive) legal mandate that directs decision takers to select environmentally preferable alternatives as far as is practicable, and to explain in the ROD the factors that prevailed in the decision.

Changes in the application of EA, to address identified inadequacies, are summarised as action to:

- initiate EA at the start of proposal development so that it is an integrated, continuous process, contiguous with proposal planning, in reducing emphasis on its role as a scrutinising activity after planning and prior to the approval stage;

- shift EA from an activity for amassing information in comprehensive reports to scoped inquiry and reporting, focusing on real issues and alternatives (CEQ regulations);
- transform EA reports from technical documentation to non-technical communication (CEQ regulations); and,
- shift the role of EA professionals from that of detached, objective analysts to active participants in planning and decision making.

Ortolano and Shepherd (1995) suggest that many of the problems of EA are systemic (i.e., pertaining to the system) and are likely to persist into the future. The following section considers the need to conceptualise EA at a level above the detail of procedures and application, as a first step towards addressing weaknesses of the EA system. Understanding of systemic weaknesses can help to identify where remedial action can be most effective.

1.4 The need to build conceptual theory for EA

According to Lawrence (1994), the decade 1984 to 1994 can be characterised as a period during which EA conceptual theorists sought to establish stronger links between EA and the natural and social sciences. The application of scientific principles and procedures in the design of EA studies was emphasised, with impact prediction and monitoring as a form of hypothesis testing. The conceptual understanding of EA as applied natural science is epitomised by the work of Beanlands and Duinker (1983; 1984), which is introduced at the beginning of Chapter 2.

Lawrence (1994, citing Culhane *et al.*, 1987) argues that the EA planning process, in which the scientific activities of the assessment stage are situated, largely reflects the rational comprehensive planning model. A number of planning theorists concur with this view of EA, for example, Gasson and Todeschini (1997) and Benson (2003). While the rational model has a strong logic and consistency, Lawrence points out that it has been the subject of intense criticism over a period of more than 30 years. Benson (2003: p. 262) contends that the EA system in the European Union is "*based on the rationalist model, in which few researchers or reflective practitioners believe*". Weston (2003) argues that public trust in experts, particularly those in state institutions, has declined, which compromises the possibility of rational planning. General public scepticism towards EA raises questions about the future and legitimacy of EA – as a procedure it "*may well have had its day*" (Weston, 2003: p. 279).

Lawrence (1994: p. 14) notes that the two foundations of EA conceptual theory – science and the rational planning model – have been imported from associated disciplines. EA "*has tended to neglect the need to refine and redefine*" its own theoretical foundations (Lawrence, 1994: p. 14).

> "*EIA practice has evolved without a sound conceptual foundation. More reflective practice and more coherent theory-building are required.*" (Lawrence, 1997b: p. 79)

The conceptual theory of EA has been found wanting; Lawrence (1997b: p. 98) concludes that the "*opportunities for EIA theory-building are immense*". EA theory and practice need to draw on the insights of broader knowledge to reach its potential. In a later paper, Lawrence (2000) reiterates his call for EA theory building, and elaborates on ways in which EA can benefit from planning theories.

Benson (2003: p. 262) finds it remarkable that Lawrence's (1997b) call for theory building was made "*almost 30 years after the implementation of NEPA*". Not many authors contributing to the EA literature seem to be aware of Taylor's (1984) explanation of the practice of EA under NEPA in two Federal agencies, the US Corp of Engineers and the Forest Service. In his book, *Making Bureaucracies Think*, Taylor (1984) builds a theory of the impact statement strategy of administrative reform in the US. The strategy is a blend of three constructs: organisational reform of agencies through internal environmental assessors acting as advocates for environmental goals; pluralist politics providing an external demand for this environmental assessment; and oversight institutions (including the courts) to elaborate and enforce the norms of assesssment. In a paper that (*inter-alia*) summarises Taylor's findings, Wandesforde-Smith and Kerbavaz (1988: p. 162) conclude that

> "*At the US Federal level, impact assessment works. We know how it works to influence project selection and design and to mitigate environmental impacts. It facilitates bargaining in the shadow of the law.*"

This explanation of the effectiveness of EA under NEPA is based on the implementation, within and between Federal agencies, of a system of formalised and intended mutual adjustment. This system is based on the concepts and theories of Lindblom (1965; 1990), which are introduced in Chapter 3. Nevertheless, Wandesforde-Smith and Kerbavaz (1988) note that the research literature on EA has not revealed much about why and how the EA process works in settings other than the United States. Furthermore, Bartlett and Kurian (1999) contend that theoretical understanding of EA is guided largely by implicit assumptions and models that have not been systematically articulated.

The explanations of why and how EA works, by Lawrence (1997b) and Taylor (1984), respectively, appear to be at odds. Is EA better conceptualised as applied science within a framework of rational comprehensive planning, or as impact assessment within a framework of mutual adjustment? Is EA a combination of both of these theoretical explanations, or are neither of them adequate representations of practice? Which theories better embody the normative expectations (or ideals) of what EA could be? These are central questions addressed in this thesis, in response to the challenge to build theory for the practice of EA.

1.5 Aim, objectives, and methodology of thesis

The aim of this thesis is to better understand why EA works and how to do it better.

The main objectives are to:

- develop an explanation of why and how the EA process works to regulate proposals, through a complex set of relations between the state, the economy, and civil society (hereafter termed the political economy of EA); and,
- refine the theory of the planning process of EA, that is, refine its methodology, in order to improve the substantive and transactive effectiveness of the process, in practice.

With regard to the second objective, Faludi (1986: p. 8) describes 'practice theory' (or theory for practice) in the field of city and regional planning, as

> "*schemes, ideas, informed guesses relating to how the practice of planning might be brought more in line with methodological prescriptions and philosophical ideas*".

The methodology of this thesis is introduced in sub-section 1.5.2, after an introduction to relevant concepts and definitions that assist in communicating the methodology.

1.5.1 Concepts and definitions in philosophy and the methodology of the social sciences

The field of research methodology is defined as the study of all aspects of the research process (Mouton and Marais, 1990). In the context of undertaking a specific research project (or an EA), methodology is the theory and logic used to ensure that appropriate decisions are taken in planning and executing the research (the EA), to maximise the validity of findings (or the effectiveness of outcomes in EA) (Mouton and Marais, 1990, citing Kaufman, 1944). Methodology can thus be defined as the theory of method (Faludi, 1986), the theory of how to go about doing something.

Concepts are the elementary, symbolic constructions through which people classify or categorise reality, or a specific phenomenon (Mouton and Marais, 1990). Concepts that acquire meaning within a theoretical framework are termed theoretical concepts or constructs. Conceptual frameworks may be classified into three types – typologies, models, and theories – according to the function that the framework fulfils (Mouton and Marais, 1990):

- typologies have a classifying or categorising function;
- models classify but also suggest relationships, heuristically (where heuristic means to discover or reveal); whereas,
- theories fulfil the functions of classification, heuristics, and explanation – a phenomenon is explained when one can describe why it has occurred.

In social science, models have been termed precursive theoretical models to emphasise that most models are (a) theoretical and not physical or scale models, and (b) precursors to subsequent theories (Mouton and Marais, 1990, citing Gorrell, 1981). The distinction between models and theories is often vague. Models are used to simplify and abstract,

whereas empirical theory explains actual relationships between phenomena for eventual testing.

In science, theory-practice connections are addressed through deductive analysis, using logic; practice-theory linkages are made through the inductive analysis of empirical observations (Lawrence, 1997b). During the deductive phase of science, "*we reason **toward** observations; during the inductive phase, we reason **from** observations*" (Babbie, 1995: p. 55). In the deductive phase, research is used to test theories.

Lawrence (1997b) outlines three levels of theory, which are related to EA below:

- macro theories **for** EA, which explain the role of EA in society;
- middle range theories **of** the EA planning process; and,
- micro theories **in** EA, which are substantive theories imported from disciplines such as sociology and ecology; and activity theories such as those of evaluation, impact monitoring, and impact management.

A theory has explanatory or prescriptive power – the 'is' and the 'ought' of theory building (Lawrence, 1997b). The striking disanalogy between the natural and social sciences is that social science theories explain not only the practices investigated but also the norms that are an essential part of these practices (Mouton, 1990, citing Taylor, 1985). Therein lies the potential for normative motives in theory construction.

> "*The framing of theory rarely consists simply of making some continuing practice explicit. The stronger motive for making and adopting theories is the sense that our implicit understanding is in some way crucially inadequate or even wrong. Theories do not just make our constitutive self-understanding explicit, but extend, or criticize or even challenge them.*" (Mouton, 1990: p. 44, citing Taylor, 1985: p. 93-94)

Social theorising can exert influence on, and even transform, the social practices that are the focus of attention. This influence is due to the way in which theorising unmasks, demystifies, explicates (makes details and meanings clear, explains), legitimises or refutes interpretations that constitute and underlie such practices (Mouton, 1990). Babbie (1995: p. 37) expresses an apparently contrary position to Mouton (1990) and Lawrence (1997b) in his contention that "*social scientific theory addresses what is, not what should be ... theory should not be confused with philosophy or belief*". The contradiction dissolves if one accepts that the role of social scientific theory is to explain and criticise other explanations, and invokes philosophy in the construction of normative theory.

"*Philosophy is an abstract way of thinking which employs logic to organize imaginaries, beliefs, and notions of purpose into formal systems of understanding.*" (Peet, 1998: p. 5) Philosophy organises ideas into patterns or logical structures, which are used to advance understanding of existence. In the social realm, at least, there can be no single philosophy based on innate logical structures but rather historical and regional variants brought about by the cultural and social imposition of ways of thinking (Peet, 1998). Peet prefers to call these variants social theories rather than philosophies, that is,

ideas in a cultural context rather than having universal generality. The term social theory, as a replacement for or repudiation of the concept of philosophy, is not used in this thesis.

Theory has more direct contact with a particular sphere of life but, like philosophy, also contains an element of speculation – a deductive "*leaping ahead from the partly known into the unknown*" (Peet, 1998: p. 6). If theory is inherently inductive, that is, constructed from empirical sources, it

> "*is also deductive in that from a knowledge of one part, aspect, sequence, or difference, the mind can deduce through logic the probable characteristics of other aspects or even, daringly, entire sequences or structures*" (Peet, 1998: p. 5).

Peet notes that the deductive approach is becoming, increasingly, the central activity of theorising with the decline of empirical forms of positivism in the social sciences. (Mouton (1990) ascribes to positivism the central assumption that the aims and methods of the social sciences are the same as those of the natural sciences.)

1.5.2 Thesis methodology

In this thesis, theory is constituted or constructed through a deductive process of reasoning. The thesis is philosophical in that it is a "*sustained rational reflection about general principles that has the aim of achieving a deeper understanding*" (Magee, 1998: p. 230), in this case of EA. Philosophy as method involves disciplined analysis and clarification of theories and arguments (Magee, 1998). This thesis draws on competing philosophies that purport, in their own way, to explain the logic of our time, and considers the applicability of their ideas and notions for advancing the theory and practice of EA. The branch of philosophy most relevant to the topic of this thesis is epistemology – the theory of knowledge concerned with what we can know and how we can know. Epistemology is relevant to the assessment stage of EA, in which knowledge is generated for use in decision making and action.

This thesis is not an empirical work, nor does it seek to operationalise and measure, in practice, the theories and constructs advanced. Indeed, one of the theories advanced (that of the EA planning process, introduced below) is of a nature that makes empirical testing inappropriate. This can be explained by analogy with Popper's theory of knowledge which, he argues, is methodological and philosophical not empirical, therefore neither testable nor falsifiable (Faludi, 1986, citing Popper, 1974). Popper's reasoning is that his theory (on the logic of scientific discovery) is a normative theory, with underlying "*value judgements and predilections*" (Faludi, 1986: p. 10, citing Popper, 1959: p. 38). Thus, choosing a rationalist attitude as a methodological rule, for instance, is a matter of making a moral choice. This is not to imply that the choice cannot be helped by argument, but that the choice is fundamentally a moral decision (Faludi, 1986, citing Popper, 1966). There is thus an important distinction between empirical theories, on the one hand, and methodological arguments and philosophical theories, on the other hand. The implications of this distinction for the theories

produced in this thesis are stated in the last paragraph of this section, after the theories have been introduced.

While the theories of this thesis are not induced from empirical observations, they are inevitably influenced by reflection on the practice of EA, what Faludi (1986) terms methodological reflection. Theory is not fully divisible from practice: thought is not independent of existence and experience (Lawrence, 1997b, citing Mannheim, 1936). No theory is purely ideational, that is, free from empirical elements (Lawrence, 1997b, citing Kaplan, 1964). Indeed, in this thesis, some practical insight is derived from the author's experience of conducting and reviewing EAs; certain information is sourced directly from EA reports, and further information on practice is incorporated from the EA literature. Selected empirical evidence is thus used to bolster theoretical arguments. The theory building process strives to incorporate facts, yet step above the details, so as not to be overwhelmed by facts (Lawrence, 1997b, citing Mills, 1959).

This thesis engages in the design of theory, where design means to create and evaluate forms in an iterative process of analysis of components and synthesis into patterns or organising structures (Lawrence, 1997b, citing Alexander, 1964). "*Analysis articulates, clarifies, and creates a structure of meaningful distinctions*", while "*synthesis binds, blends, and embraces distinctions drawn through analysis*" (Lawrence, 1997b: p. 84, citing Douglas, 1972). In this thesis, analytical activities include the elucidation of philosophies, the clarification of concepts and theories from EA and from other disciplines, and the identification of facets of EA that are vital to its effectiveness, for use in the theoretical frameworks. The analytical components (of concepts and facets) are integrated in a constructive design process that refines and embellishes existing organising structures, and develops new structures (Lawrence, 1997b, citing Rowe, 1987). From among the many and varied investigations undertaken by social scientists as described by Lindblom (1990), this thesis can be characterised as a process of conceptualisation and cognitive structuring; it is also an investigation into the investigation that is EA, at root a study of methodology – to better understand how EA is done and how to do it better.

The theories or organising structures developed in this thesis include an EA process framework (illustrated in Figure 6 in Chapter 7), which is an adaptation of an earlier conceptualisation (Figure 1 in Chapter 2); and the political economy of EA (described in Chapter 4 and depicted in Figure 5 in Chapter 7), which is a new framework. The EA process framework is a normative theory that is philosophical and methodological in nature. The process framework is, therefore, not amenable to empirical testing for the purposes of falsification, but is certainly open to logical challenge, both from the perspective of reasoned responses and from experience gained in putting the theory into practice. The framework for the political economy of EA may be classified as a model in that it reveals relationships, but it is probably best described as an incipient theory in that it attempts to explain how EA works in society. In a more fully developed form, this theory could be subject to empirical investigation in future research. The political economy framework is a macro theory **for** EA in society, while the EA process framework is a middle range theory **of** EA (where the prepositions in bold pertain to

Lawrence's distinctions relating to the level of theories.) These theories are described together as theory for the practice of EA, as per the title of this thesis.

1.6 Structure of thesis: outline of chapter contents

The following information is presented for readers wishing to gain an overview of this thesis. Chapter 8 is a synopsis of the main conclusions of this thesis. The last section of Chapters 3, 4, and 5, and the last two sections of Chapter 6, contain summaries and conclusions of the topics discussed. The theory of the EA planning process is contained in the first seven pages of Chapter 7.

The main topics of this thesis are listed, in the order of coverage, as follows: conceptual links between EA and science, and stages in the EA process (Chapter 2); theories of decision making (Chapter 3); theories of planning, and the political economy of EA (Chapter 4); existing theories of the EA process (Chapter 5); further detail on selected planning theories, and an introduction to selected philosophies (Chapter 6); and the theory of the EA planning process developed in this thesis (Chapter 7); followed by a synopsis of the main conclusions (Chapter 8). The content of Chapters 2 through 8 are outlined below.

Chapter 2 discusses theoretical conceptualisations of EA from the 1980s that elaborate its relation with science. Thereafter, each of the stages of scoping, assessment, evaluation, and decision are discussed, providing baseline information on EA procedures to inform the discussion of stages in Chapter 7.

Chapter 3 introduces a number of philosophical and theoretical perspectives that relate to decision making in EA. The premise of this chapter is that EA can learn from decision theory about the application of knowledge in decision making. The theories discussed relate primarily to public sector decision making, incorporating aspects of economics and sociology. The much criticised rational comprehensive model of decision theory is described, and its assumptions and weaknesses are explored. Key problems associated with the application of the rational model are discussed. In seeking to address these problems, social science theories provide alternative explanations of, and norms for, decision making. Alternatives to the rational model are introduced, namely, satisficing, mutual adjustment, piecemeal social engineering, and mixed scanning. These alternative models (or conceptual types) of decision making are considered for potential roles in a theoretical framework for the practice of EA. A crucial criterion for applicability is the way in which the models deal with situations, typical in EA, where there is little agreement on goals and beliefs about the relation of means to ends, amongst interacting governmental agencies and participants from business and civil society. The discussion begins to address the respective roles of rationality and politics in decision making in EA.

Chapter 4 has two main purposes, outlined in the following paragraph, both of which involve comparisons of EA and planning. The chapter introduces the evolution of planning over the last half century; outlines prevailing planning theories, lists

differences and highlights commonalities with EA. An important distinction between EA and planning systems is their respective institutional arrangements for guiding or directing social action, and the extent of state intervention in the economy inherent in each system. This comparison of systems is informed by philosophical conceptions of democracy and the associated approaches to the structuring of the state and its relation to the economy and to civil society (termed state formations or political economies).

The first purpose of Chapter 4 is to develop an understanding of the political economy of EA, and its relation to planning, to provide an overarching context within which theory for the practice of EA can be developed. The discussion considers how the impact statement strategy of the United States regulates proposals and achieves bureaucratic reform through analysis and disclosure rather than reorganisation. EA responds to proposals originating in the market place of private sector interests and in the mandates of dispersed public sector authorities. Questions arising from this discussion include, for instance, how does EA avoid being subservient to markets and these mandates if it entrusts the planning of proposals to proponents? Furthermore, what is the role of EA in regulating proposals – is it cautionary or corrective; catalytic or coercive? The second purpose of Chapter 4 is to identify concepts from planning theory that have potential for application in EA. Theories of practical reasoning and judgement – the focus of this thesis – are central to both systems. Three of the planning theories outlined in this chapter are selected for the contributions they can make to EA theory, and are further discussed in Chapter 6.

Chapter 5 discusses a number of theoretical explanations of why and how EA works to influence planning and decision making, both in its original form in the United States and more generally in a range of settings. Reasons are sought that explain the influence of EA – the why, with different facets of the EA process constituting the how. The chapter identifies those facets of the EA process that are vital to its effectiveness. The impact statement strategy of NEPA is analysed in order to explain why and how it balances the components of sustainability in decision making. Thereafter, Bartlett and Kurian's (1999) six explanatory models are described and critically discussed, with reference to the prevalence of each model in EA systems and key assumptions of the models. The chapter concludes with a summary of the facets, offered by each model, which represent vital contributions to the EA process. These facets are incorporated into the theory for the practice of EA, developed in Chapter 7.

Chapter 6 explores the link between knowledge and action from the perspectives of a number of general philosophies and specific theories of planning. The key issues discussed in this chapter relate to rationality, power, pluralism, and conflict in planning and decision making. Three theories of planning, selected from among those introduced in Chapter 4, are discussed. The first is Faludi's (1986; 1987) procedural planning theory of critical rationalism; the second theory is communicative action. The third and most recent theory of planning is Flyvbjerg's (1998a; 1998b) concept of *Realrationalität*, which emphasises the need to acknowledge and deal with power in planning. Poststructural and postmodern critiques of the use of rationality in decision making are introduced, followed by arguments from the philosophy of critical realism that counter some of the extravagant claims of postmodern thought. The chapter ends

with an outline of the theory of governance, which has led to the development of an institutionalist perspective of planning. When compared with consensual approaches to decision making, the institutionalist perspective is more accommodating of partisanship, power, and conflict.

In **Chapter 7**, the theories discussed in previous chapters are related to specific stages in the EA planning process. The delineation of a composite theory of EA is followed by detailed exploration of the implications for the stages of scoping, assessment, evaluation, and decision. In a composite theory, the constituent theories retain their recognisable qualities, in contrast to synthesis into a new form – analogous to the synthesis of constituent colours in the production of white light. The theory of Chapter 7 has already been introduced in the section dealing with research methodology. This is theory building in response to the challenge by Lawrence (2000: p. 621) that little consideration has been given "*to the potential for and limits of constructing composite or meta-theories*", from among the various perspectives within EA and by integration with related fields such as planning. **Chapter 8** completes the thesis circuit with a synopsis of main conclusions that refers back to the aims, objectives, and assumption of this investigation.

1.7 The boundary of investigation and a crucial assumption of this thesis

This thesis considers the EA stages of scoping, assessment, evaluation, and decision. The role of EA during the implementation of proposals, termed 'follow-up' by some authors, is not part of this investigation.

A crucial assumption of this thesis is that SEA and EIA are discussed as variants of EA, and not as separate entities. Nevertheless, where there are distinctions between the variants – which is most commonly between project EIA and policy appraisal – these are elaborated. There is intensifying debate in the EA literature on appropriate approaches to SEA and whether EIA procedures can be moved 'upstream' in the decision making process. For instance, Brown and Thérivel (2000) contend that grafting on an additive, EIA procedure to proposal formulation in SEA will not work, and that new methodologies and procedural requirements are required. These authors argue that SEA should be applied in the process of proposal formulation, as a design tool, and not as an appraisal document. In adopting a contrary position, Fischer (2003) defends traditional, systematically structured, EIA-based procedures in SEA and argues that they should not be prematurely abandoned, particularly for plan and programme assessment.

Sadler (2001) identifies two 'tracks' for SEA investigations: a policy appraisal track and an impact assessment track. The choice of an appropriate track depends on the answer to the following question: "*does the policy, plan or programme proposal initiate or fix the type, form, location of concrete projects?*" (Sadler, 2001: p. 17). If the answer is yes, Sadler recommends that the SEA should follow the impact assessment track in identifying well-defined alternatives and assessing direct, quantitative impacts – here "*EIA-based procedures and methods have obvious application and are widely used*" (p.

17). If the answer is no, the SEA should take the form of a policy appraisal in discussing diffuse and indirect effects and the environmental implications of broad options.

The theory developed in this thesis is generic to EA, and applies to SEA and EIA. This is partly because the theories developed are macro and middle range theories, rather than micro theories (in EA) where differences of approach between SEA and EIA may be more pronounced. Generic conceptual theory is consistent with Brown and Thérivel's (2000) acknowledgement that there are a number of valuable principles and concepts from EIA that are equally relevant in SEA, including consideration of proposal need and alternatives, impact mitigation, interdisciplinary assessment, and a process that maximises stakeholder participation. The notion that these concepts originate from project level EIA is questionable. While the first and last concepts (need and participation, respectively) originate from the CEQ regulations of 1978, the other concepts emanate from NEPA which constituted a generic process of environmental assessment for Federal actions, defined to include policies, plans, programmes, and projects (see further discussion in section 2.7). These valuable concepts all form part of the EA theory developed in this thesis. With the exercise of discretion in suitably flexible application, the theory should even apply to policy appraisal. This assumption of applicability to all forms of EA is reconsidered in Chapter 8.

1.8 Envoi

This chapter has introduced the aim, objectives, methodology, and structure of this thesis. The following quote, on the practice of EA, sums up a number of the issues raised in this chapter.

> "*More time and effort are spent in measuring what is, rather than projecting what is likely to be or could be made to be. Static and confused description replaces anticipation and clear prescription of alternatives.*" (Holling, 1978: p. 6)

Before broadening the discussion to incorporate theoretical concepts from other disciplines, Chapter 2 discusses theoretical conceptualisations of EA from the 1980s that elaborate its relation with science. Thereafter, it provides baseline information, on the stages of the EA planning process, for the investigation that follows.

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CHAPTER 2: CONCEPTUALISING THE NATURE OF EA STAGES AND THE RELATION BETWEEN SEA AND EIA

This chapter discusses theoretical conceptualisations of EA from the 1980s that emphasise its relation with science, within alternating stages guided by science and social values, respectively. This conceptualisation, refined and adapted in subsequent chapters, forms the basis for a revised theoretical framework for the EA planning process, which is introduced in Chapter 7.

The stages in the EA process are introduced to provide preliminary understanding that can inform the discussion in the remainder of the thesis.

In the last place, this chapter outlines the evolution and nature of the relation between SEA and EIA. The relation between these two components of EA is elaborated to facilitate the construction of generic EA theory. The generic approach to theory building, adopted in this thesis, acknowledges the many commonalities between SEA and EIA while recognising but not overemphasising the distinctions.

2.1 Stages in the EA process

Once an EA has been initiated, there are four main stages in a generic EA process. These stages are listed below, followed (in brackets) by the accompanying phase in a simplified proposal life cycle:

- scoping (planning)
- assessment (design)
- evaluation (approval)
- management (implementation).

The terms used for each stage are defined here, before the discussion in section 2.2 on the nature of EA activities at each stage. These EA stages are discussed more fully in sections 2.3 to 2.5. Section 2.6 introduces the relation between EA and the decision making process.

Various procedures and methods are used in different EA systems for selecting proposals that are to be subject to an EA. This selection process is termed **screening** (Tomlinson, 1984). The two most common approaches to screening are the use of published lists of activities that are to be subject to, or excluded from, EA processes; and

an initial environmental examination of a proposal to see if an EA is needed. Examples of EA systems in which listed activities must be subject to EA include South Africa (RSA, 1997a) and the European Union (Commission of the European Communities, 1985). In the United States, under NEPA, both approaches are used. Federal agencies are required by NEPA to produce a list of actions that do not have a significant effect on the environment. No environmental assessment is required for any action on this list of categorical exclusions (US: CEQ, 1978). Federal actions not on the list are subject to an initial environmental examination (termed an Environmental Assessment) that decides if an action has significant environmental impacts. If significant impacts are identified, an EIS is required; otherwise, the Environmental Assessment is supplemented by a document, abbreviated as FONSI or "*Finding of no significant impact*", that presents the reasons why an EIS will not be prepared (US: CEQ, 1978: Sec. 1508.13).

Scoping is a process for determining the scope of issues to be addressed in, and the approach to, an EA (US: CEQ, 1978; RSA: DEA, 1992b). In the context of this thesis, the terms assessment and evaluation have different meanings. **Assessment** is "*the process of collecting, organising, analysing, interpreting, and communicating data that is relevant to some decision*" (RSA: DEA, 1992c: p. 4). **Evaluation** is defined as "*the process of ... weighing information on the consequences or impacts of alternatives*" (RSA: DEA, 1992c: p. 4). In assessment, facts are presented for a decision; evaluation is the weighing of these facts, and values, in reaching a decision. Caldwell (1991) uses the terms analysis and assessment as respective substitutes for the terms assessment and evaluation (as defined above): "*to assess is to evaluate the findings of an analysis in relation to their implications for policymaking*" (Caldwell, 1991: p. 86). The term evaluation (rather than assessment) is used in both EA and planning (see section 2.5) and is the preferred term, as this stage incorporates values into the decision making process.

Environmental **management** in proposal implementation is typically based on an Environmental Management Plan (EMP), which contains a summary of impacts, mitigation measures for specific impacts, inspection procedures, a monitoring programme, and audit requirements (Hill, 2000).

Although EA processes typically start with a scoping exercise and proceed chronologically through to the implementation stage, an EA may include one or more iterations of the pre-decision stages listed above. Some EA systems, particularly those that actively seek integration with proposal planning and design, acknowledge the iterative nature of EA by identifying a preliminary or initial assessment and a comprehensive or detailed assessment (UNEP, 1996, citing Asian Development Bank, 1988). Preliminary assessments are linked to one or more of the earlier stages of proposal development, namely proposal identification, conceptualisation, and pre-feasibility studies. More detailed assessments are undertaken alongside feasibility studies and subsequent proposal design (UNEP, 1996, citing Asian Development Bank, 1988).

2.2 Conceptualising the relation between EA and science, and the nature of EA activities at different stages

The stages of scoping, assessment, evaluation, and management are delineated, respectively, by each of the four enclosed areas formed by the sine waves shown in Figure 1. This figure shows the relative importance of the roles of science and social values in the EA process. The first and the third stages are more social in nature than scientific. In the first stage, an EA team engages with a range of interested parties to ascertain the social values that will inform the EA process. In the third stage, these values provide the basis for a decision by the relevant authority. In contrast, the second and fourth stages require contributions from a range of specialists who provide technical input to an EA.

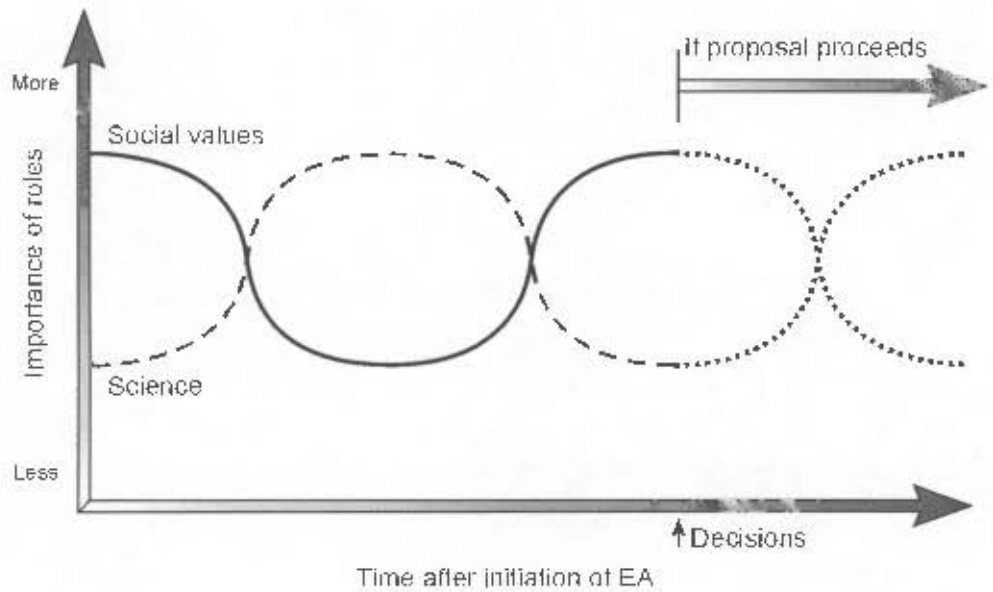

Figure 1: The relative importance of the roles of science and social values in the process of Environmental Assessment (Source: Beanlands and Duinker, 1983: p. 40)

The value of Figure 1 lies in its depiction of the changing nature of EA activities at different stages in the process. De Jongh (1988) similarly advocates that the EA process should alternate between what he terms techno- or research-orientated phases, and socio-scientific phases. A weakness of Figure 1 is its characterisation of EA as separate from planning and design: EA is portrayed as a process in which scientists, society, and decision takers have a role to play. The role and needs of the proponents and their planning and design teams are not shown. Figure 1 also simplistically depicts EA as linear and not cyclic and iterative.

Figures 1 and 2 are taken from a publication in which the authors propose an ecological framework for EA (Beanlands and Duinker, 1983). They argue for a conceptualisation of impact assessment as applied ecology, in which a proposal is considered as an experiment. In this context, post-proposal monitoring is used to test impact hypotheses that are developed from baseline studies and the predictions of an EA. Figure 2(c) portrays this conceptualisation of EA as an experiment. The authors state that "*this is the only concept of impact assessment in which the interdependencies of the various activities – baseline studies, predictions and monitoring become coherent in a scientific sense*" (Beanlands and Duinker, 1983: p. 7). This concept is important inasmuch as it aims to ensure that EA does not stop when implementation begins (Beanlands and Duinker, 1984).

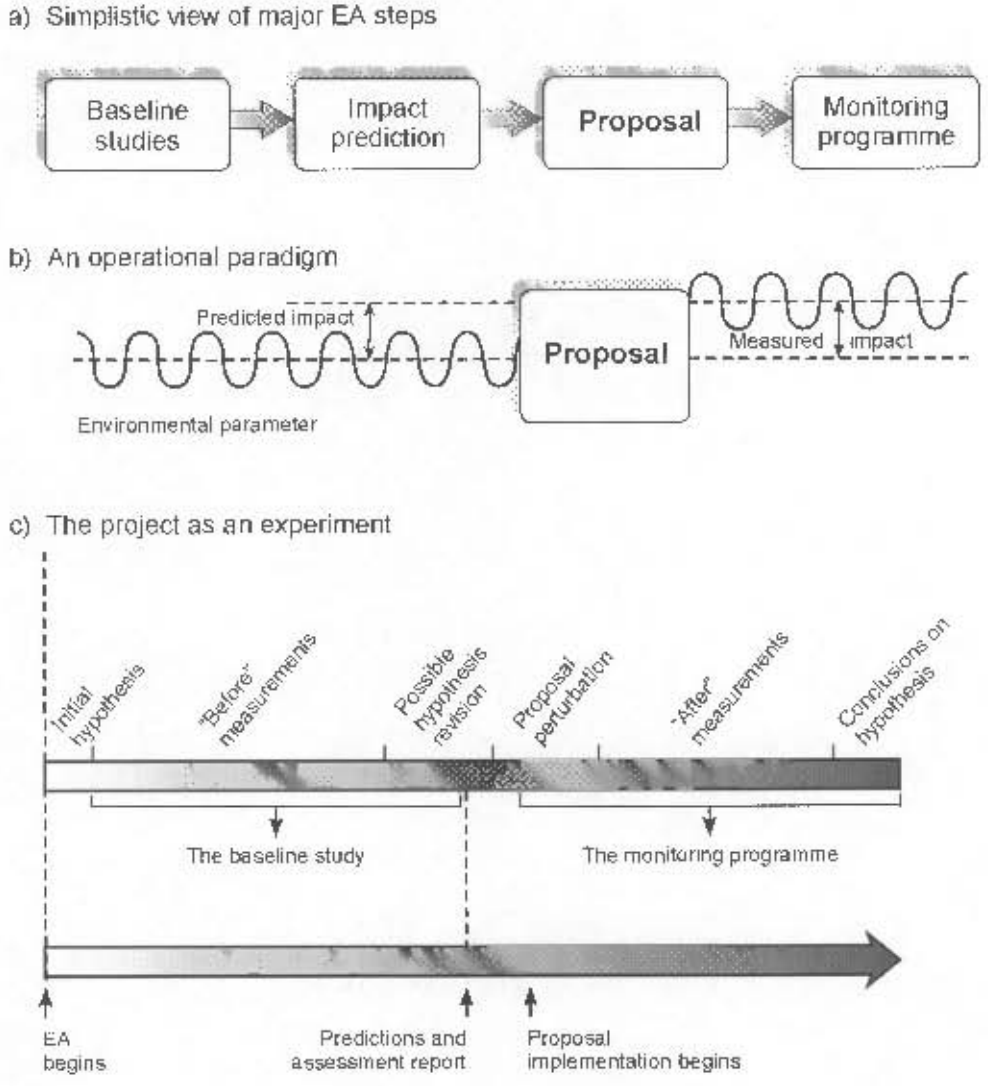

Figure 2: A scientific view of EA (Source: Beanlands and Duinker, 1983: p. 86)

A weakness of Figure 2 is that a proposal is treated as a given, and none of the three EA process diagrams – Figures 2(a), (b) and (c) – make provision for the consideration of proposal alternatives. Figure 2 only shows the steps in an EA in which a selected alternative is subject to detailed assessment, which portrays an incomplete view of the EA process. The steps shown in the figure should be preceded by an evaluation of alternatives.

Figure 3 depicts modifications to Figure 1 that broaden the scope of the basic concept. The caption 'science' has been changed to read 'specialist input', to include the role of planners and engineers in EA, in addition to the contribution of scientists. Fuggle (1992) uses the term technical instead of specialist input, which is consistent with the definition of technical as "*pertaining to ... a particular art, science, profession, or occupation*" (New Shorter Oxford English Dictionary, 1997). Nevertheless, the term specialist is preferred, as technical can cause confusion if it is incorrectly understood to refer to the application of technology. The names of the four stages listed in the introduction to this section have been added across the top of the figure. The formulation of alternatives has been added to the second stage, and the evaluation of alternatives has been added to the third stage.

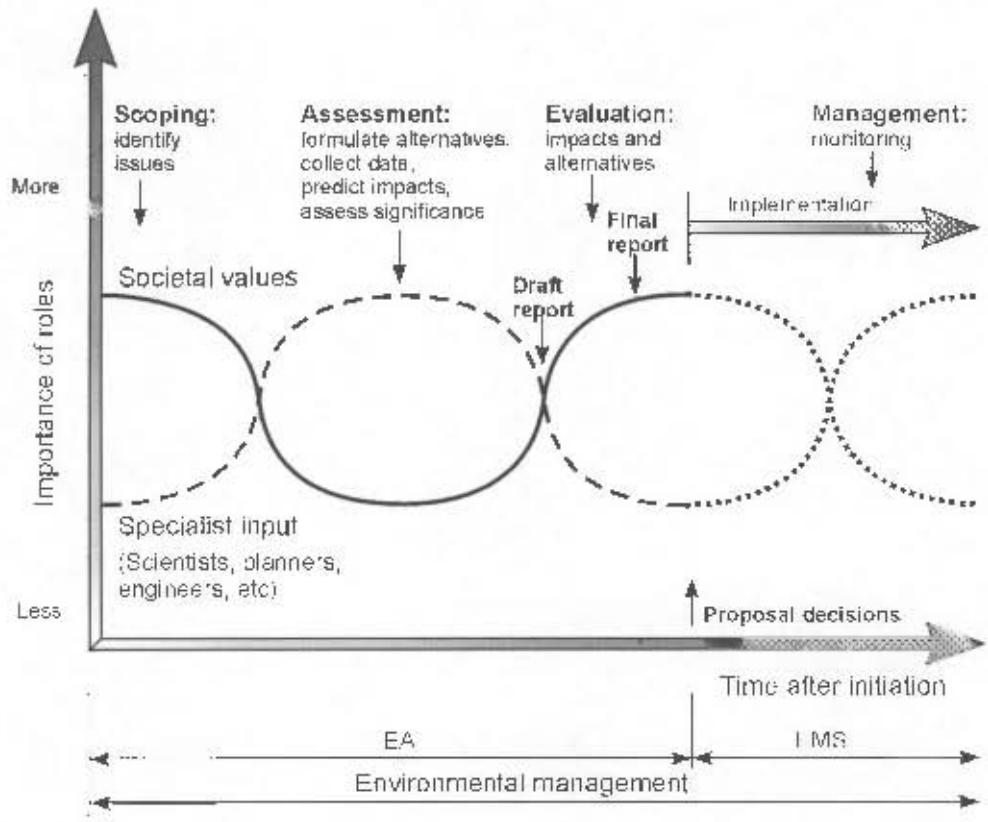

Figure 3: The relative importance of the roles of societal values and specialist input in the EA process (Adapted from Beanlands and Duinker, 1983)

Figure 3 provides a framework for the discussion of EA that follows in sections 2.3 to 2.6. There is, however, no absolute approach to EA (Glasson *et al.*, 1994). There are different sequences in the ordering of steps in various EA systems, and even different sequences in the implementation of EA to different types of proposal in one jurisdiction (Glasson *et al.*, 1994). Moreover, many of the steps in EA are repeated in iterative applications – in SEA, and subsequently in EIA – as new, more detailed information becomes available. There are many options available to the assessor at every stage and one of the important challenges of EA is to adapt the process to the context of a particular application (Morgan, 1998).

2.3 Scoping: facilitating participatory, efficient, integrated, and timeous EA

The term scoping was given formal recognition in the regulations for improving the practice of EA in the United States (US: CEQ, 1978). Scoping was a response to inefficiencies in the practice of EA prior to 1978. Scoping is essentially motivated by four concerns. The first concern is that an EA process should be effective in responding to the interests of participants. The second concern is for efficiency in the allocation of resources used to conduct EAs – primarily time and money. The third concern relates to the late application of EA at a stage when proponents have already become committed to a specific alternative. The fourth concern is to prevent delay caused by vexatious last-minute demands for consideration of issues and alternatives of marginal relevance. Thus, the objectives of scoping are to facilitate a participatory, efficient, integrated, and timeous EA process.

Scoping focuses an EA on significant issues and reasonable alternatives, and narrows the scope of an EA by de-emphasising unimportant issues (US: CEQ, 1978). The participatory objective of scoping is achieved through an exchange of information and concerns between a range of interested and affected parties. Scoping ascertains what environmental factors are more (and less) important, to individuals, groups and society as a whole. The notion of scoping as primarily a social process, effected with the participation of interested and affected parties, is widely supported (Netherlands: Ministerie van Volksgezondheid en Milieuhygiene, 1981; World Bank, 1991; Preston *et al.*, 1992; RSA: DEA, 1992b; Bregman and Mackenthun, 1992; Ortolano, 1997). Scoping can be used to set time limits on an EA process and page limits on an EA report.

In a memorandum on scoping, the US Council on Environmental Quality (CEQ) (1981) recommends that private sector proponents and government agencies should initiate scoping before eliminating alternatives. The memorandum notes that the serious consideration of all reasonable alternatives in scoping would improve public confidence in an EA process. Improved public confidence would result, in turn, in greater acceptance of the final choice of alternative. The memorandum also informs interested parties of their responsibilities in the scoping of alternatives. CEQ notes that participants in EA had been known to use the tactic of withholding information about possible alternatives during scoping. New alternatives are then raised much later in the EA process, in an attempt to subvert the legitimacy of the decision making process and delay

the development. CEQ (1981) states that the opportunity provided by early participation in scoping carries with it a responsibility not to use such obstructionist tactics. Participants are cautioned that comments raised for the first time after a draft EIS would no longer be afforded serious consideration (US: CEQ, 1986).

Although scoping establishes terms of reference at an early stage in an EA, it is an ongoing process that responds to new information and concerns as planning proceeds (Tomlinson, 1984). The culmination of scoping introduces a more technical focus, in the production of a plan or guidelines for the assessment stage that follows. For instance, Wolf (1994: p. 14) describes scoping as a process of "*preliminary problem analysis and intensive research planning*". Similarly, Beanlands and Duinker (1983; 1984) distinguish between social and ecological scoping. While social scoping identifies public concerns for, *inter alia*, valued ecosystem components, ecological scoping refers to the process of designing appropriate studies for assessing impacts on these components.

The concept of decision-scoping adds another technical element to the standard scoping process, in the development of a Gantt or bar chart of the activities and decisions for the planning-design-approval-implementation continuum (Brown and Hill, 1995). Such a chart provides a management tool to ensure that the scheduling of environmental studies is integrated with the time-line of a development process.

After an initial identification of impacts, using one of the methods for systematically juxtaposing information about a proposal and an affected environment (Glasson *et al.*, 1994; UNEP, 1996), EA managers engage in at least four distinct *foci* for scoping, with different participants, as follows:

- authority scoping – with those authorities whose area of jurisdiction and competence is affected by a proposal (RSA: DEA, 1992b), to elicit available information, to identify concerns, and to agree on the requirements of the permitting process;
- public scoping – using a variety of public participation techniques (RSA: DEA, 1992b), to gather local environmental knowledge, to identify gaps in preliminary impact identification, and to understand the values, preferences, and key concerns of interest groups (Morgan, 1998);
- specialist scoping – to collect information on a proposal and its environmental setting, to identify potential impacts and interactions between impacts, and to determine the best approach for studying potential effects on valued environmental components; and,
- decision-scoping – with the proponent's planning team, the permitting authorities, and the EA managers and specialists, to negotiate an appropriate schedule for the EA process.

The findings and recommendations of scoping are presented to the EA proponent, often in the form of a set of written guidelines. For example, the Dutch EIA Commission produces a set of advisory guidelines for the content of each EA report, and reviews each report after publication (Scholten and van Eck, 1994). Although the law does not give any formal power to the Commission, its advice is usually followed. As

the development and comparison of alternatives plays an important role in the Dutch EA system, scoping is seen as a process of searching for, and selecting, alternatives for study (van Eck *et al.*, 1994).

2.4 Assessment: collecting data, predicting impacts, determining significance with and without mitigation, and communicating findings in EA report

As the second stage shown in Figure 3, the activities in assessment are characterised by the importance of contributions from specialists. These contributions may be either multidisciplinary or interdisciplinary in nature, although O'Riordan (2000b) notes that multidisciplinarity, in the false guise of interdisciplinarity, is arguably the norm in the practice of environmental management.

Multidisciplinarity is characterised by a number of specialists working separately, on a common activity such as impact prediction, within their own area of expertise. O'Riordan (2000b) states that multidisciplinarity requires the design of a study to be agreed beforehand, with a coordinated (but not integrated) methodology. Canter (1996) notes that multidisciplinary activities in EA typically result in findings being presented in a number of individual specialist reports. Interdisciplinarity in EA can be achieved when a number of specialists from different disciplines work regularly with one another and the public, in providing information to proposal decision makers (Erickson, 1979).

The assessment stage involves detailed work to improve understanding of the impacts that were selected for study in the scoping stage (UNEP, 1996). Because environmental systems consist of component parts and interactions between the parts, and because systems display properties that are not evident at the level of components, Erickson (1979), citing Odum (1977), notes that impact assessment requires both analysis and integration of analytical information.

The assessment stage in EA encompasses the following activities:

- the collection of data and information in baseline studies;
- impact prediction and analysis;
- synthesis of information on impacts – the determination of impact significance;
- identification of mitigation measures; and,
- communication of findings in an EA report.

Each of these activities is discussed below.

Data collection in baseline studies and the prediction and analysis of impacts are primarily multidisciplinary in nature, given the focus on the acquisition of specialist information. Interdisciplinary activity is required in ascertaining the extent of interactions between impacts, determining the significance of impacts, identifying mitigation measures, and in the communication of findings. Scoping and evaluation, which respectively precede and follow the assessment stage, are interdisciplinary in nature in requiring the exercise of judgement in decision making.

Beanlands (1988) uses the term baseline studies to define the activities that provide information on the issues and questions raised in scoping. Although he limits the use of the term baseline studies to the study of environmental conditions, it is important to ensure that good quality information on a proposal is also available. Glasson *et al.* (1994), citing Mills (1992), note that an important reason for inaccurate EA predictions is that projects, as built, often differ significantly from the proposals described in EA reports. Information on a proposal can be obtained from the proponent's planning and design team. This information should be regularly updated, through ongoing liaison between the planning and assessment teams, as proposal components are modified or fixed in the planning process (Erickson, 1979; Brown and Hill, 1995).

Methods for impact prediction, from the simplest and cheapest to the more complex and expensive, include (Ortolano, 1997; Morgan, 1998):

- analysis of similar experiences elsewhere, and extrapolation to a proposal;
- expert judgement, with peer review to improve objectivity, or judgement of an interdisciplinary group;
- field or laboratory experiments, including the use of scaled-down physical models; and,
- mathematical models, based on empirical data and scientific theories, which are simplified representations of the real world.

Projected impacts are typically analysed in terms of context and severity (also known as intensity), as defined in the CEQ regulations for evaluating the significance of impacts (US: CEQ, 1978). Impact significance is determined using both objective predictions and subjective evaluation (Erickson, 1979; Glasson *et al.*, 1994). In predicting and analysing an impact, specialists apply disciplinary methods to produce objective (repeatable) outcomes. In terms of the social significance of impacts, however, specialists are inclined to attribute greater significance to their subject than would other people (Fuggle, 1992). Black (1981) notes that each member of an interdisciplinary team brings to an EA not only technical knowledge, but a bias.

> "*But environmental analysts are not only environmental experts; after spending years studying environmental problems, they tend to value ecosystems more than highways or dams or timber production.*" (Taylor, 1984: p. 5-6)

Herein lies the benefit of interdisciplinary evaluation, if it elucidates these biases and bounces them off against each other to inform the decision process.

The determination of impact significance thus requires both specialist analysis and interdisciplinary synthesis of information about impacts. But even if interdisciplinary teams are able to reach consensus on the significance of impacts, such consensus may differ markedly from the significance attached to impacts by agencies, individuals, and the general public (Erickson, 1979). In summary, the determination of impact significance follows impact analysis and proceeds from specialist through interdisciplinary to non-specialist approaches.

Impact significance should be determined both with and without mitigation measures (RSA: DEA, 1992d; Willemse and Brownlie, 1996). Depending on the extent of possible mitigation, the significance of an impact could change markedly with the implementation of mitigation measures. The likelihood of such measures being adopted in practice also needs to inform the determination of significance. In some instances, there may be a history of non-enforcement or opposition to such measures (US: CEQ, 1986).

A ranked hierarchy of acceptable mitigation measures for potential impacts is summarised as efforts to avoid, prevent, reduce, rectify, and compensate (Bass and Herson, 1993). During the assessment stage, mitigation measures are formulated in broad outline only. The aim at this stage is to identify the extent to which mitigation is possible and likely, to assist in the comparative assessment of the impacts of proposal alternatives. It is only at a later stage that details of mitigation are stipulated (by the authorities) or negotiated (with the proponent) as conditions of approval.

The assessment stage culminates in the production of an EA report. Committing the findings of an EA to a report marks a crucial transition from multidisciplinary investigation of impacts to interdisciplinary synthesis of findings. Weiss (1989: p. 240) proposes that the various specialists in an assessment team "*must not begin to write 'their sections' until the respective findings and conclusions have been discussed and evaluated*". Weiss suggests that each specialist be required to prepare written summaries of their data and interpretations, for presentation to the whole team.

As with any communication, the organisation and content of an EA report is determined by the intended audience, which in EA is constituted by all interested parties, including proponents, their planning teams, and decision makers. An EA report is thus required to communicate technical information to non-technical readers (Canter, 1996). Culhane *et al.* (1987: p. 115) report that a federal district court Judge ruled that a 1985 US Forest Service EIS was

> "*inadequate because its worst-case analysis is hypertechnical, complex, and replete with lengthy equations and calculations, and thus violated CEQ regulations (1978: Sec.1502.8) that EISs shall be written in plain language*".

Because proposal alternatives and mitigation measures together constitute the crux of the decisions to be taken (Bendix, 1984), information about these crucial aspects should form the focus of an EA report. Important issues should be presented near the front of the report, to engage readers and encourage reading on other impacts. If an EA report is to play a meaningful role in the decision making process, its purpose should be "*to provide facts, projections and analyses that raise the level of debate*" about potential environmental impacts amongst interested and affected parties (Weiss, 1989: p. 237). A report at the culmination of the assessment stage should preferably be a draft report, as a final EA report should contain information from the evaluation process.

2.5 *Ex ante* evaluation: values and preferences in decision making

This section considers the notion of evaluation and how it is linked to the decision making process in EA. Some EA procedures do not refer to the term evaluation as a distinct stage (e.g., UNEP, 1996). The term is variously used, however, to describe activities within a number of stages in the EA process, usually in relation to the concept of what constitutes a significant change to the environment. Evaluation entails judgements about what change is acceptable, what is unacceptable, and what can be made acceptable if subject to certain conditions (Whitaker, 1984).

The different uses of the term fall into three evaluative perspectives, which are *ex ante*, *in itinere*, and *ex post* evaluation (Lichfield and Prat, 1998). Each of these evaluative perspectives is outlined below, together with the accompanying use in the EA process. Figure 4 shows a generic EA process, with highlighting of the stages at which each type of evaluation is undertaken.

***Ex ante* evaluation** occurs before a decision and aims to inform a decision making process. This perspective arguably constitutes the most common use of the term in EA. There are four uses of evaluation in EA before a decision.

- Initial environmental evaluations (1st use of term) are undertaken as part of screening procedures in some EA systems (e.g., UNEP, 1996; Wathern, 1988), to inform a decision on whether to prepare an EA or not.
- In the scoping (2nd use) and assessment (3rd use) stages, evaluation of the significance of impacts follows impact identification and prediction, respectively (e.g., Westman, 1985; Morgan, 1998).
- The term is used in the context of the evaluation of alternative development proposals (4th use) (e.g., Black, 1981; Canter, 1996; Ortolano, 1997).

These four uses all relate to the evaluation of significance, which Sadler (1996: p. 131) describes as the "*decision-shaping area of EIA practice*".

***In itinere* evaluation** occurs during implementation and is an interim or intermediate evaluation. In this sense, the term is used in EA to describe the process of periodic evaluation of change using the records produced by ongoing monitoring activities (World Bank, 1996a), and in reviewing conformance to the requirements of an EMP. The term that is used more frequently in EA to describe this activity is compliance auditing, which compares monitoring records with the standards adopted in an EA process or set as conditions of approval (Hill, 2000).

***Ex post* evaluation** occurs after implementation and provides an indication of overall performance, in ascertaining and judging the extent to which goals and objectives have been achieved. In EA, this is commonly referred to as post-proposal auditing, which evaluates the accuracy of predictions and the effectiveness of the EA process (Hill, 2000). Figure 4 refers to this stage as 'EA audit and evaluation' – the only use of the term evaluation in this figure.

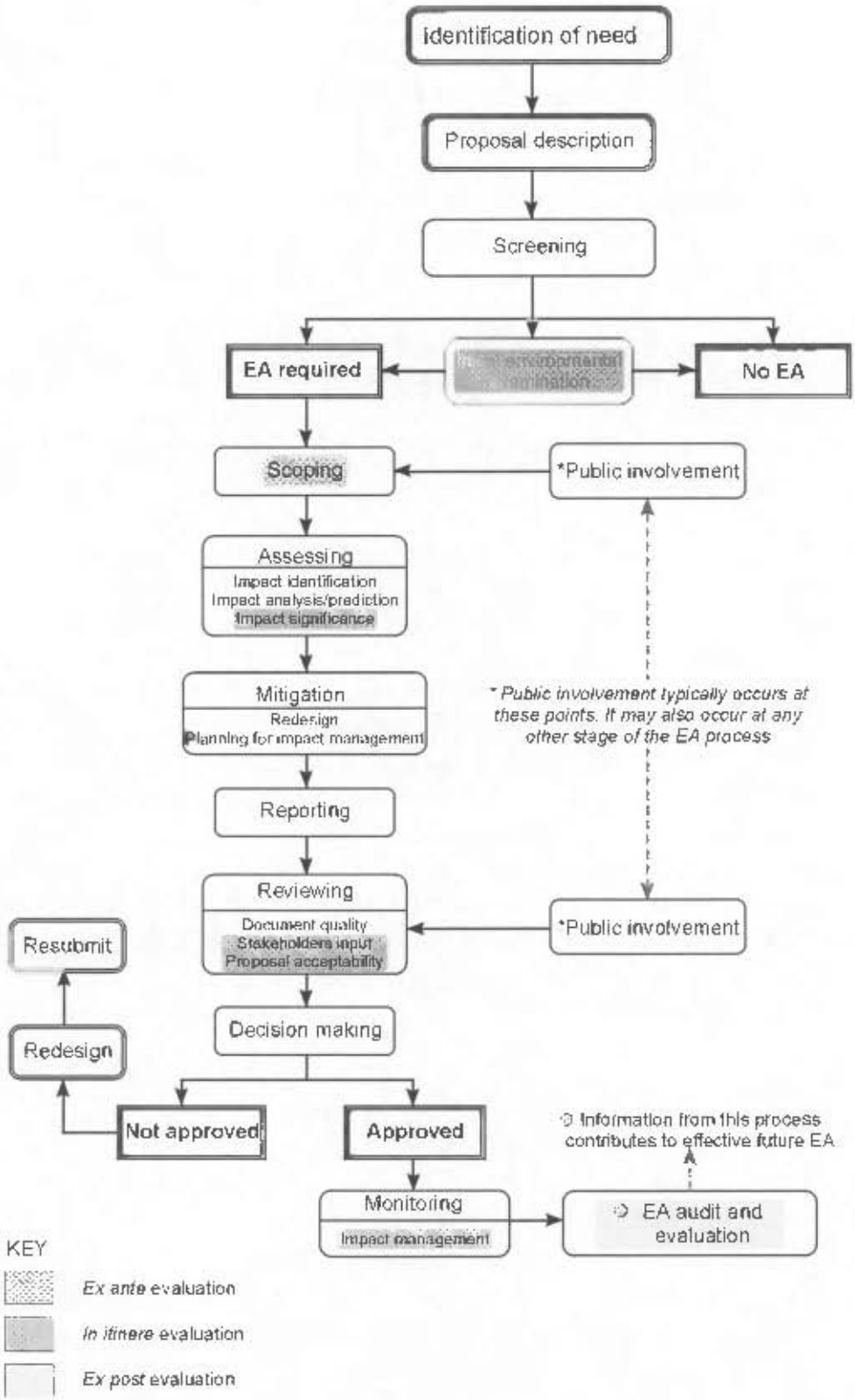

Figure 4: Generic EA process, highlighting staging of evaluation (Adapted from UNEP, 1996: p. 64)

Writing on evaluation in land use planning, Lichfield *et al.* (1976) distinguish two main groups of users of the information generated in evaluation, namely decision makers and decision takers. Decision makers are those who exercise influence in a decision process, and include proposal proponents, proposal planners and designers, government authorities, and members of the public. The decision taker is the person who is legally empowered to choose an alternative in an approval process. Evaluation is not decision taking but rather a learning process that can lead to the generation of superior alternatives (Lichfield *et al.*, 1976).

Tomlinson (1984) notes that change has no intrinsic value, and that a change only becomes an impact once a value has been attached to such change. The purpose of evaluation is to ascertain to whom the changes matter, how important these changes are perceived to be and why, and the implications of this information for decision making. Evaluation should recognise different views towards an impact or an alternative, and should highlight where change would affect different groups in different ways (Morgan, 1998).

"*Values are the principles or moral standards of a person or social group; the generally accepted or personally held judgement of what is valuable and important in life.*" (New Shorter Oxford English Dictionary, 1997) Opinions are what people think about a particular subject at a particular point in time, and bridge "*the internal, psychological world of ideology, values, and attitudes to the external world of behaviour and choice*" (Hrezo and Hrezo, 1984: p. 126). In their book, *Combining Facts and Values in EIA*, Hyman and Stiftel (1988) note that individuals hold diverse sets of values. An individual's values are not always observable, and can only sometimes be inferred from behaviour. Values do not necessarily inform actions because one individual may hold conflicting values. Hyman and Stiftel (1988) define attitudes as general feelings towards classes of things, with preferences reflecting individual's specific wants in actual situations. These authors use the term preferences in much the same way as Hrezo and Hrezo (1984) use the term opinions. In distinguishing between these two terms, an opinion could be described as an expressed or articulated preference.

An individual's opinion on the relative merit (or demerit) of introducing change to the environment is based on value judgements. Such judgements reflect likes and dislikes, which together are defined as preferences (Lichfield *et al.*, 1976). As people's values are not overtly expressed, evaluation can be more practically achieved through eliciting the preferences of those potentially affected by a proposal. Lichfield *et al.* (1976) point out that preferences are passive in nature. To be usefully incorporated in evaluation, they suggest that preferences should be turned into objectives, which are active in nature in reflecting purpose and an intention to take action. Such objectives should be framed as a set of purposes to be striven for in a decision making process. Examples of objectives listed by these authors include: to minimise the financial cost of a proposal; to minimise traffic noise; and to maximise opportunities for local businesses to benefit from a development. These objectives could all apply in an EA, alongside others, including ecological objectives such as to retain habitat for rare and endangered species.

Hyman and Stiftel (1988) recommend three changes to improve the practice of incorporating representative values through public participation in EA. These are to:

- increase the scope and number of publics involved;
- use some means for representing the values of unorganised publics, such as scientific surveys of preferences, or the use of advocates, to express the interests of the least articulate members of society (citing Davidoff, 1965) and to represent the environmental interests of future generations (citing Page, 1977); and,
- use assessment methods that "*display the range of views of various groups, rather than aggregating the information on facts and diverse values into a grand index*" (Hyman and Stiftel, 1988: p. 53).

Given the third recommendation above, the title of Hyman and Stiftel's book, *Combining Facts and Values in EIA*, seems somewhat inappropriate. A key recommendation of the book is to ensure a "*clear separation of facts and values*" in the process of evaluation (Hyman and Stiftel, 1988: p. 3).

The principle guiding the choice of who to involve in EA evaluations is to provide equal opportunity to all interested and affected parties to participate, starting in scoping. As mentioned above, this principle may require an EA practitioner to pay extra attention to soliciting the involvement of disadvantaged individuals and groups. Scoping inevitably narrows the scope of subsequent evaluations by choosing a set of issues to be investigated in an EA. Such choice is predicated on an evaluation of the relative importance of the issues raised in scoping. The evaluation that is undertaken just prior to a decision is thus strongly linked to the previous *ex ante* evaluations at the stages of screening, scoping, and assessment. The boundaries of evaluation are thus largely determined during scoping.

2.5.1 Steps in evaluation: specialist review of report and proposal; public review of proposal; and possible evaluation report by environmental authority

The evaluation process continues after the release of a draft report, and can include the following steps:

- specialist review of an EA report and proposal;
- public review of a proposal, either through the submission of comments on a draft EA report or through the medium of a public hearing; and,
- preparation of an evaluation report, by an environmental authority, for the decision taker.

Independent specialist or authority review provides an important quality control function on the information in an EA report (Sadler, 1996). Review packages may be used to ascertain the extent to which the full range of tasks within an EA have been completed and reported (Wood, 1995).

Some EA jurisdictions, including the Commonwealth of Australia and the United States, make provision for the release of both draft and final EA reports (Wood, 1995).

This process formalises the iterative nature of *ex ante* evaluation in that it allows for a period of comment on a draft report – by both the public and a range of authorities – after which a final EA report is prepared.

Further refinements of the evaluation process include formal public hearings that vary in length from a few hours to a series of meetings over a few months. A public hearing can culminate in a report produced by a different set of authors from those who prepared the EA report. A hearing provides an opportunity for evaluation that is further removed from an EA proponent, who would have commissioned and paid for an EA report. A participatory review process can adopt a more publicly orientated perspective, based as they are on the quasi-judicial principle, *audi alteram partem*, which means to hear the other side. For example, the Canadian Environmental Assessment Act of 1995 (CEAA) makes provision for public review by a panel of three to seven members appointed by the Minister of the Environment to advise the authority responsible for a decision (Wood, 1995). One of the advantages of the CEAA over the previous approach to EA in Canada is the introduction of mediation to resolve disputes, which is reported to have no precedent in EA legislation (Delicaet, 1995). The inclusion of mediation recognises that evaluation is not only based on indisputable facts but is also concerned with the controversies that often arise in the process of weighing information for a decision.

Some jurisdictions require that a final balancing of arguments (evaluation and recommendation) is provided in a report prepared by an environmental authority. For instance, after the public review stage and preparation of a final EA report by a proponent, Environment Australia prepares an 'assessment report'. Based on this report, the Environment Minister decides whether to approve a proposal or not (Wood, 2003). Similarly, in the Netherlands, the EIA Commission reviews EA reports produced by proponents, and advises the competent authority who takes the decision.

2.6 EA and the decision process: the Record of Decision and disputing a decision through appeal or litigation

EA typically seeks to ensure that information on environmental factors is used as one of a number of determinants of a decision. Other factors to be weighed in a decision could include financial costs, economic analyses, and political priorities. In most EA systems, the decision remains the responsibility of non-environmental authorities, for instance in the US, The Netherlands, Canada, and the UK. There are exceptions, where an environmental authority has decision taking power, usually after consulting with other relevant authorities, notably in the Commonwealth of Australia (Wood, 2003) and South Africa.

A written Record of Decision (ROD) was first required in the United States under the 1978 CEQ regulations to ensure that EISs are seen to influence decisions (US: CEQ, 1978). The term ROD is usually a misnomer in the US because further decision hurdles can follow its release (Culhane *et al.*, 1987). In controversial proposals, commenting pressure continues beyond the filing of an ROD; legislators and other authorities are

drawn into a dispute, and a proposal may be delayed, modified, or cancelled (Culhane *et al.*, 1987).

In some jurisdictions, proponents and opponents can lodge an administrative appeal against a decision to a higher authority when a decision acceptable to all parties cannot be reached. In the US, for instance, when a proposal is subject to interagency disputes, it can be referred to the CEQ, whose decision is non-binding but usually implemented (Rivkin, 1987; Wood, 2003). In both Canada and Australia, Ministerial disagreements over the recommendations of EAs have sometimes been resolved in Cabinet (Wood, 2003).

In the US, citizens can institute litigation in the courts in a final attempt to influence an agency proposal. The rules of discovery, which apply in all federal civil judicial proceedings, require the government to supply the plaintiff with all documentation used in the preparation of an EIS (Rivkin, 1987). Furthermore, counsel for the plaintiff can cross-examine all persons who participated in an EIS process. Rivkin (1987: p. 15) notes that, using a phased discovery approach "*a plaintiff frequently can unearth differences of opinion among the analysts and the policymakers*" and identify unusual biases displayed by an agency in the EIS.

An opponent to a proposal can obtain injunctive relief from a court that prevents an agency from continuing with a proposal until an adequate EIS is prepared. In contrast to the usual negative comments about delays caused by EA, the following quotation highlights the positive implications of a delay.

> "*Delay allows the political process to unfold, creates unexpected opportunities as new knowledge about a project is developed and disseminated, and provides time for project opponents and proponents to negotiate a resolution acceptable to all interests.*" Rivkin (1987: p. 17)

The political process described above provides an opportunity for evaluation to continue after a decision.

2.6.1 Conclusions on evaluation and decision making

The International Study of the Effectiveness of Environmental Assessment concluded that EA achieved a "*passing grade*" in terms of helping society to reach better decisions (Sadler, 1996: p. 107). In terms of 'links to decision making', 35% of the 324 respondents to the Study's survey rated EA as poor; 37% rated EA as satisfactory, and 25% assigned a good to excellent rating (with 3% having no opinion).

In his review of seven EA systems, Wood (2003: p. 238) finds that none of the seven systems meets the performance criterion for decision taking: '*Must the findings of the EIA report and the review be a central determinant of the decision on the action?*', although six of the systems partially meet the criterion. This question does not require that EA is 'the' central determinant. Wood's finding is that the criterion on decision is the weakest aspect of the EA systems reviewed. His explanation of this weakness is that

it is still possible for decision takers to circumvent EA requirements where convenient. EA does influence decisions but not always materially.

2.7 Limitations of project level EIA, and the need to link SEA and EIA

In an international study on the state-of-the-art of Strategic Environmental Assessment (SEA), the authors claim that, with certain exceptions,

> "*EIA is focused primarily on how a proposed development should take place so as to minimise adverse environmental impacts. At this stage, the prior questions of whether, where and what type of development should take place are either decided or largely pre-empted by earlier policy making processes. Often these decisions will have occurred with little or no environmental analysis.*" (Sadler and Verheem, 1996: p. 30).

Similarly, Shepherd and Ortolano (1996) state that EIAs are typically started too late and are too site-specific. These views of EIA are not new, and reiterate an early proposal to shift the focus of EIA from "*an ameliorating or mitigating function ... to a practical policy- or programme-formulating role which analyses assumptions, defines priorities, and compares a variety of alternatives*" (O'Riordan and Sewell, 1981b: p. 298). Wood *et al.* (1996) state that sectoral and regional EAs are more effective for analysing alternatives than EIA, and that the emerging importance of SEA is the result of the realisation that possible alternatives may have been precluded before a project level EIA is undertaken.

In contrast to these dominant views, two reviews of EIA practice have illustrated a more effective role for EIA in the consideration of alternatives. The first review, a 1980 analysis by the US Environmental Protection Agency (EPA), showed that EIA can affect the choice amongst alternatives. In an analysis of 58 EISs for wastewater treatment facilities, 55% of the EISs caused a change in project location; 53% changed the capacity of facilities; 52% changed the area to be serviced; 22% changed both the level of treatment and method of effluent disposal, and 19% changed land use priority (USA: CEQ, 1990). More than half of these EISs were addressing questions of 'where' and 'what type', rather than just determining 'how' a development should take place.

The second review analysed 28 South African EIA reports representing the period from 1971 to 1986 (Mafune *et al.*, 1997). More than two thirds of the EIAs assessed alternatives. The alternatives assessed were either in the form of alternative sites or corridors, or alternatives that represented different (more strategic) ways of achieving the objectives set for a proposal.

The findings of these analyses of EIA practice suggest that the international study on SEA (Sadler and Verheem, 1996) may be justified in stating that EIA is not effective in addressing the question of 'whether' a development should take place. The findings suggest, however, that the SEA study may underestimate the efficacy of EIA in addressing the questions of 'where' and 'what type of' development should take place.

2.7.1 The role of EA in a tiered assessment of alternatives

During the evolution of EA in the early 1970s, a number of cases in the US courts helped to define the relationship between policy and programme assessments and project EIA. Sigal and Webb (1989) describe an important case in 1973 that resulted from the failure of the Atomic Energy Commission (AEC) to prepare a programmatic environmental impact statement for its research and development programme for the liquid metal fast breeder reactor. Although the AEC had planned to prepare a number of EISs on major aspects of the programme, the court found that these EISs were inadequate in the absence of a programmatic assessment. The court finding is based on the principle that a programmatic assessment early in the planning stage would allow consideration of alternative energy sources before irretrievable commitments and investments were made that would bias later steps and preclude other options. This case established the importance of considering strategic alternatives early in the planning phase of proposals.

In a 1978 court case, the Energy Research and Development Administration was challenged on its decision to only prepare a programmatic environmental impact statement on its nuclear waste storage programme (Sigal and Webb, 1989). The court found that additional site-specific environmental impact statements were required for the construction of individual waste storage tanks. The principle used by the court in this finding is that additional EISs are required when it is not possible to evaluate all significant impacts in a programmatic statement. Thus, while the 1973 case established the need for environmental assessments to contribute to strategic decisions, the 1978 case showed that such strategic studies should be linked, under certain conditions, to subsequent EIAs.

The principles developed by the courts in the early years of NEPA were important in that they formed the basis for the requirements contained in the 1978 CEQ regulations (Sigal and Webb, 1989). The regulations introduced the concept of tiering, which denotes the preparation of a number of linked EISs. Early EISs are broader in coverage, while subsequent statements are increasingly more focused. The regulations describe two approaches to tiering (US: CEQ, 1978: 40 CFR 1508.28):

- from a higher level of decision making to a lower level, for example, from a policy or programmatic EIS to a regional (or river catchment) statement, down to the level of a site-specific statement; and,
- for an EIA of a specific action, a tiering of statements by the stage in the planning and design process, so that an early EIS would focus on the need for a project and site selection, while later statements would focus on impact mitigation at the chosen site.

Tiering thus focuses attention "*on the issues which are ripe for decision and excludes from consideration issues already decided or not yet ripe*" (US: CEQ, 1978: 40 CFR 1508.28).

There are a number of ways in which SEAs and EIAs can be linked, to improve the effectiveness and efficiency of Environmental Assessment. These improvements can be divided into two types: improvements to EA systems, and improvements to proposals that are subject to assessment.

SEAs can be used to develop improvements to EA systems, in terms of institutional, legal, and regulatory aspects. The World Bank has developed guidelines for two variants of SEA – Sectoral EAs (1993) and Regional EAs (1996b). In both sets of guidelines, it is suggested that SEA can be used to improve EA systems by developing environmental standards and guidelines, mechanisms for more effective law enforcement, and training of personnel engaged in the EA process. Such improvements would facilitate the implementation of subsequent EIAs of specific actions.

The World Bank proposes that both Sectoral EAs and Regional EAs can be used to improve proposals through ranking project proposals according to environmental preference. The ranked list can be used to guide the choice among alternative projects, and eliminate environmentally unsound investment alternatives, thus eliminating the need for EIAs of these alternatives. SEA can also be used to identify which ensuing projects (what the World Bank calls sub-projects) require an EIA, and which can be adequately managed using sectoral or regional guidelines. SEA follow-up can thus take the form of an EIA or the preparation of environmental guidelines for project implementation.

2.7.2 Resistance to, and limitations of, SEA

Much of the literature on SEA is of a proselytising nature. Exponents are only gradually coming to terms with what has been called "*the institutional and political resistance to its wider use*" (Wood and Djeddour, 1992: p. 13). In noting the omission of a requirement for SEA of policies from the European Commission's Draft Directive on SEA, Sadler (1998: p. 17) explains that this was expected, given the opposition by member states, which "*indicates the difficulties often encountered in broadening EIA to this level of decision making*". However, key issues in improving SEA have been reported as the provision of training for administrators and technical staff, changes to institutional procedures and decision making frameworks, and the development of appropriate methodologies (Lee and Walsh, 1992; Partidário, 1996). These proposed improvements assume that resistance to, and difficulties inherent in, SEA are a result of ignorance or inadequate procedures and methodologies.

Strong arguments have been made that planning does not conform to the idea of a consistent hierarchy from policy at the top to projects at the bottom, and from national to local initiatives – what Emmelin (1996) calls the hierarchy fallacy. The hierarchical approach assumes that decision making in planning is both deductive and linear. These assumptions are at odds with the often inductive, iterative, and incremental way in which policies and projects develop (Brown and Hill, 1995).

The hierarchical conception of governance is "*usually at odds with reality and probably with the ideal*" (Boothroyd, 1995: p. 102).

> "*In a complex, uncertain, changing world, projects are generated independently of explicit policy, explicit policy is not always implemented, and policies contradict each other.*" (Boothroyd, 1995: p. 102)

While the idea of a hierarchy in planning may have some explanatory power in the context of the public sector, it is less powerful when applied to projects that emanate from the private sector. The notion of central planning in 'command and control' economies, in which the state plays a dominant role in controlling development, has shown a world-wide decline since the collapse of communism in eastern Europe and the Soviet Union.

Boothroyd (1995) further notes that policy development is a chaotic, fluid, osmotic process without clearly defined procedures, sometimes undertaken in subterfuge behind closed doors, and that many important policies may be unwritten and even unspoken. Partial solutions to the problems inherent in the EA of policies include a more flexible and iterative approach (e.g., Boothroyd, 1995; Brown and Thérivel, 2000; Kørnøv and Thissen, 2000). Nevertheless, it seems inevitable that the holders of power will resist explicit systematisation of policy making because it threatens their flexibility and power.

SEA has further been criticised because it is typically not integrated into the policy, plan or programme making process, but instead reacts to proposals developed to advance the sectoral goals of the agency concerned (Boothroyd, 1995). This is ironic in that SEA has been proclaimed as a solution to the manifestation of the problem in project level EIA (Glasson *et al.*, 1994; Ortolano and Shepherd, 1995).

On the basis of their practical experience of SEA, The World Bank warns that undertaking Sectoral EAs "*should not become an excuse for overlooking site-specific environmental issues*" (World Bank, 1993: p. 8), and that Regional EAs "*do not substitute for project-specific EAs of individual investments*" (World Bank, 1996b: p. 1). Environmental quality cannot be optimised solely through the application of general strategic guidelines to all sectoral or regional combinations of project and environment. Fuller (1997) notes that SEA cannot replace other environmental management tools, such as EIA, because SEA cannot generate the level of detail required.

2.7.3 The need to (re)consider strategic alternatives in EIA

SEA and EIA should be mutually supporting. The linkages or information flows between SEA and EIA can be of two types: forward linkages from SEA to EIA, and iterative or review linkages from EIA to SEA.

The most common perspective in the EA literature is that environmental benefits can be realised from a forward link between SEA and EIA. Nevertheless, higher level planning frameworks should not set too rigid standards for project level EIAs, which could result in too little flexibility in the EIAs, rendering them meaningless.

Where the upward link from EIA to SEA is included in the pyramidal diagram used to illustrate the tiering of assessments (with SEA at the apex and EIA at the base) (e.g., RSA: Department of Environmental Affairs and Tourism, 2000), the assumption is usually that the ideal – if not the practice – is to start with an SEA and for this to be followed by EIAs.

A review of previously unasked strategic questions, triggered by an EIA, should be a legitimate approach to generating policy. Such an approach should also be effective, in that the strategic assessment would be informed by the situated judgement emanating from a specific context. The International Effectiveness Study on SEA recognises that the requirement to consider need and alternatives in EIA provides "*an entry point into the surrounding policy and planning framework*" (Sadler and Verheem, 1996: p. 42).

Policies have a tendency to "*implementation amendment when tested with large-scale application*" (Swaffield, 1982, citing Bracken, 1982). There is, furthermore, a basic tension between the assumed certainty of policies and plans and their flexibility to changing circumstances (Swaffield, 1982, citing Underwood, 1981), such that policies become increasingly fragile over time. The notion of continuous policy assessment, which addresses these concerns, requires that policy assessment is "*undertaken not only before, but also during and after project IA*", and that "*downstream assessment can instigate and shape upstream policymaking*" (Boothroyd, 1995: p. 102).

The effectiveness of EA would be enhanced if EIA practitioners and interested and affected parties re-evaluated the relevance of assumptions and prior policy decisions in the context of a specific project. The re-evaluation of policy decisions is particularly important if EA is to achieve the objective of meaningful public participation in decision making. It is difficult to involve the public in remote and abstract discussion around policy development. It therefore seems inappropriate – and contrary to the participatory ideals of EA and planning – to prevent discussion of policy issues in the context of EIA. The implications of policy decisions for the local environment become clearly understandable to interested and affected parties, perhaps for the first time, when a project is proposed (Emmelin, 1996; Boothroyd, 1995).

In non-controversial development projects, EIA may suffice, even in the absence of strategic guidance. In controversial and critical cases, EIA would need to be 'lifted up' to a more strategic level, in triggering a policy analysis. Mulvihill and Jacobs (1998) describe such a situation in the EIA for the Great Whale Hydroelectric Project in Quebec, where upstream policy issues were considered because this large-scale project is tantamount to a regional development scenario. With the decline of central planning, the notion of having strategic guidelines in place for every eventuality may be a receding ideal, practically and financially remote. The topic of the limits of SEA is revisited later in this thesis, specifically in Chapter 4 in a discussion on the political economy of EA.

2.8 Looking forward

In a paper on the anatomy of rational policymaking, Caldwell (1991) reflects on the relative importance of challenges in the social and scientific phases of EA. He writes:

> "*I do not underestimate the scientific and technical difficulties that may be encountered in impact analysis and assessment. But I continue to believe that the greater problem in the effective use of this procedure is in the opinions of people regarding how decisions should be made and what values should receive priority.*" (Caldwell, 1991: p. 86).

It is ironic that the most significant weakness of the seven EA systems reviewed by Wood (2003) is their inadequate performance in meeting the stated aim of EA as an instrument of decision support. Wood concludes that "*only if the public and politicians truly will the ends, can EIA deliver a truly effective means of achieving sustainable development*" (Wood, 2003: p. 370).

Insight from philosophy and theory pertaining to decision making thus appears to be crucial in seeking to improve the effectiveness of EA. The following chapter considers various concepts that seek to explain the ways in which knowledge is used in decision making. An important issue is how the values and volitions of participants can be influential in the process of decision making.

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CHAPTER 3: PHILOSOPHY AND THEORY OF DECISION MAKING IN THE CONTEXT OF EA

A number of philosophical and theoretical perspectives that relate to decision making in EA are introduced in this chapter. The theories discussed in Chapter 3 relate primarily to public sector decision making, but include aspects of economics, the sociologies of knowledge and of guided social change, the politics of public interests, and environmental assessment.

As EA reports are used by public sector decision makers, public decision theory is relevant to the development of EA theory. For the purpose of appreciating decision theory's relevance to EA, Culhane *et al.* (1987) divide decision theorists into two main groups, the rationalists – led by economists, and the antirationalists – led by political scientists and psychologists. They also use the term arational to describe the approach advocated by the latter group. Arational does not mean irrational, illogical, or unreasoned: the arational model is distinguished as more cost-effective and politically sensible than the rational model (Culhane *et al.*, 1987). Portney (1991) uses a similar classification for environmental policy decision making, which he terms the rationalist and public process orientations. This dichotomous classification is also found in the literature of economics. For example, in a critique of the role of neo-classical economics in environmental management (the rational approach), Söderbaum (1987) advocates, as an alternative, the perspective of institutional economics. This perspective proposes a holistic, interdisciplinary, value-conscious approach to decision making, which emphasises the role of institutions, actors, and power relationships. In this chapter, a number of variants and combinations of these basic orientations are discussed.

3.1 Rational comprehensive decision making and systems analysis

Culhane *et al.* (1987) note that the rational model of public decision theory, which first appeared in Simon's (1947) book *Administrative Behaviour*, has influenced the evolution of the theory of EA. The main steps in the rational model of public decision making are listed below. These steps ensue from the identification of a problem, or opportunity, that delineates the need for action, which for the purpose of description is termed a proposal. The four steps followed by rational decision makers are to (Culhane *et al.*, 1987, citing Simon, 1947):

- agree on the objectives (also termed goals, or purposes, or ends) that should be attained in the implementation of a proposal, which could include, for instance,

financial efficiency, social tolerability, political feasibility, and environmental fit (O'Riordan, 2000a);
- identify and design all the alternative proposals (means) that meet the stated need and achieve, to varying degrees, the chosen objectives (ends);
- identify all relevant consequences of the alternative proposals, including the performance of each alternative in the attainment of agreed objectives; and,
- compare the sets of consequences, using an appropriate calculus, and decide on the optimum alternative.

Culhane *et al.* (1987) report that Simon was influenced, in describing the rational model of decision making, by the mathematical economists von Neuman and Morgenstern (1944) whose rational economic 'man' knows his preference functions (for the weighting of objectives), has perfect information about the alternative actions and their consequences, and chooses the action with the highest net benefit, i.e., with the best goal accomplishment and lowest adverse side effects.

Simon argued that the rational model was not attainable in decision making, because humans cannot generally cope with the complex information processing required by the model (Culhane *et al.*, 1987). Simon described an alternative approach to decision making that he termed satisficing, which is described in section 3.2.1. Early decision theorists thus used the rational model as the antithesis of real-world decision making.

Advocates of the rational model first entered the public administration literature in the 1960s, as proponents of systems analysis (Culhane *et al.*, 1987). Systems analysis, which originated in World War II as 'operations research', offers methods to solve complicated logistical problems through the mathematical modelling of the inter-relationships within systems. Taylor (1998) notes that such methods had an impact on a number of disciplines, amongst others, planning, transportation planning / engineering, geography, and ecology. Systems analysis adhered to the four steps of the rational model in its prescription for decision making, but added a preference for the use of mathematical models to provide quantitative predictions of consequences (Culhane *et al.*, 1987).

Culhane *et al.* (1987) describe an application of systems theory to US Federal Government decision making that preceded and influenced the evolution of NEPA. The federal government appointed the Rand Corporation to develop a new approach to budgeting practice, called planning-programming-budgeting (PPB). PPB was intended to improve on the practice of incremental (defined in section 3.2.2) budgeting. Activities with similar goals, from a range of agencies, were grouped in a multiyear budget programme, which was subject to systems analysis replete with a consideration of alternative budget proposals. By the late 1960s, under order from President Johnson, all federal government agencies were required to use PPB. Culhane *et al.* (1987) report that PPB fell short of its promise; it did not replace satisficing budgeting practices, and the injunction to use PPB was withdrawn in about 1973. The extent to which NEPA imposes rational comprehensive decision making on federal government agencies is discussed in section 3.2.1.

Unlike the linear sequence of steps in Simon's model of rational decision making, systems analysis was presented as a cyclic process, with evaluation after a decision leading to incremental refinement of actions – a form of rational incrementalism (Culhane *et al.*, 1987).

Taylor (1998: p. 74) notes that systems analysis marked "*the high tide of modernist thought – the crest of that wave of optimism about the use of science and reason for human progress which had formed the European Enlightenment of the 18th century*". (Magee (1998: p. 123) notes that the term enlightenment comes from an "*insistence on viewing everything in the light of reason*".) Taylor characterises the 1960s (in the West) as a period when technical professionals played a key role in advising politicians, a situation that he terms the corporatist state. Rational planning was so widely accepted that the social theorist Bell (1960) wrote about the end of ideology – what Faludi (1987) terms a consensus view of society. This view holds that there can be little disagreement with the analysis and recommendations of specialists appointed to formulate technical solutions to social problems, characterised as the application of technical rationality in decision making.

Contrary to predictions of emerging consensus, the passage of the 1960s witnessed a burgeoning discontent with the values and institutions of western society, particularly amongst youth. The social movements that evolved from this dissent replaced "*the modernist emphasis on simplicity, order, uniformity and tidiness*" with a celebration of "*complexity, diversity, difference, and pluralism*" (Taylor, 1998: p. 166).

The rejection of the modernist view was supposed to mark the demise of rationalism. The postmodern position (in its extreme form) questions the use of reason, and espouses a relativism that asserts that the relative merits of one theory (or decision) over another is ultimately undecidable (Taylor, 1998, citing Dear, 1995). Faludi (1987) insists that critics of rationalism (in planning and decision making) mistake the systems approach and model building, which he describes as an aberration of the rational model, for the real thing. Faludi's arguments on this issue are discussed in section 6.1. The sociologist Giddens (1990) disputes that society is in a state of postmodernism, and proposes instead a state of high modernity. He suggests that the term postmodernism should be restricted to literature, arts and architecture. While acknowledging the term the post-industrial society, which has been well defined, Giddens notes that this is not the same as postmodernism. Giddens is scathing in dismissing the idea that there can be no systematic knowledge of human development: "*the only possibility*", he suggests, in following this line of thinking, "*would be to repudiate intellectual activity altogether – even 'playful deconstruction' – in favour of healthy physical exercise*" (Giddens, 1990: p. 47). Nevertheless, postmodern thought has contributions to make to a theory of EA, which are the subject of section 6.2.

Sub-section 3.1.1 below explores problems experienced in the application of the rational comprehensive method, which the alternative approaches (described in section 3.2) were advocated to resolve or avoid.

3.1.1 Key problems associated with the application of the rational comprehensive model

The key problems considered in this section relate to group preferences in situations of social choice, the context dependency of preferences, controversy about the nature of preferences, and technocratic decision making.

3.1.1.1 Do group preferences exist?

The first problem that impedes the application of the rational comprehensive model in public decision making (and hence in EA) is the question of whose preferences should be used in step one of the model. In the context of EA, there are, inevitably, a number of individuals and groups with different preferences. In order to discuss this problem, it is necessary to refer to the discipline of decision analysis.

French (1988: p. 27) defines decision analysis (DA) as "*the careful deliberation that precedes a decision*". DA is thus similar to Lichfield *et al.*'s (1976) notion of evaluation, which involves the presentation of facts and values in a logical framework for a decision. DA differs from evaluation in that the analyst and the decision maker work together in analysing a decision, in a process that has also been termed decision support (Stewart, 1997). French notes that the principles of DA were developed for individual decision makers, and that translation of DA principles and methods to a group is neither straightforward nor simple. French distinguishes between a group decision problem (where the number of attributes or decision factors is small) and social choice problems (where the number of attributes is large, or very large). In social choice problems, numerous groups and individuals influence a decision (as in EA), thus increasing the complexity of the decision analyst's task.

French states categorically that, using one of the mathematical methods of DA, "*a group cannot decide*" (French, 1988: p. 347), because "*group subjective probabilities and utilities ... do not exist*" (French, 1988: p. 348). Similarly, Faludi (1986: p. 24) writes of the "*elusive ... search for a common denominator of various interests*". These statements have not deterred the numerous inventors of group decision methods that produce a single quantitative index for each alternative. These quantitative methods use one of three approaches to deal with preferences in public decisions. The three approaches, all of which are denounced by Zey (1992) as inappropriate, are:

- by aggregation of individual preferences;
- by fiat, involving the preferences of representatives, which are then aggregated; and,
- by assuming that the preferences of the decision maker are the only ones that matter.

A fourth approach is to impose the values of the decision analyst on the decision maker. This imposition of values has been described as a technocratic approach to decision making, which is discussed in section 3.1.1.4.

The following quote, which pertains to decision making within an organisation, notes that the aggregation of preferences is of little value.

> "*Aggregating preferences, goals ... of organisational units does not give an accurate picture of the characteristics of the organisation nor is a measure of central tendency likely to present, in any valid way, the complexities of the organisation.*" (Zey, 1992: p. 256)

Because group preferences cannot be meaningfully determined, French (1988) recommends that the decision analyst should undertake a comprehensive sensitivity analysis, in which the analyst advises each group member, individually. A sensitivity analysis indicates how changes in the weightings attached to attributes affect the outcome, in determining which alternative represents an individual's optimum choice. Thus, there can be no socially-determined optimum, no absolute optimum valid for all stakeholders, only subjective choices by each individual. In the context of group decisions, the role of DA is not prescriptive, but rather to help group members develop an understanding of each other's values, where and how views differ, and the implications of these differences for the choice amongst alternatives (French, 1988).

The recognition of the limitations of DA in public decision making has an important implication for the evaluation of alternatives in EA. The implication is that "*there is no best course of action ... only courses of action that can be agreed upon*" (Portney, 1991: p. 200). Each individual can choose an optimum alternative that best satisfies their combination of preferences. Thereafter, if a decision is to be reached by consensus, negotiation can bring about mutual adjustment of preferences (Faludi, 1986). If negotiation fails, a decision taker has to impose a solution on at least some of the stakeholders.

Given this recognition of the subjective nature of all decisions, DA methods can be used in EAs provided there are a relatively small number of decision factors and a limited number of I&APs, who have a basic mathematical literacy. If these provisos do not apply, the use of quantitative methods is inimical to the process of public participation.

3.1.1.2 Preferences are context dependent and are made, not discovered

There has always been an undercurrent against the notion, inherent in the rational comprehensive model, that one starts the process by developing a hierarchy of goals or preferences (Faludi, 1987; Culhane *et al.*, 1987). Faludi notes that decision makers find it hard to deal with abstract goals. Culhane *et al.*, citing Lindblom (1959), note that participants can rarely agree on preferences before analysis begins. In the context of EA in US Federal agencies, Taylor (1984) emphasises that the impact statement strategy is designed to work in situations where agreement on goals and beliefs about the relation of means to ends amongst interacting agencies would be a "*rare and happy event*" (p. 306).

Hollick (1981) explains that difficulties arise in starting with preferences because preferences are context dependent. This dependence means that preferences can only be established (meaningfully) towards the end of project planning, after alternatives and

their consequences are known, rather than at the beginning. Similarly, Hart *et al.* (1984: p. 430) note that "*preferences are sequentially discovered, influenced, and reformulated by the process of exploring alternative ... approaches*". This is consistent with Etzioni's (1967) view that values are fluid. He further questions whether values and facts, means and ends can be clearly distinguished.

Lindblom's (1990) prognosis for the process of guided social change involves an alternative to what he sees as the impossibility of searching for and discovering preferences, wants, needs or interests, which are required as inputs in the centralist, rational model. He notes that preferences are not an objective attribute that can be observed and discovered through scientific inquiry. He scorns Maslow (1968: p. 3f) for studying the inner nature of human beings in order to scientifically discover "*a court of ultimate appeal of good and bad*" (Lindblom, 1990: p. 19).

Lindblom (1990: p. 19) disputes the existence of a "*biologically imprinted bedrock of dispositions*". He notes that one individual's many desires conflict with each other: examples include the contradiction between desires for "*sociability and for privacy, for adventure and security, for challenge and release from challenge*" (p. 20). He lists other examples of what he considers to be half-hidden conflicts in society – a preference for lower taxes that conflicts with a preference for better schools.

Predisposition to one or the other of these conflicting preferences would vary from time to time. No observation by self or others can uncover a wanted resolution of the conflicts. Even if it can be observed that serenity lengthens life, Lindblom argues, "*neither self nor observer could observe that a serene long life serves a person's interest better than a shorter, more challenging or active life*" (p. 20). The 'participating self' is a confusing and contradictory mix of selfish, more communal, and altruistic drives (O'Riordan, 2002).

In the 6th century BC, Heraclitus noted that if you do away with contradiction you do away with reality (Magee, 1998). Lindblom similarly argues that the actual human situation in social problem solving is uncertainty about preferences, and that preferences are created not discovered.

> "*Building on a foundation of fact, poorly or well constructed, people (never alone but always in social interaction) form, create, decide, will. ... On how to live – what wants and interests to pursue – at every point and for every facet of this question, people create rather than find. Call what they create a volition. It might be called a judgement, but 'volition' has the advantage of stressing commitment or will.*"
> (Lindblom, 1990: p. 21)

A quote from a central figure in the history of EA reinforces the notion of creating futures in social problem solving. In a critical review of EA in the US, Caldwell (1988) slates the over emphasis on the impact statement as a focus on procedure over substance. "*Problem-solving is not a substitute for a consideration of preferred futures.*"
(Caldwell, 1988: p. 81)

The act of deciding what to pursue does not derive from interests, Lindblom (1990) observes – it is the decision itself that encapsulates the interests. As Simon (1964) notes:

> "*It is doubtful whether decisions are generally directed towards a goal. It is easier and clearer to view decisions as being concerned with discovering courses of action that satisfy a whole set of constraints.*" (Lindblom, 1990: p. 39, citing Simon, 1964: p. 20)

A decision taken thus contains within itself a weighing and trading of preferences and constraints, which is contextually appropriate in a way that can never be achieved when hierarchies of preferences are created as the first step in the rational model. Furthermore, the trade-offs encapsulated in a decision are made at the margin, rather than in the general way in which preferences are related to each other in the rational model.

3.1.1.3 Preferences relate to marginal choices

In addition to being context dependent, preference trade-offs relate to marginal choices. Lindblom (1959: p. 82) states that "*attempts to rank or order values in general and abstract terms so that they do not shift from decision to decision end up ignoring the relevant marginal preferences*". He explains this statement as follows:

> "*That one value is preferred to another in one decision situation does not mean that it will be preferred in another decision situation in which it can be had only at great sacrifice of another value.*" (Lindblom, 1959: p. 82)

Lindblom explains this with an example. Assume one has two alternatives, X and Y, that both promise the same achievement of objectives a, b, c, d, and e. X promises more of objective f than Y, and Y promises more of objective g than X. In choosing alternative X, one is choosing a marginal increase in the attainment of objective f at the expense of a marginal increase in objective g, and *vice versa* if alternative Y is chosen. In this example, it is not necessary to analyse any values other than f and g, and then only in terms of marginal differences. Lindblom argues that the need for information on values is drastically reduced compared with the rational model. For complex problems, he claims that attempts to clarify objectives before selection of alternatives "*is impossible and irrelevant*" (Lindblom, 1959: p. 83). What is possible and relevant, is "*the close intertwining of marginal evaluation and empirical analysis*" (Lindblom, 1959: p. 83). He concludes that the only practicable way to disclose one's marginal objectives or values (even to oneself) is in the process of choosing a preferred alternative. Thus "*values are ordered only in the contexts of specific choice*" (Etzioni, 1991: p. 57, citing Smith and May, 1980: p. 153).

Applying Lindblom's logic to a decision with more than two alternatives offers a surprising and profound insight for the process of choosing amongst alternatives. In a given decision situation, a preference weighting (for one attribute) can vary from one pairwise comparison of alternatives (X versus Y) to the next (comparing Y and Z), because preference weights relate to marginal choices which change from one pair of alternatives to the next. The context dependency of preferences (ends) requires that

alternatives (means) are known before a combination of ends can be decided, which can only be made explicit in the process of choosing a preferred alternative.

3.1.1.4 Technocratic or 'positivistic' decision making: technical rationality

In 1887, US President Woodrow Wilson advocated the establishment of schools of public administration to train a new class of professional administrators who would assist elected and appointed leaders in the analysis and implementation of public policy (Wachs, 1985, citing Wilson, 1887). Wilson was impressed by the way in which science had contributed to technological change in transforming nineteenth-century industry. He envisaged that scientific management principles could similarly modernise government, in perfecting and applying rational tools of analysis and choice. He argued that leaders should provide strategic direction and oversight in matters of policy, but leave detailed implementation to a cadre of professional administrators trained to deal with technically complex matters.

In section 3.1 it was noted that the 1960s marked the apogee of modernist thought. During this period there was widespread acceptance of the role of specialists in formulating solutions to social problems. The notion that science should be central in all areas of human endeavour, from industry to public administration and even in the practice of 'home economics' (Wachs, 1985), was challenged in the 1970s.

Faludi (1986) notes the decisive influence of the positivistic dispute in German sociology, which later spread to Britain and the United States, on the intellectual climate of the seventies. The dispute hinged on criticism of the use of the methods of natural science in social research. The term positivist was invoked in a derogatory sense to represent all that was "*despicable in modern science, from atomic bombs to opinion polls*" (Faludi, 1986: p. 124).

The term positivist should not be confused with the logical positivists who held that objective facts can only be determined from observation, and who abhorred metaphysical statements that could be not be verified (Faludi, 1986). The philosophy of logical positivism originated in the early 20th century in a group called the Vienna Circle. Although Karl Popper was initially a member of the Vienna Circle, he claims to have killed logical positivism with his notion that falsification is the demarcation criterion in science, not verification (Faludi, 1986).

According to Faludi (1986), the work of Fay (1975) was influential in the paradigmatic debate in operational research, on the relationship between social theory and political practice. This debate can improve understanding of a range of theoretical perspectives on EA. Fay's work identified three models for the relationship between knowledge and action, which are labelled the positivistic, the interpretative, and the critical. The positivistic model is outlined below; the interpretative and critical models are introduced in the following section (3.1.2).

The distinguishing feature of the positivist view of planning and decision making is that the best course of action is identified by the analyst. The analyst becomes, according

to Fay (1975, cited by Faludi, 1986), a social or policy engineer. According to Faludi (1986), the German sociologist Habermas (1968) would describe this view of policy making as 'technocratic'.

In the EA literature, the perspective of Skutch and Flowerdew (1976) could be characterised as positivistic. These authors stated that the integrated methodologies of EA, such as Dee *et al.* (1973), take the load of responsibility for interpretation and decision out of the decision makers' hands and place it in those of knowledgeable experts with whom it ought to reside. Critics of the positivistic model call this appropriation of decision by EA practitioners (and their methods) "*the professional theft of decision-making*" (Lee, 1983: p. 22).

3.1.2 Interpretative and critical alternatives to positivism

De Jongh (1983) introduced the term technocratic to the EA literature. He contrasted technocratic and sociocratic decision making processes. Technocratic methods and processes tend to include implicit values: the end result of an EA report, produced by specialists, is seen to be objective and not open for discussion. Sociocratic (or participatory) approaches require that groups make their values explicit: the EA report, produced by generalists, emphasises and explicitly describes the subjective choices involved, and discussion of alternatives is stimulated.

De Jongh's participatory approach coincides with Fay's (1975) second model for the relationship between social science and policy, the interpretative model. Here social science (and EA) make clear the criteria of rationality by which certain alternatives are chosen rather than others. A decision is made possible by "*successful dialogue in speaking and acting between different social actors or within oneself*" (Faludi, 1986, p. 125, citing Fay, 1975: p. 81-82). Fay adds that this approach fosters tolerance and respect for those with whom one disagrees. Such tolerance reduces the potential that violence will be used to advance particular interests, thus underpinning the (more commonly) peaceful character of an ordered, democratic society. The philosophy of critical rationalism, introduced in section 6.1, is situated within the interpretative model of the idealised relationship between information and action, in planning and EA.

The critical model is the third of Fay's characterisations. Adherents of this model argue that planning and decision making is enmeshed in the dominant power structures in capitalist society, which makes rational analysis and deliberate action an ideal that cannot be attained. Social conditions, over which individuals have little or no control, influence their ability to think freely and act deliberately. Rational planning and decision making is thus characterised as being unrealistically idealist in nature. Certain outcomes will be inevitable, no matter how much people struggle to oppose powerful interests intent on capital accumulation in the development process.

Faludi (1986) proposes that the issue here is the state of society, not an issue of planning methodology. He notes that planning methodology in socialist countries was similar to that in western countries. He asks if planning methodology would be any different if the barriers to rational choice were removed. Perhaps more appropriately,

one might ask whether methodology could be changed, to try to overcome these shortcomings in the social order. Section 6.2 outlines arguments about the relative importance of power and rationality, and describes how the understanding that power forms and shapes information should influence the practice of EA.

3.2 Some alternatives to comprehensive rationalism from the theories of public sector decision making: satisficing, mutual adjustment, piecemeal social engineering, and mixed scanning

The previous section describes problems associated with the choice of preferences in the rational comprehensive model. There are a number of factors that militate against comprehensiveness in decision making, which requires consideration of all of the consequences of all of the alternatives. In EA, such factors include short timelines, limited financial and human resources, uncertainties in knowledge, and limited predictive ability. This section discusses alternative models that reduce the level of resources required in planning and decision making. The discussion refers to the relevance of each of these models to EA theory.

3.2.1 Satisficing, incremental decision making within a framework of agency standard procedures

Satisficing as a mode of decision making has already been introduced, in section 3.1. In satisficing, "*decision makers focus on selected aspects of a decision problem and then adopt the first satisfactory solution that they find during a search through alternatives*" (Culhane *et al.*, 1987: p. 3, citing March and Simon, 1958). Administrators are said to satifice in looking for a course of action that is "*good enough*" (Faludi, 1987: p. 47, citing Simon, 1976).

Culhane *et al.* (1987) collected empirical data to provide a substantive foundation to their hypothesis that EIS writers and users are not rational comprehensive analysts but are inclined towards satisficing decisions. In an analysis of predictions in 29 EISs prepared under NEPA, they found the practice so far short of the rational ideal that they chose to use the term forecasts rather than predictions. Fully 65% of forecasts (in their sample) were verbal, unquantified forecasts, and only 24% were quantified.

In the second part of their research, Culhane *et al.* (1987) audited four of the 29 EISs analysed, to ascertain the accuracy of forecasts. They found that the EIS forecasts were not inaccurate, in that three quarters of the impacts were in the same direction as forecasted. They note that the idealised version of prediction places heavy demands on environmental staff. They explain this by citing March and Simon (1958) who noted that the marginal costs of comprehensive prediction and analysis greatly exceed the marginal benefits of an optimum as opposed to a satisficing decision.

Culhane *et al.* (1987) note that the predilection for systems analysis in government decision making in the late 1960s influenced the passage of NEPA through Congress in 1969. They argue that, in section 102(2) of NEPA, words like 'sciences', 'methods', and

a 'systematic, interdisciplinary approach' (which requires consideration of the consequences for all disciplinary areas) suggest that a rational comprehensive evaluation is required. In fact, NEPA only requires consideration of "*the environmental impact*" (not all consequences), and "*alternatives to the proposed action*" (not all alternatives) (US: NEPA, 1969: Sec.102(2)C). Nevertheless, court challenges of EISs and the findings of judicial review under the Administrative Procedures Act pushed EIS writers into fuller consideration of consequences and alternatives (Culhane *et al.*, 1987). In providing only vague and global policy goals in section 101, however, NEPA does not provide preference functions for individual EAs, nor does it require the choice of the environmentally preferred option. Culhane *et al.* (1987: p. 10) conclude that "*NEPA led the horses to the waters of rational-optimizing decisionmaking, but it did not require them to drink*".

In the conclusion to their research, these authors note that the 1978 CEQ regulations provide a better model than the prescriptive EA literature that tends, they impute, towards a rational comprehensive perspective. The preamble to these regulations notes:

> "*Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action.*" (US, CEQ, 1978: Sec.1500.1).

> "*In short, the empirical record and real-world limitations of the NEPA process present a grim prognosis for the rational, comprehensive, optimising, scientific model of the prescriptive literature on EISs. As an alternative, we prefer CEQ's (1978) version of the old practical maxim: Keep It Simple and Succinct.*" (Culhane *et al.*, 1987: p. 270).

3.2.2 Partisan mutual adjustment as social rationality: the self-guiding society

The most elaborate process of mutual adjustment is to be found in the economic market system, where the production of goods and services responds to money offers such that an "*impossible variety and number of conflicting volitions reduce to feasible outcomes*" (Lindblom, 1990: p. 241). The concept of mutual adjustment amongst partisans has also been used to explain the functioning of the American political and administrative system (Lindblom, 1959). The American founding fathers, intent on protecting individual liberty from overly powerful central government, divided government between federal, state and local authorities; they created a bicameral legislature and separated this from the executive and the judiciary, and further built in some overlap between federal institutions to ensure a counterbalancing of power (Taylor, 1984; Lindblom, 1990).

> "*In this view, first carefully formulated by Charles Lindblom as policy making by "partisan mutual adjustment", diverse interest groups and agencies, each looking out for its own narrow objectives, may give society as a whole more knowledge about the potential consequences of a policy than any single group or organisation, trying to foresee as many impacts as possible, could ever hope to comprehend.*" (Taylor, 1984: p. 19)

Mutual adjustment involves multiple policy makers (inclusive of citizens and groups inside and outside of government) engaging with each other to find an outcome that all can live with. The participants are partisan in that they disagree on goals; they further disagree on what constitutes appropriate means towards their disparate ends (Taylor, 1984). Mutual adjustment takes place through formal and informal bargaining; decisions reached represent a consensus that different participants can agree upon, often for different reasons (given their disagreement on goals) (Lindblom, 1959). In adjusting to each other's interests, participants engage in social learning, over time, about how to balance competing social values.

This approach to decision making has also been described as consisting of a process of limited comparisons and as disjoined incrementalism (Lindblom, 1959; 1990). It is **disjoined** when the process is characterised by dispersed decision making among a number of different actors who do not all engage with each other (A engages with B who engages with C, but C does not engage with A). Mutual adjustment can also be **joined**, in which case participants come together to discuss their differences (Lindblom, 1990). In joined mutual adjustment, decision making is dispersed amongst participants even if they are gathered in the same room. Thus, in both disjoined and joined mutual adjustment, coordination of action takes place without a central coordinator, which is the opposite of the unilateral exercise of decision taking. Mutual adjustment is incremental because today's decisions are built on yesterday's, since today's consensus would be achieved among (largely) the same set of actors involved in yesterday's decisions. In his later writing on the subject, Lindblom (1990) omits use of the term incrementalism and instead focuses on mutual adjustment.

Lindblom (1959) compared and contrasted mutual adjustment with the rational comprehensive method for decision making, which he called the branch and root methods, respectively. On the basis of this comparison, it has been assumed that his method is anti-rationalist. Such an assumption would be mistaken, as Lindblom later makes clear. While disputing foundationalism, which seeks universal ideals for society, he confesses that "*the tattered flag of the Enlightenment still stirs a deep response*" (Lindblom, 1990: p.14). He acknowledges that the reason he chose "*to study inquiry and knowledge derives from a commitment to information and intelligence in human affairs*" (Lindblom, 1990: p. 2).

> "*The aspiration to improve social problem solving ... follows ... in the tradition of the Enlightenment: not its frequent expectation that only a few generations would bring society to unheard-of levels of human welfare, but its commitment to inquiry, the exercise of the mind in probing. An aspiration for citizens, functionaries, and everyone, rather than only for a scientific or intellectual elite, it takes sides on that issue, disputed in the Enlightenment. In a degree of retreat from the Enlightenment, it pursues inquiry and the resourceful utilization of its results more than it pursues firm knowledge. Thus it rewrites Kant's "Dare to know!" as "Dare to Inquire!"*"
> (Lindblom, 1990: p. 301)

He notes that solving a social problem "*requires not simply a cold rationality but some sensitivity of feeling or affect, with respect to other people*" (Lindblom, 1990: p. 31). As a partisan for mutual adjustment, Lindblom invokes a social rationality in preference to technical rationality that is exercised in remote, unilateral, centralised decision making.

The view that only a centralist's mind can achieve rationality is mistaken in its assumption that social problem solving is based largely on cognitive factors, when such problem solving is, significantly, also a social process. Two further quotes clearly show the intent of partisan mutual adjustment, not as the antithesis of rationality or a different type of rationality, but as a different way of approaching rationality.

> "*While many people grant the usefulness of diffusion of power and of mutual adjustment for preventing excesses of power, they resist doing so for wise, intelligent, or informed problem solving.*" (Lindblom, 1990: p. 247)

> "*The aspiration to dampen power and enlarge analysis often identifies politics with power, as though political persuasion or discourse, inquiry, and probing were not part of politics. I pose the choice not as politics versus analysis but as power in politics versus analysis in politics.*" (Lindblom, 1990: p. 46)

Mutual adjustment as 'analysis in politics' seeks to make decisions more intelligent and wise through the dispersed probing and inquiry of a multiplicity of participants. Centralists claim to have broad vision in being able to see a problem as a whole, but all social problems are fragmented.

> "*Problems intertwine. No society wisely decides whether to use nuclear energy sources for the production of electric power without considering questions about utilizing its own coal or petroleum, about threats to health and safety, about foreign exchange and trade, about the state's regulatory role in markets, or about the physical location of electric generating facilities and of energy using industrial enterprises. Hence, the number and variety of volitions that must be transformed into one or a few choices go well beyond what first appears.*" (Lindblom, 1990: p. 239)

This quote clearly illustrates that a host of authorities, let alone groups outside of government, would be involved in a decision to construct a nuclear power plant. Even the central decision makers in the range of authorities implicated above are largely participants in mutual adjustment with each other – with other decision makers who do not fall under their central authority. With few exceptions, every central decision maker "*is actually a centralist only with respect to some island of decision making in a sea of mutual adjustment*" (Lindblom, 1990: p. 252).

Social rationality in mutual adjustment is not only procedural, in setting in place the social organisation of inquiry, but can approach substantive rationality. In order to solve social problems in heterogeneous societies, it is necessary to elicit information and preferences from a variety of social groups, including "*ethnic, racial, religious, geographical, ideological, gender, and age group, subgroup and sub-subgroup*"

(Lindblom, 1990: p. 232). Many studies in social psychology have discovered that people probe well, not as individuals, but in identifying themselves with social groups (Lindblom, 1990). In probing a problem, they look for clues in the beliefs, attitudes, and situations of others whom they regard as similar to themselves. They thus ask the question:

> "*How do people like me think about this problem? Even if they dissent – that is, develop some elements of uniqueness in their analysis – they dissent from group thought and identification, which constitutes their starting point.*" (Lindblom, 1990: p. 235)

Citizens are also more effective in making their volitions known and influential if they "*move their volitions towards clusters of agreement*" – government cannot respond to millions of diverse volitions, as in the extreme of participatory democracy (Lindblom, 1990: p. 235). Furthermore, groups are able to mobilize resources not necessarily available to individuals.

A further component of the social nature of mutual adjustment is that citizens and functionaries (Lindblom's term for leaders and authorities) need to reconsider and reformulate their volitions to be effective in solving problems. The choice is often renewing inquiry into attitude or belief or finding no solution at all. For instance, Lindblom observes that even though there are solutions to many environmental problems, society is unwilling to bear the cost of the necessary reforms. Reformulation of volitions occurs when groups adjust to other groups, in the process of forming alliances that will strengthen their influence. This process proceeds incrementally, ultimately creating "*opportunities for collective action that did not exist before*" (Lindblom, 1990: p. 244). In EA, proponents move their volitions to soften opposition and win allies by adapting their proposals, because they want their proposal to succeed. "*If there is a common good it can only emerge from multiplist and pluralist probing.*" (Lindblom, 1990: p. 255)

3.2.2.1 Mutual adjustment and conflict

> "*It is sometimes said that, on a view of political life as fundamentally cooperative or consensual, one chooses centralism, while on a view of political life as fundamentally conflicted, one chooses mutual adjustment.*" (Lindblom, 1990: p. 250)

Mutual adjustment accepts partisan self-interest as the vehicle for attainment of the common good, and is not based on any assumptions about the possibility of altruism leading to cooperation. This much is evident in Immanuel Kant's (1724-1804) perspective on conflict in mutual adjustment, which follows.

> "*It is only necessary to organise the state well ... and to direct these forces against each other in such wise that the one balances the other ... Consequently the result for reason is as if both selfish forces were nonexistent.*" (Lindblom, 1990: p. 245, citing Kant, as cited in Friedrich, 1949: p. 452)

Kant views mutual adjustment, where forces are directed "*against each other*", not only as useful for balancing power but also for advancing reason. Thus, even in resolving questions of fact, the approach to truth "*has to be made by the rough process of a struggle between combatants fighting under hostile banners*" (Lindblom, 1990: p. 54, citing Mill, 1859: p. 47).

Mutual adjustment is thus understood to incorporate a wider scope for conflict resolution than can be achieved by government. Nevertheless, if conflicting parties cannot reach agreement, and discussion has been exhausted, a solution must then be imposed. At this point, Lindblom observes that "*central imposition is arbitrary, responding to some volitions, not others*" (Lindblom, 1990: p. 253). This is not the action of a non-partisan decision taker –

> "*everyone is necessarily a partisan, whether a narrow one or a public interest partisan ... centralists are of both kinds ... similarly, participants in mutual adjustment are of both kinds*" (Lindblom, 1990: p. 254).

Lindblom suggests that the ideal balance is reached with an island of centralisation in a sea of mutual adjustment. The island refers to those situations in which deliberation fails, when a decision taker has to impose a solution on at least some of the participants.

3.2.2.2 Mutual adjustment and power

A common critique of mutual adjustment is that decisions made by consent among partisans would reflect the interests of the most powerful members of society. Decisions made in this way would "*over represent the strong and under-represent the weak*" (Etzioni, 1968: p. 272). Such critics view centralism as "*brains instead of brawn, mutual adjustment they regret as all brawn, no brains*" (Lindblom, 1990: p. 248). Lindblom refutes this argument, firstly in terms of brawn and secondly in terms of brains.

In challenging the allegation that mutual adjustment favours the powerful (those with brawn), Lindblom turns the argument around: can centralists be trusted to overrepresent the weak? Not necessarily, he argues. The centralists, including scholars, professionals and decision makers, are largely contained within the advantaged sectors of society and such persons would find it difficult to fully understand the situation in which the disadvantaged find themselves. Furthermore, elites tend to endorse central decision making to counter challenges to their advantaged position that inevitably result from dispersing authority throughout society. Partisanship may be more capable of exposing and opposing the excesses of power than centralism.

> "*The inequalities of unilateral power often lend themselves to obstructed communication more than the greater equality of multilateral power.*" (Lindblom, 1990: p. 254)

Thus, mutual adjustment can be structured to permit challenges to the advantaged or to smuggle social change into society, primarily through a competition of new and varied

ideas, including "*giving voice to ideas that would otherwise be overwhelmed by louder and more frequent messages*" (Lindblom, 1990: p. 293).

As for the alleged brains behind centralism, Lindblom proffers the argument contained in section 3.2.2 – rationality in social problem solving requires a collective approach. He notes that scientists and professionals assume the value of centralism because their "*commitment to it is only with difficulty raised to a conscious level*" (Lindblom, 1990: p. 248). The scholarly method is centralist, with each person taking responsibility for thinking through and solving a problem.

> "*If this is appropriate for a scholar's intellectual problem, it would seem – but here the mistake – that a central mind is appropriate when society tackles a social problem. That mutual adjustment among a plurality of participants might better solve it is foreign to the scholar's own methods.*" (Lindblom, 1990: p. 248)

No one person can grasp the totality of a situation, nor obtain and process all relevant information, nor do justice to the volitions of all of those involved. In an ever more complex world, a comprehensive overview may be the preserve of the 12 greater gods of Greek mythology who looked down, all seeing, from the top of Mount Olympus.

While mutual accommodation of interests is important in reaching agreement, it is important to realise that mutual adjustment is not confined to benign methods – persuasion and control are also invoked by participants. As in central decision making, control is exercised through power and influence, including manipulation, deceit, contingent payments, threats, and even force (Lindblom, 1990). The morality of either mutual adjustment or central decision making will depend on the methods used by participants.

If the excesses of power are less easy to control in informal or disjoined mutual adjustment, then the formal and joined variant can be structured to ensure that the voices of the weak are heard in a way that allows them to speak for themselves. It can thus be argued that mutual adjustment is more capable of dealing with power than other approaches to problem solving, through distributing the power to impose, rather than trying to minimise its use. This capability is important for the practice of EA when considered in terms of what has been called *Realrationalität*, which is discussed in section 6.2.4.

3.2.2.3 The self-guiding society

What Lindblom is advocating is a self-guiding rather than a science-guided society. In such a society, there is room for science, but more for enlightenment than for engineering (Lindblom, 1990, citing Friedmann, 1987). This means that science is not used to control and direct society, but rather to inform choices made by ordinary people and functionaries. The self-guiding society requires lay probing with a powerful supporting role for science (Lindblom, 1990).

Table 2 overleaf lists the dimensions of the self-guiding society, which is a summary of Chapter 13 of Lindblom's (1990) book *Inquiry and Change*. The table is not discussed in this section, although a number of the dimensions listed in the table have already been discussed in previous sections. Discussion of this topic is resumed in Chapter 7, which probes the extent to which the self-guiding society provides an alternative model for EA practice.

What are the chances of a self-guiding society coming into being?

> "*Despite their frequent monumental folly, people learn new ways ... I do not wholly despair of the possibility that somewhere along the line descendants of mine may live in a self-guiding society with its characteristic probes, failures, reconsiderations, and endless reformulations of ends ... If they do not perish through catastrophe ... they will reach the self-guiding society, if at all, by reconsidering, with the help of professional inquiry, their own volitions for what they seek and what they will give up to get it.*" (Lindblom, 1990: p. 302)

3.2.2.4 The impact statement strategy as a formalised system of partisan mutual adjustment

The title of Lindblom's (1959) well known paper, The Science of "Muddling Through", probably hindered the more widespread acceptance of his ideas on a self-guiding society. In the last sentence of this paper, he disputes the conventional wisdom of organizational theory that stresses the merits of like-mindedness among government administrators. Instead, he argues for 'difference', through appointing

> "*administrators whose professional or personal values or interests create diversity of view (perhaps coming from different specialities, social classes, geographical areas) so that, even within a single agency, decision-making can be fragmented and parts of the agency can serve as watchdogs for other parts*" (Lindblom, 1959: p. 88).

A decade later, US Federal agencies put this notion of difference into practice when, in response to the requirements of NEPA, they appointed environmental assessors within their ranks. (Taylor (1984) uses the term analyst instead of assessor: assessor accords better with the term Environmental Assessment, which is not termed Environmental Analysis.) These assessors were tasked with preparing Environmental Impact Statements (EIS) on agency projects, with the responsibility to act as advocates for environmental values in their institution. Thus, the roots of the impact statement strategy lie in what Taylor (1984: p. 306) has called

> "*a "designed", "intended", or "formalized" partisan mutual adjustment system, one in which partisan discussion is guided by more formal rules of due process and norms of analysis than in naturally occurring partisan adjustment systems*".

Table 2: Dimensions of the self-guiding society (adapted from Lindblom, 1990)

- **Probing** – wide inquiries by citizens and functionaries, much less conclusive than science; as for ends, regards them as undiscoverable, instead people form, choose, or will
- **Science in aid of probing** – science as aid, refiner, extender, sometimes tester
- **Lay learning** – decision to act is outcome of politically active citizens examining their volition to do something about a problem – they are learning about a problem and how serious it is (the problem may be well described by experts)
- **Sensitivities** – the origin of problems lies in sensitivities, feelings, or affect (there are no objective indicators of the existence of problems)
- **No correct solutions** – a good solution is one that has been well probed
- **Learning from error.**
- **A learning from action** – impossibility of anyone achieving a full grasp of relevant complexities compels action in ignorance, hence the model counts on trial and error
- **Downgrading elites** – of inheritance, arms, or other wealth, including a potential knowledgeable elite sanctioned by the scientific model that could become an elite of such dominance as society has never seen
- **Downgrading social control** – social science not as instrument of social control, but rather as blocking attempted control
- **Politics and the imposition of power** – after probing, acknowledges the need for imposition and seeks to distribute power or the capacity to impose rather than to minimise its use
- **Democracy** – citizens choose parties or candidates for office based on their own volitions so that their choice becomes a consequential influence on problem solving
- **Epiphenomenal problem solving** – society is not a purposive organization so solutions do not emerge by design; civilisation advances by extending the number of operations which can be performed without thinking about them
- **Time-bound, space-bound solutions to problems** – the timeless, universal solutions sought in some versions of scientific problem solving do not exist
- **Institutions** – need for institutions that reach and implement solutions, including environmental authorities and planning departments; parties, legislatures, and cabinets; courts
- **No holism** – no aspiration for a single system of knowledge, answering all questions through unbreakable chains of logic from universally valid axioms; this aspiration of the Enlightenment shrank when it ran head-on into the articulation of the fact-value distinction
- **Limited faith in reason** – limited faith in human cognitive capacity, rationality is bounded, the best minds can only cope well with greatly simplified problems; rather a citizenry of investigators who turn again and again to political institutions and leadership because of the many conditions in which discussion cannot reach a solution without the additional element of imposition
- **The connection between reason and democracy** – with increasing scepticism of human capacity to reshape our world, there is a turn towards institutions that hold fallible leaders responsible without granting them the authority to create a 'correct' egalitarian world

The circulation of the EIS creates a marketplace in analysis, and agencies and their critics engage in analytical competition. Under pressure from partisan interest groups in civil society, representatives from a range of government agencies engage in bargaining, to identify designs and decisions acceptable to all participants. The success of the impact statement as a policy instrument has been ascribed to agencies gradually developing an understanding of the reactions of potential critics, thus putting them in a position to select and design projects and formulate mitigating measures that avoid or manage conflict.

Sections 4.5 and 5.1 continue this discussion of a regulated form of partisan mutual adjustment as the foundation of EA and as a necessary part of its success.

Stepping above the level of most EA practice, well-probed mutual adjustment appears to be the most practical way in which the international community can deal with global environmental problems. A world state that can impose solutions on nation states and corporations is only a remote possibility, and many countries in both the North and the South would oppose such an institution. Lindblom (1990) observes that mutual adjustment accounts for much of the international order at present, and appears to be the most promising prospect for accomplishing the collective action needed to deal with a range of global environmental problems, such as pollution, global warming, loss of biodiversity, and overpopulation. Much of the activity at the 2002 World Summit on Sustainable Development (WSSD), by functionaries from government, business, and civil society, focused on evaluating current initiatives and developing new strategies for partnerships among partisan groups struggling to accommodate each other's values and interests and organise the necessary action.

One of the most heralded initiatives at the WSSD was the launch, on 2 September 2002, of the Global Reporting Initiative (GRI). The GRI is a prime example of the impact statement strategy aimed at voluntary disclosure by corporations, in report form, of their impacts and activities towards the goal of sustainable development. Taylor (1984) is sceptical of the use of this strategy for regulating the private sector. He reports on problems experienced in the implementation of the US Occupational, Health and Safety Act, which he viewed (at the time) as the closest analogue to an impact statement strategy for regulating private firms. The performance of the GRI in regulating corporations is, therefore, of great interest, and deserves evaluation to ascertain the extent to which this structured system of analysis and reporting leads to mutual adjustment between corporations and the sustainable development movement.

3.2.2.5 An aside: incrementalism in EA

Satisficing and mutual adjustment both incorporate elements of incrementalism, the notion that current decisions are built on the antecedents of prior decision making. There is, however, a key distinction between these two types. Decisions that satisfice can be made with or without participation by internal and external stakeholders, and can thus be less or more technocratic, respectively. Mutual adjustment is founded on interaction between partisan stakeholders.

The theory of mutual adjustment holds that, if there is little or no analysis before participants reach agreement on a policy, the consequences observed in implementation should inform the next round of decision making. Policy making can thus be implemented in an iterative and incremental way.

Can the incremental notion of decision making apply in the context of EA? Incrementalism in decision making can be applied in the appraisal of numerous small proposals, for instance, the erection of the ubiquitous telephone radio mast. Here authorities are likely to investigate the issues most thoroughly for the first few applications, and seek the consensus described by Lindblom from typical participants. After lessons have been learned from a number of projects, strategic guidelines may be produced that codify mitigation or set in place standardised procedures for dealing with such proposals – a form of programmatic environmental assessment. Such incrementalism can even be applied in big project EIA. Consider, for instance, a road authority commissioning or undertaking a number of EIAs for major road projects in a particular region. The issues in each EIA will be similar and the approach to be followed could be documented in sectoral guidelines for these project EIAs.

The guidance provided by Strategic Environmental Assessment (SEA) notwithstanding, incrementalism is less applicable in the case of big project EIA, where the project / environment combination is unique and complex because of the extensive scale of impacts. In addition, different sets of interested and affected parties would be involved in the assessment of similar projects in two different locations, and the consensus that might emerge in one context could be different from the political choices adopted in another area. Furthermore, fundamental decisions are taken that result in irreversible action in implementing a project. Nevertheless, incrementalism can be helpful if the lessons learned in an EIA for one big-project are applied to the next similar project, which is the rationale of post-project auditing.

This discussion will be concluded in section 3.2.4, which discusses the approach to decision making known as mixed scanning.

3.2.3 Piecemeal social engineering combined with criticism

Both Lindblom (1965) and Popper (1961) presented powerful critiques of the feasibility of comprehensive planning. The piecemeal engineering espoused by Popper bears some similarity to mutual adjustment, but is not so much an approach to decision making as a philosophical rebuttal of attempts to plan anything as a whole. It is not an alternative to rationalism, in that Popper argued for piecemeal action coupled with critical rationalism.

Popper noted that successful engineering is based on small-scale experimentation, whether in physical engineering through the application of technology or in social engineering as practised in planning (Faludi, 1986). Popper described piecemeal engineering as a process of "*small adjustments and re-adjustments which can be continually improved upon*" (Faludi, 1986: p. 64, citing Popper, 1961: p. 66).

In the field of physical engineering, for instance, new car models are introduced every few years with upgrades in between. Even the 'new' models are only incrementally different from previous models. Similarly, the codes governing the structural design of reinforced concrete are the product of years of empirical observation of what worked and what designs did not meet the requisite performance criteria. Such engineering design codes are subject to periodic review and improvement.

Popper's injunction to act in a piecemeal way is not directed at the scale of the intervention, in the same way that engineers do not restrict themselves to small projects (Faludi, 1986). His argument is that one cannot plan anything as a whole, which is what the leaders of the communist movement promised in their attempts to create an egalitarian world through central planning. Arguing instead for the liberal democratic approach, Popper urges that one proceeds experimentally in a process of actively searching for mistakes to inform a process of learning (Faludi, 1986). Piecemeal engineering is thus similar to Lindblom's (1959) early version of mutual adjustment, incrementalism, which builds on previous decisions in a process of learning from experience.

Although Popper is remembered primarily as a philosopher in the field of scientific endeavour, he was also a social thinker. As an Austrian who lived through the upheavals of the Great War, the Russian revolution, and the Second World War, he was implacably opposed to fascist and communistic belief in the "*inexorable laws of historical destiny*" (Faludi, 1986: p. 49). These laws hold that the future is a function of historical trends, what is known as historicism. In the twentieth century, both communism and fascism appropriated historicism to political ends.

According to the philosophy of historicism, the role of social science is to discover the rhythms, patterns and laws underlying the evolution of human history in order to forecast how society might develop in future (Faludi, 1986, citing Popper, 1961). A tenet of historicism is that social science should be built on the methods of natural science. Popper dismisses historicism by noting, *inter-alia*, that sociological laws differ in different places and periods, and that immutable laws such as those that are held to exist in the physical world do not prevail in the study of social phenomena (Faludi, 1986).

While the historicist approach starts with an interpretation of history, it prognosticates that plans for the future can only be effective if they fit in with the historical current. Thus, while providing a supposedly scientific basis for action, the approach severely limits the scope of such action. Popper's misgiving about historicism is that "*we may become the makers of our fate when we have ceased to pose as its prophets*" (Faludi, 1986: p. 55, citing Popper, 1966: p. 4). In this Popper espouses humanism – that we are responsible for our own fate (Faludi, 1986).

Popper supported social reconstruction in an open society, as opposed to the totalitarian solutions of Karl Marx whom he characterised as a radical historicist. In his interpretation of history, Marx viewed the state as a reflection of economic interests. He foresaw communist revolutions overtaking capitalist society, in an inevitable march of

history. Marx differed from historicism in proposing that human endeavour could successfully change historical trends if undertaken through massive intervention in the form of centralised rule and Utopian social engineering (or planning). Such intervention should deal "*with society as a whole, leaving no stone unturned*" (Faludi, 1986: p. 56, citing Popper, 1966: p. 164). While the focus of Marx was on a planned economy, the extent of state control of society has been similarly at the centre of much debate around the theory and practice of planning (see section 4.3).

Popper argued that attempts to remodel society as a whole turn out to be impossible because the greater the changes attempted, the greater are their unintended and unexpected consequences (Faludi, 1986). This he explains to be a weakness of holism. Attempts to study human development as a whole cannot be the object of scientific enquiry, because one cannot test a universal hypothesis when confined to observation of one unique process (Faludi, 1986). (The consequences of remodelling Iraqi society through the 2003 invasion are similarly open. In a 1992 interview with *Der Spiegel*, Popper (1999) argued that a war against Saddam Hussein would be justifiable, because nothing is more important than the removal of nuclear weapons. This case was made again in advance of the 2003 war in Iraq, but is compromised by the apparent lack of weapons of mass destruction.)

It was in rebutting the social blueprints of collectivist planners that Popper delineated the opposite model of piecemeal tinkering, combined with criticism, as the best way to achieve results (Faludi, 1986). In offering this model, Popper was arguing for the possibility of democratic reform of society that "*sets free the critical powers of man*" (Faludi, 1986: p. 55, citing Popper, 1966: p. 1). The application of the philosophy of critical rationalism, in both planning and EIA, is further elaborated and discussed in section 6.1 and Chapter 7.

3.2.4 Mixed scanning as a combination of rationalism with incrementalism

Etzioni (1967; 1968) describes incremental decision making as remedial action aimed at alleviating present imperfections. He is critical of the incremental approach as inappropriate for decisions about significant future actions, in much the same way as incrementalism is described (in section 3.2.2.5) as not wholly appropriate for EIAs of big projects. He furthermore argues that decisions made by consent among partisans (mutual adjustment) should not be viewed as the preferred approach, as such decisions would reflect the interests of the most powerful members of society. (Lindblom's rebuttal of this argument is presented in section 3.2.2.2.)

The rationalist model is also criticised by Etzioni (1967) on a number of grounds, including the high level of control exercised by a decision taker over the decision-situation. The decision taker is assumed to be a highly knowledgeable actor, with perfect information, who bases his/her decisions on such knowledge, without being sidetracked by values, power or emotion (Etzioni, 1991). He notes emphatically that the necessary calculations cannot be carried out by societal decision takers, for many reasons. These include difficulties in determining criteria for the weighing of preferences because "*the assumption that values and facts, means and ends, can be neatly (or even less neatly)*

separated by decision-makers seems to be invalid" (Etzioni, 1968: p. 265). Information about consequences is fractional, and besides, future consequences cannot be surveyed because they are open (Etzioni, 1968).

Etzioni posits a third approach to decision making, that of mixed scanning, which he defines as "*the combination of wide but not deep examination of facts and options with more detailed study of select sub-sectors, chosen in the first or second round of scanning*" (Etzioni, 1991: p. 46). Mixed scanning starts with the choice of a major strategy, within which it then chooses an appropriate sub-strategy, before examining in detail some options within the sub-strategy. Mixed scanning is thus a hierarchical form of decision making that incorporates higher-order, fundamental decisions with lower-order incrementalism (Etzioni, 1967; 1991). Details are omitted from the overviews that inform the contextuating decisions, while the bit or item decisions that follow are made incrementally within the context of the fundamental decision (Etzioni, 1968).

This hierarchy of decisions is remarkably similar to that which links SEA and EIA. Except that SEA, as a set of flexible guidelines for subsequent EIAs, is perhaps not akin to a fundamental decision. The information provided by an SEA is one set of inputs to the decisions that form part of an EIA. The context specificity of an individual project-environment combination may be such that the generic guidelines of an SEA are found to be of lesser importance than other factors that pertain in the unique situation of the project under consideration.

In mixed scanning, the more general decisions are made first, often without much information or analysis. Subsequent decisions, based on more detailed information and analysis, follow a particular line of thought until it is realised that one of the previous assumptions or decisions must be modified and the process is repeated. The final proposal thus takes form gradually in an iterative and incremental way. Hollick (1981) ascribes mixed scanning as the approach most suited to decision making in project planning. Given that most environmental assessments are undertaken for projects, mixed scanning would seem to have some relevance for approaches that seek to integrate EIA and project planning and design.

The term scanning refers to the collection, analysis, and evaluation of information relevant to a decision (Etzioni, 1991). Scanning also has a spatial connotation in that Etzioni (1967) uses the example of a remote-sensing satellite providing data for analysis using two cameras, one with a wide angle and the other with a zoom lens. The wide angle lens provides truncated information about a broad area, with the zoom lens providing detail of chosen sub-areas. Mixed scanning thus provides advice on how to go about the process of data collection, and this feature can be usefully applied in the assessment stage of EA.

Mixed scanning requires what Etzioni (1991: p. 59) describes as "*deep public awareness of the fundamental decisions and the main alternative schemes (but, by implication, less involvement in incremental decisions)*". One of the main factors scanning encompasses is the posture of the actors and the relations among them. He notes that once a rationalist plan is adopted its makers would discourage community

debate, which he contrasts with the high level of consensus building that is required in incrementalism (by which he means mutual adjustment).

Etzioni (1967) views the mixed scanning strategy as situated in a middle ground between the comprehensive planning of totalitarian societies, which he describes as closer to the rational model, and the more incremental strategies advocated by democracies. Mixed scanning seeks to "*combine a balanced commitment to collectivity with pluralism*" (Etzioni, 1991: p. 63). It incorporates a truncated review of all sectors with a detailed (and hence rationalistic) examination of some selected sectors. Mixed scanning attempts a synthesis – it is less rationalistic than comprehensive rationalism and more rationalistic than incrementalism (Etzioni, 1968).

In summary, Faludi (1987) notes that mixed scanning shows how rationality can take account of limitations, so as not to attempt the impossible.

3.2.4.1 Comparing mutual adjustment and mixed scanning, and a critique of mixed scanning

Etzioni's (1967; 1991) explanations of mixed scanning use the term incrementalism as synonymous with mutual adjustment. This is understandable in that Etzioni is drawing on Lindblom's (1959) earlier work in which these two concepts are used interchangeably. In his later writing, Lindblom (1990) focuses almost exclusively on his theory of mutual adjustment. In Etzioni's second and lower order scans, the incremental decisions are made with more detailed information and are hence more rationalist (from a technical perspective) – while incrementalism as in Lindblom's early writings on mutual adjustment can occur without much (or any) analysis.

When compared with Lindblom's (1990) later and more coherent version of mutual adjustment, mixed scanning appears to be closer to a technical rationality as practised in central decision making, with a less comprehensive analysis of fundamental decisions. Even when he calls for a "*deep public awareness of the fundamental decisions*", Etzioni is not explicit in describing what this calls for in the practice of mixed scanning. Nor does he make clear that public awareness and public involvement in decision making are distinctly different. Given the contrast between Etzioni's limited discussion of public involvement and the central position of stakeholder engagement in mutual adjustment, it seems reasonable to conclude that mutual adjustment is more participatory in nature.

The remainder of this section provides three criticisms of Etzioni's arguments in support of mixed scanning.

Firstly, while Etzioni's approach is appropriate for choosing geographical boundaries for broad and detailed data collection, it is flawed in its approach to decision making. The problem is that the more important, fundamental decisions are made with less comprehensive information, while the less important, lower order decisions are made with more detailed information, admittedly about a more narrowly-focused area. Etzioni's premise, that one can revisit the higher-order decision if subsequent collection of detailed information identifies problem areas, is based on the supposition that

implementation has not yet begun. Choosing between one fundamental option and another can mark an irretrievable and irreversible commitment of resources (drawing on NEPA terminology). For instance, the choice of future land use in a coastal dune ecosystem, for either the mining of heavy minerals or nature-based recreation, is one example of the irreversibility of fundamental decisions. (Interestingly, while the mining option could foreclose the alternative option in the vicinity of the mine, implementation of the recreational option would not foreclose a future decision to mine the dunes.)

Secondly, while Etzioni is correct that incrementalism is not suited to the task of making fundamental decisions, mutual adjustment can be quite appropriately used to this end, as incrementalism and mutual adjustment are distinct, in this regard.

Thirdly, Etzioni's pertinent criticisms of the rationalist model are not overcome by mixed scanning. The issues he raises, in summary form, relate to assumptions about a highly knowledgeable decision maker who is not sidetracked by values, power or emotion, and who has no difficulties in determining criteria for the weighing of preferences. Mixed scanning does not offer any solutions to these issues. As described in section 3.2.2, all of these issues are addressed in the theory of mutual adjustment, including the possibility of participants reaching decisions in the absence of agreement on goals.

In summary, Etzioni's distinctions between fundamental and incremental decisions in mixed scanning relate to two factors: for information, the distinction relates to the level of detail required (less and more, respectively), for participation, the extent of the centralisation of decision making (both centralised, but slightly less so for fundamental decisions). These distinctions do not sufficiently distinguish mixed scanning from the rational method for it to deserve a significant place in the theory of EA that is presented in Chapter 7. That distinction is conferred on critical rationalism, which is introduced in section 6.1. A subsidiary role for mixed scanning in EA theory is outlined in section 3.3.

3.3 Conclusions for EA from theories of decision making: deciding through mutual adjustment, with subsidiary roles for satisficing and mixed scanning

The rational comprehensive approach to decision making is prone to the appropriation of political decisions by the empirical evidence and values of specialists. The approach is based on a questionable assumption that better decisions ensue when expert knowledge is provided to a non-partisan decision taker, who wields centralised power over other decision makers. Besides its anti-democratic tendencies, further weaknesses include excessive quantification of both the consequences of alternatives (at times in ratings) and the preferences or weights attached to objectives, sometimes using mathematical calculation to arrive at numerical indices for each of a range of alternatives. The aggregation of preference weights in the multi-actor decision making of EA is of little value: measures of central tendency cannot represent the complexities of a decision-situation.

Social science theory provides an alternative explanation and norm of how decisions should be made in practice. Preference trade-offs are made at the end of planning through intertwined empirical analysis and marginal evaluation: the choice of a preferred alternative by a participant encapsulates a set of implicit preferences. Specialists are not expected to discover preferences – they are regarded as undiscoverable: instead participants form, choose, or will, in creating preferred futures with the support of specialist analyses. This marks a shift from a vision, as old as Plato, of a scientifically guided society, to what may eventually become a self-guiding society.

Making decisions means discovering courses of action that satisfy a whole set of constraints, in a successful dialogue between different social actors. The process of reaching agreement has been described as mutual adjustment, in which participants adjust to each other's interests. In this way, participants engage in social learning, over time, about how to balance competing social values. Consensual action represents a social rationality that is not only procedural, but can approach substantive rationality. The theoretical construct of a social rationality allows one to discard the unfortunate terms antirational or arational, introduced at the beginning of this chapter. This is a rationality in which there is no best alternative, nor correct solution: decisions reached represent a consensus that different participants can agree upon, often for different reasons. A good solution is one that has been well probed or considered.

Mutual adjustment makes more allowance for conflict than consensus based views of society. The premise is that mutual adjustment amongst diverse groups, each looking out for their own interests, can be structured to permit challenges by the disadvantaged and to smuggle social change into society, primarily through a competition of new and varied ideas. On a related aspect, mutual adjustment distributes power or the capacity to impose among a multiplicity of social groups, rather than trying to minimise its use.

The impact statement strategy of NEPA is designed to work in situations where there is little agreement on goals and beliefs about the relation of means to ends, amongst interacting governmental agencies and participants from business and civil society. In this strategy, mutual adjustment is an intended, structured, or formalised system in which social interaction is guided by more formal rules of due process and norms of analysis than in naturally occurring mutual adjustment systems. Mutual adjustment emerges from the discussion in this chapter as the most important concept for EA theory, particularly in the scoping and evaluation stages.

Two further concepts discussed in this chapter have a subsidiary role within the theoretical framework for the practice of EA, as described in Chapter 7. The first concept is satisficing, which contrasts with comprehensive analysis and prediction. In satisficing, decision makers seek just enough information to identify an alternative that is good enough. Theorists referenced in this chapter argue convincingly that EA is, and ought to adhere to, a practice of satisficing. Instead, Chapter 7 argues that the extent of inquiry should be decided in the context of each EA, somewhere on a continuum from comprehensive to satisficing inquiry. This decision is a function of the significance of impacts and a desired level of precaution. Furthermore, the nature, extent, and depth of inquiry changes as the EA process advances. The second concept – that of mixed

scanning, requires a wide but not deep examination of facts, values, and options related to fundamental choices, with more detailed study of select sub-sectors. It thus provides advice on how to go about the iterative processes within EA, starting with the link between SEA and EIA. The first scan of EA, in scoping, is broad and quick. The scoped inquiry of the assessment stage, which follows, learns more about the issues initially selected as more important and closes or limits further inquiry of the less important issues.

In addition to these insights from the philosophy and theory of decision making, the following chapter provides a justification for drawing further inspiration for EA from planning theory.

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CHAPTER 4: THE POLITICAL ECONOMIES OF EA AND PLANNING – A CONVERGING EVOLUTION

This chapter argues that Environmental Assessment is a form of planning that is congruent with a more globalised, competitive world. Having evolved in a market economy (the United States), EA is close to current conceptions of planning in which market trends exert significant influence on the allocation of land uses. The global spread of EA over the last three decades has coincided with a 'loosening' of control by planning on the location and form of new development. Along with the collapse of centrally planned economies, the power and influence of governments has been declining, and transnational corporations have been consolidating the global capitalist economy. The heightened spatial mobility of capital has compromised the ability of local planning, which aims to direct local actions to determine local conditions (Beauregard, 1989).

The changes experienced in planning, over the life span of EA, have arguably moved planning closer to EA, although there are notable distinctions. This chapter introduces the evolution of planning over the last half century, outlines prevailing planning theories, lists differences and highlights commonalities with EA. Planning and EA are compared and contrasted in terms of philosophical conceptions of democracy and the associated approaches to the structuring of the state and its relation to the economy and to civil society – also termed state formations or political economies. This comparison leads to the articulation of a theory of the political economy of EA. A fundamental aspect that characterises EA and planning systems is the way in which they regulate proposals, specifically the extent to which decision making is centralised or dispersed. The impact statement strategy (of the US) facilitates decentralised decision making among a variety of agencies, in contrast to the more centralised nature of decision making in those planning systems where one authority is responsible for creating and implementing plans. This characteristic of the US impact statement strategy is not universal to all EA systems – in some systems, notably in South Africa, decision taking is largely centralised in one environmental authority.

This chapter refutes the premise that EA is a stage in a progression from sectoral licensing to planning, and argues instead that EA is a significant form of planning, and even a preferred form in some neo-liberal economies. In traditional models, planning is conceptualised as the central guidance of market forces. The pluralist argument against these models is outlined, and it is shown that EA fulfils many, but not all, of the social functions set out for planning. The aims, objectives, and activities of a more entrepreneurial approach to planning are close to those of EA, suggesting that these two

fields are converging. This converging evolution provides significant opportunities, as yet largely unrealised, for reciprocal learning.

> "*EIA has largely failed to benefit from planning theory insights and lessons. Obstacles and dilemmas already encountered and addressed in planning theory are still hampering EIA theory building and practice.*" (Lawrence, 2000: p. 607)

The chapter concludes that EA can assist planning with methods for advancing sustainable development. In return, the theoretical debates of planning can inform the development of EA.

4.1 Planning and EA: similarities and differences

There are a number of terms used to describe land use planning: these include city and regional planning (the US term), town and country planning (the UK term), or environmental planning – the term used by Faludi (1987). In the remainder of this thesis, the term planning is used as synonymous with city and regional planning by the state, at local or broader scales of government, although planning can relate to the prior co-ordination of future activities in many arenas.

Planning and EA are both concerned with the protection and improvement of the physical, social, economic, and the biophysical environment, through the development of land and public services. Both are concerned with the way in which resources are distributed in the developmental process. Both are rooted in an interventionist theory of the state, arguably less interventionist for EA than for planning, to protect the rights of individuals from the activities of other individuals.

Planning and EA both aim to produce appropriate decision making concerning future courses of action. In deciding on an agreed course of action, both activities depend on factual information about consequences of potential actions. Both seek stakeholder participation in defining the decision-situation (scoping in EA) and in the evaluation of options, and require stakeholder values and preferences to assist in identifying desired outcomes. Both profess the importance of monitoring and feedback to managers during the implementation of decisions.

EA and planning systems provide institutional arrangements for social action or social practice, which is about intervening in the world (Taylor, 1998). This is why theories of practical reasoning and judgement – the focus of this thesis – are central to both systems. EA and planning are neither science nor art, although sound judgement in both systems is based on understanding the consequences of proposed actions, which comes from scientific knowledge and aesthetic principles (Taylor, 1998).

In terms of differences, the act of plan making, typically by or for public sector authorities, is more strategic and proactive than project level EIA. The exercising of development control over individual proposals, under guidance of a plan – what Faludi (1986) calls the operational decision making of planning, is closer to the practice of EIA.

In cases where an SEA has been undertaken prior to an EIA, the SEA provides the same kind of strategic guidance that plans give to decisions made in the development control stage of planning. The policy guidance of SEA may be less spatially orientated than the strategic guidance of plans.

4.2 The evolution of planning over the last half century

Having noted the many similarities between EA and planning, this section considers the evolution of the theory and practice of planning over the last half a century, with some examples of changes in the UK system. Three of the planning theories outlined in this section are considered in more detail in Chapter 6. These planning theories, and the theories of decision making selected from Chapter 3, are then used in Chapter 7 to build a wider theoretical base for the EA process than the perspectives on procedures and methods presented in Chapter 2.

Tables 3, 4, 5 and 6 outline different theories of planning. The tables show the main activities, purposes, characteristics, and (in some instances) critiques of each type of planning. The information in these tables is sourced from Taylor (1998), Faludi (1986; 1987), and Flvybjerg (1998a; 1998b).

Table 3 describes the evolution of planning up to the late 1960s. The dominant form of planning during the twenty years after the Second World War was the comprehensive or master plan. Planning was envisaged as urban design, and was dominated by architects, civil engineers, and surveyors (Taylor, 1998). Plans defined precise uses for particular sites, and delineated the future form of towns. The plans thus produced were conceptually similar to the drawings prepared by architects and engineers for the construction of buildings, which were called 'blueprints' after the blue colour of the lines on the drawings reproduced by copy machines. Like engineering drawings, master plans were meant to be implemented down to the last detail.

In 1968, a new Town and Country Planning Act in the United Kingdom made provision for a two tier system of structure and local plans (Taylor, 1998). Structure plans are less detailed than master plans and avoid the rigidity of zoning schemes. While zoning fixes land use in law, structure plans provide indications of preferred development patterns but are not binding. The shift from master to structure plans represents a loosening of the extent to which planning dictates specific uses of sites, which was later to become more marked. The tier of local plans provides more detail than master plans to provide specific direction to the implementation process.

That structure plans are more conceptual and flexible in nature is consistent with the parallel emergence of a systems view of planning, in which cities are understood as systems of interconnected activities linked by communication media (Taylor, 1998). Another change in the late 1960s was the shift from planning as design to planning as rational decision making, in plan making and plan implementation, supported by systems analysis to improve understanding of the consequences of planning interventions (Taylor, 1998).

Table 4 shows how planning progressed in the 1970s and 80s from a largely technical activity to incorporate participation by society. This ensued from widespread recognition that goals (or planning ends) are value statements that need to be subject to debate in a vigorous democratic process. Thus planning came to be seen as an evaluative or normative activity and, because planning action affects people who hold different views on the desirability (or otherwise) of planning outcomes, it is rightly also a political activity (Taylor, 1998). Although some theorists of planning as political practice distanced themselves from rational planning, others denounced the technicalist or technocratic interpretation of rationalism where the planner is deemed to know what is best. Faludi (1986; 1987) articulated a combined theory of **critical rationalism** that retains the use of reason in rendering decisions justifiable while recognising the centrality of political argument in identifying what he terms the better option. Faludi's theory is discussed in section 6.1.

Table 5 outlines the dominant contemporary views on planning theory and practice. An important component of planning evolution is a further loosening of planning control over land use options. (The first loosening was brought about by the move from rigid master plans to more flexible structure plans.) With control loosening to become more 'plastic' and less 'holistic' and exercised preferably through persuasion, land use is not wholly directed from the centre but responds to market forces. Partnerships (or regimes) are set up with the private sector to ensure that the necessary capital and capacity is mustered to ensure achievement of societal goals through planning action. According to Taylor (1998), the shift to entrepreneurialism is characteristic of urban governance and planning since the 1980s, with local authorities competing with each other for investment and development. He notes that the theory of **communicative action,** which is discussed in section 6.4, continues to occupy a dominant position because of the role of planners as negotiators and implementers of contracts with business and civil society organisations.

Table 6 outlines an important perspective on planning formulated by Bent Flyvbjerg. In his book, *Rationality and Power*, Flyvbjerg (1998a) narrates the case of the Aalborg project in Denmark. This is a sceptical view on the possibility of planning, as the project showed consistent lack of goal achievements over a period of 15 years (from 1977 to 1994). Flyvbjerg's conclusion is that unbalanced power relations produced an unbalanced project. He describes a planning process warped by powerful actors intent on stifling the full implementation of the project. In this case, rationality was used as rationalisation to push the agendas of those opposed to the project. The formal policy-making activities of democratically elected organisations had little influence on the project. Flyvbjerg turns Francis Bacon's famous dictum, Knowledge is Power, on its head. Instead, he argues that the powerful create the knowledge needed to advance their goals. Flyvbjerg shares the Enlightenment ideals of freedom, justice, and truth, but argues that, if one takes these ideals seriously, one has to understand the anti-Enlightenment terms of a Nietzchean will to power and Foucauldian rationality-as-rationalisation. Flyvbjerg's ideas on **power analytics** are considered significantly important to a theory of EA to warrant further elaboration in section 6.2.4.

Table 3: Comprehensive and structure plans, and the systems and (early) rational view of planning (information sourced from Taylor, 1998)

Type of planning / *Period applied*:	**Main activities**	**Purposes**	**Characteristics** / ***Critiques***
Comprehensive or master plans or 'blueprints' / *Renaissance to 1960s*	Survey, analyse and plan: * **physical planning / design** of land use and built form * **control** of development rights by state, i.e., planning permission	**Planning as comprehensive** (Utopian / holistic) redevelopment of urban fabric **Zoning schemes** identify sites for particular uses; enhance aesthetic quality of environment	Procedural; technical; managerial / ***Fixed not flexible****; little empirical research on social and economic implications of planning*
Two tier system: structure and local plans / *In UK, 1968 onward*	* Prepare strategic **structure plans** at **broad** spatial scale * Nesting within these, more **detailed local plans**	Compared with master plans: * structure plans more general, with policy statements * local plans more detailed, better site planning and urban design	Flexible, to be revised every few years; plans as social, economic and physical
Systems view of the object of planning / *From late 1960s*	**Analyse, model, and control urban systems**; plans as trajectory of states over time, with ongoing monitoring and adaptation; prevalent in transportation planning	Better understanding of consequences of planning interventions	As for two tier above, plus: Abstract; mathematical; **substantive theories of how cities work** / *Too complex – gap between theory and practice*
Rational process of evaluation, decision making, and action / *From 1960s*	**Sequential stages** in planning process (with feedback): Define problem and goals; identify and evaluate alternatives and consequences; implementation and monitoring	**Reaching reasoned decisions** about goals and actions; seeks optimum alternative that maximises benefits to society as a whole	**Procedural**; incremental or comprehensive approach / ***If*** *applied in* ***technocratic*** *way,* ***hides values*** *inherent in choice; optimising solutions at expense of distributive justice; provides 'means' for planning, says nothing about 'ends' (vacuous); little attention to implementation*

Table 4: The politics of planning (information sourced from Faludi, 1986 and 1987; and Taylor, 1998)

Type of planning */ Period applied*:	**Main activities**	**Purposes**	**Characteristics** */ Critiques*
Normative political practice */ Developed 1960s and 1970s*	Two views on political practice: * **Technicalist** – planners should not dictate values to clients, but stick to technical matters such as setting out likely effects of alternatives * **Advocate** – in representing and pleading the plans of many interest groups, planner should be an advocate for what he/she deems proper, explaining and affirming the values underlying his/her prescriptions for action	Create an effective urban **democracy through participation**, in addressing shortcomings of representative democracy; Planner sometimes in **advocacy** role, representing interests of disadvantaged or minority groups	The information in this box applies to both normative practice and critical rationalism below: Ends (goals) as value statements, which are **contested** and **subject to debate** in vigorous democratic process **Framework planning** within which actors can choose freely (interpersonal and egalitarian); recognises that strategies are subjective – there is **no absolute optimum**; fits into interpretative model of social theory
Critical rationalism: * **a decision-centred view of planning** * **the politics of rational planning** */ 1986*	**Participatory definition of decision-situation** based on perspectives (values) of actors; examine proposed solutions critically – **foster criticism of facts and values**, listen to (political) arguments in identifying the better option; take seriously criticisms of fellow human beings as equals; 'plastic' rather than 'holistic' **control**, by just institutions, preferably **by persuasion**	**Render decisions justifiable**: "*I may be wrong and you may be right, and by an effort we may get nearer to the truth*" (Faludi, 1986: p. 58 , citing Popper, 1966: p. 225); only one concept of rationality – action is rational if agent has reason to believe behaviour most likely to produce the consequences desired; proceed in piecemeal fashion and learn from our mistakes; reinterpret plans in light of implementation	**Procedure based on**: * **consequentialism** – judge decisions by consequences, which provides demarcation criterion separating acceptable from unacceptable proposals * **critical dualism** – separating facts and values, which cannot be derived from each other **Theory of how we ought to plan:** the quest for comprehensiveness raises our sights, tempered with prudence which flows from human limitations

Table 5: Planning in a neo-liberal economy – dominant contemporary views (information sourced from Taylor, 1998)

Type of planning */ Period applied*:	**Main activities**	**Purposes**	**Characteristics** */ Critiques*
Planning in a neo-liberal market economy: trend planning */ 1980s onwards*	Market forces significant determining factor in planning: * urban governance as **entrepreneurial** (1980s and 1990s), rather than managerial (1960s); local government **establishing partnerships with private sector** to accomplish public goals – setting up 'regimes' (informal arrangements) to make and carry out decisions, i.e., assembling power / capacity to act * local government competing in global market to **attract investment** by multi-national corporations	Development plan merely reflects market trends in allocation of land, with public intervention to neutralise neighbourhood effects (externalities): * One view assumes that market and planning in opposition – planning as regulating capitalist land development, e.g., to protect green belts from development * Structural Marxist view that state planning governed by, and working with, the market system – the state being compelled to act to resolve problems (contradictions) of capitalism	Planning situated in political economic context – planners have **negative powers** to refuse development, but New Right in 1980s sought to ease burden of state restrictions on development to regenerate economy **Planning as piecemeal rather than comprehensive redevelopment** of urban fabric – policies to address particular problems rather than a whole set of policies in a single plan */ Planner has few positive powers to ensure that developments in plan will occur (called implementation gap), although this view may exaggerate the weakness of planning*
Planning as rational action: theories of (a) implementation (market-led) and **(b) communicative action** (market-critical) */ Late 1960s, 80s & 90s*	Society planning too much and seeing too little application of plans: * **Fuse planning and action** – at each stage consider other stages * Ensure joint action, in effective teams; manage interpersonal relations and direct conflict towards constructive action – planning as **communication and negotiation** * Many problems of implementation unpredictable – planners as **fixers**	**(a)** Bargain and compromise, e.g., pragmatically accept less than ideal design to secure private sector development of site **(b)** Ensure **comprehensible, truthful, sincere and legitimate communication** as preconditions (and ethics) for more democratic society and for participatory planning; if not, communication 'distorted' and decision not reached as result of the force of the better argument	**(a) Action-centred planning**: policies often follow as response to pressures and problems on the ground; policies may also be developed from innovation, i.e., action may precede policy; this view somewhat at odds with the hierarchical view of implementation from policy to action (policy-centred); planning 'on the spot' because changes in real world render plans / policies obsolete **(b) Planning is for people, in the face of capitalist power**

Table 6: Contemporary sceptical views on planning in a neo-liberal economy (information sourced from Flyvbjerg, 1998a and 1998b)

Type of planning */ Period applied*:	**Main activities**	**Purposes**	**Characteristics** */ Critiques*
Power and planning analytics, based on ***Realrationalität*** */ Late 1990s onwards*	* **Power analytics** (for action): empirical study of power and its net of relations; central question – how is power exercised?; answer by analysing strategies and tactics because action is the exercise of power * **Planning analytics** (for reflection): using historiographical narration, i.e., writing the histories of particular plans, to better understand what happens in actual planning	* Freedom from domination; resist, struggle, and **counter abuse / misuse of power**, as most important problem of our time * **Strengthen democracy**, build a strong civil society * Sceptical view about the possibility of effective planning, so **draws attention to details** that make or break plans and policies, during genesis and implementation	**Power defines knowledge** and this knowledge then confirms power – be aware and beware of rationalisation masquerading as rationality Critique of **normative malaise in planning**, in which planners always focusing on what ought to be, rather than what is Recognition that distrust, criticism, **conflict**, power, and partisanship are true pillars of democratic society */ After power analytics has helped understand balance of power, not explicit on how to use this information, what to do, in guiding action towards desired end*

4.2.1 Policies, plans, and programmes in planning: some definitions

This section describes the uses of certain terms. In forward planning, there generally exists a tiering or hierarchy of policies, plans and programmes, which Wood and Djeddour (1992: p. 8) define as follows:

- a policy (or set of policies) which provide "*inspiration and guidance for action*";
- "*a plan as a set of co-ordinated and timed objectives for implementing the policy*"; and,
- "*a program as a set of projects in a particular area*".

In the context of land use planning, these three terms can be incorporated under the ambit of a 'plan'. A plan can include a set of policies and a physical plan showing proposed land use and built form, which together are intended to control future projects in a specific geographical area. In this context, a plan is more than a set of objectives, and can be defined as "*a set of prospective, dated actions which may be reversed prior to their implementation*" (Faludi, 1987, citing Meyerson and Banfield, 1955). Plans are also subject to implementation, through future decisions and ensuing actions. Plans can include a programme of actions, thus illustrating some of the nuanced uses of the terms policy, plan, and programme.

4.3 The disputed extent of state intervention in planning and EA

The philosophical and political issue of the extent to which the state should intervene in the economy and in physical development is contested, in EA and planning. The paradox of freedom holds that rights are not unconditional and control is necessary where the freedom of one person interferes with the freedom of another (Faludi, 1986).

This section considers three historical conceptions of democracy, and the preferred organisation of the institutions of state within countries upholding these different democratic ideals. Each of these state formations in turn affects the nature and extent of planning. In its original form as conceived in the US, the impact statement strategy seeks to regulate proposals without subjecting proponents to central coordination and control. As an institutional arrangement, it fits in a liberal democratic context. Centralised planning and control, another arrangement for achieving the same ends, would fit less well in this context, but could suit other contexts.

4.3.1 Three historic conceptions of democracy in philosophical thought: individual freedom, imposition of the general will, and a left-liberal middle way

The nature and extent of state control over individuals has been the subject of much philosophical thought and debate. The perspectives of a number of philosophers are outlined here to provide a basis for understanding three conceptions of democracy that have implications for planning and EA. John Locke and John Stuart Mill were proponents of individual freedom under liberalism, while Jean-Jacques Rousseau and

Georg Hegel advocated the imposition of a collective, democratic will of the people. Jeremy Bentham charted the middle way of the left-liberal agenda. The ideas of these philosophers, as described below, are sourced from Magee (1998).

The English philosopher, John Locke (1632-1704), is regarded as the supreme liberal philosopher and the chief founding father of empiricism. Locke held that everybody is born with a mind like a blank sheet of paper, a *tabula rasa*. The social implications of this idea, that by birth no-one is superior to anyone else, were revolutionary: Locke influenced the playwright Voltaire (1694-1778) whose writings fomented the French Revolution. For Locke, society is based primarily on voluntary transactions between free men, rather than on the interactions between government and citizens. Lockean ideas thus form the basis of liberal capitalism. The writings of John Stuart Mill (1806-1873), probably the best known English philosopher of the 19th century, were of similar import. In his most famous work, *On Liberty*, Mill argued that the individual should be able to do as he or she pleased so long as this did not cause significant harm to anybody else. "*As a judge once remarked to a defendant: 'Your liberty to swing your arm ends where my nose begins'.*" (Magee, 1998: p. 185).

The concept of liberty espoused by Locke and Mill is significantly different to that of the French philosopher, Jean-Jacques Rousseau (1712-1778). Rousseau held that society is a collective being with a will of its own, which is more than the sum of individual wills. Once people have come together to deliberate and decide an issue (possibly by a vote), the general will must then prevail even by forceful imposition over individual volitions. This concept of democracy is compatible with a limited concept of individual freedom. Georg Wilhelm Friedrich Hegel (1770-1831) insisted that individualistic conceptions of freedom are limited and that is only in societal groups that people can find self-realisation. Rousseau and Hegel thus provided the intellectual roots for the development of the totalitarian movements of the 20th century,

> "*communism and fascism – which likewise claimed to represent the people, and to have mass support, and even to be democratic, while denying individual rights; and which ... waged both hot war and cold war against the Anglo-Saxon democracies who based themselves on Lockean principles*" (Magee, 1998: p. 129).

Of the two leading Anglo-Saxon democracies, Britain has typically been more accepting of government intervention than the United States. This can be ascribed to the powerful influence of Jeremy Bentham's (1748-1832) philosophy of Utilitarianism on British institutions of government. Bentham held that actions should be judged by their utility or usefulness in bringing about certain consequences. Good consequences give pleasure while bad ones cause pain. The right course of action maximises pleasure and minimises pain, through procuring "*the greatest happiness for the greatest numbers*" (Magee, 1998: p. 183). Utilitarianism forms the basis of the left-liberal agenda for addressing social injustice through state intervention in society.

The following section discusses the institutional arrangements of the state within each of these conceptions of democracy, and the implications for planning practice.

4.3.2 *Political economies and the nature and reach of planning, illustrated with reference to the United Kingdom*

State formations (or political economies, to use a Marxist term) can be classified in four general categories, along a continuum ranging from more state intervention (on the left of the political spectrum) to less state control (on the right). The fourth category was added in the late 1970s. Prior to this time, the three main categories were (Taylor, 1998):

- socialism, in which the economy is under the 'command and control' of the state, from the centre; in physical planning this approach is characterised by comprehensive, blueprint planning (see definition in Table 3);
- social democracy, the so-called 'middle way' between socialism and liberal capitalism, which characterised most states in the western world in the quarter century after the Second World War (except the US); the productive economy is situated in the private sector and directed by competitive markets, with the state playing a determining role in physical, social and economic planning, for instance, in the provision of health care, education, basic income grants, and land use planning, in setting in place the welfare state and nationalising certain strategic industries and services;
- classical free market liberalism, which favours a decentralised free market as more productive, efficient, creative, flexible and responsive to peoples' needs; liberals (and libertarians) emphasise individual liberty and oppose state planning and excessive regulation as a burden on private enterprise.

A fourth category of state formations came to the fore in the late 1970s with the rise of the New Right (Taylor, 1998). This category is situated between social democracy and liberalism, and has come to be known as neo-liberalism. Neo-liberal policies are characterised by a shift from 'welfare' to 'workfare', with the state promoting economic growth. The philosophy of the New Right was adopted by Margaret Thatcher when she came to power as Prime Minister of Britain in 1979, and by President Ronald Reagan in the US in 1980.

Four months after the 1979 Conservative Party victory in the UK, the Secretary of State for the Environment, Michael Heseltine, was invited to address the Royal Town Planning Institute (Taylor, 1998). In his address, Heseltine said that his government wanted a planning system that did not impede development. He indicated that he was intent on lifting the burden of state restrictions as part of a strategy to regenerate the British economy. In a frequently quoted statement, he noted that "*thousands of jobs every night are locked away in the filing trays of planning departments*" (Taylor, 1998: p. 137, citing Heseltine, 1979: p. 27).

Taylor (1998) notes that a decade of Thatcherism did not significantly alter the British planning system and that, by the late 1980s, the 'hard line' rhetoric of the early years had been replaced by a more moderate approach. This he attributes to rising concerns about the environment and the view that the state (and planning) has an important role to play in environmental protection. During his term of office as Prime Minister, John Major strengthened planning to accommodate Conservative voters in southern England, who

were demanding increased protection of the natural environment and rural communities (Murdoch and Abram, 2002). Under his leadership, two Planning Policy Guidelines (PPGs) were introduced dealing with the environment and sustainable development. (PPGs were first introduced in 1988 to allow central government to provide national guidance to the urban planning framework.) PPG 1 of 1997, on *General Policy and Principles*, declares that a key role of the planning system is "*to enable the provision of homes and buildings, investment and jobs in a way which is consistent with the principles of sustainable development*" (Murdoch and Abram, 2002: p. 29, citing UK: DETR, 1997: p. 2).

Under Tony Blair, who was elected Prime Minister in 1997, the regional level of planning is being accentuated to ensure that the views and aspirations of regional stakeholders are accommodated in Regional Planning Guidance (RPG) notes, first established in 1989 (Murdoch and Abram, 2002). Although PPGs disseminate central state policy to regional and local levels (in this way the system is still hierarchically organised), there is an important shift from prescription to discretion, in which guidelines are flexible and local plans may only loosely adhere to PPGs. Indeed as the devolution to a system of regional planning proceeds, it is likely that local planning authorities may be subjected to conflicting advice from central and regional planning guidance. The balance between national (abstract and decontextualised) and local planning is shifting to the local, "*into a richer, more place-focused, more future-oriented and more localized form*" (Murdoch and Abram, 2002: p. 135, citing Vigar *et al.*, 2000: p. 289). Planning's spatial sensitivity (or territoriality) is being recast as a direct response to environmentalism, that is, spatial planning for sustainable development. Methods include a 'new' technology in the form of capability studies that show environmental constraints on development, close collaboration with stakeholders, and sustainability appraisals of different strategic options in the formulation of regional policies (Murdoch and Abram, 2002, citing UK: DETR, 1999).

4.3.3 Alternatives in EA: limiting a proponent's right to implement a proposal, by requiring open, accountable, and transparent planning to ensure a place for competitive options

Reflecting on 20 years of NEPA in the US, Caldwell (1993) notes that EA aroused opposition from libertarians for the same reasons that the New Right object to planning. To put this opposition in perspective, he notes that those who disapprove of environmental protection as public policy are a minority, as shown in American public opinion polls. This minority believes that environmental protection costs more than it is worth, and is counterproductive to jobs, earnings, and private property. They argue that environmental quality ought to be bought by those who feel the need for it, rather than through imposing inequitable economic burdens on the public sector (Caldwell, 1993).

Of importance for this thesis is the premise that it is the consideration of alternatives that pushes the role of EA beyond subservience to markets. This premise is inferred from Caldwell (1993: p. 17) who notes that, in the US, "*a traditional role of science in relation to political ambitions has been to serve not subvert*". Section 102(2)(C) of NEPA, he argues, may be regarded as subversive of the right of proponents to

implement their proposals, in that it requires them to consider alternatives to proposals with significant environmental impacts. This is a pivotal notion from a central player in the evolution of EA in the US: Caldwell introduced the action forcing mechanism of the EIS into NEPA (Caldwell, 1983).

The source of the idea of considering alternatives, which became a requirement of NEPA, could lie in the literature of rational planning (Meyerson and Banfield, 1955) or in advocacy planning (Davidoff, 1965). Davidoff criticised the practice of a city planning agency preparing a comprehensive, unitary plan. He notes that, in responding to the requirements of rational theories, the agency planner is burdened with inventing a few representative plans. He questions why planning fails to provide for the formulation of alternative plans by interest groups. Such plans would stimulate contention amongst advocates of competing claims of how a community should develop. This adversarial process would result in a more careful and precise use of information and values in planning. Thus, Davidoff argues for both advocacy and pluralism in planning, through the medium of the consideration of alternatives. Both advocacy planning and mutual adjustment are based on processes that are pluralist and adversarial, with participants making competing claims and expressing alternative volitions for future development.

In many EA jurisdictions, proponents can be from either the public or private sectors, which is unlike the US application of EA where the majority of proponents are government agencies. In insisting that the requirement to consider alternatives is met, EA procedures still exert less control over proponents than is the case in planning, where the planner directs the type and location of proposals from the centre. Caldwell (1993) notes that the role of the EIS is essentially **cautionary** in that it indicates what should not be done, rather what should be done. However, the EIS is **corrective** in requiring proponents to formulate alternatives that reduce impacts, so that the onus to find solutions to problems of externalities, when these are shown by an EA to be significant, rests primarily (and rightly) with the sponsors of proposals. In an earlier paper, Caldwell (1988: p. 82) advocates a more pro-active role for EA in the future, that of being "*more firmly integrated into the normal processes of planning and decision making rather than as a check upon them*". The convergence of EA and planning will become more pronounced as this integration occurs.

The procedural rule of alternatives in EA encompasses two principles of environmental management. Firstly, the potential polluter must pay, in this instance for the design of alternatives and the testing of their consequences in the EA process. Secondly, proponents (whether from the private or public sectors) must accept responsibility for the stewardship of their own activities, rather than abrogating to others (usually in the public sector) the task and cost of neutralising externalities in the public interest.

4.4 Is there a hierarchy of planning instruments, from sectoral licensing through EA to planning?

Haigh (1983) notes that the European Community's proposed Directive on Environmental Assessment of Development Projects was discussed in the British House of Commons in 1981, just when the government was trying to loosen its planning system. The government's response to the proposed directive was "*scepticism which, rightly or wrongly, has sometimes appeared as total opposition*" (Haigh, 1983: p. 594). He predicted that, with the (eventual) adoption of the Directive (which happened in 1985), the result would be a tightening of the planning system, albeit for a narrow class of listed developments.

Haigh (1983) suggests a hierarchy of state control over development that, in its most elementary form, starts with sectoral licensing, broadening into environmental assessment, in turn broadening into planning. In this hierarchy, environmental assessment is conceptualised as a technique or element of planning.

The practice of public authorities licensing dangerous, polluting, or unneighbourly developments (or activities) is old (Haigh, 1983). Haigh notes that, although these licensing procedures would entail some assessment of potential effects, the procedures are characterised by narrowness and privacy. They are narrow (or sectoral) because each licence focuses on one aspect, controlled by a specific authority. They are private because other authorities and the public are not privy to the assessment. Thus, a developer might have to apply for a number of sectoral licences, from a number of independent authorities, in seeking approval for a proposed development.

Environmental assessment improves on sectoral licensing in that it "*brings together, in a co-ordinated and public way, all the environmental effects of a development together with the views of those affected in such a manner as to inform the mind of the decision-maker*" (Haigh, 1983: p. 588).

Haigh assumes that the regulation of development starts with sectoral licensing and then evolves through EA to the apogee of the hierarchy – a fully fledged planning system. This is a normative assumption. Although Haigh argues that the British planning system is more desirable, he acknowledges that EA has "*the advantage that it is to some extent self-contained and capable of being applied even without the infrastructure necessary for a fully fledged planning system*" (Haigh, 1983: p. 588 and 589).

The impact statement strategy substituted analysis for reorganisation as a way of achieving bureaucratic reform in the US, which is less costly in terms of both financial and political resources (Taylor, 1984). Other strategies for achieving the objectives of EA were not adopted, according to Taylor, because of their enormous – and unobtainable – resource requirements. Such alternatives include (a) changing the legislative mandate of agencies and their oversight bodies, or (b) setting up one powerful environmental oversight body, or (c) integrating many agencies by creating super-agencies with multiple objectives.

The first two alternatives (a and b above) require central 'command and control' by environmental organisations, which is contrary to the philosophical stance of the impact statement as analytical competition within a system of mutual adjustment, which is introduced in section 3.2.2.4 and further discussed in section 5.1. In contrast to the centralised nature of planning, the decision making process of EA in its US form, is decentralised. Alternative (c) appears to be resource intensive and politically unfeasible. Furthermore, it is probably unworkable, given the problems associated with grandiose attempts by the state to comprehensively plan the environment. In his book *Seeing Like a State*, Scott (1998) analyses why large scale attempts to improve the human condition fail. In his book, he reiterates earlier arguments, such as those of Popper (1961), for piecemeal action and against comprehensive and centralised planning.

4.5 EA as a significant form of planning, and even a preferred form in some neo-liberal political economies

The arguments outlined above call into question Haigh's assumptions about the inevitable evolution of planning systems. Rather than viewing EA as a step towards planning, there is another perspective that an EA system is the planning instrument of choice. This perspective was held, most notably, by those involved in the development of NEPA in the United States.

The US Federal government had little that could be called a national planning system, and Haigh (1983) makes the point that NEPA filled a policy vacuum. The reasons for this vacuum are twofold. Firstly, planning is viewed in some quarters as undesirably socialist in nature (Haigh, 1983), and secondly, planning is mostly within the competency of local authorities, primarily through land use zoning (Pacione, 2001). In discussing the application of EA in Europe, Haigh compares the merits of continental Europe adopting a British-type planning system and the approach of adopting an EA system. He predicts that Europe would be more likely to adopt an EA system because it requires a less elaborate infrastructure than planning.

EA requires less government than planning and leaves more developmental decisions to the market. Instead of directing development via a central plan, EA responds to proposals originating in the market place of private sector interests and in the mandates of dispersed public sector authorities. It seems less than coincidental that EA, which emerged in a country with a predilection for less planning, spread around the world during a period (from 1970 to the present) that saw the collapse of centrally-planned economies, the spread of neo-liberal economic thought and practice, and the consolidation of a global capitalist economy. During this period, dominant trends included less rather than more government, and less rather than more planning. Marris (1998: p. 11) notes that "*governments, almost everywhere, are in retreat – fiscally overburdened and outmanoeuvred by the transnational corporations whose investment they court*". Thus, just as central planning was loosening its grip on the location and form of new development, a new planning instrument more congruent with the market was spreading across the globe.

The premise of this section is that EA is a significant, and in some jurisdictions preferred, form of planning. In building the argument in support of this premise, it is useful to reflect on the remarkable congruency between EA and planning systems in a neo-liberal economy. (The activities, purposes and characteristics of such planning systems are summarised in Table 5.)

Consider the stated purpose of trend planning, which is public sector intervention to neutralise neighbourhood effects, while accepting that development plans typically reflect market trends in the allocation of land. Consider the role of a planner acting according to the market-led, planning theory of implementation: bargaining, compromising, and in some instances accepting a less than ideal design to secure private development of a site. It is conceivable that an EA authority, responding to the same development proposal, could exert more rigorous checks on the market (by exercising the requirement to consider alternatives) than might be the case in trend planning.

Consider the action-centred view of planning, in which action (projects) may precede policy, where planning happens 'on the spot' because changes in the real world render plans and policies obsolete. (This is similar to what happens when project level EIA is confronted with, or uncovers, a need to consider more strategic issues. The need for more strategising can trigger, in turn, an SEA, a view that is at partially at odds with the hierarchical view of implementation from policy to action. It is 'partially' at odds with the hierarchical view because the cycle here is action first, then policy, to guide subsequent actions – the guiding of subsequent actions is consistent with the hierarchical view from policy to action, regardless of the source of the policy.)

Finally, consider planning as piecemeal action, rather than comprehensive redevelopment, in which development is generated not according to a central, predetermined and fixed plan, but is piecemeal in responding to dispersed, localised, and changing needs and pressures, in what is effectively a market place of needs.

In an article discussing arguments for and against planning, Klosterman (1985) describes the pluralist argument against planning. He notes that

> "*Lindblom, Wildavsky, and other critics of planning suggest that government actions should not be guided by long-range planning or attempts at comprehensive co-ordination but by increased reliance on existing political bargaining processes.*"
>
> "*In this model, government has no independent role other than establishing and enforcing the rules of the game and ratifying the political adjustments worked out among the competing groups. Thus it is assumed that political competition, like market competition, eliminates the need for independent government action, planning and co-ordination.*" (Klosterman, 1985: p. 156-157)

Klosterman points out that political markets (like economic markets) are not perfect. Certain individuals and groups wield more power than others and use their access to government officials to advance their interests and protect their privilege and wealth. In the neo-liberal state, business leaders are particularly privileged in that government

works hard to achieve their co-operation in advancing the social goals of economic growth and job creation.

In attempting to counter this shortcoming, EA procedures include the rule of public participation, and the International Association for Impact Assessment (IAIA) includes equity considerations as a fundamental element in its principles for social impact assessment (Vanclay, 2003). The lofty values and principles of the IAIA notwithstanding, this shortcoming of the political market is a real constraint on the effectiveness of impact assessment, and accounts for much of the scepticism expressed by NGOs towards the practice of EA (Wildlife and Environment Society of South Africa, 2000). The topic of social justice is discussed further in section 7.5.

In the conclusion to his paper, Klosterman (1985: p. 163) notes that "*critics such as Lindblom have revealed planners' traditional models of centralised coordination to be impossible in a decentralized democratic society*". He lists four vital social functions that public sector planning aims to provide. He poses a challenge to the profession in the form of an open question, whether planning, as currently practiced, deserves public support or "*whether other professional groups and institutional arrangements can better perform the vital social functions*" (Klosterman, 1985: p. 163). These four social functions are outlined below, followed by comment on the extent to which the EA institutional system assumes these functions.

The first function is to promote the common or collective interests of the community. As EA opens proposals, from either the public or private sectors, for public scrutiny, and provided an EA process is fair in upholding public interests, EA can be said to perform this function. EA further seeks to prevent degradation of the public goods represented by a healthy and pleasant environment. Given the essentially cautionary outcomes of EA, however, there are further public goods that would need to be provided independently of EA processes, such as managing protected nature areas and regenerating depressed urban areas. EA can thus be said to fulfil important aspects of the first function, although not completely.

EA clearly fulfils the three other functions listed by Klosterman, which are to:

- consider the external effects of individual and group action;
- improve the information base for public and private decision making, in considering both the immediate and long term implications of proposed actions; and,
- consider the distributional effects of public and private action, and even act as advocates for the most disadvantaged members of society.

In performing these four social functions, EA is, at least, a form of planning, if not an alternative contender in a different institutional form.

Friedmann and Douglas (1998) have summarised changes in the context of planning practice, which contain a number of pointers that reinforce the argument that planning and EA are converging.

> *"Planners are no longer exclusively concerned with the "central guidance" of market forces, or planning regulation. The new planning is more entrepreneurial, more daring, less codified. It is participatory, concerned with projects more than with the whole system of relations in the city; it seeks to forge limited consensus through negotiated and mediated settlement among contesting parties; it is a provider of strategic information to all participants in the planning process."* (Friedmann and Douglas, 1998: p. 3)

The pointers of convergence between the two systems are that planning and EA are both participatory providers of information, mostly about projects, and seek consensus among contesting parties to decide on courses of action. This argument does not imply that there should be no plans. Rather than considering decisions one by one, project by project, it is useful to refer to a range of plans when identifying the impacts of a project. A map showing open spaces to be preserved, tree preservation ordinances, a transportation plan, even a structure plan, can be helpful in assessing the impacts of a proposal. The need to rise above a project-by-project approach provides the *raison d'être* for Strategic EA – further evidence of the convergence of EA and planning.

The shift in the emphasis of planning, concurrent with the rise of EA, is that plans are not considered as sacrosanct but as flexible guides in a variety of decision situations. Planning considerations provide one set of inputs to operational decision making and sometimes, to the chagrin of planners, plans are departed from. Faludi (1987) notes that the aim of implementation studies should not be to evaluate the extent to which operational decisions are in conformance with a plan, but rather to assess the performance of a plan in providing useful guidance for action. Such studies "*may show ... the fundamentally unsuitability of plans as guides to action*" (Faludi, 1987: p. 127). Faludi is arguing here for a more modest, less heroic object of planning to include a focus on defining decision-situations, including the many issues raised by the generation and evaluation of alternative proposals, and in understanding the need for flexibility.

There is a cautionary note here for fervent advocates of SEA who may be expecting too much from this component of environmental assessment. The premises of SEA are, in some respects, contrary to the significant shifts in planning theory outlined above. Trends in planning that are contrary to the thrust of emerging theory of SEA include:

- a retreat from utopian visions for planning, which entails a retreat from what has been termed the 'normative malaise' of planning in which planners focus on the ideals of 'what ought to be' to the detriment of becoming involved in the specific context of 'what is' – a philosophical schism as old as the difference between Plato, who would support the more abstract and idealised arguments of SEA, and Aristotle, who would advocate the 'topical' (or situated) thinking of project level EIA (from *topikos* meaning local);
- less centralised control over land use;
- plans no longer considered as definitive and sacrosanct, but as flexible guides in a variety of decision situations; and,
- a more project-centred focus.

This section has argued that there is a converging evolution of planning and EA. The skills associated with planning are listed as

> "*applying knowledge to action, defining issues, mobilizing participation and reconciling conflicts, evaluating the potential impact of policies and their performance, and designing a framework for collaboration*" (Marris, 1998: p. 12).

EA practitioners would surely agree that these skills are central to their work.

4.6 Conclusions: the converging evolution of planning and EA providing valuable opportunities for mutual learning

Both planning and EA are based on an **interventionist theory of the state**, to protect the rights of individuals from the activities of others. EA generally requires less action by government than traditional planning, and leaves more developmental decisions to the market. In its original form, the impact statement strategy (of the US) regulates proposals without subjecting proponents to central coordination and control. The strategy achieves bureaucratic reform, in opening up agency decision making to multiple actors, through analysis and disclosure rather than reorganisation, making it less costly to implement than a fully fledged planning system. Instead of directing development via a centrally created and implemented plan, EA responds to proposals originating in the market place of private sector interests and in the mandates of dispersed public sector authorities. Nevertheless, the requirement to consider alternatives to proposals takes EA beyond subservience to markets, in that proponents are called to account and cannot formulate and implement a proposal solely as they see fit. The injunction to consider alternatives is invoked most strongly when a proposal is shown to have significant impacts, and shifts EA from an essentially cautionary activity to one that is corrective, in requiring proponents to formulate alternatives that reduce impacts. Thus, although EA entrusts the planning of proposals and alternatives to proponents, this is subject to the important proviso that planning and decision making are conducted openly, in the spirit of mutual adjustment, with whoever chooses to be involved, from whichever sector – whether from government, business, or civil society. EA procedures and ethics direct professionals to ensure that the participation of civil society is meaningful, as a means to counter powerful interests in government and the private sector.

Concurrent with the emergence and evolution of EA, **planning has been undergoing significant changes**. The ideal of planning has changed from comprehensive redevelopment according to a predetermined and fixed plan, to piecemeal action in response to dispersed, localised, and changing needs and pressures. The emphasis of planning has shifted from prescription to discretion, with the exercise of more flexible control, preferably through persuasion. Plans are only one set of inputs to operational decision making, alongside other contributions that could include SEA guidelines and EIA recommendations. Finally, the nature of planning has changed from a largely technical activity to an evaluative or normative activity. This change ensued from recognition that statements of goals and objectives are based on values and ought to be the subject of debate in a political process.

There is notable **correspondence between EA and planning systems** in neo-liberal economies, in terms of overall aim and functions, objectives, and activities. Planning and EA both aim to produce appropriate decision making concerning future courses of action related to the development of land and public services, although in its policy variant, EA is not limited to this type of development. The social functions of planning are to promote diverse community interests; facilitate participation and democracy; reconcile differences; enable social learning; consider the external and distributional effects of actions; and improve the information base for decision making through evaluating the immediate and long term implications of proposed actions. The cautionary role of EA only partially achieves the first function through its public scrutiny of proposals. EA fulfils all of the other social functions, if applied conscientiously. Planning and EA share the objective of protection and improvement of the physical, social, economic, and biophysical environment. The activities common to EA and planning include designing a framework for collaboration, mobilising participation, defining issues, applying knowledge to action, reconciling conflict so that parties can decide on mutually agreed courses of action, and the monitoring of implementation. The conclusions drawn from these many similarities are that planning and EA are converging, and that EA is a significant form of planning, if not an alternative contender in a different institutional form. Indeed, in some jurisdictions, EA is the preferred form of planning.

The converging evolution of EA and planning provides significant opportunities, as yet largely unrealised, for mutual learning. As Lawrence (2000: p. 607) observes, the literature of planning and EA is largely separate, with only "*limited and sporadic interaction*".

What can planners learn from EA? Like EA, planning seeks to address concerns about the environment and sustainable development. Planning can learn from EA practice through the adoption of capability studies that show environmental constraints on development; methods for assessing consequences, and formulating mitigation, in social and ecological impact assessment; and sustainability appraisals of strategic options in the formulation of regional policies and plans.

What can EA theorists and practitioners learn from planning? Planning theory reports on a normative shift from abstract, centralised prescription of policy to a greater emphasis on place, which requires flexibility and discretion in the local application of national and regional planning guidelines. This shift, applied to EA, would involve a preference for the output of SEAs to be couched in the form of flexible guidelines for downstream EIAs, rather than rigid prescription.

There are further benefits for EA from planning theory. While EA recognises the fact-value distinction and has experienced a trend towards more meaningful public participation, the overtly political approach of planning contrasts with the science-orientated approach of much EA theory and practice. There is relatively little in the EA literature on theories of how knowledge is used in decision making. Three of the planning theories outlined in this chapter are selected for the contributions they can

make to EA in this regard. The three theories are listed below, in the order of their chronological development, followed by the reason why they were selected:

- critical rationalism, for providing a participatory alternative to the perspective that the assessment stage is the preserve of specialists; for facilitating the incorporation of knowledge systems other than science; for emphasising the partial and fallible nature of all knowledge; and for insisting that both facts and values should be subject to challenge and argument;
- communicative action, for the insights it can add to the participatory nature of scoping and evaluation; and,
- *Realrationalität*, for a perspective on the exercise of power that is scarcely acknowledged yet inevitably a significant part of EA practice.

These theories are explored further in Chapter 6, for incorporation into EA theory in Chapter 7.

In his book, *Inquiry and Change*, Charles Lindblom (1990) characterised liberal democratic thought and the communist movement as representing two fundamental alternatives in strategies for solving social problems. A year before his book was published, the Berlin Wall was demolished, and the landscape of world politics changed dramatically in the space of a few years. The eastern block has largely dropped centralised planning and adopted market systems, in what often appears as a chaotic process of transition. While EA arose in the West, in a situation of less planning, it is now practiced around the world, in eastern block countries including China, and in many developing countries. The following chapter considers how EA is understood to work, both in its original form in the United States and more generally in a range of settings.

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CHAPTER 5: THEORETICAL EXPLANATIONS OF WHY AND HOW EA WORKS

It has been noted that "*it is not clear precisely how the EIA process works*" (Wood, 2003: p. 3). Wood cites Bartlett and Kurian (1999) who contend that theoretical understanding of EA is guided largely by implicit assumptions and models that have not been systematically articulated. As a first step in addressing this shortcoming, Bartlett and Kurian identify and describe six implicit models from a survey of EA literature, each of which contains a number of facets that characterise the EA process. These models, they suggest, can form the basis of EA theory building.

This chapter discusses why and how EA works to influence planning and decision making. Reasons are sought that explain the influence of EA – the why, with different facets of the EA process constituting the how. The issue is to identify which facets of the EA process are vital to its success (or influence), and which (if any) facets are redundant and can be excised without affecting the outcome.

The impact statement strategy of NEPA is revisited in order to explain why and how it works. Thereafter, Bartlett and Kurian's six models are outlined and critically discussed. The chapter concludes with a summary of the facets, offered by each model, that represent vital contributions to the EA process. These facets are incorporated into the theory for the practice of EA, developed in Chapter 7.

It is further proposed that three of the models be consolidated, leaving a total of four models. Of these, two models are of minor importance for the purposes of this thesis. The two main models characterise the dialectic of EA – its inherent contradiction. On the one hand, the inquiry-in-politics model provides an ideal aspiration for practice. The power-in-politics model provides a reality check, on the other hand, that requires a heightened awareness of the exercise of power. The EA process entails the continuous interplay of the opposite forces represented by these two models. The power-in-politics model requires the application of new EA methods to contain the abuse of power. The genesis of these methods is discussed in section 7.5: once in use, they should improve the performance of EA in addressing issues of environmental justice and environmental democracy.

5.1 Why and how NEPA works: the behavioural motivators of competition, pride, and the possibility of challenge in court

The NEPA system of EA incorporates some fundamental factors that motivate individuals to enhanced performance. The motivational factors of pride and competition, which have been described as intrinsic to the NEPA system, are discussed below.

Haigh (1983: p. 595) is critical of NEPA, which he characterises as "*ill thought out by a country which has no national planning system and has never believed in it anyway*". Others see the impact statement strategy of NEPA as a remarkable success, enduring over time despite executive indifference, particularly under the Reagan presidency (Caldwell, 1983; 1993). Wandesforde-Smith and Kerbavaz (1988: p. 162) move that:

> "*At the US Federal level, impact assessment works. We know how it works to influence project selection and design and to mitigate environmental impacts. It facilitates bargaining in the shadow of the law.*"

The two sub-sections below describe why and how the impact statement strategy works, under NEPA. The book by Serge Taylor (1984), *Making Bureaucracies Think*, is the source of much of the information in these two sub-sections.

5.1.1 The impact statement strategy for regulating government organisations: internal environmental assessors and external pressure groups

The impact statement strategy addresses a particularly difficult problem – that of regulating other government organisations (Taylor, 1984). While an organisation like the Environmental Protection Agency (EPA) can readily instruct a private sector company to meet air quality standards, or be sued or fined, it is not easy for the EPA to so instruct another federal agency, for instance, the Department of Defence.

> "*The essence of the impact statement strategy is a formal requirement that the regulated organisation analyze the "impacts" of its proposal on the social value of concern, and an informal expectation that this will lead to the installation of "analyst advocates" for this value inside the organisation and increase the political resources of private and public groups that favour the regulatory goal.*" (Taylor, 1984: p. 296)

The aim of the impact statement strategy is to make agencies less single-minded in the pursuit of their primary goal. The strategy forces agencies to attend to secondary goals, such as environmental protection, or affirmative action, or planning for the handicapped. The policy statement in NEPA does not, however, stipulate a secondary goal, nor is it a singular goal. Instead it proffers the goal of sustainable development (without using the term) – the Federal government is instructed

> "*to use all practicable means and measures ... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social,*

economic, and other requirements of present and future generations of Americans" (US: NEPA, 1969: Sec.101a).

Sustainable development in its entirety is more than environmental protection, and NEPA thus calls for a balancing act – the statute does not provide specific environmental standards. While it is not feasible to set centralised standards of substantive policy excellence for achieving balance, NEPA does set centralised standards of analytical excellence that EISs should uphold (Taylor, 1984). The analyses contained in EISs, produced in a variety of different institutional and geographical settings, form the basis for argument in many local forums. The balancing act is thus approached through context-specific deliberation and situated judgement that is related to realities on the ground.

In Chapter 3, it was noted that developmental agencies in the federal government appointed environmental assessors within their organisations in response to the requirements of NEPA. These assessors need autonomy and power to participate meaningfully in an agency's planning processes (Taylor, 1984). The assessors have to find a balance between showing loyalty to their agency and so increasing their internal influence (or power), and cooperating – sometimes even conspiring – with outsiders, in exercising their autonomy, to build external support for environmental advocacy within the agency. In their relations with outside groups, the assessors typically feel safer conveying information to environmental agencies rather than to private environmental groups. The environmental agencies, in turn, have closer relationships with private environmental groups, and can help them to phrase questions, requests, or demands that they can ask of a developmental agency, in their comments on a draft EIS.

Environmental advocates inside and outside of developmental agencies thus have mutually supportive roles – the insiders have information while the outsiders have motivation to act on the information. While some outside groups may lack a research arm, the public release of a draft EIS motivates "*adversely affected groups to organize and lobby*" (Taylor, 1984: p. 20).

Private groups compensate for the legal and political weakness of the environmental regulatory agencies in the US. In responding to a draft EIS, the more extreme comments of private groups help the environmental agencies look more reasonable. As an official in EPA's San Francisco office reports: "*We always look at the Sierra Club's comments before we send in ours, so that we don't come out asking for more than they have*" (Taylor, 1984: p. 266).

In the majority of EAs, the environmental assessors work in the spirit of mitigation. In this spirit of compromise, they build credit in their organisation, which allows them to occasionally and legitimately advocate that certain projects be abandoned. The internal assessors are in a position to facilitate the integration of environmental considerations into the planning and design process of their agency, something an independent EA consultant would be unlikely to achieve.

> "*By becoming familiar with the agency, the analysts might discover how to change the agency's search and decision-making procedures so that it would be easier for the agency to find and adopt superior trade offs.*" (Taylor, 1984: p. 301-302)

5.1.2 Analytical competition and mutual adjustment in the shadow of the courts

Taylor (1984) proposed that NEPA works because it creates a market in analysis. As outlined in the section on mutual adjustment, agencies and their critics (in other agencies and civil society) engage in analytical competition, regulated by the rules of the EA procedure. Solutions to complex problems rarely have quick and radical solutions, and Taylor argues that the impact statement strategy helps participants work out their differences and approach these problems incrementally. This informal accommodation happens on an ongoing basis and, over time, the lessons are codified, bringing stability to the continuing relationships of agencies and other actors in the EA process. The result is better knowledge that facilitates the evolution of policy and decision making.

Taylor's explanation of the ultimate success of the impact statement as a policy instrument has agencies anticipating the reactions of potential critics and either avoiding or managing potential conflict. He thus views EA (under NEPA) as a formalised variant of Lindblomian partisan mutual adjustment, in which participants are engaged in social learning about how to balance competing social values. He views the impact statement strategy as a process for institutionalising environmental values and the social thinking necessary for intelligent trade-offs between different goals.

This analytical competition takes place in the shadow of the law. In disputes, private organisations can turn to litigation in the courts to discredit the analyses contained in an EIS. The potential for court oversight, even if not exercised in a particular project, strengthens the role of the non-litigating commenting agencies, who

> "*become simultaneously more dangerous as opponents and more valued as potential allies, and the development agencies have much stronger incentives to draw the environmental agencies into their planning process and to explore possible accommodations*" (Taylor, 1984: p. 269).

The courts have tended not to focus on technical details like the choice of analytical methods (Taylor, 1984). Judges have rather dealt with planning matters, such as the question of reasonable alternatives and whether there is evidence that the environmental specialists and engineers have worked closely together in developing the preferred alternative. Thus while judges evaluate agency performance on the basis of a narrower zone of reasonableness, this creates a wider zone of unpredictability in the minds of the agency managers about what the courts might do in a particular case (Taylor, 1984). The unpredictability of possible public exposure in the courts is a powerful incentive for managers to motivate their staff to increased levels of competency, whether in matters of engineering design or environmental analysis. Pride in their institutions and their work provides the psychological basis for action by agency officials in seeking to maintain the reputation of their institutions in the face of societal challenge (Wandesforde-Smith and Kerbavaz, 1988).

By the 1980s, US Federal agencies not only tolerated EA, but even came to love it (Wandesforde-Smith and Kerbavaz, 1988, citing Taylor, 1984). Culhane *et al.* (1987) further note that agencies integrated their planning documents with EISs, which led to the standardisation of processes across agencies. Taylor (1984) reports that the reforms of the 1978 NEPA regulations restored informality to the deliberations and negotiations between agencies (and between agencies and outsiders) that the era of excessive EA litigation (in the 1970s) had swept away. Environmentalists were still able to challenge agencies in court, although the potential for challenge was perhaps more important in changing agency behaviour than the court actions themselves.

The NEPA policy instrument thus incorporates two sources of positive behavioural motivation, pride and competition, to maintain its functionality, under fear of possible legal remedy should these prove inadequate.

It is important to note that the analytical competition desired within the EA process does not represent a competitively ruthless individualism, nor an adversarial debate that rewards hyperbole. The competitive element is structured and contained within an administrative system that values and nurtures the incremental building of relationships based on collaboration, reciprocity and trust, in coping with the uncertainties of planning for the future.

5.2 Six implicit models in EA theory that explain why and how EA works

Wandesforde-Smith and Kerbavaz (1988) note that the research literature on EA has not revealed much about how and why the EA process works in settings other than the United States. Bartlett and Kurian (1999) agree that there have been very few theoretical attempts to understand how EA works in a range of settings. They identify and describe six explanatory models, which are summarised in Table 7 (overleaf) and discussed in the text of this section. They label these provisionally as:

- the information processing model;
- the organisational politics model;
- the pluralist politics model;
- the institutionalist model;
- the political economy model; and,
- the symbolic politics model.

Each of these models is described and discussed below in terms of its prevalence in EA systems and key assumptions. A combination of three of the models described by Barlett and Kurian (1999) – the organisational politics, the pluralist politics, and the institutionalist model, account for Taylor's (1984) explanation of EA under NEPA, which is discussed in the previous section. Information on these three models in this section builds on what has already been presented. General differences between the US application and other EA systems are raised.

Table 7: Analysis of implicit models in EA theory (information mostly sourced from Bartlett and Kurian, 1999)

EA model/ ***Prevalence*:**	**Activities and outcomes**	**Characteristics and assumptions**	**Type of *policy making*/ rationality**	**Contribution to EA theory**
Information processing model/ ***Overwhelming majority of EA literature***	Collection, analysis, and communication (in impact report) of **information**; focus on **quantitative** techniques for impact prediction; public involvement necessary but limited, mostly as source of information; technocratic decisions; **specialist** monitoring/auditing in implementation	Rational comprehensive approach desirable and possible; more and better information produces **right decision**; **value neutrality** of assessment; decision independent of EA process, with **apolitical**, unitary decision taker who decides on technocratic merits Little questioning of the need for development and ignores or wishes away hidden political agendas and ulterior motives	*Decisionist/* Technical rationality	Analysis of consequences
Organisational politics model/ ***Internal reform model of NEPA; largely limited to government***	**Reform** or transform **internal politics** of organisations over time, through change of structures, planning processes, and practices, including who is hired, to adjust corporate culture to include environmental values	Assumes can institutionalise a value by appointing a group of **advocates** inside organisation committed to this **value;** presumes unavoidably political or relational nature of EA Requires an active role for environmental team in planning and design; in some EA systems, use of external consultants militates against internal reform and active role	*Political process/* Communicative rationality (defined in section 6.4.1)	Reform of organisation by internal advocates, in active political role
Pluralist politics model/ ***External reform model of NEPA; In most EAs, to a greater or lesser extent***	Increased **involvement** for public and organised interests in open and transparent administration; most efficient and acceptable way of regulating polyarchic agencies (government by many); pluralist interdependent decision makers in **competition** and **conflict** – negotiating, debating, bargaining, and **accommodating**, in local forums, using situated judgement, with imposition when negotiation fails	EA serves to **politicise** technological decisions; influence of participation varies, but is strengthened by **alliances** between internal environmental advocates & external groups Common criticism that only organised groups involved and poor and disempowered excluded: counter argument notes **greater equality of dispersed power** (unilateral power is highly unequal); criticism can be remedied – as a **rule-based** version of **mutual adjustment**, EA can be structured to give voice to difference with respect to gender, age, race, ethnicity, religion, ideology, way of life, class, wealth, speciality, access to power, and ability to use force	*Formalised mutual adjustment/* Social or communicative rationality	Widespread participation, giving voice to difference; Analytical competition; Rule-based, probed, mutual adjustment; Politicises decision making

Table 7 (continued): Analysis of implicit models in EA theory (information mostly sourced from Bartlett and Kurian, 1999)

EA model/ ***Prevalence*:**	**Activities and outcomes**	**Characteristics and assumptions**	**Type of *policy making*/ rationality**	**Contribution to EA theory**
Institutionalist model/ ***Normative – what ought to be***	**Transformation** of political **institutions** of society as a whole, of which organisations only a part, ito mandates, procedures, rules, routines, values and culture, to incorporate science and **ecology** into decision making	Social construction of reality is done in institutions, both in federal agencies and organisations that interact with them; concern not with procedures, but with achieving the **substantive** intent of EA, which is stated as asserting the **primacy of environmental** over economic **considerations** (which is a contestable assertion)	*Institutionalist/* Ecological rationality, a form of technical rationality	Emphasis on imposing environmental values
Political economy model (or preferably – Private sector model)/ ***Voluntary uptake by (mostly large) corporations and banks***	Includes voluntary **EA by banks** iro real estate transactions, and in lenders like the World Bank; Environmental Management System (**EMS**) certification; environmental reporting as per Global Reporting Initiative (**GRI**); product **ecolabelling** schemes; cleaner production Outcomes: internalisation of externalities and prevention of environmental harm	**Voluntary private sector** initiatives using new policy instruments (such as ISO 14 001) in which EA imbedded; demand arises in market, exercised through consumer choice – using **market forces** of **economic advantage** to enhance environmental management Corporations protect themselves against **risk** from existing and future environmental degradation and financial **liabilities** for clean-up; cost cutting through ecoefficiency; **improved relations** with regulators and public	*Competitive market forces/* Technical rationality	Need to move beyond command and control by the state
Symbolic politics: **1) Merely symbolic** ***/Common criticism of EA*** **2(a) and 2(b): Powerful symbolism/** ***In most EAs, either (a) or (b), to greater/lesser extent***	**1)** Critical view of EA as **token** gesture to appease environmentalists **2(a)** EA as iterative mechanism for reaffirming moral **commitment** to environment **2(b)** EA as duplicitious legitimation of the exercise of **power** by developers – rationalisation masquerading as rationality	**1)** EA a formality (**merely symbolic**); implementation inadequate; few read reports; little effect on decisions **2(a) & 2(b) Powerful symbolism**: language has power to shape meaning and change / create events and reality as part of **struggle** over interpretation of the world – analysis in **politics** creates strategically crafted arguments used in: **2(a)** for environment, in positing collective values; **2(b)** by developer, using EA as tool in the arsenal of power to **manipulate** and control opposition – rhetoric of science to **legitimise** decisions already made on political grounds	**2(a) and 2(b)** *Political struggle over interpreting the world – realpolitik/ Realrationalität*	**2(a)** Advocacy for environment **2(b)** Need for power analytics to counter abuse of power

5.2.1 The information processing model

A survey of the EA literature, mentioned by Barlett and Kurian (1999) but not referenced, shows that the overwhelming majority of papers, produced by scientific analysts and technical experts, fit into this model. This model has EA processing information for a unitary decision maker who should be apolitical. EA addresses problems of information, which include missing, defective (inadequately studied, or spatially or temporally limited), untimely, or unusable information (in the wrong format). There is a focus on quantitative techniques for data collection, analysis, and prediction, and public involvement is viewed as necessary but limited, mostly as a source of information.

The model assumes that the rational comprehensive approach to decision making is not only desirable, but possible. It further assumes that more and better information produces the right or correct decision, based ideally on technocratic merits rather than on political considerations. Bartlett and Kurian (1999) note that this assumption on the use of information is contrary to the findings of a century of social science research: better information only occasionally produces better decisions, unless aided by other causal factors. The normative assumptions of this model are value neutrality, technical rationality, and a decisionist perspective on policy making – the political nature of decision making is not recognised, or decried.

The authors conclude that this is the only model of the six that has no further contribution to make to theorising about how EA works, because it is hard to identify any strengths of the model. While many assumptions and features of the rational comprehensive approach are problematic (as discussed in a previous section), analysis of potential impacts is an important component of EA. Section 6.1 introduces critical rationalism as a more appropriate way to approach the task of analysis of consequences.

5.2.2 The organisational politics model

Taylor (1984) describes how EA in the United States harnesses the pluralism and adversariness of specialised agencies. The impact statement strategy that he describes (in minute detail) incorporates the elements of internal reform of organisations and external pressure on agencies through pluralist politics and court oversight. These elements together contribute to reshaping the institutions of governance and the environmental values of participants, through the ongoing interactions of a range of individuals, groups, and organisations. Taylor's model thus incorporates three of the models described by Barlett and Kurian (1999).

With regard to the organisational politics model, Barlett and Kurian observe that the extensive use of contract consultants in many EA systems is counterproductive to the goal of internal reform. Caldwell (1998: p. 13) declares assertively that "*farming out EIA to external consultants defeats its purpose*". Caldwell argues that full benefit from EA is only achieved when the process and its findings are internalised within the

structure, functions, and personnel of an organisation. Organisational learning is unlikely if outside specialists are not integrated in agency procedures.

In South Africa, for example, the EIA regulations require the use of independent consultants, defined as "*a consultant not in the permanent service of the applicant*" (RSA: DEA&T, 1998a: p. 6). In addition, a contract consultant ceases to be independent if he or she earns more than 50% of his or her work from the same company, or has a financial interest in the undertaking of a proposed activity, such as might accrue from involvement in design work. In the process of earning up to 50% of one's work from a company, one might gain insight as to how their planning and design procedures could be changed to better incorporate environmental factors. Even so, it is questionable whether an outsider with ideas about procedural reform could exercise the same influence as a staff member (or environmental unit) within an organisation.

This South African legal requirement indicates that EIA is perceived to work in the mode of the information processing model, which places emphasis on the value neutrality (or independence) of the assessment process. Brown and Hill (1995: p. 224) characterise this approach as EA "*undertaken at arm's length from the proponent and the proponent's designers*". These authors state that the majority of EA systems are dominated by the requirement to produce an independent, stand-alone impact report, particularly in developing countries where the focus is often on making sure that the impact report is good enough to pass the approval hurdle. (This represents the merely symbolic model of EA – see later.) This focus militates against opportunities for repeated interaction between EA specialists and the project design team. Such interaction is important in turning EA from a passive role (as provider of information) to an active role in contributing "*apposite environmental advice in good time for each of the decision points in the planning process*" (Brown and Hill, 1995: p. 223).

Bartlett and Kurian (1999: p. 422) comment that the organisational politics model provides a "*more plausible and powerful explanation of EIA effectiveness*" than the information processing model. In terms of its prevalence in EA systems, they mention that the organisational model is largely limited to administrative agencies. In this, they err. The many applications of EA in the political economy model are based largely on the organisational reform of private firms.

5.2.3 The pluralist politics model

This model of EA serves to politicise technological decisions through increased involvement for the range of groups and agencies that make decisions in polyarchic society – meaning governance by many. It is present in most EA systems, to a greater or lesser extent.

5.2.4 The institutionalist model

Bartlett and Kurian (1999) link this model to the organisational politics model, but note that formal organisations only constitute one type of political institution. They categorise Taylor's (1984) explanation of EA under NEPA as a combination of the

organisational politics and the pluralist politics models. This categorisation does not do justice to Taylor's model, which clearly includes an institutional perspective. Taylor's description of the impact statement strategy involves interaction between a range of agencies and groups, inside and outside of government, including the courts, federal, state and local agencies and authorities, and a range of interest groups and organisations in the private sector and civil society. It is not restricted to the reform of federal agencies as individual organisations, although this is an obvious feature of the impact statement strategy. The key characteristics of Bartlett and Kurian's institutionalist model are discussed below, to identify those aspects that differentiate it from Taylor's model.

Bartlett and Kurian (1999: p. 427) propose that the institutionalist model "*most explicitly and extensively integrates normative principles with its operational aspects*". The word 'normative' (in the quote above) is the key distinguishing feature of their perspective of the institutionalist model. This model focuses on the transformation of values or world view, not only of organisations, but of society as whole: it seeks reform of "*the administrative state from within ... while remaking individual values and patterns of thinking and acting*" (Bartlett and Kurian, 1999: p. 425). The reforms of NEPA, or EA more generally, become the norms of the future. The norms to be advanced and incorporated into human behaviour in institutions include the application of scientific information in decision making, particularly from the science of ecology.

Over the years, Caldwell has been an articulate exponent of science "*as an informant and corrective for public policies impacting on the environment*" (Caldwell, 1993: p. 15). He describes the limits of science in EA, as follows: science is not definitive, "*seldom indicative of the policy choices to be made*" (p. 16), and perhaps best applied in testing the assumptions underlying the programmes or projects being considered.

> "*But the assumptions underlying public policy decisions are not always demonstrably right or wrong. They often express beliefs regarding ethics, equities or economics that fall beyond the reach of science; these are often beliefs that move political decision makers. Science moves politics when its methods or findings arouse public concern or apprehension – as in the climate change and ozone issues. Indeed, the intended role of science in NEPA went far beyond impact analysis.*" (Caldwell, 1993: p. 16)

The intended role of science in NEPA, only partly realised, was to facilitate applied research into environmental issues. This role, however, is not the focus of the current discussion. What is pertinent is that Caldwell (1995) argues that EA is fundamentally about beliefs or values and, in this regard, his writings lend support to the institutionalist model.

> "*On balance, the politics of the environment is a politics of value rather than of interests. It resembles more the politics of morals and religion than the politics of who gets what, when, where, and how.*" (Bartlett and Kurian, 1999: p. 427, citing Caldwell, 1995: p. 171)

Dickson (2000) argues, however, that the solution of environmental problems is not contingent on changes in perceived moral obligations to the environment. One of the ethicist views discussed by Dickson describes key environmental agents whose decisions shape the way the environment is used – agents such as proponents, engineers, and decision makers in EA. Once these agents have been persuaded to adopt new environmental values and attitudes, ethicists suggest they will no longer take decisions that cause environmental degradation. Dickson argues that change in decision making is not guaranteed, because there are powerful pressures on such agents to choose non-environmental options, such as pressure to reduce costs. These pressures can only be reduced through state regulation, for instance, by banning certain activities, regulating others to conform to standards, and providing economic incentives for preferred options or penalties for less favoured options (Dickson, 2000). Ethicist conceptions are nevertheless required to convince the state to adopt such regulatory measures, but they occur outside the realm of EA. The introduction of an EA system is a regulatory approach that requires conformance to standards of analytical excellence, to inform a process of decision making in which the values and volitions of participants are considered and balanced.

The institutionalist model assumes that policy is based on a social construction of reality and that this construction is done in institutions. The emphasis is thus on socio-psychological aspects and the substantive intent of NEPA rather than its procedural provisions. EA influences the social construction of reality through

> "*restructuring rules and values, both in federal agencies and in the organisations that interact with them through the forced institutionalization of ecological rationality*" (Bartlett and Kurian, 1999: p. 426, citing Bartlett, 1997: p. 57).

There are two aspects of Barlett and Kurian's perspective to be challenged. The first issue is the notion of forcing or imposing value transformation. Taylor's (1984) explanation of the impact statement strategy has the internal environmental assessors introducing consideration of a secondary goal into the activities of an agency that has a primary focus on the delivery of some service, for instance, building dams, or producing timber. Taylor describes EA as balancing different values in development, not the forced imposition of environmental values. Inevitably, there are gradual changes in institutional and personal values over time, as participants learn about environmental issues and how these can be readily incorporated into project planning and implementation. The forced imposition of values, even in advancing socially benevolent goals, is questionable, because this imposition is unlikely to produce the desired outcome of better decisions without interventions to reduce other powerful influences that also impinge on decision making.

The second issue is Bartlett and Kurian's advocacy for "*the priority of environmental over economic concerns*" (p. 426), which they base on the notion of ecological rationality. This notion is contestable, as explained below (and as argued in section 6.1.1).

Ecological rationality is assumed to be a more fundamental form of reason than either economic and political rationality and "*hence should take precedence over them in collective decisions*" (Dryzek, 1983: p. 5). Other forms of human reason "*should step aside in favour of the superior claims of ecological rationality*" (p. 9) in all decisions impacting on the environment. Who can exercise the claims of ecological rationality? If "*nature knows best*", as Dryzek argues, quoting Commoner (1972: p 29), who speaks for nature? Is ecological rationality expressed through the voice of ecologist kings aspiring to the order of Plato's philosopher kings? Perhaps in anticipation of this rhetorical question, Dryzek states a preference for a process of mutual adjustment, but only after prior imposition of an ecological constraint, such as the assimilative capacity of an ecosystem for a given pollutant. Dryzek makes no mention that determining the ecological constraint is often not an easy task. In some situations, Taylor (1984: p. 318) notes, determining the constraint is "*scientifically unresolvable at the present time*". The example he describes is the effect of small doses of carcinogens – while the issue is capable of being scientifically stated, the 510 000 laboratory animal tests required per suspected substance make it a "*trans-scientific*" issue (p. 318). In such situations, it is difficult to separate factual and value issues.

In ecological rationality, the boundary within which mutual adjustment can proceed is thus drawn beforehand. The architect of the boundary is not identified, save that

> "*the well known failings of hierarchical, centrally-controlled decision structures in other realms make it highly unlikely that they would cope successfully with ecological problems*" (Dryzek, 1983: p. 9).

If the defects of centralised control by ecologists are to be avoided, the likely alternative is mutual adjustment for determining the ecological constraint in a particular context, which (by definition) involves advocates of other decision factors. The superior claims of ecological rationality appear suspect as soon as one attempts to implement the idea. Dryzek argues that "*there is little room for trading off ecological rationality against other forms of reason*" as such tradeoffs "*require sacrificing some homeostasis for some other benefit*" (p. 8). Herein lies the second defect in the argument – if there is 'little room' for trade-offs, there is at least 'some room' for sacrificing some ecosystem homeostasis (the ability to adjust to change). How is society to go about these 'little' trade-offs, before continuing with its normal operations?

Taylor (1984) argues that the potential for ecological accommodation in the balancing act of sustainable development is a function of the amount of 'slack' present in particular projects. Organisational slack is defined as "*the existence of resources above and beyond the minimum needed for survival*" (Taylor, 1984: p. 133). In a project, this is reflected in the amount by which a project's financial benefits outweigh the costs. If the benefit-cost ratio is 'fat', more money can be spent on environmental mitigation without compromising the viability of the project. Dryzek would dismiss this as resorting to an inferior economic rationality, but economic realities cannot be wished away. While one might be generally in favour of maintaining ecosystem homeostasis, the amount one would be prepared to forfeit would vary, depending on the nature of the challenges facing society in the context of a particular decision. Consider, for instance, the disparate

contexts of jobs for the young, poor billions of the South and the ecological preferences of some of the older, richer millions of the North.

Neither of the two aspects of Barlett and Kurian's perspective of the institutionalist model that have been challenged, namely, the notion of forcing value transformation and their advocacy for the priority of environmental over economic concerns, are necessary assumptions of the institutionalist model. Institutional economic approaches to environmental management, as elucidated by Söderbaum (1987), emphasise interdisciplinarity and the role of institutions, actors, and power relationships, and try to be conscious of values and ideologies. Institutional economics rejects the positivistic assumptions that outside analysis can be value-free. Instead of the aggregated approach of cost-benefit analysis in project appraisal, institutional economics proposes a disaggregated approach, which encourages many-sidedness in the analysis of alternatives, impacts and interests. This approach is also called positional analysis. The characteristics of institutional economics listed above can further inform the institutionalist model of EA.

A recent initiative that seeks to advance the transition to sustainability has been termed sustainability science. With regard to the institutional innovations required, one of the core questions of sustainability science is to explore

> "*the options for combining different ways of knowing and learning so that social actors with different agendas can act in concert under conditions of uncertainty and limited information*" (Kates *et al.*, 2000).

5.2.5 The political economy model

The name of the political economy model is obscure and possibly confusing. In this thesis it is renamed the private sector model in recognition of the primary context in which the model is used. This model of EA includes a range of instruments for environmental impact management, which are adopted mostly by business and industry on a voluntary basis (RSA: DEA&T, 1998b). Environmental Management Systems (EMS), environmental reporting, and ecolabelling schemes are examples of this model, which typically imbed a form of impact assessment within the other requirements of the model.

The demand for these instruments arises in the market, with participating companies thought to gain economic advantage over others who are not certified in terms of these instruments. The primary direct benefits are protection from risk arising from liabilities for rehabilitation of natural systems subject to contamination, and cost savings from measures that improve ecoefficiency – reducing resource use or producing less waste, which benefits both the environment and the financial bottom line. Indirect benefits accrue from improved relations with the public and regulatory authorities.

While this model includes a semi-political element in the sharing of information with stakeholders, the focus is mostly on management systems and the technical aspects of impact monitoring and reduction. A critique levelled at these instruments is that

companies themselves tend to decide what environmental aspects of their activities are most deserving of attention, often on financial grounds, and there is much less room for public participation than in the other models of EA. For example, ISO 14 001 (South African Bureau of Standards, 1996) does not require disclosure of impacts and the findings of audits to the public. Critics point out that self-regulation without disclosure is a contradiction in terms (European Environmental Bureau, 1996). In response to this criticism, industrial environmental managers have suggested that these instruments are better described as voluntary initiatives rather than self-regulation.

The most significant difference from conventional EA is that these instruments usually focus on management of existing activities. In such situations, the anticipatory element of EA is absent.

5.2.6 The symbolic politics model

There are two versions of this model. In the first, EA is criticised as merely symbolic, a token gesture to pacify the environmental lobby, and a paper hurdle that has little effect on decisions. This is a common criticism of EA by environmentalists. This is the **merely symbolic model** of EA.

The **powerful symbolic politics** model, the second version, recognises the power of language in shaping meaning and changing outcomes. Given the inevitable diversity of volitions, participants on all sides craft strategic arguments to advance their values and interests. EAs are manipulated to support certain outcomes, and reports use language not to describe but to signify meaning in attempting to create reality that is consistent with participants' preferred futures. Developer and opponents alike construct arguments that find expression in EA reports and the subsequent submission of comments. The powerful symbolic politics model is present in many (most?) EAs, either as arguments for and against a proposal.

An EA report prepared by environmental advocates would argue in favour of environmentally preferred outcomes, including the no development option. In this case, EA reaffirms a moral commitment to the environment. Alternatively, an EA report prepared by a proponent would use the rhetoric of science to legitimise the developer's preferred outcome. In Bartlett and Kurian's (1999: p. 418) paper, this perspective is described as "*the duplicitous legitimation of the exercise of power by the powerful*".

But is the shaping of meaning duplicitous, which means deceitful or two-faced? If both sides are arguing for what they believe or want, where is the deceit – is it not more honest than a pretence of objectivity? Deceit arises:

- when unequal power not only creates but enforces the dominant interpretation such that the manipulators get their way, and the inequality of power does not allow opposing views to be heard and adequately considered – as Soderbaum (1987: p. 152) observes "*many-sidedness can be seen as the antipole of manipulation*";
- when rationalisation masquerades as rationality – where strategic arguments are crafted after a decision has been taken on grounds that are not made explicit.

5.3 Summary and conclusions: facets of EA vital to its success in influencing planning and decision making, and the dialectic of EA

There are elements of reality in each of the EA models discussed in this chapter. What follows is a summary of the facets of each model that represent vital contributions to the EA process. The key words summarising each facet are highlighted in bold font. As relevant facets are only highlighted once, the list of vital facets for EA as whole can be taken as the sum of all facets in bold, across all models.

With regard to contributions to EA theory, the organisational politics model:

- stipulates both a **passive and an active role for environmental assessors** – passive in providing information on environmental consequences, and an active role in planning, design, and agency decision making;
- provides the potential for ongoing **organisational reform through continued interaction** between traditional agency staff (such as engineers) and internal environment assessors who are advocates for the environment; and,
- recognises **EA as a political process**, in the sense of relational approaches to decision making.

The pluralist politics model:

- provides **structured opportunities for participation** to a wide variety of groups and agencies to voice their concerns and engage in decision making at a number of stages in the EA process;
- **advocates analytical competition** to improve understanding of consequences, with specialist analysis in support of inquiry by citizens and functionaries;
- reaches decisions via a **rule-based system of mutual adjustment**;
- provides an **opportunity for appeal**, most forcefully **though a legal remedy** in which plaintiffs can challenge a decision in court, on the basis of inadequate compliance with the law; and,
- facilitates **social learning by proponents**, who gradually develop understanding of the reactions of potential critics, putting them in position to select and design proposals (and mitigation measures) that avoid or manage conflict.

In terms of contributions to EA theory, the institutionalist model is separated into two variants that differ in some respects. The first is Barlett and Kurian's model. The second variant arises out of the critique of the institutionalist model (in section 5.2.4 above), and is termed the institutional politics model. This model is more overtly political in nature, in the sense of politics as "*interpersonal value-based interactions*" (Portney, 1991: p. 200). Two separate lists provide a summary of facets for each variant of this model. Points (a), (b), and (c) in each of the two lists are directly comparable: thus point (a) in both lists relates to institutions, (b) to values, and (c) to the epistemology of knowledge in each variant (how we can learn and know).

Bartlett and Kurian's (1999) institutionalist model:

a) seeks **reform of societal institutions**, including the administrative state, through a **restructuring of rules** and the **remaking of individual values** and patterns of thinking and acting – an integration of normative principles with operational aspects;
b) **imposes a value**, that of ecological rationality, through forced institutionalization; and,
c) emphasises **interdisciplinarity**, and the application of scientific information in decision making, particularly from the **science of ecology**.

In terms of contributions to EA theory, the institutional politics model:

a) acknowledges the **role of institutions, actors, and power relationships**, and tries to be conscious of values and ideologies, recognising that the politics of the environment is a politics of value rather than one of interests;
b) views EA as **balancing different values in development**, with inevitable and gradual changes in institutional and personal values over time, as **participants learn** about social and environmental issues and how these can be practically incorporated into planning and implementation;
c) explores options for **combining different ways of knowing** and learning so that social actors with different agendas can act in concert under conditions of uncertainty and limited information; and,
d) **utilises a disaggregated approach**, through **many-sidedness in analysis** of alternatives, impacts and interests – this approach is also called positional analysis.

The contributions to theory of the institutional politics model (points a to d above) are similar to those of three other EA models – the symbolic politics (point a), organisational politics (point b), and pluralist politics (points c and d) models. The commonalities are based on recognition of the unavoidably political nature of EA. The separation of these into four different models is somewhat superfluous, notwithstanding the benefits to understanding of the different perspectives. The institutional, organisational, and pluralist politics models are thus combined into what could be termed the analysis-in-politics model of EA, which is what Taylor (1984) terms the impact statement strategy of NEPA. The term analysis may be limiting, in that it conjures up images of a purely specialist endeavour. The model could also be termed the information-in-politics model, but information has a passive connotation. For these reasons, the inquiry-in-politics model is preferred. The term inquiry more readily encompasses participation by lay persons and the possibility of drawing on epistemologies other than that of science.

The symbolic politics model is distinct, for a number of reasons discussed in section 5.2.6, and is renamed the power-in-politics model. This model necessitates the analysis of actor configurations to understand power relations in the context of a proposal under investigation. In this regard, EA theory can draw on Flyvbjerg's (1998a; 1998b; 2001)

concept of *Realrationalität* and its antidote, power and planning analytics, which are discussed in section 6.2.4. Section 7.5 considers ways to approach the study of power relations in EA and the genesis of methods to contain the abuse of power in the EA process.

The grouping and renaming of models reduces the political models from four to two, in juxtaposition to each other: the inquiry-in-politics model as the way in which EA ought to work, and the power-in-politics model in recognition of the way in which politics often works in practice. These two models represent the dialectic of EA – its inherent contradiction, manifest in the ongoing interactions between the forces of rationality and power.

The theoretical models of EA are listed below in descending order of importance, with the most important model at the top of the list:

- the inquiry-in-politics model (otherwise known as Taylor's (1984) impact statement strategy of NEPA);
- the power-in-politics model;
- the information processing model; and,
- the private sector model.

The first two models are much more significant to EA theory than the last two models, which have little to contribute to a theory of decision making in EA. The contribution to theory of the private sector model lies in the guidance that instruments like EMS can offer to the implementation stage of EA.

Taylor (1984) admits that there may be redundancies in the impact statement strategy. Redundant facets could be excised without significantly affecting the performance of the model as a whole. He does not, however, identify any such facets. In settings outside the US, not all of the elements of Taylor's model are commonly incorporated. For example, he notes that functionaries from other Western democracies, contemplating adoption of EA, shudder at the bureaucratic openness and judicial independence of the American system. In these settings, EA would more likely employ one of two other systems for achieving the regulatory control required: by informal coordination among a smaller, more trusting elite, or by a powerful, formal planning mechanism (Taylor, 1984). In both of these alternative systems, coordination is centralised and potentially more technocratic.

The proposition raised here is that, in implementing EA in other settings, there has been a tendency to adopt the standards of analytical excellence set by NEPA, but not to adequately recognise the importance of the institutional and social arrangements (of the US setting) that invoke a social rationality in decision making. In settings that are more centralised and less dispersed, EA readily assumes the mantle and *modus operandi* of technical rationality, and becomes a corruption of the original impact statement strategy. In South Africa, for instance, Claassen (2001) has criticised the application of EA as technocratic, in that he argues that decisions are being formed by one environmental official pouring over an environmental impact report. If the success of NEPA is to be emulated in South Africa or elsewhere, theorists and practitioners of EA would do well

to recognise the central roles of analytical competition and mutual adjustment as primary tenets of a successful EA system, that invoke a social rationality in decision making.

Chapters 4 through 7 of this thesis alternate between theories of planning and EA. After the above focus on theoretical models of EA, Chapter 6 returns to planning theory and general philosophies for current ideas on the links between knowledge and action.

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CHAPTER 6: FURTHER PHILOSOPHICAL THOUGHT AND THEORIES OF PLANNING TO INFORM EA

This chapter draws ideas and inspiration from a number of general philosophies and specific theories of planning, to provide foundations for the development of EA theory in Chapter 7. The rationale for considering planning theories is that EA and planning are converging. Various philosophies, some of which have influenced planning theory, are examined for insights that can inform EA theory and practice. These philosophies and theories are, in the order of discussion, critical rationalism, poststructuralism, postmodernism, *Realrationalität*, critical realism, communicative action, and an institutionalist perspective on governance and planning.

Three theories of planning, selected from among those introduced in Chapter 4, are discussed. The first is Faludi's (1986; 1987) procedural planning theory of critical rationalism, which recognises the centrality of argument and criticism in building the knowledge base to inform decision making. Critical rationalism is relevant to the assessment and decision stages of EA. The second planning theory is communicative action, which continues to occupy a dominant position because of the role of planners as negotiators and implementers of contracts with the private sector and civil society organisations. This theory has relevance to all stages of EA. The third and most recent theory of planning is Flyvbjerg's concept of *Realrationalität*, which emphasises the need to acknowledge and deal with power in planning. This topic has not been given much attention in the EA literature, other than in critiques that EA is a merely symbolic activity to appease the public.

In addition, this chapter introduces poststructural and postmodern critiques of the use of rationality in decision making. This is followed by arguments from the philosophy of critical realism that counter some of the extravagant claims of postmodern thought. The chapter ends with an outline of the theory of governance, which has led to the development of an institutionalist perspective of planning. This resonates with the institutional politics model of EA discussed in the previous chapter, and provides further evidence of the converging evolution of planning and EA. When compared with consensual approaches to decision making, the institutionalist perspective is more accommodating of partisanship, power, and conflict.

Critiques of rationality in planning and EA, while pertinent, have led to a situation in which rationality is disparaged as an outdated 1960s approach to decision making (Benson, 2003). This chapter concludes with a challenge to current use of the phrase 'the rationalities of planning', which refers to the preferences of various participants. A

reinvigorated and critical approach to rationality is essential in EA, and may be beneficial in planning.

6.1 An introduction to critical rationalism

Critical rationalism is central to Faludi's (1987) decision-centred view of planning, in which planning methodology is concerned with making correct decisions concerning future actions. In this view, plans are aids to the operational decisions that follow the process of plan making, rather than the source of action as in master planning. The rationality sought lies not in the process of plan making itself, but in the operational decisions that follow. Rationality in planning resides in the arguments developed to justify decisions. Making correct decisions requires the use of reason in accepting or rejecting proposals, using rationality as the decision rule for separating good and bad proposals, rather than irrationalist emotions or passions.

Faludi's procedural theory of planning was subject to much criticism as it was mistakenly associated with technocratic approaches to decision making that are based on a 19th century view of the role of science and experts in society. On the contrary, he espouses critical dualism, which is 'critical' in the recognition that both facts and values can be criticised, and 'dualistic' in emphasising the importance of distinguishing between factual and ethical arguments in planning. Critical dualism holds that facts and values cannot be derived from each other. What is important, Faludi claims, is ascertaining the factual consequences of adopting a value position.

Classic planning thought was influenced for many decades by the work of Geddes (1915) and his doctrine of Survey-Analysis-Plan. Faludi (1987) notes that the Geddesian approach was both mistaken and undemocratic, in that it assumed that knowledge was an unambiguous guide for action. Geddes suggested that, after undertaking a civic survey, a planner should reflect on the available information and wait for insights and intuitive 'creative leaps' through which a plan would evolve. This is the approach adopted by designers, and it is a personal affair. Faludi critiques the Geddesian doctrine as disregarding

> "*the conditional nature of knowledge and the need to render explicit such value judgements as are implied in the simplest survey. It also disregards the fact that the step from knowledge to action involves choice.*" (Faludi, 1987: p. 8).

Further criticism levelled by Faludi is that Geddes does not recognise uncertainty in human knowledge, nor that values would influence insights. No knowledge is beyond criticism, and this calls for an argumentative approach in which all actors engage in dialogue with planners in attempting to find better answers. Faludi (1987) notes that methods provide ways of structuring this dialogue.

> "***Method** refers to established ways of inferring conclusions from assumptions and evidence. It conveys legitimacy, therefore, on the outcomes of arguments, be it in research, or in planning.*" (Faludi, 1987: p. 17)

Faludi (1987) acknowledges that methodical approaches have been associated with technocracy, but points out that methods themselves are not constraints on freedom of choice, only the way they are used. He states that "*a well-designed methodical approach helps in distinguishing facts and values, a precondition, if anything, of holding experts at bay*" (Faludi, 1987: p. 18).

Faludi's approach to rationalism is derived from the writings of Karl Popper. In his book *The Logic of Scientific Discovery*, Popper (Faludi, 1986, citing Popper 1959) states that truth is being in complete accord with reality. We cannot attain truth, however, because hypotheses cannot be verified conclusively – we can never exclude the possibility of future observations contradicting conclusions. It is by relentlessly falsifying hypotheses that we approximate truth in asymptotic fashion. Falsification provides the demarcation criterion for separating acceptable from unacceptable hypotheses. The decision rule for choosing between potentially falsifiable hypotheses is to choose theories that have withstood more rigorous tests. The more a theory forbids – thus with more falsifying instances, the more we should trust that theory (Faludi, 1986, citing Popper, 1959). The principle of Ockham's razor states further that one should choose the theory with the fewest number of unprovable assumptions: William of Ockham (1285-1347) was the forerunner of the empiricist school of philosophy (Magee, 1998).

Falsification is not useful in decision making where, unlike science, the purpose is not to arrive at universal or law-like statements about reality. In planning and EA, the aim is to make justifiable decisions concerning future actions. Thus, Faludi (1986) proposes that the demarcation criterion in decision making, for separating acceptable from unacceptable proposals, is consequentialism, which Popper defines as follows.

> "*It is most helpful to analyse carefully the consequences which are likely to result from the alternatives between which we have to choose. For only if we can visualize these consequences in a concrete and practical way, do we really know what our decision is about; otherwise we decide blindly.*" (Faludi, 1986: p. 10, citing Popper, 1966, p. 232)

While critical rationalism is a procedural theory, the required information on potential consequences is obtained from substantive theories. (The above quote lends support to the argument of Lindblom (and others, outlined in section 3.1.1.2) that preference weights are context dependent and can only be meaningfully established towards the end of planning, after alternatives and their consequences are known in a 'concrete and practical way'.)

From Popper's book *The Open Society and its Enemies*, Faludi extracts the following quote on rationalism:

> "*I may be wrong and you may be right, and by an effort we may get nearer to the truth.*" (Faludi, 1986: p. 58, citing Popper, 1966: p. 225)

Popper emphasises the importance of just institutions, in aspiring to rationality in planning.

> "*This latter attitude with its emphasis upon argument and experience, with its device I may be wrong and you may be right, and by an effort we may get nearer to the truth, is ... closely akin to the scientific attitude. It is bound up with the idea that everybody is likely to make mistakes, which may be found out by himself or by others, or by himself with the criticism of others ... Thus a rationalist ... will reject all claims of authority ... we have not only to listen to arguments, but we have a duty to respond, to answer, where our actions affect others. Ultimately, in this way, rationalism is linked up with the recognition of the necessity of social institutions to protect freedom of criticism, freedom of thought, and thus the freedom of man.*" (Faludi, 1986: p. 11, citing Popper, 1966, p. 237-238)

According to Popper (Faludi, 1986, citing Popper, 1973), the linguistic formulation of arguments (including theories) enables humans to criticize and eliminate arguments without having to resort to eliminating the person who holds different views. Words are often plurivocal, having ambiguity of meaning (Faludi, 1986, citing Archibald, 1980). In seeking to resolve such ambiguities, planning is an interpretative discipline, requiring a dialogue between different social actors. Thus, Popper states that

> "*the one method of all **rational discussion** ... is that of stating one's problem clearly and of examining its various proposed solutions **critically** ... I have italicised the words 'rational discussion' and 'critically' in order to stress that I equate the rational attitude and the critical attitude*" (Faludi, 1986, citing Popper, 1959).

The emphasis on argument and justification in planning stems from a duty of respect for others, as our equals, whose criticisms we have to take seriously (Faludi, 1986). Furthermore, when it comes to taking public decisions, rationality is enshrined in constitutional and legal provisions such as those in the US that require officials to act in ways that are not unreasonable, arbitrary or capricious (Rivkin, 1987; Faludi, 1987).

The decision rule (or criterion of choice), in striving for correct decisions, is to consider the consequences of **all** realistic alternatives (Faludi, 1986). In this way, the chances of a decision being criticised, and possibly rejected, are maximised. Every time a realistic alternative is advanced and consequences pointed out, the decision needs to be re-considered, which is in keeping with the spirit of critical rationalism (Faludi, 1986). The ideal of taking correct decisions is, however, as distant as the attainment of truth. In practice, there are real limitations that militate against the ideal of considering **all** realistic alternatives. These limitations are discussed in sections 7.1 and 7.2, which consider the application of critical rationalism in the scoping and assessment stages of EA, respectively.

In his acknowledgement that 'correct decisions' and 'truth' are distant ideals, Faludi subscribes to realism. Peet (1998) describes realism as an acceptance that the entities that a theory refers to actually exist (or may exist when hypothetically postulated), and a belief that statements about these entities might, with great difficulty, be designated as

true or false, where true means practically adequate rather than completely accurate. In adopting a realist approach, Faludi is an adherent of modernism, which is contrasted with the theories and approaches of postmodernism in section 6.2.

The critical rationalism of Popper underpins and pre-empts (by a number of decades) the current, dominant theory of planning as communicative action, with its Habermasian ideal of undistorted communication. It also accounts for Popper's (1973) evolutionary theory of knowledge in which he sees objective knowledge (his World 3) as being essentially a collective product. World 3 is the content of thought and the products of the human mind, including stories and myths, scientific theories (whether true or false), social institutions and even works of art (Faludi, 1986, citing Popper, 1973). World 1 is the physical world, the world of material objects, and World 2 is the world of mental states or subjective experience. An EA report is a World 3 object, with potential and intention to act on World 1.

On matters of terminology, the philosophical school of rationalism holds that human beings can only gain knowledge through the use of reason and should not rely on sensory input which is regarded as unreliable (Magee, 1998). Rationalism had its greatest period in the 17th and 18th centuries. The contrary view, that of empiricism, is that human beings cannot gain knowledge without making use of sense-perception albeit through controlled and disciplined observation (Magee, 1998). In terms of these definitions, it is rationality rather than rationalism that applies in the context of EA, given the accepted role of empirical observation in gaining understanding of environmental conditions and in monitoring impact predictions during implementation. In the remainder of this thesis, therefore, the term critical rationality is used to describe what Faludi terms critical rationalism. The term rationality is used in the sense of invoking reason not emotion and passion, which is consistent with its use by Sir Karl Popper, the philosopher of science (Faludi, 1986, citing Popper, 1966).

Rationality is defined as the "*effectiveness of the means to achieve sought after ends*" (Taylor, 1984: p. 325). Taylor further notes that social processes can be assessed by two standards of rationality that need to be balanced one with the other. A decision is substantively rational if the outcome is instrumentally most effective (also termed instrumental rationality, where means are instruments to achieve ends). A decision can also be procedurally rational if the process for making decisions is the most effective way to attain the desired outcome.

6.1.1 Rationality as a methodological rule: disputing the notion of different types of rationality

Faludi (1986) claims that rationality is a methodological rule, not a behavioural rule. He thus disputes the notion that there are different types of rationality, such as political, technical, or ecological rationality, as described by Hollick (1981) and Dryzek (1983, citing Diesing, 1962). Faludi quotes that rational action "*is that which the agent has reason to believe (is) most likely to produce the consequences desired*" (Faludi, 1986: p. 111, citing Reade, 1985: p. 79).

In an EA of a proposed road, the civil engineer would seek different consequences to those of the ecologist intent on protecting ecological processes during construction. They are not applying a different type of rationality, however, merely attaching differing levels of importance to the various objectives set for the project.

Faludi (1986) notes that rationality is a straightforward rule, and that controversy should rage over defining the decision-situation. Decisions will seem rational only to those who accept the premises agreed upon in defining the decision-situation, i.e., in defining which objectives are adopted for a particular proposal and how much emphasis should be given to each objective (see further discussion in sections 7.1 and 7.2). It is on questions of objectives that the ecologist might differ from the engineer: according to Faludi (1987: p. 120), "*it is perfectly possible for rational people to be at cross-purposes*". They should both uphold the need for rationality in presenting and criticising arguments in a logical way, and in seeking agreement on a balancing of arguments, to form the basis for a justifiable decision.

6.2 Introducing poststructuralism and postmodernism

Much of the information in sections 6.2.1 and 6.2.2 is sourced from Peet's (1998) book, *Modern Geographical Thought*. Information on Flyvbjerg's application of poststructuralism in planning theory is, however, sourced from the original texts.

The promise of modernity is the liberatory potential of scientific understanding. Evidence and fact, mediated by reason, produce truth, which can be used to direct good social practice. In this way, science frees humans to be self-guiding rather than subject to religious and civil authority. The premises of modernity are incorporated in both capitalism and communism. For instance, structuralism (of which structural Marxism is one form) is viewed as a science of human existence in which the elements and events of life are linked by knowable causal relations (Peet, 1998). Under modernity, theory can display coherence and causality as there are "*structures to existence which exert pressures, even if the particular form of these pressures varies between cases*" (Peet, 1998: p. 144). In contrast, both poststructuralism and postmodernism question the possibility of being able to develop representations of social structures and systems that support the identification of cause and effect.

The May 1968 uprising of students and workers in Paris eventually led to the emergence of the philosophy of poststructuralism. During the upheaval, it seemed to some that the dreams of radical modernism were in the process of being realised – a society characterised by participatory democracy and management by workers. After the return of normality, there was a period of re-evaluation on the left and a move away from structuralism and Marxism.

The theories of poststructuralism and postmodernism are critical of modern philosophy because it is argued that rationality cripples the modern subject – 'mind over body' is seen as the problem, not the solution. Modern reason is criticised as a mode of social control operating through disciplinary institutions, in disguised form through

socialisation, and most subtly through rational self-discipline (Peet, 1998). The rational subject of modern social theory thus becomes the emotional being of postmodern theory.

Contrary to the modern view of knowledge as emancipatory, poststructural and postmodern theory view knowledge in society as part of a system of power with a dark side of domination. There is a strong scepticism directed at totalitarian politics, whether in capitalistic or communistic societies. With the decline of communism, poststructural theory emphasises the pluralisation of oppression by western, capitalist societies. The political stance of poststructuralism is thus to side with dominated and marginalised groups, including peasants, women, and the colonised, with an associated emphasis on difference over sameness. The politics of postmodernism disengages from the modern project of perfectibility, is anti-modern rather than anti-capitalistic, and seeks to unleash "*the creative power of desire, breaking the chains of repression imposed on humans by the constraints of rationalism*" (Peet, 1998: p. 215). The following quote provides a summary of the tenets outlined in this paragraph.

> "*As opposed to Marxian class analysis, poststructural theories appeal to Nietzschean notions of power, while postmodern variants are founded on desire as basic category.*" (Peet, 1998: p. 215).

Poststructuralism preserves many aspects of its modernist predecessors. Analysis remains ontologically grounded (i.e., what actually exists) in what are regarded as the pervasive forces of power and desire. Postmodernism, by comparison, attempts to produce theory without ontological grounds.

The theories of poststructuralism and postmodernism are further elaborated below, and plumbed for ideas of relevance to EA theory. A sceptical theory of planning is outlined, arising out of poststructuralism, which can be extended to advance understanding of rationality and power in EA.

6.2.1 Poststructuralism: local criticism based on subjugated knowledges countering the tendency of power to create knowledge

Michel Foucault (1926-1984), the greatest poststructural philosopher, argues that history is not the progress of universal reason but rather a process of moving from one form of domination to another (Peet, 1998). History is fragmented and non-evolutionary, and does not represent the inevitable march of progress. The Enlightenment conception of universal rationality is a cultural trait of European society, which has been imposed on a large portion of the world through a history of despotic colonialism and the global reach of capitalism. With its totalising mode of thought, rationality regulates and represses human experience. The grand vision of the Enlightenment imposes a measure of order that smoothes over the confusions, contradictions, and conflicts of life.

> "*In place of western enlightenment ... Foucault favours difference, fragmentation, and discontinuity, multiple forms of analysis rather than single truths, microanalyses interwoven with macroanalyses, pure opinion mixed with exact historical studies.*" (Peet, 1998: p. 200)

For Foucault, talk of truth masks the exercise of wills; talk of meaning or virtue hides strategies of domination; and, instead of human intentionality, he finds the imposition of force. Foucault claims to isolate the mechanisms or rituals by which power operates, and he elaborates on the links between the large-scale organisational forms of power and the ways in which it is ultimately localised in the human body (Peet, 1998, citing Foucault, 1979). Both Nietzsche and Foucault focus on biopower, the question of how power moulds and creates people (Flyvbjerg, 1998a).

Analysing power relations amongst people, the topic of power analytics, involves a number of methodological precautions, according to Foucault (Peet, 1998: p. 204-205, citing Foucault, 1980 – bold font not in original text):

"*1 **analysis** should not concern itself with forms **of power** in their central locations, but with power at its extremities, **in its** more regional and **local forms and institutions**;*
*2 analysis should **not** concern itself with power at the level of conscious **intention** or decision, **but** where intention, if there is one, is completely invested in real and effective **practice**;*
*3 power should **not** be taken as a phenomenon of the **domination** of **one individual** or one class **over others**, **but as** something which circulates or only functions in the form of **a chain**;*
*4 ... one must conduct an **ascending analysis** of power, starting from its **infinitesimal mechanisms**, each with its own history, trajectory, technique, and tactics, and see how these mechanisms are colonized by ever more general mechanisms and by forms of global domination; and,*
*5 ... **power** is **exercised through** the production of effective instruments for **the formation and accumulation of knowledge**."*

Foucault thus turns Francis Bacon's famous dictum, Knowledge is Power, on its head. Instead, as he argues in point 5 above, the powerful create the knowledge needed to advance their goals.

Foucault is not opposed to the concepts and methods of science *per se*, "*but to the effects of the centralizing powers linked to organized scientific discourse*" (Peet, 1998: p. 204). In order to counter the dominating effects of globalising discourse, Foucault argues for non-centralised, local criticism based on subjugated knowledges, such that "*critical discourse may discover a new essential force*" (Peet, 1998: p. 204). This new force arises from integration of erudite knowledge and local memories.

Another poststructural philosopher whose ideas are pertinent to the subject of this chapter is Richard Rorty. In his book, *Philosophy and the Mirror of Nature*, Rorty (Peet, 1998, citing Rorty, 1979) criticises the claim of modern philosophy to be the adjudicator of truth. In modern philosophy, to know means to accurately represent a reality outside the mind. Representations of reality can thus be characterised as accurate or less accurate. Instead, Rorty (Peet, 1998, citing Rorty, 1991) favours an edifying or instructive philosophy that makes no claim to objective truth yet, unlike postmodernist approaches to theory, can be systematic in approach. The benefits of modern philosophy,

he argues, can be attained equally well through Dewey's idea of a democratic, pluralist community striving for intersubjective agreement and novelty. John Dewey (1859-1952) was an American pragmatic philosopher who posited the importance of criticism in testing proposed solutions to problems, in a process that is inescapably social in nature (Magee, 1998). In this regard, Dewey was an intellectual progenitor of the ideas of Charles Lindblom. Rorty (like Lindblom) finds opportunities for the reform of liberal society, and calls himself a postmodern bourgeois liberal (although Peet (1998) characterises Rorty as a poststructuralist philosopher).

A summary of the poststructural approach to the creation of theory provides a useful link between this and the next section on postmodernism. Like postmodernism, poststructuralism criticises the notion that "*the social projection of rational consciousness results in universal and totalising forms of knowledge*" (Peet, 1998: p. 208). These philosophies are critical of the notion that one individual, however rational, can produce coherent theory – can 'think the world'. Yet unlike postmodernism, theories produced in a poststructuralist mode are still structural in that they, "*to some extent, fit events into wider contexts which conceptualization attempts to characterize in some systematic way*" (Peet, 1998: p. 208).

In summary, poststructuralist theorists recast the role of thinking

> "*so that it is no longer an instrument for penetrating into essence, nor is it armchair explorer of realms and lands never physically entered, but instead theory is a categorizing play on surface, spatial appearances which, when it enters into the relations between things, tries to understand in non-causal, non-hierarchical, self-deprecating, ironic yet still systematizing ways*" (Peet, 1998: p. 208).

6.2.2 Postmodern ideas

Postmodern philosophy is a more extreme form of scepticism than poststructuralism. Postmodernism proposes new ways of being which for some writers involves the liberation of desire and creativity, and for others total cynicism or nihilistic resistance to modernity (Peet, 1998). Peet concludes that postmodernism is not successful as overall philosophy but contains some brilliant insights.

Jean-Francois Lyotard's (1984) book, *The Postmodern Condition*, is considered to be one of the definitive works on postmodernism (Peet, 1998). In modernism, science is legitimated by appeals to metadiscourses, such as the emancipation of humanity. The postmodern is defined as "*incredulity to metanarratives*" (Peet, 1998: p. 209, citing Lyotard, 1984: p. xxiv). Society is not on a linear trajectory to progress or other desired end states, and human experience is thus dominated by categories of space not time. Structural notions of an orderly time-space have been replaced by a scrumpled geography, where the world is experienced as "*continuous variation, becoming, and chance, rather than one of constancy, being, and predictability ... a fractral world of infinite disadjustment, destabilization, and disjointure*" (Peet, 1998: p. 240, citing Doel, 1996: p. 421). In the realm of natural science, chaos theory expresses similar

understanding of the non-linearity and unpredictability of system responses to perturbations.

Along with the poststructuralists, Lyotard rejects universalising theories. Theory, as a reflection of conditions in the world, is characterised by fragmentation, multiplicity, and indeterminacy. The aim of postmodern knowledge is anything but grandiose – it "*redefines a sensitivity to differences and reinforces an ability to tolerate the incommensurable*" (Peet, 1998: p. 209). Postmodern knowledge prefers innovation (creativity) over sameness, inventors rather than experts. Theories of knowledge should be confined to little narratives as the "*quintessential form of imaginative invention*" (Peet, 1998: p. 210), particularly in science.

Lyotard's views on science are similar to those of the poststructuralists. The science of modernity disparages narrative, which is the basis of traditional, prescientific knowledges. In contrast, postmodernism acknowledges a plurality of different knowledge systems. Science is merely one more language game, or world with its own language. (According to Ludwig Wittgenstein (1889-1951), philosophical problems are not those of the mysteries of the world, but rather the confusions caused by the misuse of language (Magee, 1998). Words are given different meanings in each of a number of different games or worlds, including the worlds of religious activity, music, business, the military, law, history, *et cetera*. The task of philosophy is to remove the confusion by careful analysis of the use of language or utterances.)

Even if science is the only system of knowledge (which it is not), it has no special status when it comes to directing action.

> "*Positive knowledge in this context can only inform the practical subject about the reality within which the prescription is to be inscribed; there is nothing to prove that because a statement is true, a prescription based on it will be just.*" (Peet, 1998: p. 210, citing Lyotard, 1984)

In postmodern theory, legitimation of action can only emanate from communicational interaction. Any consensus on the rules that define a decision-situation must be local (agreed by participants) and subject to cancellation. The Enlightenment belief in absolute criteria for judgement is criticised. It is preferable for one to judge without criteria, where justice is local, multiple, provisional, and subject to contestation and change (Peet, 1998, citing Lyotard and Thebaud, 1985). This approach epitomises the relativism of postmodernism, in which there are no 'correct' solutions or 'best' course of action, only solutions or actions that participants can agree on.

Postmodernism thus enfranchises and empowers those outside the traditions of scholastic authority, and undermines the hegemony of existing power systems through its legitimation of difference (Peet, 1998, citing Dear, 1994). Postmodernity is thus liberating, according to Dear, although he attacks it for its relativism and loss of rationality. Harvey concurs with Dear that the ideas of postmodernism can be deployed to radical ends as part of a libratory politics, in a renewal of historical materialism and the Enlightenment project.

> "*The treatment of difference and otherness should be omnipresent from the beginning in any attempt to grasp the dialectics of social change – hence, the importance of recuperating race, gender, and religion within an historical materialist frame traditionally emphasising capital, money and class.*" (Peet, 1998: p. 221, citing Harvey, 1989)

The quote below summarises the characteristics of postmodernism.

> "*Postmodern knowledge is thus against metanarratives and foundationalism, avoids grand schemes of legitimation, is for heterogeneity, plurality, constant innovation, and the pragmatic construction of local rules and prescriptives agreed upon by participants (and thus for micropolitics).*" (Peet, 1998: p. 210)

6.2.3 Contributions of poststructuralism and postmodernism to EA theory

This section discusses the insights and ideas of poststructuralism and postmodernism relevant to EA theory, which are to:

- recognise the difficulty of obtaining reliable knowledge and meaningful projections, particularly in the social sphere;
- provide opportunities for the expression of a heterogeneity of voices and the use of a plurality of knowledge systems;
- encourage the use of knowledge for innovation;
- counter the manipulation of knowledge by power;
- acknowledge the limits of knowledge in ensuring just decisions; and,
- direct evaluation and decision, by acknowledging that there are no correct decisions, only ones that can be agreed through communicational action in a process of micropolitics.

6.2.3.1 Recognising the difficulty of obtaining reliable knowledge and meaningful projections, particularly in the social sphere

In poststructuralism, social systems are characterised by contradictions and fragmentation, and in postmodernism by variation, chance, and indeterminacy. In repudiating the coherence and predictability associated with modern social theories, both poststructuralism and postmodernism doubt that social representation can accommodate the identification of cause and effect relations. The dominant 'defeatist' version of postmodernism is that there is no possibility of distinguishing better or worse social representations, let alone truth or falsity (Sayer, 2000). This is one aspect of the relativism of postmodernism. If this is so, then it is not possible to make meaningful projections (or predictions) of the impacts of proposed change in the social environment. (This first aspect of postmodern relativism relates to a refusal to rank explanations of reality. The second aspect relates to the alleged impossibility of finding an optimum or 'best' decision.)

In natural science, complexity theory explains that slight changes in the properties of components of complex systems or their rules of interactions can produce quite unexpected behaviour of the whole system. These unexpected outcomes are known as the emergent properties of complex systems (Goodwin, 2003). The implications of unpredictable system behaviour, whether in the social or ecological realm, are discussed in section 7.2, which focuses on theory of EA for the assessment stage.

6.2.3.2 Providing opportunities for the expression of a heterogeneity of voices and the use of a plurality of knowledge systems

Poststructuralism favours multiple forms of analysis. Integration of specialist and local knowledge provides discourse with a new essential force. This force is gained by accessing local (or indigenous) knowledge to strengthen specialist discourse, a principle that is recognised (if uncommonly) in the EA literature. For instance, principle 10 of the International Principles for SIA practice states that "*local knowledge and experience and acknowledgement of different local cultural values should be incorporated in any assessment*" (Vanclay, 2003). This requires openness to other ways of knowing, including narrative (also termed the historic tradition of knowledge generation) that many scientists disparage. Furthermore, indigenous knowledge is not readily integrated into organised scientific discourse (the abstract tradition), even though the construction of knowledge in both traditions is based on observation.

> "*Whereas the former is holistic, territorially oriented and concrete, the latter is abstract. There are, in other words, no commensurate units that might enable integration.*" (Lane, 2003: p. 91-97)

Postmodernism views subjugated knowledges as alternatives to science and specialist investigation. Local criticism can counter the domination of centralised analysis and planning, although local power is relatively weak compared to the powerful alliances that arise between scholastic authority, the state, and developers in the global economy. The exercise of local knowledge nevertheless empowers those outside existing power systems, while simultaneously undermining the hegemony of dominant systems of power. The emphasis on local criticism echoes Lindblom's (1990) notion of the greater equality of dispersed power. It is also similar to critical rationality's dependence on discussion and argument.

6.2.3.3 Encouraging the use of knowledge for innovation

Postmodernism prefers inventors to experts (difference rather than sameness), and the use of knowledge for creativity and innovation. An emphasis on innovation lends support to an active rather than a passive role for EA, which is discussed in a previous section dealing with the organisational politics model of EA. As mentioned above, ingenuity is an attribute that is not the preserve of specialists, and lay people can contribute beneficially to the process of finding better alternatives to a proposal.

6.2.3.4 Countering the manipulation of knowledge by power

Poststructuralism contends that knowledge in society is part of a system of power with a dark side of domination. In recognising a pluralisation of oppression, poststructuralism sides with dominated and marginalised groups. Beyond the simple prescription to use local knowledge (as outlined above), there must be more awareness of the exercise of power in the creation of knowledge. Knowledge is created selectively to advance the objectives of the powerful, in shaping decisions and the reality of implementation. Extra vigilance is needed particularly in the scoping stage, when the type and extent of knowledge to be used in decision making is determined. This focus on scoping notwithstanding, all stages of the EA process require openness to the likelihood of overt and covert manipulation, and action to counter such abuse should it be exposed.

While Foucault (1980) conceives of social reality as a network of individuals connected by force relations, postmodernism (as per Lyotard, 1984) understands the connections as language games. In this regard, the symbolic politics model of EA is postmodern in its awareness of the power of language to manipulate opinion and outcomes. A counter argument is that language and the media are powerful tools for building and strengthening civil society, which can be effective in countering the abuse of power.

6.2.3.5 Acknowledging the limits of knowledge in ensuring just decisions

Accessing knowledge about reality does not ensure that prescriptions based on such knowledge will be just or fair. The step between knowledge and action requires choice, which reinforces the fact-value distinction of critical rationality. With its emphasis on justice for dominated groups, poststructuralism challenges the utilitarian assumption of critical rationality that seeks the greatest good for the greatest number of people. A just solution might give more emphasis to ameliorating adverse consequences for disadvantaged groups, because affluent groups have resources they can mobilise to offset adverse impacts.

6.2.3.6 Directing evaluation and decision – no correct decisions, only ones that can be agreed through communicational action in a process of micropolitics

The overarching principle of decision making, from postmodern theory, is that legitimation of action can only ensue from communicational interaction. The stated importance of dispersed (non-centralised), local criticism lends support to the notion of EA as a process of democratic micropolitics. As for the scoping stage, the rules defining a decision situation must be determined locally.

Postmodernism calls for judging or deciding without criteria. This, Lindblom notes, is the way that lay people approach choice, a process in which there is not a clear separation of facts and values. People choose an alternative that meets their felt needs and expectations without listing and weighing up factors in an analytical way. Given the subjective nature of choice, the utilitarian notion that a best solution can be found is rejected. There is no best solution in matters of social choice, only solutions that can be

agreed to by participants. The theory of mutual adjustment holds that communicational processes need not be irrationalist, and can represent a social rationality.

6.2.4 Bent Flyvbjerg's sceptical (poststructural) view of planning – power defines knowledge and reality

The question arises whether Foucault's power analytics can be applied in the context of planning and EA, given the context of his empirical studies of interpersonal power relations (biopower) in medical clinics, prisons, and in the realm of human sexuality. Flyvbjerg (1998a; 1998b) documents his study of an environmental planning project in Aalborg, Denmark, in which he develops the ideas of Nietzsche and Foucault on biopower into a focus on how power creates the built environment. This section summarises Flyvbjerg's propositions about power and rationality that he observed in the Aalborg project, which represent a specific application of poststructuralism in planning. Flyvbjerg's work thus provides a theory of power relevant to EA.

6.2.4.1 A case study of the project for the Urban Renewal of Downtown Aalborg, Denmark

In his book, *Rationality and Power: Democracy in Practice*, Flyvbjerg (1998a) narrates the case of the Aalborg project in Denmark. The project sought to address problems of urban renewal, land use, traffic, and the environment through, *inter alia,* granting increased priority to pedestrians, bicyclists and public transportation in the city centre. A plan to resolve traffic congestion proposed four zones with barriers to make it more difficult to drive cars through the city centre. There were 41 subprojects on traffic and the environment, including a major city bus terminal. Over a period of 15 years (from 1977 to 1994), only six of the 41 subprojects were implemented, which represents an implementation rate of 15%. An additional eight subprojects (20%) were only implemented partially, and 27 subprojects (65%) never left the drawing board.

The project, as built, exacerbated pressure on road space – the opposite of what was intended. A powerful group of business people in downtown Aalborg blocked the measures to restrict cars, while grudgingly accepting improvements for public transportation, pedestrians, and bicyclists. The losers in the Aalborg Project are the citizens who "*live, work, walk, ride their bicycles, drive their cars, and use public transportation in down-town Aalborg*", because they are exposed daily to "*increased risk of traffic accidents, higher levels of noise and air pollution, and a deteriorating physical environment and social environment*" (Flyvbjerg, 1998a: p. 223). The rate-payers also lose, because the funds used in the Aalborg Project were largely wasted.

The business people of downtown Aalborg, represented by the Chamber of Industry and Commerce, were the main beneficiaries (or winners) of the modified project, because their customer base was substantially increased. They achieved this outcome through a powerful coalition with two other groups opposed to restrictions on cars – the Aalborg Police Department, who wield considerable influence on traffic policy, and the only local newspaper, the *Aalborg Stiftstidende*.

> "*The **Realpolitik** for the Aalborg Project is shaped by these interests in classic Machiavellian style, while the **formal** policy-making activities in democratically elected bodies like the City Council, the Municipal Administration (**Magistraten**), and political committees have had and continue to have only minor impact on the project. Unbalanced relations of power have produced an unbalanced project. Power has defined a reality in which the **real** Aalborg Project, that which has become reality, deviates from, and in key objectives directly contradicts the **formal** Aalborg project, that ratified by the City Council.*" (Flyvbjerg, 1998a: p. 223).

Flyvbjerg shares the Enlightenment ideals of freedom, justice, and truth, but argues that, if one takes these ideals seriously, one has to understand the anti-Enlightenment terms of a Nietzchean will to power and Foucauldian rationality-as-rationalisation. In explaining the manipulation of knowledge by power, Flyvbjerg (1998a: p. 34) quotes Nietzsche's (1872: p. 60) doctrine of Hamlet – "*Knowledge kills action; action requires the veils of illusion*".

The management of the Aalborg Bus Company obtained a large, central terminal at Nytorv-Østeraagade – their desired site, as the first major subproject to be constructed. The bus terminal is situated in the centre of historic Aalborg. The city architect's reservations about the siting decision, based on aesthetic, environmental, and functional concerns, were left out of the evaluation report. There is, again, a coalition of powerful stakeholders supporting the Nytorv site. The central figure is the mayor, who worked for the bus company in his youth, was instrumental in the municipality's acquisition of the company and, furthermore, is a strong advocate for public transportation. The mayor's nickname is 'Bus-Marius', and the bus terminal became popularly known as the 'Marius Memorial'. The bus company is an independent public utility under Aalborg municipality with significant capital and operating budgets. Nytorv is the optimum site for limiting operational expenditure. The nexus of personal aggrandisement and financial interests achieve the concrete reality of a terminal at Nytorv by creating 'illusions' about the location and size of the terminal, in a manipulated evaluation. The bus terminal was implemented at Nytorv because its consequences were not correctly predicted – this constitutes Nietzsche's 'veils of illusion', and no alternative sites were evaluated.

At another stage in the project's convoluted history, Flyvbjerg describes how the technical department of the local authority succeeded in 'killing' action it did not want by producing knowledge about the effects of the action – Nietzsche's 'knowledge kills action'. These examples are used to illustrate how the powerful manipulate knowledge towards their own ends according to Nietzsche's doctrine. "*The agenda is set not by a will to knowledge but by the will to power.*" (Flyvbjerg, 1998a: p. 34)

> "*A truly balanced evaluation of alternative locations for the bus terminal would have included an evaluation of the terminal's size, an analysis of the relative benefits and drawbacks of each of the alternative locations, and a comparative evaluation of utilizing each location for other potential uses. Instead of this kind of evaluation, the Aalborg Bus Company gradually pushes through an evaluation which (1) builds on a set of evaluative criteria predisposed to the desired placement*

of the terminal at Nytorv-Østeraagade, and (2) emphasizes the benefits of the desired location while emphazing only the drawbacks of the competitors. The result of the evaluation is a foregone conclusion: it serves to rationalize a prior political decision. Analysis, instead of acting as a foundation for intelligent policy making, becomes a manipulated instrument of politics." (Flyvbjerg, 1998a: p. 35)

6.2.4.2 The EIA for the bus terminal at Nytorv

When the City Council ratifies the Aalborg project, it commissions an EIA to inform citizens about possible health hazards of the bus terminal at Nytorv, not a balanced evaluation of alternative sites as outlined in the quote above. The EIA, prepared by Copenhagen consultants, is submitted to the Danish Environmental Protection Agency (EPA), who conclude that it is technically inadequate. Both noise and air pollution predictions are calculated as averages over longer time periods than the actual time periods during which buses would wait in the terminal with engines running.

The EPA demands a renewed study of alternative locations. The Aalborg Technical Department advise the EPA that such a study was done (which is untrue) and that there are no suitable alternative locations. The EPA accepts this explanation, sets conditions to reduce pollution levels at Nytorv, and requests a monitoring study one year after the opening of the terminal. This response is typical of overstretched environmental authorities, who might not have the time, resources, or inclination to pay a visit to Aalborg and challenge the local authority and the bus company. The conditions require extra expenditure to make the buses less polluting (others relate to operational conditions) that are resisted by the bus company.

When another EIA for a regional bus terminal linked to the Aalborg project obtains an EPA Appeals Board reprieve on requirements for anti-pollution measures on buses, the County Council notes that this ruling and the one for the Aalborg terminal are inconsistent. The council decides that there is no further basis for reducing and monitoring pollution in downtown Aalborg, and environmental quality control on the project collapses. The chapter of Flvybjerg's book that describes what he terms "*deceiving the EPA*" is called "*Rationality in the Context of Power*", and he precedes the chapter with a quote from Nietzsche "*What is truth? A mobile army of metaphors*" (Flyvbjerg, 1998a: p. 92). The point is well made. EA practitioners and authorities seldom perceive their activities as rationality in the face of power. They would also rather not acknowledge that their reports and conditions of approval may, in some instances, be little more than armies of metaphors – words with limited power, or 'paper tigers'.

6.2.4.3 Conclusions from the Aalborg case study – modernity is young and fragile compared to the traditions of power: propositions on power and rationality

An analysis of power relations in Aalborg shows that the cooperation between the Technical Department and the Chamber of Industry and Commerce has historical roots that extend back more than five hundred years. The first Danish legislation on governance of mercantile towns goes back to 1422 (Flyvbjerg, 1998a). For many

centuries, local government (*magistrat*) was dominated by merchants. The *magistrat* constituted the board of governance for both the city and the business community. These class interests still characterise political life in many Danish towns. In a final irony, both the Mayor of Aalborg and a prominent businessman are jailed in 1982 for corruption after the Mayor accepts a gift of a moss-green bathroom, a practice that could be termed power maintenance. The mayor served two months of a six month sentence, and was re-elected to the City Council three years later.

> "*When seen from the perspective of the* ***longue durée****, modern institutions and phenomena such as rationality and administrative neutrality show themselves to be both young and fragile in relation to the "estate" (****stand****) traditions which have consolidated themselves via centuries of daily practice. These premodern traditions, and the power relations that go with them, have penetrated into the forging of modern institutions. This is in spite of the fact that the very raison d'etre of modernity is ideally to eliminate or balance the meaning of* ***stand*** *or tradition, and despite the fact that the process of modernization has been going on for more than two centuries. The rationality of power turns out to have substantially deeper historical roots than the power of rationality.*" (Flyvbjerg, 1998a: p. 90)

Modern institutions are therefore partly unrealised (even in Denmark – one of the oldest democracies in the world), and must be fought for in a never-ending power relation with tradition. Democracy requires practices of governance that do not obstruct but advance "*the undefined work of freedom*" (Flyvbjerg, 1998a: p. 90, citing Foucault, 1984a: p. 42).

Flyvbjerg concludes with 10 propositions about rationality and power, which are outlined below. These propositions can be summarised by the statement "*power has a rationality that rationality does not know*" (Flyvbjerg, 1998a: p. 90).

Proposition 1 – Power defines reality:

Power defines what knowledge is accepted as rationality and thereby actually creates reality on the ground. Power also creates interpretations of data that suit its purposes, not in the academic sense of commentary, but as a means of mastering a situation.

Proposition 2 – Rationality is context-dependent, the context of rationality is power, and power blurs the dividing line between rationality and rationalisation:

Rationality is penetrated by power. It is therefore meaningless and misleading to operate with a concept of rationality that assumes power is absent. EA professionals who decry the role of politics in EA illustrate the opposite, naïve view that EA would be more effective if only politics (read power) was contained or removed from the process. In modern societies, power is largely related to the ability to create or suppress knowledge. Flyvbjerg argues that it is only by acknowledging and regulating the role of power in planning processes, and constantly struggling against its abuse, that rationality can be brought to bear on issues.

Proposition 3 – Rationalisation presented as rationality is a principal strategy in the exercise of power:

Flyvbjerg observes a need to separate formal rationality from what he terms *Realrationalität*, or real rationality, in the same way that political science distinguishes formal politics from *Realpolitik*. This distinction originates with Machiavelli (1469-1527) who was the first person to study politics and administration using a scientific attitude. In his book, *The Prince* (published in 1513), Machiavelli "*represents things as they are in real truth, rather than as they are imagined*" (Magee, 1998: p. 72). Formal rationality is presented as the public image, in which rationalisation masquerades as rationality, with the *Realrationalität* of power hidden from view. This is not always dishonest, as there are situations where people, groups, and even whole societies actually believe their own rationalisations, for instance, the Afrikaner belief in the rationalisation of apartheid. Identifying rationalisations can be difficult and, if uncovered, may not be revealed through fear of the consequences of challenging the power behind the rationalisation.

Proposition 4 – The greater the power, the less the rationality:

"*Power, quite simply, often finds ignorance, deception, self-deception, rationalizations, and lies more useful for its purposes than truth and rationality.*" (Flyvbjerg, 1998a: p. 230) Rational argument is one of the few forms of power available to those outside the ambit of power, which explains the remarkable appeal of the Enlightenment to the oppressed. Rationality is however a weak form of power.

Proposition 5 – Stable power relations are more typical of politics, administration, and planning than antagonistic confrontations:

In modern societies, stable power relations are the norm just as peace is a more common state than war. While confrontation is more dramatic and demands attention, a meaningful understanding of power requires probing to uncover its less visible aspects.

Proposition 6 – Power relations are constantly being produced and reproduced:

Power relations require ongoing cultivation and maintenance. In the Aalborg case study, the business community showed considerable skill in maintaining its position of institutionalised privilege through cultivating alliances. Functionaries and planners in the public sector were less competent in this realm.

Proposition 7 – The rationality of power has deeper historical roots than the power of rationality:

The modern institutions of democracy and rationality are young and fragile when compared with the traditions of power and privilege that modernity seeks to regulate and restrict. Designating governments in office as 'democratic' is misleading propaganda, even if they were elected democratically: elected governments can, however, operate in

a democracy, which is a state of being, a daily (and never-ending) task of confronting traditions of tribe, class, or any other privilege and power.

Proposition 8 – In open confrontation, rationality yields to power:

In antagonistic confrontations, naked power is more effective than appeals to rationality, and action is predicated on the basis of what works most effectively to overcome an opponent. In such situations, knowledge and rationality are of little use, which is the idea captured in the saying 'truth is the first casualty of war'. This proposition is the extreme form of proposition 4 – the greater the power the less the rationality.

Proposition 9 – Rationality-power relations are more characteristic of stable power relations than of confrontations:

Rationality can operate alongside power, in settings of stable power relations. Stable relations does not mean equal or balanced power relations, and rationality can be invoked between unequal parties in a working consensus, although it is unlikely that outcomes will be just. Such coercive relations are characterised by what Jürgen Habermas terms distorted communication, which is described in section 6.4.1. For justice to prevail, communication must be non-coercive (*zwanglos*) according to the discourse ethics of Habermas's communicative rationality.

Proposition 10 – The power of rationality is embedded in stable power relations rather than in confrontations:

Proposition 10 is outlined below, followed by two objections.

Proposition 10 asserts that power relations must be kept non-antagonistic as a pre-condition for the exercise of rationality. In other words, it is only once power relations are stabilised that parties are able to seek rational consensus on disputed issues. This does not mean that inequality must be accepted, passively.

> "*If one wishes to expand and straighten the field of stable power relations and of rationality, then one must rely on strategies that can limit the use of confrontational behaviour. Stable power relations leave space for ... the force of the better argument making an impact.*" (Flyvbjerg, 1998a: p. 194).

The level of information is higher in a stable relation, and actions decided by consensual agreement have a better chance of implementation than is the case when disagreement persists. Further drawbacks of confrontational approaches are that they use more resources and may be experienced as unpleasant.

The first objection relates to the issue of how to achieve stable power relations, to facilitate rational debate, when unilateral power is imposed on other parties. In such situations, the weak may choose to confront the strong, to increase their limited power. Heightened oppression is a possible unintended consequence should this strategy of

confrontation fail, but the oppressed may be prepared to accept this risk. A possible undesirable consequence is entrapment in a vicious cycle of confrontation. Extrication from a vicious cycle requires agreement to stabilise the situation, or the imposition of stability by another powerful actor.

Popper would probably not agree with Flyvbjerg that rationality and confrontation are mutually exclusive. This second objection would be void, however, if Flyvbjerg means confrontation in its excesses, such as resorting to force, which Popper abhorred. Here rationality certainly gives way to power. In critical rationality, challenge and argumentation are vital for improving understanding and reaching the possibility of joint action. An added proposition thus reads – **Rationality can be advanced through challenge and argumentation, but not through antagonistic confrontation.**

6.2.4.4 The challenge for democracy – incorporate both rationality and power into planning and public decision making

Flyvbjerg claims that modern democratic government is based on rational argument; rationality is relatively fragile, and the power of rationality is weak. In contrast, he argues, special interest groups have more freedom to resort to naked power (although the state is able to use its powers of physical arrest and detention if individuals or groups break the law). Flyvbjerg therefore concludes that there is an unequal relationship between formal politics and *Realpolitik*, between governmental rationality and private power, and that "*governmental rationality and formal politics end up in the weaker position*" (Flyvbjerg, 1998a: p. 233).

The considerable power of the private sector in the global economy, particularly the power of transnational corporations, is not in dispute. However, Flyvbjerg's (1998: p. 233) assertion that the democratic state is "*formally and legally based on rational argument*" appears sociologically naïve. In the structuration theory of Giddens, the state (as a set of institutions) employs a wide range of structures that pattern social relations, or provide structure in a skeletal sense (Peet, 1998, citing Giddens, 1984). Structures are rules and resources, used for communication, sanction (enforcing obedience), and domination (authorisation and allocation). The functioning of social systems within these structures is closely associated with the exercise of power, as illustrated by Foucault's exposés of domination. Resources are of two types: authoritative – command over persons, and allocative – command over material aspects. If private power is relatively rich in allocative resources, and the state relatively poorer, the state draws more extensively on authoritative resources, rules, and procedures for the sanctioning of social conduct.

Flyvbjerg concludes that increasing the power of rationality in society requires "*long term strategies and tactics which would constrict the space for the exercise of naked power and **Realpolitik** in social and political affairs*" (Flyvbjerg, 1998a: p. 233). He provides few practical guidelines to achieve this constriction of power. His prescription is rather a new way of thinking that incorporates **both** rationality and power into planning and public decision making, to encompass 'what is actually done' not only the normative focus on 'what should be'. A part of this re-orientation is to understand

democracy not as dissolving power, but regulating power and domination. A slightly more practical (but still general) suggestion is to improve existing institutional arrangements (rather than devise new constitutions and institutions) to achieve more transparency and better civic participation. The most specific recommendation is to prefer participation that is ready for conflict – facing power head-on, rather than a detached, consensus seeking rationality. From a Nietzschean and Foucauldian perspective, societies that suppress conflict loose vitality – conflict sustains society. The apparent inconsistency between this recommendation on participation (that is ready to confront power) and proposition 10 (that seeks to rely on strategies that can limit the use of confrontational behaviour) remains unexplained.

6.3 Critical realism – a third way between modernism and postmodernism, with further insights from ecofeminism

The ideas and information in this section are sourced from Andrew Sayer's (2000) book, *Realism and Social Science*. Realism is based on the notion that there is a reality outside of human knowledge of it. The objects of study are termed the intransitive dimension, whereas the theories that seek to explain the objects are the transitive dimension. Theories are transitive because there may be more than one theory explaining the same object, and theories change over time. In natural science, change in the transitive realm does not cause change in the intransitive realm. In social science, however, the situation is more complicated in that knowledge is part of the social realm, and changes in knowledge eventually filter into and change the social world. With its focus on understanding the intransitive dimension, realism is a philosophy of ontology (what is), rather than epistemology (how we can know).

As a philosophy, realism accepts that human beings can only know reality with difficulty, and that representations of the world may be wrong – human knowledge is fallible. In natural science, realism offers a third way between empiricism and positivism, on the one hand, and relativism on the other. In social science, realism recognises that social systems are open, and that change in these systems is contextually variable and contingent – which means it may not be as anticipated or predicted. Causal processes can produce different results in different contexts.

Critical realism accepts that it is appropriate to be critical of the social practices under study, and further advocates that criticism of theories is the way to improve knowledge. In this, critical realism is similar to the critical rationality of Faludi's planning theory. If postmodernists tend to be anti-realist and realists tend to be modernists, critical realism acknowledges the usefulness of certain elements and insights of postmodernism.

Critical realism rejects aspects of modernity, particularly its tendency to reduce the social world to a few basic structures. An example is the "*crassness of rational choice and public choice theory*" (Sayer, 2000: p. 30), which is critiqued in section 3.1.1. These theories are reductionist in analysing complex decision-situations in terms of isolated components. They are crass in so far as they make little or no effort to acknowledge or take into account what their simplifications exclude.

In its leaning to postmodernism, critical realism accepts the complexity and ambiguity of social action. But, where postmodernism takes these attributes of social action as the basis for relativism,

> "*critical realists ... argue ... that notwithstanding the daunting complexity of the world and the fallible and situated character of knowledge, it is possible to develop reliable knowledge and for there to be progress in understanding.*" (Sayer, 2000: p. 30)

Critical realism finds fault with postmodernism which, in rejecting the untenable positions of complacent modernism, adopts inverted or opposite positions that are equally untenable. Sayer (2000; p. 31) terms these reversals the 'pomo-flips', or **postmo**dern flips,

> "*from naïve objectivism to idealism, from grand narratives to local knowledges, and from ethnocentrism to cultural relativism. In each case, critical realism offers a third way.*" (Sayer, 2000, p. 31).

These positions of postmodernism are outlined in the subsections below, together with the counter response of critical realism. These critical realist responses do not undermine any of the insights from poststructuralism and postmodernism that are relevant to EA theory, as the insights were chosen specifically not to reflect the excesses of postmodernism. The critical realist responses, listed below, provide further contributions to EA:

- recognise that all human knowledge is fallible, and apply falsification to choose the more adequate theoretical representation of reality;
- synthesise situated knowledges to provide system overviews; and,
- uphold the principle that no knowledge should be above criticism, which should be applied consistently to knowledge emanating from all knowledge systems, local and scientific included.

6.3.1 From foundationalism to relativism and idealism: critical realism's response – human knowledge is fallible, apply falsification to choose the more adequate representation

Postmodernism rejects foundationalism, the notion that there are immutable laws that, once revealed, provide the bases for universal (applicable in all contexts) and absolute (or objective) truth. Adherents of postmodernism are prone to accuse foundationalists of assuming a 'god's eye view' from which to evaluate knowledge. Relativism rejects any assertion of truth or falsity, while idealism is a view that reality is ultimately something non-material – the opposite of materialism (Magee, 1998). In postmodern idealism, humans do not discover things but socially or discursively constitute them, thus denying the possibility of empirical testing.

In critical realism, theories can not claim to represent absolute truth, but through falsification it is possible to assert that, for practical purposes, some theories are more adequate in explaining reality than others. Critical realism thus provides a middle way between absolute truth and subjective opinion. The process of choosing amongst rival theories is not only decided by the relative power of the theories' proponents!

> "*Just as assessing truth or practical adequacy is not an all-or-nothing affair, neither is falsification. In practice it is messy, provisional and often partial, and the empirical observations are theory-laden – or at least conceptually mediated – though this does not make it impossible for the theory in question to be contradicted.*" (Sayer, 2000: p. 70)

Only naïve objectivism, which claims that the observer does not influence findings, holds that empirical testing is unambiguous.

Critical realism thus accepts two propositions, the first a set of insights from postmodernism, and the second a central premise of modernism:

> "*1. There is no neutral access to the world, knowledge is linguistic (by and large) and social, and language is not a transparent, stable medium, but opaque and slippery.*
> *2. We can nevertheless develop reliable knowledge of the world and have scientific progress.*" (Sayer, 2000: p. 71)

6.3.2 From grand narratives to fragmented local knowledges: critical realism's response – synthesise situated knowledges to provide system overviews, and even acknowledge the unity in nature

Totalising discourses posit a 'centre', or most important feature, around which social activity revolves. The social relations of production, for instance, provide the 'centre' of Marxist theory. The social ontology of poststructuralism is a "*centreless web of heterogeneous relationships, none of which hold universally, and in which each location is unique*" (Sayer, 2000: p. 72). It seems perverse to deny that some structures are pervasive, Sayer notes, citing capitalism and patriarchy as examples. Realism accepts that some structures or features are more important than others in shaping outcomes, but holds that what is central depends on the context of what is being investigated.

Critical realism advocates that the risks of formulating overviews should not restrict research to local details. It can be useful to step above the details, in trying to discern common or large features, from a 'bird's eye view'. Critical realism values overviews obtained from a synthesis of the insights of many situated knowledges. In a global economy, Sayer notes, where tea picked in India is consumed in the UK, it would be disastrous to ignore grand overviews of systems. What is needed is to discover what links the local views, not fragment them into non-communicating local discourses.

Recognition of an earlier neglect of difference need not prompt a flip to a situation in which interdependence and similarity are neglected. As many feminist writers note, an

obsession with difference can be corrosive of a politics of common cause (Sayer, 2000). The poststructuralist disregard for things we share and for any kind of communion can encourage cynicism towards others and the environment (Ellin, 1996). In opposing such deconstructivism, ecofeminism has been described as reconstructive postmodernism: it seeks to preserve the benefits of the liberal tradition and values technological capabilities, "*but is rooted in ecological sanity and meaningful human participation in the unfolding story of the Earth community*" (Ellin, 1996: p. 185, citing Spretnak, 1991: p. 4). Freed of the constraints of "*highly selective modern rationalism*", human beings can "*now allow themselves subtle perceptions of the grand unity, the ground of the sacred*" (Ellin, 1996: p. 203, citing Spretnak, 1991: pp. 19-20).

> "*In summary, grand views are as needed as ever, but the challenge is to develop them in a way that synthesizes – though neither undemocratically nor uncritically – the standpoints of the many rather than speaking only for a minority.*" (Sayer, 2000: p. 76)

6.3.3 From ethnocentrism to cultural relativism: critical realism's response – no knowledge should be above criticism

Cultural relativism evolved as a reaction to anthropology's ethnocentrist beginnings (Sayer, 2000). Ethnocentric means to be centred on one's own race or ethnic group, characterised by a tendency to evaluate other ethnic groups using criteria specific to one's own culture (New Shorter Oxford English Dictionary, 1997). According to cultural relativism, persons from one culture should not criticise other cultures. Although postmodernism has exposed the imperialism of ethnocentrism, it has flipped into a position of extreme deference towards others. In contrast, critical realism argues that no knowledge should be privileged and beyond criticism.

> "*It is one thing to grant respect to the knowledge of others, but quite another to grant them immunity from external criticism.*" (Sayer, 2000: p. 76, citing Taylor *et al.*, 1992)

Relativism can serve the interests of the powerful in providing them an excuse to disregard the criticisms of those they oppress. Furthermore, the equality thesis of relativism would grant equal status to racist and patriarchal theories. Non-relativists can reject such theories both on moral grounds and because they can be shown to be cognitively inferior, in that they are based on misleading explanations of human society.

6.4 Planning as communicative action – invoking a communicative or deliberative rationality

Flyvbjerg's sceptical view of planning (discussed in section 6.2.4) is a more recent contribution to the theory of planning than the perspectives considered in this section. The range of theories presented in this chapter are organised in chronological order, save for this ordering of *Realrationalität* before communicative rationality. These two theories are inextricably linked as the boundary between rationality and rhetoric is

commonly manipulated. In the practice of planning and EA, both theories should be applied to the context under consideration to gain the insights they offer, in a juxtaposition of opposites.

Planning as communicative action originates in an objection, expressed in the 1960s, against the notion that planners could somehow discover, and give voice to, a broad but commonly held public interest (Friedmann, 1998). Davidoff (1965) influenced socially-minded planners to turn away from seeking a presumptive public interest to a process of advocacy for disempowered groups. More recently, postmodernism's repudiation of the existence of a common good that can be accessed by trained experts threatened the *raison d'être* of planning (Ellin, 1996).

Ellin (1996) answers the question – whether the modern project of planning should be continued or abandoned – in a qualified manner. Planners should retain faith that some progress is possible; they should avoid the negative aspects of modernity such as the domination of people and the destruction of the environment; and strive to make a limited and localised difference. Similarly, Beauregard (1989) argues that planning should adopt the openness and flexibility of postmodernism, but not abandon the modernist goals of advancing democracy and reforming society. He also states that planners should not remain detached from controversy by hiding behind the cloak of their expertise, but should participate in societal debates on planning issues. In response to the challenge of postmodernism (to acknowledge difference), planning is thus opened to a multiplicity of constituencies – "*planning for a heterogeneous public, rather than for the (modernist) 'public interest'*" (Sandercock, 1998: p. 182).

The influence of postmodern theory led to what has been described as the argumentative turn in planning theory, planning through debate, or planning as communicative action (Healey, 1992). In communicative action, planners work with the private sector to accomplish a range of public goals, assemble effective teams, manage interpersonal relations in these teams (and with stakeholders) and direct conflict towards constructive action (Taylor, 1998). A radical (or empowerment) variant seeks to supplement state directed planning, such that planning is undertaken with and by communities, invoking participation towards the goal of self determination. "*Difference then means not just different interests, not just ... the old familiar pluralism, but a different way of being in the world.*" (Sandercock, 1998: p. 182)

Sandercock (1998) comments that the communicative action model of planning involves an epistemological shift away from the view that professionals have a monopoly on a static body of knowledge, to a more dynamic concept of knowledge creation as a process of learning. The genesis of this shift is found in the work of Friedmann (1973) who described a growing polarity between experts and their clients, exacerbated by the inaccessible language used by professionals in formulating and grappling with problems. As neither side can provide all the answers, he argued, it is preferable to adopt a transactive style of planning that acknowledges reciprocal human worth in a process of mutual learning. In this way, planning is considered as communicative action and social learning – "*a fusion of thinking, moral judgement, feeling and empathy*" (Sandercock, 1998: p. 174).

Communicative action theory aims to advance the democratic project of the Enlightenment by removing barriers to communication (Sandercock, 1998).

> "*There is a hope that, through dynamically critical communicative processes, the democratic project of 'making sense together while living differently' can develop as a progressive force.*" (Healey, 1992: p. 253)

As the social theories of the German sociologist and philosopher, Jürgen Habermas, provide a basis for planning as communicative action, his ideas and concepts are elaborated in sub-sections 6.4.1 and 6.4.2. Section 6.4.3 outlines the challenges of Forester's (1998) critical planning, which involves the exercise of deliberative rationality. Section 6.4.4 discusses critiques of Habermasian philosophy.

6.4.1 Jürgen Habermas's communicative rationality and intersubjectivity, within three structures of rationality

Retaining positive aspects of modernism and introducing new approaches from postmodernism has been termed 'oppositional', 'alternative', or 'critical' postmodernism (Ellin, 1996). Habermas is perhaps the leading critic of postmodern social theory (Peet, 1998) and a notable proponent of 'critical' postmodernism (Ellin, 1996).

Habermas criticises the encroachment of rationality into every realm of life and he declares "*the necessity to preserve a world of values and meanings against the onslaught of the rational and bureaucratic world*" (Ellin, 1996: p. 184, citing Habermas, 1970). The one-sided development of instrumental rationality is unbalanced, and Habermas seeks to redress the imbalance between what he describes as three autonomous structures (or branches) of rationality, which are (Healey, 1992, citing Habermas, 1987):

- cognitive-instrumental rationality for dealing with issues of knowledge and truth;
- moral-practical rationality to decide normative rightness; and,
- aesthetic-expressive rationality to express authenticity in art.

The communicative content of all three structures of rationality should be increased through an extension of democracy, to access a collective store of knowledge (Peet, 1998). In communicative rationality, participants overcome their subjective views through argumentative speech to reach mutual (or intersubjective) understanding, which makes possible a rationally motivated consensus and consensual action (Flyvbjerg, 1998b, citing Habermas, 1987). (Acceptance of different 'structures' of rationality does not contradict the argument against the use of the notion that there are different types of rationality within the structure of instrumental rationality, which is made in section 6.1.1.)

According to Habermas, Emmanuel Kant (1724-1804) failed in his attempt to develop a rational, democratic, and universal foundation for social institutions because he

focused on the philosophy of the subject, or a subject-centred rationality, as did many others from Hegel and Marx to contemporary thinkers (Flyvbjerg, 1998b). The strength of Habermas's theory lies in its shift from subjective to intersubjective rationality. Habermas emphasises the importance of procedures for democratic decision making, which need to be encapsulated in constitutions and laws to ensure the "*institutionalization of those forms of communication necessary for rational political will formation*" (Flyvbjerg, 1998b: p. 189, citing Habermas, undated: p. 15). EA procedures are a prime example of the institutionalisation of analysis and communication to enhance the role of rational politics in environmental decision making. It is thus surprising that EA theorists have not made more use of Habermas's theories, with a notable exception being the social learning perspective on public participation of Webler, Kastenholz, and Renn (1995).

In communicative rationality, the validity of claims and the principles for collective 'acting in the world' are established discursively, which means through reasoned argument and debate. Such reasoning can include the telling of stories and undertaking analyses. Habermas's concept of truth is pragmatic: truth is that which participants accept as true under conditions of 'ideal speech', which means speech undistorted by power leading to consensus without force (Flyvbjerg, 1998b).

> "*Argumentation insures that all concerned in principle take part, freely and equally, in a cooperative search for truth, where nothing coerces anyone except the force of the better argument.*" (Flyvbjerg, 1998b: p. 188, citing Habermas, 1990a: p. 198)

Habermas is critical of the way in which instrumental rationality is applied in the process of directing social change, in which an autonomous individual uses scientifically-generated knowledge and logic to determine a course of action. Habermas's communicative rationality contrasts with the utilitarian concept of rationality that is individualistic in application and determines a preferred outcome through maximising utility (Flyvbjerg, 1998b). Utilitarianism holds that there is one action that is right, correct, or best, which can be determined by calculating and comparing the consequences of options, towards securing the end of 'the greatest good for the greatest number'. This end constitutes the central principle of utilitarianism: once it is accepted, the only remaining difficulty in decision making is calculating the consequences (Magee, 1998). In these calculations, "*everybody is to count for one, and nobody for more than one*" (Magee, 1998: p. 184). Such calculations do not take account of current inequalities in society and the need to consider questions of distributive justice in decision making. Thus, a key objection to the 'felicific calculus' of utilitarianism is the focus on means rather than ends – the question of desired ends is surely more complex than consideration of one principle, however important it may be.

This is the context in which Habermas charges that the rationality of Popper is limited to means and leaves ends out of consideration (Faludi, 1986, citing Habermas, 1968). Faludi (1986: p. 70) disagrees, and argues that critical rationality allows for "*mutual criticism of normative as well as factual assumptions*", and that it thus conforms to "*the pragmatic model of Habermas*". Habermas's critical reason is similar to critical rationality in its emphasis on argumentation. In terms of approaches to decision making,

however, critical rationality is utilitarian in its emphasis on consequentialism as the demarcation criterion separating acceptable from unacceptable proposals. Faludi places relatively more emphasis than Habermas on analysing the consequences of alternative means, while Habermas's approach focuses on a process of communication in which means and ends are considered together.

6.4.2 The discourse ethics and normative rationality of Habermas

> "*Habermas's most distinctive claim is that there is a universal core of moral intuition operating at all times with an inherent human interest in emancipation and especially communication without domination.*" (Peet, 1998: p. 243)

On the basis of this purportedly universal value, Habermas claims that his procedural rationality is universally applicable because it is central to human experience and inherent in social life – he calls it unavoidable (Flyvbjerg, 1998b, citing Habermas, 1990b). Habermas advocates five processal requirements of discourse ethics, as follows (Flyvbjerg, 1998b, citing Habermas, 1990a, 1993):

- no party affected by what is being discussed should be excluded;
- all participants should have equal opportunity to participate;
- participants must be willing and able to empathise with each other's claims;
- existing power differences must be neutralised; and,
- participants must be open and desist from strategic action.

Habermas's discourse ethics provide the rules for an ideal process. The rules constitute a procedural rationality rather than a substantive rationality because, Habermas argues, moral philosophy can not provide particular truths about how to act in a given situation.

> "*Habermas is a universalistic, 'top-down' moralist as concerns process ... conversely, as regards content, Habermas is a 'bottom-up' situationalist: what is right and true in a given communicative process is determined solely by the participants in that process.*" (Flyvbjerg, 1998b: p. 189)

Thus 'top-down' procedural rules set up, shape and guide the planning process. Thereafter, what is right in a particular context is decided by the participants, in an intersubjective accommodation of each other's interests. Once the procedural rules have been applied properly, however, the outcome is substantively rational as well. This process and its outcomes have been described as follows.

> "*'Right' and 'good' actions are those we can come to agree on, in particular times and places, across our diverse differences in material conditions and wants, moral perspectives, and expressive cultures and inclinations. We do not need recourse to common fundamental ideals or principles ... to guide us.*" (Healey, 1992: p. 243)

Habermas agrees with Foucault that modernity produces domination and control (Peet, 1998), and that its emancipatory ideals are subverted by commerce, expertise, and private interests (O'Riordan, 2002, citing Habermas, 1987). In order to prevent the

emergence of a new and potentially dominating consensus in the application of discourse ethics, Habermas proposes four criteria to sustain a dynamic critique. The criteria for assessing the validity of claims are comprehensibility, integrity, legitimacy, and truth. These criteria are discussed in section 7.5.

If Barlett and Kurian (1999) are correct, that the most common perspective of EA is the information processing model, then EA theory and practice have much to learn from planning as communicative action. For example, under South African legislation, public involvement is the responsibility of the proponent through his or her environmental consultant. In the Western Cape Province of South Africa, representatives of the environmental authorities used to attend public meetings for EAs, but sat quietly in the back row. Now, the unwritten policy is not to attend at all, lest they are drawn into the controversies embodied in the proposals they will be reviewing in their capacity as relevant authority (Seath, 2003, pers. comm.). These environmental officers are operating under the premises of modernism, with its detached approach to analysis, which planning theory rejected in the 1980s.

6.4.3 Forester's critical planning, informed by deliberative rationality

Sandercock (1998) characterises Forester's (e.g., 1989; 1998) writings as central to the social learning and communicative action model of planning practice. In acknowledging local, experiential knowledge, it is radical in its epistemological shift away from experts as the sole repository of knowledge. It has moved away from instrumental rationality that focuses on developing the means to achieve a specified end. Forester prefers qualitative, interpretative inquiry and deliberation about alternative ends, which he calls critical planning.

Forester (1998) provides practical guidance on procedural fairness in 'deliberative and inclusionary processes' (DIPS) – a descriptive term sourced from O'Riordan (2002). Fair procedures should provide "*equal opportunity for all to attend, to communicate authentically, to deliberate (i.e., accommodate to each other's position), and to decide*" (O'Riordan, 2002, citing Renn, 1995).

This section describes a set of lessons, emerging from the experience of environmental mediators, that relate to dialogue, learning, and rationality, in providing windows to the practical world of democratic deliberation. These lessons are sourced from Forester (1998), who worries that, with the overthrow of modernity's metanarratives, there is a danger of sidestepping the importance of justifying political claims and confronting "*the problems of distinguishing critical discourse from myth making*" (Forester, 1998: p. 214). Postmodern planning theorists have emphasised the importance of recognising multiple voices and respecting the difference of participants. Forester notes that 'voice' means something practical: it means making claims on others, and that such claims can be bogus, exaggerated, or self-serving.

> "*We are in danger, it seems, of forgetting that practical political claims – the effluent is safe, the politician speaks for the community, the species will survive, the company has fixed the leak, – can be more or less justified, can be tested critically.*

> *That means that these and other political claims can be roughly, humanly, true or false, which means either sound or ... showing a lack of concern for the truth.*" (Forester, 1998: p. 214)

That these claims can be only roughly or humanly justified echoes Popper's notion that we cannot attain, only approximate truth.

Guidance on creating a deliberatively democratic space should address 'what to avoid', and 'what to set in place'. Forester (1998) argues, citing one of the practitioners he interviewed, that public hearings are an abomination and should be avoided. Hearings, where one has just a few minutes to make one's case, encourage rash behaviour and reward hyperbole. Such forums can obliterate dialogue, and the rebuttal talk of adversarial debate may humiliate and hurt participants.

Forester (1998) distils five practical and theoretical challenges (he calls them problems) from the work of the environmental mediators he interviewed, which are summarised in the sub-sections below. He urges that these challenges be explored by those hoping to stimulate thoughtful discourse and a deliberatively democratic society.

Design of the deliberative process:

The design of the deliberative process, and the enabling structure, includes:

- deciding who should participate – Forester suggests distilling out different points of view and seeking representatives of each view, or sector;
- establishing the procedural rules and ethical requirements for enhancing the deliberative democratic space;
- providing orientation to the process for each sector – Forester calls for orientation rather than training: who wants to be 'trained'?, he asks;
- protecting parties by ensuring their psychological (if not physical) safety;
- promoting the welfare of all participants, which requires the political and ethical sensibilities of 'civic friends', rather than the sensibilities of experts or generals, judges or bureaucrats;
- setting limits for what is acceptable in the deliberation, which is a "*subtle and deeply political problem*" (Forester, 1998: p. 220) – what Faludi (1986) describes as defining the decision-situation (see section 7.1); and,
- keeping the parties focused and 'on track'.

Deliberatively working through trauma:

Traumatic histories and memories have a place in democratic deliberation, and should not be denied. Participants need to air or vent such memories, in pragmatically working through their feelings. At some point, however, it is necessary to move beyond strong negative feelings, and the mediator must exercise judgement in deciding when deliberative working through becomes destructive.

The ethics of recognition and listening:

A core principle underpinning deliberative rationality is that no one person can know everything, which is consistent with Popper's notion that knowledge is a collective product. So, in order for a larger truth to be revealed, all parties need to be present and their knowledge systems given voice. The process is about the recognition of others and learning about them, and from them, through listening. It is not limited to learning about the other, but also allows participants to learn more about themselves, and crystallise their own interests in learning about means and ends. As participants develop a more fine-grained identification of what is at stake, and what is possible, they can begin to retreat from strategic positions. It involves not just seeking interests and utilities but expressing identities, and bridging differences.

The challenge of deliberative rationality – a collaborative building of new and mutually beneficial alternatives:

The consideration of alternatives and their consequences is at the heart of critical rationality. Deliberative rationality offers a subtle yet important shift from critical rationality, from critically evaluating a preordained set of alternatives to the collaborative building of solutions that accommodate, not compromise, the interests of everybody. This is

> "*the classical promise of dialogue – not just bargaining but social learning, not compromise but transformation, not self-sacrifice but joint gains, not the deterioration of speech into nastiness but the creation of new and mutually beneficial alternatives, ways of going on together*" (Forester, 1998: p. 218).

The challenge of 'advocacy' or what mediators term 'neutrality':

> "*Part of the task of any critical theory of civil society, surely, should be to help us understand the 'better' possibilities we face – and not just tell us that 'power' is everywhere, that 'better' is an empty or self-serving social construction. That is the abiding challenge of a critical theory ... a critical pragmatism ... to be activist realists, not resigned cynics, to bring imagination and insightful theory to bear on practical challenges, to keep real hope alive.*" (Forester, 1998: p. 225)

6.4.4 Critiques of Habermas

Habermas argues that consensus seeking behaviour and the desire for freedom from domination are universal forces in human conversation, that the good in human beings prevails. Machiavelli, who was also concerned with matters of good government, held an opposite view of human behaviour – "*one can make this generalization about men: they are ungrateful, fickle, liars, and deceivers*" (Flyvbjerg, 1998b: p. 193, citing Machiavelli, 1513: p. 96). Given that Habermas agrees that philosophical statements should be subject to empirical study, Flyvbjerg (1998b: p. 194) contends that the universalisation principle of discourse ethics is "*bad philosophy and speculative social science*" because it has not been tested. It is better, Flyvbjerg declares, to assume that

universals do not exist, as no one has yet demonstrated their existence in social science or philosophy. Flyvbjerg does not mention that Machiavelli's generalisation also cannot be taken as universally true, applying the same argument used to rebut Habermas's proposition. All one can confidently suppose is that people are capable of both good and bad behaviour, that domination as well as consensus are possible, and that planners should be prepared to deal with any possibility.

Another criticism is that the unifying assumptions of communicative rationality preclude self-expression and difference (O'Riordan, 2002, citing Tewdyr-Jones and Allmendinger, 1998). The most significant critique of discourse ethics, however, relates to the concentration of power in society. The prospects for establishing the requirements of discourse ethics in global market economies, even with some commitment to social responsibility, are remote (O'Riordan, 2002). For Flyvbjerg (1998b), methods of advancing consensus through argumentation are not sufficient, and he favours Foucault's power analytics over Habermas's discourse ethics. The exercise of power corrupts public discourse, and rationality can easily be turned into rationalisation of the interests of the powerful.

> "*For students of power, communication is more typically characterized by rhetoric and maintenance of interests than by freedom from domination and consensus seeking.*" (Flyvbjerg, 1998: p. 194)

The superficial similarity between reaching mutual understanding via the discourse ethics of Habermas and the process of mutual adjustment is noteworthy, save that Lindblom (1990) questions the widespread veneration for agreement or consensus in society. His study of the sociology of knowledge recognises that in most situations people enter into communicative interchanges in order to control others, thereby suppressing and distorting information in order to confuse, mislead, or intimidate. Such interchange impairs thinking and probing, rather than allowing for mutual learning. A competition of ideas offers some escape from impairment.

> "*You or I could enjoy at least a limited opportunity to form a reasonable judgement not wholly crippled by impairment, say, about the prospects for global warming ... because the many people and institutions that attempt to control us ... dispute with each other and give us the benefits, unintended, of their challenges to each other. In short, our hopes for some degree of competence – some abatement of impairment – and society's comparable hope, lie in a competition of ideas. They lie less in the goodwill, honesty, or competence of those who communicate to me and otherwise engage with me, than in a possible rivalry and mutual challenge among them.*" (Lindblom, 1990: p. 81)

After four chapters on the subject of impaired inquiry, Lindblom (1990) offers a hypothesis, as follows: on complex social issues, patterned impairment of thinking is necessary to explain convergent thinking among large numbers of people who do not know but only believe, which pattern is provided by elites in defence of their advantaged position in society. Elites enjoy advantages in communication where influence and wealth permit some messages to overwhelm or silence others, thus undercutting the

competition of ideas. As people become more knowledgeable, and impairment decreases, they entertain a wider variety of positions on social issues. Probing and inquiry on complex social issues produces a diversity of understandings, and a divergence of ideas and opinions, not consensus.

Habermas, Foucault, Flyvbjerg, and Lindblom are all committed to reason. Foucault asks the question: "*How can we exist as rational beings, fortunately committed to practicing a rationality that is unfortunately crisscrossed by intrinsic dangers?*" (Flyvbjerg, 1998b: p. 199, citing Foucault, 1984b: p. 249). Foucault notes that this question is both central and extremely difficult to resolve. The first task in moving towards more democracy and freedom from domination, Flyvbjerg argues, is to understand the realities of power not to strive for the utopia of communicative rationality. He does not provide much practical guidance on how this first task should be tackled, save for his 10 general propositions on power and rationality that are discussed in section 6.2.4.3.

Foucault argues, in a typical postmodern flip to a non-action orientation, that solutions of this type, i.e., what is to be done, are part of the problem. His work strives to bring awareness of power such that those working in institutionalised settings no longer know what to do, "*so that the acts, gestures, discourses that up until then had seemed to go without saying become problematic, difficult, dangerous*" (Flyvbjerg 1998b: p. 204, citing Miller, 1993: p. 235). This is not altogether disingenuous. Focusing on analysis of evils and restraint in commitment to ideals also typifies the thinking of Popper (1966) and Lindblom (1990), who both argue against striving for utopian solutions to social problems.

Popper's name became known internationally because of his critique of aspects of modernism, in which he "*mounts a massive onslaught on the most influential proponents of an ideal form of society, above all Plato and Marx*" (Magee, 1998: p. 224). In his book, *The Open Society and Its Enemies*, Popper (1966) argues that because perfection and certainty are unattainable, planning should be less concerned with creating model neighbourhoods, schools, and hospitals, than with eradicating the worst ones or improving the conditions of people living and working in them. It is not possible to know how to make people happy, but it is possible to remove avoidable suffering and hardship (Magee, 1998, citing Popper, 1966). This strategy "*identifies ills to escape rather than ideals to approach*" (Lindblom, 1990: p. 43). With its focus on mitigating the adverse consequences of development, EA is closer to the spirit of our time than those types of planning that seek to remake human settlements according to some idealised form. What is idealised varies over time according to the ideas and fashions of the period – such forms are ephemeral, not universal for all times and places.

Notwithstanding Foucault's reticence to provide guidance on 'what is to be done', Forester (1989) provides a number of practical measures to counter domination and misinformation. These and further measures to restrict the influence of power in the practice of EA are introduced in section 7.5.

6.5 Consensus and conflict in decision making: social conflicts as pillars of democracy, within an institutionalist perspective of governance and planning

A key question for planning and decision making is whether to strive for consensual processes or to pragmatically accommodate partisanship and conflict. Popper, Lindblom, and Flyvbjerg believe that the freedom to criticise, oppose, and protest is the most effective way to improve social policies. Rickson *et al.* (1990) term this integrative conflict (rather than divisive conflict), which stimulates rather than impedes public involvement and learning. Flyvbjerg (1998b) outlines a number of arguments in support of the notion that social conflicts form the pillars of democratic society. Firstly, social ties are formed between participants in social conflicts, which provides social cohesion in the long run. Secondly, the scores of competing social movements in pluralist democracies guarantee the existence of interest-based conflict. Thirdly, distrust and criticism of authorities and corporations are omnipresent in a strong civil society. Public life is not played out in a sphere that assumes away power, but in "*democratic spaces where obstinate differences in power, material status, and interest can find expression*" (Flyvbjerg, 1998b: p. 209, citing Ryan, 1992: p. 286).

Table 8 compares and contrasts consensual approaches to planning and decision making with approaches that make more room for partisanship, conflict, and power. These approaches broadly reflect the idealised approach of discourse ethics juxtaposed alongside a combination of power analytics and mutual adjustment. Flyvbjerg's (1998b: p. 208) discussion, "*splitting the difference between Foucault and Habermas*", is acknowledged as providing the idea and key information for this table. Further information is attributed to Lindblom (1990).

The distinctions made in Table 8 are subtle, yet fundamental. For instance, both consensual and conflictual approaches aim to reach agreement on action – the difference lies in the emphasis of how this is to be achieved. The most significant difference relates to the more centralised coordination and control of consensual approaches, in contrast to the more dispersed and naturally occurring processes of mutual adjustment. In practice, elements of both approaches are applied.

The emergence of the theory of governance is tilting the balance in favour of the conflictual model. The term governance, rather than government, implies a shared responsibility for formulating and implementing policy in situations of political complexity (O'Riordan, 2002). There are a host of interconnected governing arrangements from global through sub-local geographical space. The task of steering public affairs is shared across multiple levels (or spheres) of authority, coupling representative democracies with professional bureaucracies, incorporating the private sector and civil society, in a range of interdependent sectors (O'Riordan, 2002). Thus the application of hierarchical control, in both planning and government, no longer works effectively when even centralised decision makers are largely participants in mutual adjustment with other decision makers who do not fall under their central authority (Lindblom, 1990). "*The idealised power relationship is a pluralist one, namely where political power is spread widely, though not evenly, throughout society.*" (O'Riordan, 2002: p. 90)

Table 8: Comparison of consensual and competitive approaches to planning and decision making

	CONSENSUAL APPROACH	CONFLICTUAL / PARTISAN APPROACH
Proponents	**Habermas and Forester**	**Foucault and Flyvbjerg / Lindblom**
A key problem of our time	Misuse of power	Misuse of power
Philosophical perspective	**Idealist** – what ought to be	**Pragmatist** – what is
Enlightenment philosophers	Jean-Jacques Rousseau's (1712-1778) **general will**	John Locke's (1632-1704) **individual volitions**
Mode of regulation	**Control** through *central* coordination	**Struggle over power,** *dispersed* competition
Approach to power	Power differences **neutralised**	Ability to impose power **dispersed** among many actors
Role of knowledge workers in EA	Detached, neutral **information support** for balanced decision making	Committed **advocates** for the environment
Subject of assessment	**Consequences**	**Power configurations** and **consequences for actors**
Knowledge validation	**Validity** established under conditions of **'ideal speech'**	**Insight** gained from disputing actors **challenging** each other's information
Source of values	Situational ethics	Situational ethics
Democratic decision making: approach & method	**Consensus dependent**, via discourse ethics; if this fails, **imposition by authority**	**Ready for conflict**, via mutual adjustment; if this fails, **imposition by authority**

The implications of this comparison for the theory of EA in Chapter 7 is a preference for a partisan approach to managing power relations, rather than attempting to neutralise power differences through centralised control. This translates into a preference for a formalised system of Lindblomian mutual adjustment rather than Habermasian discourse ethics in the scoping and evaluation stages. The approach of disjoined mutual adjustment would be the most efficient approach to evaluation and decision making in day-to-day EAs. The greater effort of face-to-face, joined mutual adjustment, which is inevitably more resource and time intensive, may be necessary where proposals have significant consequences and are subject to pronounced conflict. While superficially akin to communicative action, joined mutual adjustment remains distinct in its partisan

approach to power relations. This distinction is based on pragmatic acknowledgement that neutralising power differences is a utopian ideal only partly attainable in practice.

The theory of governance reflects a shift in which representative democracy is now only one component, albeit important, of an articulated deliberative democracy (O'Riordan, 2002). Key concepts of the governance approach are policy networks, which are coalitions of actors or advocacy partnerships, and multi-level governance in which various state agencies may be loosely coordinated or may even be in conflict with each other (Murdoch and Abram, 2002).

The governance approach has led to the development of an institutionalist perspective in planning theory (Murdoch and Abram, 2002, citing Vigar *et al.*, 2000).

> "*Institutionalist analysis takes for granted that the social worlds of people in formal agencies of government are intertwined with wider social forces, embedding governance processes in wider relations of economic activity and civil society.*" (Murdoch and Abram, 2002: p. 7, citing Vigar *et al.*, 2000: p. 50)

The role of the state has shifted from formulating and implementing policy to acting as an orchestrator (or conductor) of networks, in arbitrating policy development (Murdoch and Abram, 2002). The state maintains an array of relations with groups external to government.

An institutionalist perspective of governance shaped the impact statement strategy of NEPA in the early 1970s. Key elements of the US political and administrative system, most notably its division and distribution of powers, reciprocal checks and balances, and mutual adjustment amongst partisans, are now more widely accepted in current theories of governance and planning. This suggests that the impact statement strategy, in its fullness, is appropriate in other settings, including its components of internal and external reform of institutions through competition and ultimately through social learning, and its desired end of social rationality in decision making through mutual adjustment. With a justification in current theories of governance, these components can now be incorporated into the practice of EA in other parts of the world to complete the strategy, to supplement the part that deals with analytical excellence, which to date has been the most imitated component of NEPA.

It is within this institutionalist context that Flyvbjerg calls for a re-imagining of policy and planning, to be cognisant of power, conflict, and partisanship. The principal exponent of mutual adjustment has done just this, in proposing conditions for the self-guiding society (Lindblom, 1990). One of the dimensions of the self-guiding society, listed in Table 1, relates to 'Politics and the imposition of power'. This dimension is described as follows: after probing and mutual adjustment by citizens and functionaries (including planners), acknowledges the need for imposition (of decisions) and seeks to distribute the power or capacity to impose rather than to minimise its use. With the possible exception of epiphenomenal problem solving, which holds that solutions to problems do not emerge by design, the remaining 16 points listed as dimensions of the self-guiding society appear to be consistent with the views of contemporary planning

theorists. Of these theorists, the insights and prescriptions of the planning sceptic, Bent Flyvbjerg, are closest to those of Charles Lindblom, who has long been a critic of centralised planning. This convergence suggests a view of planning coming to terms with its limitations.

6.6 Synthesis and conclusions: critical rationality in adjudicating knowledge claims and justifying decisions in a process that accommodates pluralism and conflict

The key conclusions of this chapter relate to rationality, power, pluralism, and conflict in planning and decision making. These conclusions constitute a reasoned synthesis of arguments towards a framework for EA theory, followed by a checklist of contributions from the philosophies explored.

The role of **rationality** in decision making has been the subject of much criticism and debate. Poststructuralism contends that knowledge, as a form of power, is used for social control and domination. The powerful direct the formation and accumulation of knowledge to advance their interests: control is achieved through deciding which knowledge to create, which to leave aside, and which to suppress. This circumscribed knowledge is then wielded as further power to shape decisions and ultimately create reality. Another criticism, from postmodernism, is that rationality has encroached into every realm of human life, creating an imbalance by displacing the role of values, feelings, and emotions.

These postmodern critiques have led most planning theorists to question the role of rationality in decision making, and to argue for a shift to a more overtly political process. This shift was given impetus by the acknowledgement that civil society is heterogeneous and the rejection of the notion of a unitary, broad public interest. The recognition that goals are irreconcilably plural in nature has led planning to adopt the openness and flexibility of postmodernism, in order to make ethical judgements about what is better or worse in the making of places, with and for others (Campbell, 2002). This has been described as the argumentative turn in planning theory, planning through debate, or planning as communicative action. The theory of communicative action was influenced by Habermas's principles of discourse ethics. Discourse ethics provide the procedural rules for an ideal process of communication in which power is neutralised to allow a situation of 'ideal speech', in which nothing prevails but the force of the better argument. In reaching agreement on the knowledge base for decision making and on a preferred course of action, participants arrive at an intersubjective accommodation of each other's interests.

As a leading critic of postmodernism, Habermas provides persuasive arguments for re-emphasising rationality as a normative ideal, albeit in a modified communicative form that displays balance between what he describes as independent structures of rationality. Two of his three structures of rationality are relevant to decision making in EA and planning. (The third relates to authenticity in art.) The first structure is cognitive-instrumental rationality for dealing with matters of knowledge, which is relevant to the

assessment stage of EA. The second structure is moral-practical rationality to decide normative rightness, in evaluation. To address the imbalance caused by a near-exclusive focus on cognitive-instrumental rationality under conditions of modernity, Habermas argues for more emphasis on moral rationality. In seeking a rational and democratic foundation for social institutions, the strength of Habermas's theory lies in its departure from the subject-centred philosophy of Kant, Hegel, and Marx, to a communicative and intersubjective rationality. The attainment of rationality in social action thus requires an increase in the communicative content of decision making, and a rational approach to both means and ends, through reasoned argument and debate. This is consistent with the approach of critical rationality, which is to subject both facts and values to criticism.

A further challenge to rationality in planning has emerged more recently with Flyvbjerg's concept of *Realrationalität*. This concept is based on the poststructural critique of rationality, with empirical support from Flyvbjerg's analysis of the Aalborg project. His analysis shows that distorted and corrupted speech and analysis pervade all aspects of the project. He challenges Habermas's normative focus on 'what ought to be' and argues that, instead of attempting to implement the ideals of discourse ethics, planning should rather seek to uncover and regulate the manipulation inherent in 'what is actually done'. *Realrationalität* raises awareness of what Flyvbjerg describes as the most important challenge for democracy, which is to incorporate consideration of both rationality and power into public decision making and planning.

There has been a change in the use of the term rationality in planning literature, influenced by poststructural critiques and exposés of corrupted practice. As used currently in planning theory, rationality invokes a behavioural rule rather than a methodological or procedural rule. The term is used in the plural form, to portray multiple and conflicting rationalities, for instance, social, economic, technical, political, and ecological rationalities, as per the writings of Diesing (1962) and Dryzek (1983). The notion of conflicting rationalities is epitomised by Flyvbjerg's evocative phrasing in which he juxtaposes the rationality of power and the power of rationality. Another example is provided by the title of Murdoch and Abram's (2002) book, *The Rationalities of Planning: Development Versus Environment in Planning for Housing.* The concept of multiple rationalities, which reflects a postmodern objection to reason, is based on an understanding of rationality as subject-centred – an agent is rational in taking certain action because he/she believes that it will produce the consequences desired. If one agent favours beneficial environmental consequences in the provision of housing and another seeks developmental outcomes, they are not expressing different rationalities, but different values and preferences. As per the arguments of Faludi, the notion that rationality is a behavioural rule is disputed. Moreover, if rationality is procedural, it is appropriate to use the singular, rather than the plural, form of the word.

A proposed delineation of use in EA would apply the term rationality to claims about knowledge, exclude it from the evaluation process, and require the exercise of rationality in the Record of Decision and appeal procedures. This proposal is contrary to the arguments of Faludi and Habermas, who contend that rationality can apply to both facts and values, in that both can be contested. While knowledge can be improved through multiple inquiries and contestation, values may be more enduring. In evaluation, no

matter how much participants strive to understand each other's positions and interests, value differences will remain and volitions may not shift as much as is required to reach agreement through mutual adjustment.

While social rationality is a promising ideal for evaluation, mutual adjustment is the preferred concept to characterise the evaluation stage in the framework for EA theory. The relativistic interpretation of rationality in evaluation, as in the use of multiple rationalities, would tend to destabilise the integrity of the concept of rationality as a procedural rule in the realm of knowledge creation and in articulating the premises of decisions.

In intersubjective approaches to the assessment stage of EA, knowledge claims about the consequences of proposals are subject to contestation and, in some instances, face-to-face debate, in order to establish or refute the validity of these claims. If criticality is a prerequisite for rationality, then information can only be rational if it is subject to improvement through contestation. **Critical rationality** is thus established as an appropriate procedural rule for the assessment and decision stages of EA. With the use of the term rationality confined to specific stages of an EA process, the need for a conception of multiple rationalities in evaluation falls away.

On the question of consensual or partisan approaches to decision making, arguments by Lindblom and Flyvbjerg suggest that participation should be ready for **conflict**, and that rivalry and mutual challenge are the pillars of a democratic society. Rather than trying to eliminate the effects of **power**, as per the rules of discourse ethics, there are a number of measures that can be used to restrict attempts by powerful agents to gain control of a decision making process. These measures are based on the principle of distributing the power to impose among participants, as far as possible. Early in the process, all participants should jointly decide on the rules of the process, to facilitate transparency and more meaningful interaction. Thereafter, a competition of knowledge offers some escape from control, in that the many people and institutions involved dispute with each other, allowing a wider and better understanding to develop. The project of modernity has long been associated with the drive to eliminate the power of tradition. This is perhaps too ambitious a goal, and attention might be focused more effectively on regulating and restricting power, in the ongoing struggle for democracy and societal reform.

For EA, the competitive approach of disjoined mutual adjustment may be the most efficient approach to decision making in general practice, for ordinary EAs. Proposals with significant consequences may need to be subject to the greater effort and control of deliberative processes, which are inevitably more resource and time intensive, particularly if conflict is pronounced and shows signs of escalating.

Having established the important philosophical principles that inform the theoretical framework for EA, a checklist of contributions from the theories of postmodernism and critical realism are provided below. From the philosophy of **postmodernism**, three insights relevant to the assessment stage of EA are identified: recognise the difficulty of obtaining reliable knowledge and meaningful projections, particularly in the social

sphere; provide opportunities for the expression of a heterogeneity of voices and the use of a plurality of knowledge systems; and encourage the use of knowledge for innovation. For the stages of evaluation and decision, three pertinent insights are: counter the manipulation of knowledge by power; acknowledge the limits of knowledge in ensuring just decisions; and acknowledge that there are no correct decisions, only ones that can be agreed through communicational action in a process of micropolitics.

The insights of **critical realism**, all of which pertain to the assessment stage, are to: recognise that all human knowledge is fallible, and apply falsification to choose the more adequate theoretical representation of reality; synthesise situated or local knowledges to provide system overviews; and uphold the principle that no knowledge should be above criticism, which should be applied consistently to knowledge emanating from all knowledge systems, local and scientific included.

Finally, with its focus on ills to avoid rather than ideals to approach, EA is closer to the spirit of our time than forms of planning that seek to remake human settlements according to some idealised form. Current theories of governance have led to an institutionalist perspective in planning, which is congruent with many of the characteristics of the impact statement strategy of NEPA. This suggests that the impact statement strategy, in its fullness, and not just the facet that deals with analytical excellence, can now be recognised and incorporated into EA in other parts of the world.

Having introduced a number of philosophies and planning theories in this and previous chapters, the following chapter considers the implications of these for each of the EA stages of scoping, assessment, evaluation, and decision.

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CHAPTER 7: THEORY OF THE EA PLANNING PROCESS

This chapter develops theory for the practice of Environmental Assessment by integrating theories of EA (discussed in Chapter 2 and Chapter 5) with those of decision making (Chapter 3) and planning (Chapter 6). This integration is approached from a position of critical postmodernism, which is characterised as

> "*a third path different either from the 'smiling mortician's' postmodern celebration of the end of everything and the critical modernist's over-defensive caricaturing of postmodernism as nihilism or new age silliness*" (Peet, 1998: p. 224, citing Soja, 1996: p.5).

This theory of the EA planning process combines modernist and postmodernist perspectives in a 'both/and also' logic, which Soja sees as an opportunity for extraordinary openness.

Particular inspiration was drawn from the theories of decision making that are summarised in Tables 9 and 10 (see overleaf), with the exception of the rational comprehensive approach that is included in Table 9 only for comparative purposes. Table 9 contains types of decision making in planning systems, while those grouped in Table 10 are characteristic of market systems. The role of selected decision making types in the EA planning process is outlined after introducing Figure 5, which shows these groupings (or typologies) in a schematic way. The information in Figure 5 (see page 156) and in Tables 9 and 10 informs the middle range theory of the EA planning process presented in this chapter.

Figure 5 is dissected by a horizontal broken line that separates planning systems above the line, in yellow, from market-type systems in orange, below the line. The domain of EA is shown by the green block arrow on the right of the figure, which straddles the divide between these systems. The left-hand column of Figure 5 contains types of decision making in turquoise boxes, with the corresponding extent of stakeholder participation in the grey boxes alongside. The decision making types adjacent to the broken, horizontal line are the most participatory types of decision making: these are the deliberation of planned communicative action and the competitive interaction of mutual adjustment. The decision making types closer to the line use information for enlightenment rather than for social engineering. Further away from the broken line, decision making is characterised as less participatory and more an instrument of social control by either the state or actors in the private sector.

Table 9: Planning systems – type and extent of rationality in different types of decision making

Type of decision making:	Type and extent of rationality	Approach to decision making	Who takes decision?	Some critiques/ *Key shortcoming*
Rational comprehensive (positivism)	**Logical-empirical** (L/E) analysis of facts of situation and predicted consequences of alternative means towards given ends; called **technical** or **substantive** or **instrumental rationality**, where means are instruments to achieve ends	**Centralised, science-guided**	**Ends determined** by formal decision taker, who **delegates authority to analyst** to implement technical solution	Problematic in social (group) decisions; professional theft of decision making/ *Preferences are made, not discovered*
Mixed scanning	**Dualistic**: **L/E** analysis of facts and means; AND **Normative-affective** (N/A) incorporation of values in determining & weighing ends	**Centralised, science-guided**: **Fundamental or strategic** decisions centralised, informed by involvement of civics, followed by a number of decentralised, **incremental** decisions	**Decision taker** informed by staged strategic and detailed analysis, and stakeholder participation	As above/*above*; *Efficiency in analysis depends on possibility of iterative decision making*
Critical rationality	**Dualistic** in separation of facts and values: **L/E** analysis of facts & means, in spirit of contestation and argument; AND **N/A** deliberation to determine values and ends, through **procedural, communicative**, or **deliberative rationality**	**Centralised, science-guided** and **politically-directed,** within institutional structures of planning in a representative democracy, informed by perspectives of civic participants	**Decision taker** informed by analysis and stakeholder participation	Questionable demarcation of correct from incorrect decisions/ *Social justice sidelined in optimising utility*
Communicative action	**Interpretative inquiry** focused on alternative ends; discourse ethics provide rules for process so as to achieve **ideal speech** situation in which power differences neutralised; aims to reach **intersubjective understanding** through **communicative** or **deliberative rationality**	Evaluation as **interactive discourse** in deliberatively democratic space, inclusive of local, experiential knowledge; knowledge as contested, underpinning an **argumentative approach** to social learning as a mechanism for achieving consensual action	Co-operative search for truth, where nothing coerces except **the force of the better argument**; collaborative building of new and mutually beneficial alternatives	Idealistic if not naïve/ *Face-to-face deliberation time consuming*

Table 10: Market systems – type and extent of rationality in different types of decision making

Type of decision making:	Type and extent of rationality	Approach to decision making	Who takes decision?	Some critiques/ *Key shortcoming*
Mutual adjustment	**Bargaining** and **adaptation** in seeking **market-like coordination** amongst participants who do not agree on goals or on cause and effect; probing of means and ends together; mixture of limited analysis and social interaction; can approach **communicative rationality**	**Adversarial, dispersed, incremental**, and **adaptive** **Self-guiding society** (as in Table 1) Participants clustered in partisan groups in **competition**; in iterative probing, if little or no analysis before action then observed consequences inform next round of decision making; not the extreme of participatory democracy	**Pluralist, interdependent decision makers** in 'sea' of democratic deliberation, with 'island' of centralised decision taking when negotiation fails	Power imbalances skew decisions (this applies to a greater or lesser degree in all types of decision making)/ *Limited analysis*
Realpolitik* and *realrationalität	***Realrationalität***, the principle strategy in the rationality of power is '**decision first, then rationalisation presented as rationality**'; power defines what counts as knowledge and reality or truth, they are analytically and politically inseparable; power creates and suppresses knowledge and determines what becomes the dominant interpretation Formal rationality or reason is one of few powers possessed by the weak but, in open confrontation, reason yields to power, i.e., **rationality is weak – the weakness of the better argument**	***Realpolitik***, a realist's sense of the practical, where agenda is set by the will to power of special interest groups often with convoluted influence (hidden juntas) who procure and build allies **Lessons of power analytics:** The power of rationality can only be secured by developing strategies and tactics that limit the raw exercise of power – democracy must be fought for each day, in facing power head-on; conflict (with traditions of tribe, class and privilege) must not be suppressed; need more partisanship, civic participation, and transparency in decision making – **democracy** is not about dissolving but **regulating power** and **domination**	Governmental rationality and formal politics are weaker than **private power** which **creates the reality it wants** – power seeks change not knowledge; real power lies not in the coherence of the written and spoken word, which is the legitimation of power; dominant power is not exercised in public, nor in 'rubber-stamping' by authorities	*Unless there is a focus on the lessons of power analytics, there is a danger of becoming resigned cynics rather than activist realists*

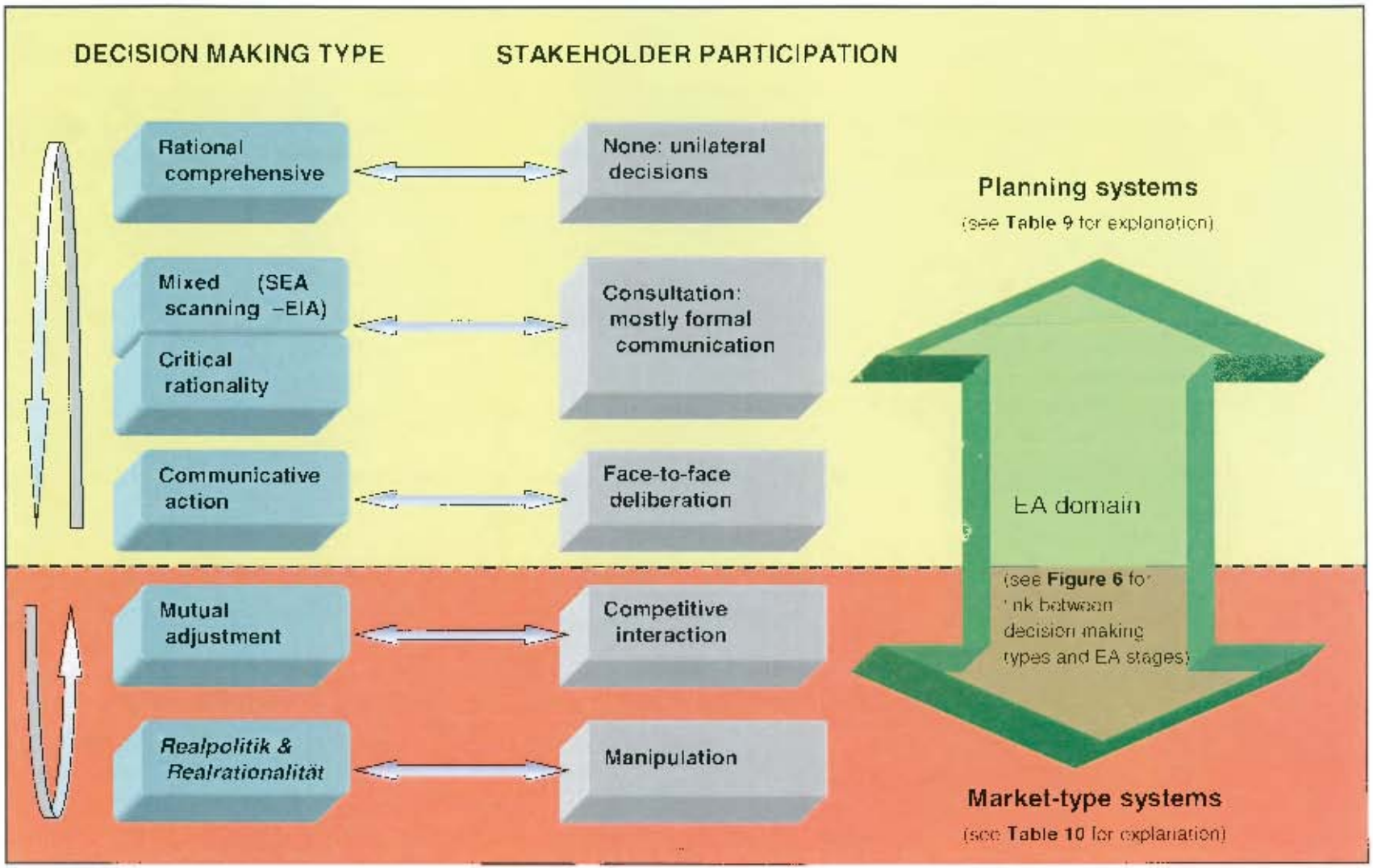

Figure 5: Domain for EA in terms of system (market or planned), type of decision making, and extent of stakeholder participation

Note that all participants, from the state and civil society, are involved in the communicative processes of governance that are clustered in the middle of Figure 5 (i.e., close to the horizontal, broken line). This avoids a weakness of Arnstein's (1969) ladder of citizen participation, which is the assumption that control by civil society can be an alternative to control by the state (Abbott, 1997). Arnstein's continuum was useful in the era in which her paper was written, when policy implementation was largely government-led and subject to the inevitable flaws of 'top-down' control. The relevance of her critique aside, the extreme of management by civil society (at the top of the ladder) can only apply in some localised situations and is hardly feasible in most contexts. Interpreted as the other end of a single continuum, community participation is perceived by authorities within the state as a threatening concept (Abbott, 1997).

Figure 5 has two outer poles of manipulation, with the integration of governance and participation in the middle, as interactive decision making. The circular arrow on the far left shows that the extremes of the rational comprehensive method and *Realrationalität* represent polarities of power with much the same controlling effect on decision making. Power creates knowledge in both formal politics and *Realpolitik*.

Another conceptualisation relates these theories to the stages of the EA process, as shown in Figure 6 on page 159, which is explained on pages 158 and 160. The first two theories listed below are central to the theory of the EA planning process developed here. Critical rationality (theory 1) is most relevant to the assessment and decision taking stages of EA, culminating in possible appeals against the Record of Decision. A formalised process of mutual adjustment (theory 2) is most important in the decision making (or decision shaping) that occurs in scoping and evaluation. In this approach to decision making, co-ordination occurs without a central planner, through mutual adjustment amongst participants.

The approach of disjoined mutual adjustment would be the most efficient approach to decision making in general practice, for ordinary EAs. Proposals with significant consequences and pronounced conflict may need to be subject to the greater effort of face-to-face deliberation or joined mutual adjustment, which is inevitably more resource and time intensive – akin to communicative action, but without necessarily achieving the ideals of discourse ethics. In situations where mutual adjustment fails and consensual action is not possible, a decision must be imposed, subject to the conditions of critical rationality.

This framework of mutual adjustment and critical rationality is encompassed, inevitably, within a conduit of the *Realrationalität* of power (theory 3). It is within this conduit that the various structures of rationality can be exercised, or blocked, throughout all of the phases of EA. Mixed scanning (theory 4) provides a conceptual link between SEA and EIA – between early strategic consideration of broader alternatives and subsequent more detailed evaluation of narrower, incremental alternatives. This theory can be used further to scope the collection of data at various stages in the planning, design, and assessment of proposals, with later stages providing more detailed information around restricted foci.

Mixed scanning is otherwise not used as a theory of decision within EA, as it exhibits many of the weaknesses of the rational model, as argued in section 3.2.4.

The rational comprehensive approach to decision making is the only one in Figure 5 that is not used to structure this theory of EA. A related (but opposite) concept, that of satisficing, is not readily incorporated into the structure of Figure 5, which shows a range of opportunities for stakeholder participation in decisions. The extent of information gathered in a particular EA is situated somewhere on a continuum, with comprehensive and satisficing decisions at opposite reaches. The amount of information needed for specific decisions varies from proposal to proposal and is determined in the scoping and assessment stages, depending on a decision as to whether weak, moderate, or strong precaution is appropriate (see further section 7.2).

Figure 6 has evolved from Figures 1 and 3, which are sourced and adapted, respectively, from Beanlands and Duinker (1983). In a change from Figure 1, the sine wave curves are replaced by two lines (for simplicity) that regularly switch over from slightly more to slightly less important, for each of the stages of EA. The two lines in Figure 6 represent critical rationality in the place of science, and mutual adjustment instead of social values. These changes in terminology are subtle, with the shift from science to critical rationality in both the assessment and decision stages being more nuanced, to:

- allow for the possibility of inquiry by citizens and functionaries;
- emphasise that all knowledge is imperfect and open to contestation; and,
- encourage lay people to not accept unquestioningly the findings of specialists but rather to challenge and critique information on the basis of their own knowledge, as far as possible.

The most obvious visual change in Figure 6 is a reduction in the distance between the two lines representing these theories, to the point of merging. Critical rationality and mutual adjustment are not easily separated. Figure 6 shows them as a double helix, closely linked and intertwined. Critical rationality accepts that both facts and values should be laid open to challenge by others. The practice of critical rationality thus makes possible the accommodation of mutual adjustment. In the sub-sections that follow, in which detail is added to this theory of EA, both of these theories (and others) are used to improve understanding of each consecutive stage of EA. The decrease in amplitude of Figure 6 also portrays an EA process with closer integration of specialists, functionaries, and citizens, working together to make decisions and influence planning and design.

Another change is the addition of a decision stage, to replace the decision point in the original figure. Where mutual adjustment fails and consensual action is not possible, a decision must be imposed, subject to the conditions of critical rationality. The decision stage is not a single point in time: it includes the act of deciding, the preparation and distribution of the ROD, a time period during which appeals may be lodged with administrative authorities, and the consideration of the appeal. Court challenges of decisions further extend the opportunity to pursue the principles of critical rationality.

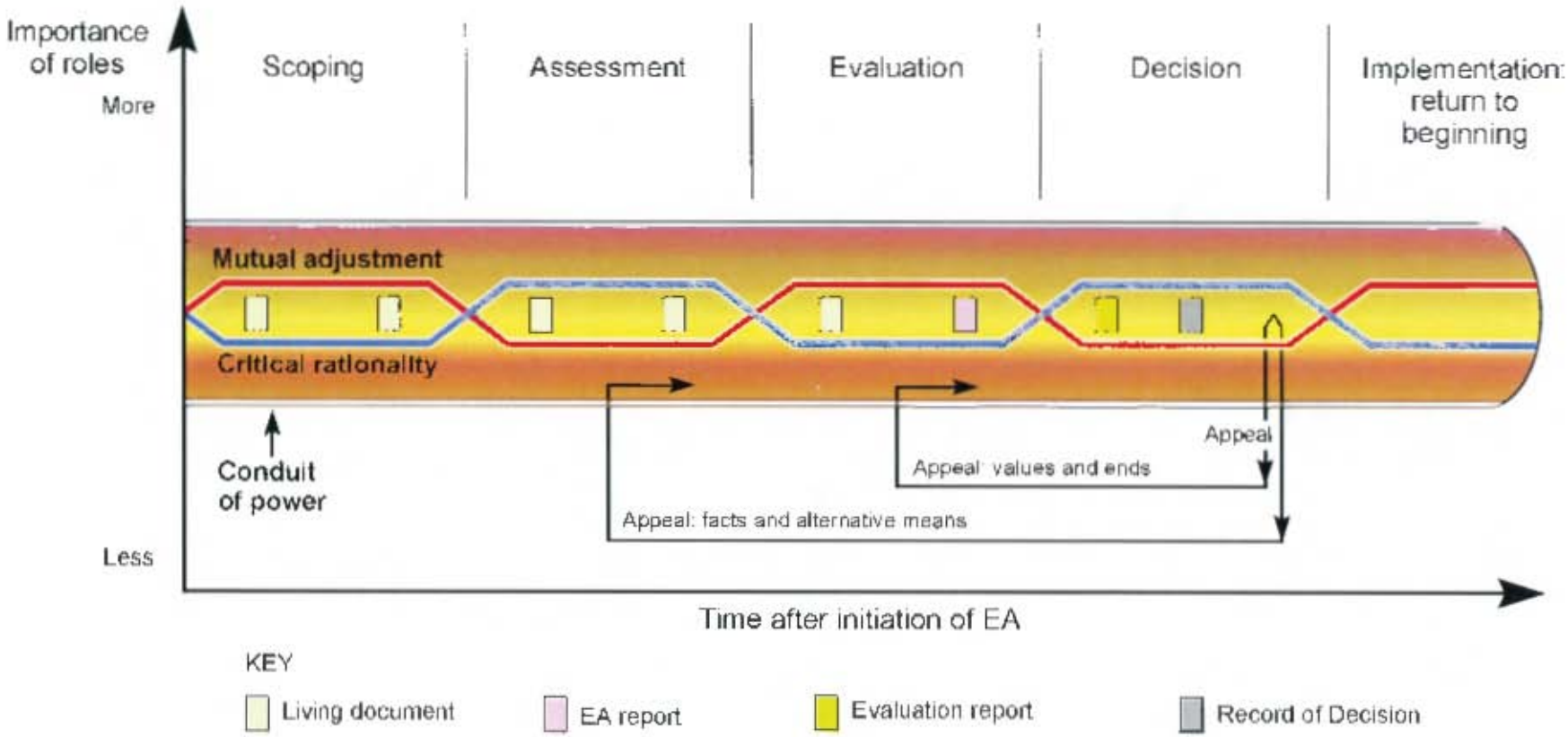

Figure 6: Mutual adjustment, critical rationality, and power in the EA planning process

The cycle of stages in Figure 6 is repeated for the implementation stage. The cycle of stages may even be applicable to screening decisions, albeit in a contracted form.

The remainder of this chapter elaborates on this theory for EA practice by considering, in turn, each of the stages of scoping, assessment, evaluation, and decision. The notion of a living document as precursor of, and complementary to, an EA report – as shown in Figure 6 – is described in section 7.2.4. The chapter ends with a section on rationality and power in EA, which emphasises the importance of adding a morality of obligation to the procedural focus of this theory. Addressing unequal access to power in EA is a limited yet practical attempt to counter the widening disparities apparent in society.

7.1 Scoping: pre-structuring the decision-situation through the intersubjectivity of mutual adjustment

Like Geddes's injunction to start planning with surveys, many early EAs also started with unguided surveys of baseline environmental conditions. Such surveys often attempted to study every aspect of the environment, much to the chagrin of Beanlands and Duinker (1983; 1984) who elaborated a theory of scoping to guide decisions on what to study and what to leave aside. The choice of what information is relevant to a decision amongst alternatives is related to what has been called the problem of significance (Faludi, 1987, citing Harvey, 1969). In EA, significance is determined from an analysis of the context and severity of impacts. Choice is also exercised in deciding which alternatives are to be formulated and assessed.

As outlined in section 2.3, scoping facilitates participatory, efficient, integrated, and timeous EA, and culminates in the production of a plan or guidelines for the assessment stage. The theoretical elaboration of scoping provided here draws on critical rationality, through its notion of defining the decision-situation, described below. Another significant addition to a theory of scoping is to advance beyond the widespread recognition of scoping as a subjective process, to the Habermasian notion of intersubjectivity. According to Habermas, the process of achieving agreement amongst participants is only possible through rational processes in which people overcome their subjectively based views in favour of a rationally motivated and intersubjective consensus (Flyvbjerg, 1998b, citing Habermas, 1987).

Popper (1973) would characterise this process as participants gradually developing a collective World 3 construct of the World 1 situation they are seeking to understand and grasp, through the interaction of the subjective World 2 states in the minds of participants. The outcome of scoping goes beyond the individual mind as a product of many minds, which makes it part of World 3 objectivity, regardless of whether the outcome is more or less adequate to the task of guiding the assessment stage and subsequent decisions. Habermas's notion of intersubjectivity is preferred as simpler and more evocative of the scoping process than the complexity of World 3 objectivity.

Lindblom (1990) would argue that what is occurring in scoping is a process of mutual adjustment. A formalised process of mutual adjustment is appropriate to the scoping (and evaluation) stages of EA, through its:

- inclusion in the impact statement strategy, as a central component of this existing and cogent theoretical model of EA;
- emphasis on lay learning, in which citizens learn about a problem and how serious it is, and start to consider the strength of their volitions in determining how much effort they are prepared to invest in confronting and addressing the problem;
- distribution of power to diverse interest groups to influence outcomes, in which each group, on its own or in conjunction with other groups, organises to achieve its own objectives; and,
- explanation of how consensual action can be achieved in the absence of agreement on goals through collectively agreeing to a course of action for different reasons, or developing a mutually beneficial alternative.

Beyond the variations in these explanations of how scoping functions, as described by Faludi, Habermas, Popper, and Lindblom, all of these theorists acknowledge that social rationality is at work in the process.

7.1.1 Rationality as relative to the definition of the decision-situation, and subjectivity in scoping

In his writing on critical rationality, Popper (Faludi, 1986, citing Popper, 1959) urges that one must state one's problems clearly and examine proposed solutions critically. He refers to the need for a 'situational analysis', to inform the process of problem definition and decision making. Scoping is a preliminary situational analysis that influences all subsequent stages of an EA process and the ensuing decision.

Faludi (1986: p. 120) supports the notion of scoping by acknowledging that decisions about the relevance of data should be taken from the point of view of the actors concerned, "*lest analysis should deteriorate into collecting a meaningless heap of facts*". He does not mention the term scoping, but uses the notion of the definition of the decision-situation, as follows.

> "*A definition of the decision-situation is a description of the alternatives which a decision maker has with respect to a certain decision, together with their expected consequences weighed in the light of his/her values.*" Faludi (1986: p. 21)

The definition of the decision-situation includes all that one must know at the moment of confronting a decision. While Faludi (1986) recognises that the decision-situation rests on many assumptions and prior decisions, his emphasis is on the decision taken at the approval stage. He describes his procedural theory as a decision-centred view of environmental planning.

Brown and Hill's (1995) process of decision-scoping bears many similarities to Faludi's definition of the decision-situation, with an important difference. Decision-

scoping emphasises the informational needs of not only the final decision taker but also those involved in the many smaller decisions that inform the design of a proposal. Decision-scoping prescribes the phasing of design decisions, in time, such that relevant information is provided, timeously, for each of these smaller decisions. Thus, decision-scoping influences the process of incrementally gathering information, and momentum, towards the approval stage, when the decision-situation will be completely defined. Decision-scoping can thus be characterised as both a design- and a decision-centred view of environmental planning.

EA theory acknowledges that at least some of the assumptions and decisions inherent in defining the decision-situation are best made some time before the decision to approve a proposal. Scoping pre-structures the decision-situation, with subsequent refinement as the process proceeds towards the decision stage.

Faludi (1986) rejects the problem-centred view of planning which suggests that one should start with an objective analysis of a problem and then search for optimal solutions. He points out that a 'problem definition' cannot be objective because it reflects the perspective of the person (planner) involved in the process of such definition. Lindblom (1990) concurs that the origin of problems lies in sensitivities and feelings, which pertain to the emotions. These views on the origin of problems are consistent with that of the philosopher David Hume (1711-1776). In his book *A Treatise of Human Nature* (Books I to III, 1739-1740), Hume argues that

> "*reason is, and ought to be only the slave of the passions, and can never pretend to any other office than to serve and obey them*" (Tudge, 2003: p. 30).

Scoping decisions to select certain alternatives and consequences for further study are based on values (passions), which are then served by the rationality of the assessment stage. Most EA professionals agree that scoping decisions are largely determined by values, even those who advocate that the assessment of significance should preferably be based on technical standards (e.g., Sadler, 1996).

Defining the decision-situation is a subjective activity, in that it represents the world, or the situation, as seen by a subject (Faludi, 1986; 1987). The subject could be a real person, for instance – the decision taker, or it could be a construct such as the nation or a community. Faludi acknowledges the strategic choice approach of the Institute for Operational Research (IOR) as the mainspring of his views on planning, alongside the work of Popper. The IOR school emphasised an 'agency-centred' approach to decision making, in which decisions arise from the perspective of an agent or actor (Friend and Jessop, 1977).

As planning and EA involve numerous actors, one must approach the description of situations from the perspectives of the actors concerned. While planning and EA are synthetic disciplines, in that they bring diverse perspectives to bear on decision making, Faludi (1986) warns that synthesis will never be total. It is not possible to grasp the 'essence' of a situation, because there will be different views on what constitutes the situation. Furthermore, Friedman (1998) notes that, while (what he calls) Euclidean (or

geometric) planning was suited to a static world in which the state could control urban change, the post-Euclidean perspective of planning is that the world is incapable of being seen as a whole in all relevant detail. Faludi (1986: p. 94) acknowledges that the definition of the decision-situation is a "*fallible reconstruction of a specific situation resting on many assumptions and decisions*".

Faludi (1987) explains that rationality can only apply within the constraints set by the definition of the decision-situation.

> "*It follows that rationality cannot be an objective criterion of the quality of decisions. Rather it is relative to the definition of the decision-situation. The questions which it raises are: whether all alternatives and all their consequences have been assessed* ***within*** *that definition, and whether the proposed decision flows from this.*" (Faludi, 1987: p. 120)

Faludi (1987) notes that the recognition of subjectivity in defining the decision-situation takes care of many issues. The limitations of the human mind and of time are not issues because they are part of the definition of the decision-situation. He contends that rationality cannot be said to transcend conflict, because there can be no generally acceptable solution when there is no common definition of the decision-situation. If agreement cannot be reached in scoping, unresolved conflicts are carried forward to subsequent stages.

7.1.2 Determining the need and purposes of a proposal in scoping: a model for identifying reasonable alternatives

The first step in defining the decision-situation is to establish and clearly define the need underlying a proposal, "*because it drives the selection of the range of alternatives*" (Bass and Herson, 1993: p. 64). The US Council on Environmental Quality regulations of 1978 require that an EIS "*shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action*" (US: CEQ, 1978: Sec. 1502.13). Thus, while an EA process is triggered in response to a proposal, the requirement to specify the underlying need pushes EA further 'upstream' in the policy process to the point of 'problem definition' or 'need statement'.

Most references to the consideration of alternatives in EA suggest that a set or range of 'reasonable' alternatives should be formulated and evaluated (e.g., Bisset, 1996). The US CEQ defines reasonable alternatives in a practical way as those that are economically and technically feasible (US: CEQ, 1986). While this narrows the range of reasonableness, the CEQ (1986: Question 2b) expands the notion of reasonableness to include alternatives outside the "*legal jurisdiction of the lead agency*" and even allows consideration of alternatives "*in potential conflict with local or federal law*". Within these defining statements, it is noted that "*what constitutes a reasonable range of alternatives will depend on the nature of the proposal and the facts in each case*" (US: CEQ, 1986: Question 1b).

The primary determinant in the identification of a set of reasonable alternatives is the stated need that a proposal seeks to address. A wide statement of need makes it possible to identify a broad range of alternatives, and *vice versa*. The second determinant of a set of reasonable alternatives is the purposes that a proposal seeks to satisfy. These two determinants are discussed below.

Reflecting on 20 years of experience with NEPA, Schmidt (1993) presents a model for defining and evaluating alternatives, as described below. In rational decision theory, Schmidt notes, a need is identified, alternative ways to meet the need are defined, the alternatives are compared using a range of decision factors, and, finally, a decision is taken.

A need is "*the lack of something wanted or the presence of something unwanted*" (Schmidt, 1993: p. 44), and is either an opportunity or a problem. Needs are nouns, such as water, transportation, a building material, and office space, with the only exception being transitive verbs that act like nouns, where, for example, the need might be for some form of management. Schmidt (1993) claims that any alternative that meets the underlying need constitutes a reasonable alternative. Needs have alternatives, while purposes do not.

Purposes are goals or objectives to be attained, and represent the qualities sought in alternatives. Purposes are thus the issues studied and the decision factors used in choosing between alternatives. Purposes are adjectives, such as economical, biodiverse, and safe.

In the model shown in Figure 7 (overleaf), Schmidt (1993) denotes the bull's-eye in a target as the underlying need. An arrow is a proposed action, and multiple arrows represent alternatives to the action. Stated purposes are rings, in Venn diagram form, suspended in front of the target. Figure 7 shows three purposes (or rings) for illustrative purposes: any number of purposes can obviously be chosen, as appropriate to the situation.

In using this model to guide the selection of alternatives, Schmidt proposes that:

- Alternatives that meet both the need (hit the bull's eye) and purposes (pass through the rings, preferably through the centre where all purposes are met) are analysed in the greatest detail (arrows marked 1 in Figure 7).

- Alternatives that meet the need, that is, those that hit the bull's eye, but do not satisfy the stated purposes by missing the rings in front of the target, should be included in an EA report, but do not need to be subject to detailed analysis (arrow 2).

- Alternatives that do not meet the need, that is, those that do not hit the bull's-eye, are not reasonable alternatives, and can be eliminated from further consideration (arrow 3 in Figure 7).

The EA literature typically refers to 'purpose and need', as listed in the US CEQ regulations. Reference should be made to 'need and purposes', in the sequential order in which these two concepts should be applied to identify alternatives.

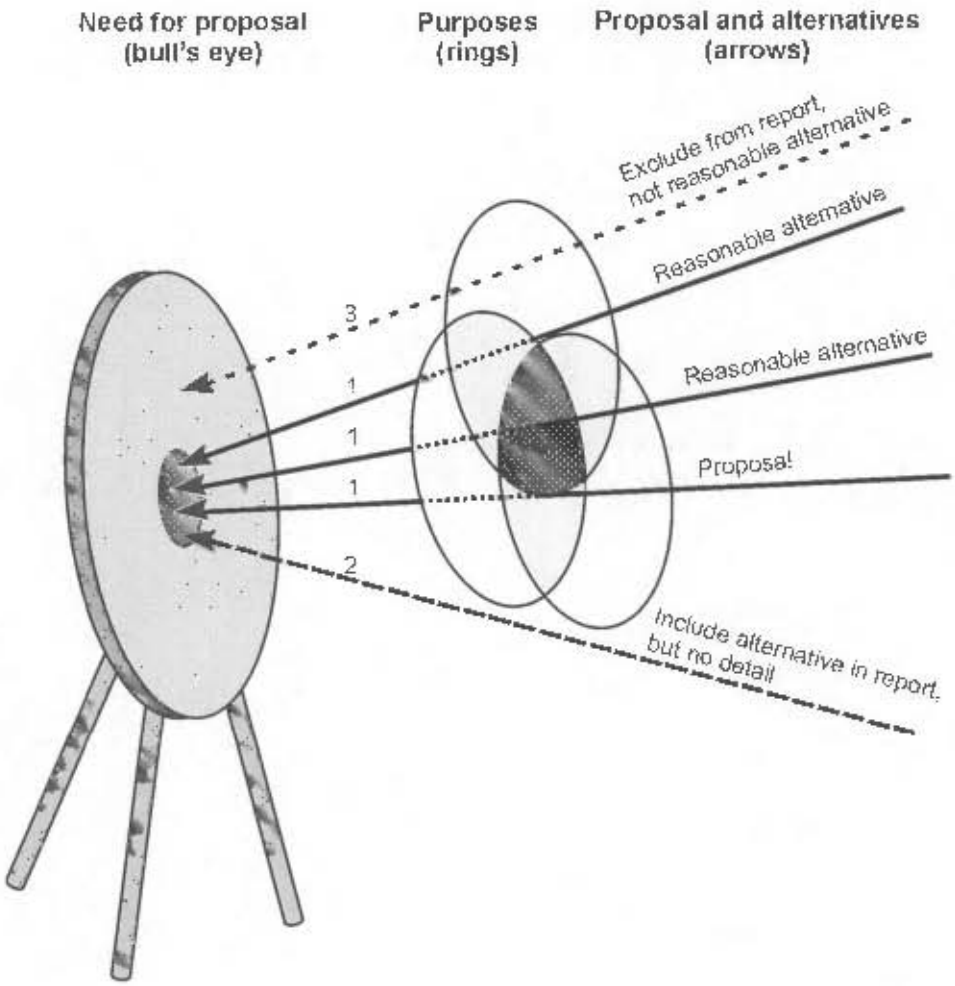

Figure 7: A structured approach to need, purposes, and proposal alternatives in EA (Source: Adapted from Schmidt, 1993: p. 64)

As a lawyer practising in the field of EA in the United States, Schmidt (1993) used a number of NEPA court actions to show that his model convincingly explains the court decisions on the question of alternatives. Two such cases are illustrated in Figure 8.

In the first case, Figure 8(a), the Secretary of the Interior prepared an EIS on a proposed oil and gas lease in the Gulf of Mexico, to meet the nation's energy needs. The Natural Resources Defence Council (NRDC) sued on the grounds that other alternatives (shown in the figure) should have been considered in the EIS. The court found in favour of the NDRC because the alternatives proposed by the NDRC would all meet the stated need.

In the second case, Figure 8(b), the US Department of Transportation proposed to regulate the transportation by highway of radioactive material to meet the need for safe highway transport. The City of New York sued because the EIS did not consider the alternative of transporting radioactive waste around New York by barge. The City of New York lost the case, because the stated need as presented in the EIS was the safe highway transport of radioactive material. If the need had been stated as the safe transport of radioactive waste, NewYork would have probably won the case.

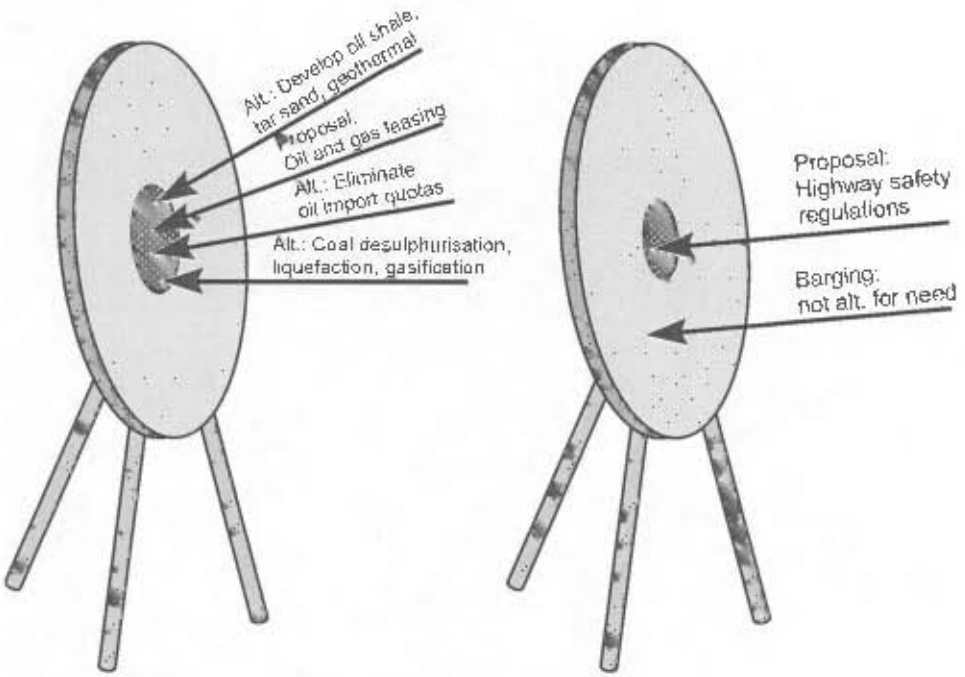

Figure 8: Broad and narrow statements of need, defining broad and narrow alternatives (Source: Schmidt, 1993: p. 57)

On the basis of these and a number of other cases, Schmidt (1993) concludes as follows:

> *"When an agency defines the underlying need very narrowly, it wins. And when it defines the need very broadly (or not at all), it loses. It seems that a narrowly scoped EIS is easier to write and to defend than one that is broadly scoped."* (Schmidt, 1993: p. 49)

As an attorney with the Bonneville Power Administration, Schmidt (1993: p. 43) used his model to advise his employer to limit the scope of an environmental document by *"carefully defining the statement of underlying need"*. In this quotation, the word 'carefully' is a euphemism for 'restrictively'. This narrow perspective lends credence to

the power-in-micropolitics model of EA, which holds that EA is often misused to continue the practice of 'business as usual'.

This criticism aside, Schmidt's model successfully captures the nature of decisions related to need and alternatives, regardless of whether the model is used or abused, by proponents or their opponents. Narrow statements of the need and purposes directing proposals might not advance sustainability, human well-being, or any number of other laudable goals, because they narrow the range of alternatives that might be considered in an EA.

Faludi (1986, citing Reade, 1985) argues that, in order to be rational, one ought to have not only considered alternative courses of action, but also alternative objectives. Faludi paraphrases the word 'objectives' as 'goals'. It is not clear whether Reade intends this condition of rationality to include the choice of alternative needs. If there is a hierarchy of goals (or ends), with higher order goals as needs and lower order goals as objectives, the inclusion of both alternative needs and objectives seems a reasonable expression of this condition of rationality.

As there are always many possible objectives, Reade urges consideration of the following questions:

- Are the objectives attainable? – it is not rational to pursue unattainable objectives;
- Have all possible (attainable) objectives been examined? – asking this question before adopting a set of objectives ensures the choice of preferred objectives;
- Do any objectives clash with higher order objectives or ends? – in this context, Reade refers to higher order ends as fundamental beliefs; and,
- Does pursuit of any objective preclude others? – this is inevitable and requires a rank ordering of objectives.

Previous sections have dealt extensively with the problems of ordering preferences (or objectives) at the beginning of the decision process. The problems include the context dependency of preferences and that preference trade-offs relate to marginal choices and marginal differences between alternatives. In scoping, the context of a proposal is partially established. The outcome of scoping is to distinguish between a group of factors (objectives) that form the subject of further inquiry in the assessment stage and a group of factors that are screened out from further consideration. While this is an important choice that pre-structures the decision situation, it is a rudimentary decision – a first iteration that does not require fine distinctions in the preference ordering of factors taken forward into the assessment stage.

Instrumental rationality, which is concerned with optimising the ratio between means and ends, is turned into comprehensive rationality by considering alternative ends (Faludi, 1986, citing Etzioni, 1968). While this is evidently what Reade is arguing for, the scoping process establishes EA as a form of bounded rationality. Inherent in the conception of bounded rationality is the need for a selective point if view, without which one obtains too much information (Faludi, 1986). That the choice of a point of view is

best made before conducting investigations to inform a decision, emphasises the importance of the scoping stage in the attainment of critical rationality in EA.

Whether the ideal of considering alternative needs and purposes is achievable in a specific EA depends on the context of a proposal and the extent to which participants in EA are prepared, and able, to challenge powerful proponents. This is consistent with Caldwell's (1993; 1998) notion that it is the consideration of alternatives, required by EA law and demanded by vigilant environmental pressure groups, that pushes the role of EA beyond subservience to the market place in which proposals arise.

Proponents in both the private and public sectors formulate proposals in response to perceived or expressed demand. Fasolina and Bardecki (1992) argue that it is difficult for private sector operators of waste management facilities to consider alternative sites not already owned. The difficulties include the financial savings inherent in using a site already owned, the inability of private firms to expropriate sites, and unacceptable price escalation when owners of alternative sites become aware of proposals for their land. Building on this argument, it seems unrealistic to require consideration of alternative needs by private sector proponents if the provision of services to meet such needs lies beyond the core business of an enterprise. While this limitation on the part of individual firms is acknowledged, it does not absolve them from the responsibility to consider complementary environmental and social purposes beyond a single minded focus on a core business goal.

There are two implications emerging from acceptance of the premise that individual private sector proponents should not be impelled to consider alternative needs in EAs of their proposals. The first implication is that a proposal might be not be approved if the proponent is unwilling or unable to reconsider the underlying need to allow more environmentally preferable alternatives. The second implication relates to the longer term sustainability of an enterprise, which could be compromised if other firms develop competitive proposals to meet alternative needs, in accordance with the principles of the private sector model of EA.

In a discussion of the practice of scoping in the Great Whale Hydroelectric project in Quebec, Mulvihill and Jacobs (1998) note that it is rare for project EAs to address the issue of problem definition (or as described above, need statement). In contrast, they indicate that, in the concept or class assessments that are prepared under the Canadian Environmental Assessment Act, the "*terms of reference often include broad questions of justification that are tantamount to policy decisions*" (Mulvihill and Jacobs, 1998: p. 362). Nevertheless, in the scoping process for the Great Whale project, upstream policy issues were considered because this large-scale project was tantamount to a regional development scenario.

The strongest challenge to a proposal is to challenge its need. The requirements of critical rationality can be attained in an EA without consideration of alternative needs, subject to the proviso of agreement among participants to exclude consideration of alternative needs in defining the decision-situation. This raises the next issue relating to a reasonable set of alternatives.

7.1.3 Scoping: listening to many subjective voices, and advancing to intersubjective agreement on proposal need, purposes, alternatives, and the design of the EA process

While the above model provides a structured approach to identifying a set of alternatives, it does not address the issue of who formulates the statement of need and purposes for a proposed action. A South African environmentalist (Fig, 1995) suggested that a central question in EA is 'who decides which alternatives should be included and which should be excluded?'. With the insight of the Schmidt model, Fig might have rephrased this question as 'who decides on the need statement?', which in turn shapes the decisions on reasonable alternatives.

Jordan and O'Riordan (2000) compare and contrast the rational actor and the multiple-sequence decision models. The rational actor model is typically used in situations in which decision making is the prerogative of an elite decision taker, under conditions of consensus on underlying needs and values, with the goal of optimising utility and efficiency. The multiple-sequence decision model also begins with the exercise of elite power, but proceeds in an iterative process of criticism by disaffected groups in which policy shifts may ultimately be hard won by advocacy coalitions. In both models, needs are framed unilaterally, within a business or a sector of government. In the multiple-sequence model, unilateral framing is followed by resistance and protest that may "*trigger a more pluralistic and deliberative approach to decision making*" (Jordan and O'Riordan, 2000: p. 85). They warn that the potential for inclusive processes depends on breaking down the old order, which is still largely in place, with some fragmentation apparent in the nuclear power, intensive agriculture, and road transport sectors (in the UK).

The multiple-sequence decision model fits the context of EA. It would be rare for a proponent not to have formulated a need and purposes before they announce a proposal in public. As Caldwell (1993) notes, EA is based on the premise that proposals emanate from dispersed sources, either in the public or private sector, and that it is not possible to centrally coordinate this process. EA is structured to ensure that proposals are laid open to possible challenge, in an attempt to ensure that unreasonably narrow 'need and purposes' are modified to be more broadly tolerable. EA provides formal opportunities to express opposition to proposals, and forces proponents to listen to, and engage with, other political actors. The extent to which such opposition influences decision making depends on the willingness of proponents to share their power, and the influence and counter arguments that can be mobilised by coalitions opposing proposals, or undesirable aspects of proposals.

For a plan to be an effective guide for action, Faludi (1986) lists two conditions relating to communication amongst stakeholders. The same conditions hold true in EA, in seeking to realise inclusive deliberation to inform decisions and delineate environmentally sound action.

> "*The first is that there should be a* ***community of discourse*** *embracing all those concerned. The second is that there should be* ***agreement*** *as to the definition of the decision-situation.*" (Faludi, 1986: p. 101)

The first condition is necessary, while the second is sufficient as it will seldom be fully achieved – what is needed is enough agreement for the discourse to work.

There are two ways to achieve a community of discourse, by formal communication and face-to-face interaction. Faludi (1986) notes that formal or written communication can be effective where there is already a level of mutual understanding among participants. Where this understanding does not exist, it can only be realised by face-to-face engagement, which is the path advocated by Friedmann in his transactive planning or, using Habermasian terminology, communicative planning.

Scoping inevitably involves both written communication and face to face meetings. For example, the EIS for the Exton Bypass (a proposed 5.5 mile, four lane highway in Pennsylvania, United States) provides an outstanding example of the initial scoping and ongoing coordination of participation in an EA (US: Federal Highway Administration, 1985). The coordination process stretched over a period of 20 months prior to publication of the Draft EIS and included 29 meetings, with environmental and conservation organisations, private companies and business leaders, and officials from local, state, and federal government. Comments were obtained on preliminary alternatives, the overall Plan of Study, and on methods proposed for the study of specific impacts.

Much of the communication in the Exton Bypass EA was of a bilateral nature, in the form of meetings, both formal and informal, between the proponents (federal and state transportation agencies and their private sector consultants) and another agency or interest group. A number of larger, multi-lateral scoping meetings were arranged, some in the field, to allow a range of representatives from different agencies to get together and discuss specific issues and impacts, for example, socio-economic concerns, historic and archaeological issues, impacts on natural resources, and impacts on wetlands. Another large scoping meeting brought together public officials from four townships in the study area to obtain opinions and information related to the evaluation of alternatives. A public meeting was held to inform the public about the pending EA and to receive their comments, followed by a series of interviews with a number of individuals with local interests.

The Exton Bypass EIS illustrates the social nature of scoping and coordination. The broad based and intensive nature of the coordination process (as documented) reflects public and agency input into the plan of study, its implementation and, most importantly, into "*the ultimate preparation of a project design which is sensitive to the community needs and to the environment*" (US: Federal Highway Administration, 1985: p. VI-5). Coordination is used in this case towards the goal of communicative planning and design of a facility. While interdisciplinarity is evident, the coordination includes many inputs from non-specialists and, as such, communicative planning appears to be a more apt description than interdisciplinary planning.

In keeping with the intent of communicative planning, scoping in an intercultural context must go beyond merely accessing local knowledge and producing a list of impacts to be studied. Scoping should rather provide an opportunity for stakeholders with culturally diverse world-views to participate in the design of an EA, to accommodate diverse approaches to identifying, classifying, and assessing impacts (Mulvihill and Jacobs, 1998). This is because even the technical process of developing an EA design is underpinned by the social construction of reality. Scoping in an intercultural context "*calls for more respectful and enlightened consultation with stakeholders*" (Mulvihill and Jacobs, 1998: p. 367).

Scoping thus prestructures the decision-situation through a formalised system of mutual adjustment, to gain intersubjective agreement on:

- the underlying need for a proposal;
- reasonable alternatives to meet this underlying need;
- auxiliary purposes or objectives to be met by a proposal, which relate to enhancing desired consequences and ameliorating undesirable impacts, while meeting the underlying need – these purposes (or issues) become the focus of information gathering in assessment and ultimately constitute the decision factors used in choosing amongst alternative proposals at the decision stage; and,
- the design of the EA process, including the extent and depth of information required to adequately assess the alternatives, which is considered in the following section on the assessment stage of EA.

The initial decisions of the scoping stage need to be reviewed, and possibly revisited, as further information becomes available. The definition of the decision-situation is refined, iteratively, as the EA process proceeds to the act of decision taking.

7.2 The assessment stage: critical rationality within a model of inclusionary, precautionary, and adaptive assessment and management

Critical rationality is the centre-piece of assessment in this theory of EA. Critical rationality is a cognitive-instrumental rationality, through analysis of facts and means. The facts emerge from cognitive understanding of the environment and the consequences of a proposal; alternative proposals are the instruments or means towards the ends desired by participants. As per the counsel of Popper, Faludi, and Habermas, this instrumental rationality is potentised in a spirit of contestation and argument. In emphasising the link between the critical attitude and the rational attitude, EA can distance itself from the corruption of rationality by power.

The essence of critical rationality is expressed in the maxim "*I may be wrong and you may be right, and by an effort we may get nearer to the truth*" (Faludi, 1986: p. 58, citing Popper, 1966: p. 225). There are two points related to this maxim, to be emphasised. Firstly, the 'you' and 'I' invoked can refer to anyone. This section considers, in a critical way, the extent of lay contributions to assessment, and concludes

that the assessment stage is not the sole preserve of specialists even if they have a key role to play. The second point is captured in the phrase 'nearer to the truth', which implies that human understanding is fallible and truth is elusive. A combination of precaution in decision making and care and adaptiveness in implementation are necessary for managing uncertainty in EA.

Section 7.2.1 considers the role of lay people in assessment. Recent public participation theory articulates a case for increased levels of involvement and responsibility in finding solutions that have broad support. To complement this bottom-up perspective on lay participation, section 7.2.2 examines the issue of specialist knowledge in decision making, which has been conceptualised as linking experts and decision takers in a top-down relationship with the governed. Theory on the use of knowledge in decision making acknowledges that information does not provide direct prescriptions for action. Some theorists invert the two perspectives, such that specialist input is relegated to a technical support function (Lawrence, 2000). The non-hierarchical approach outlined in this chapter argues for integration of a plurality of lay and specialist participants in the collective decision making of mutual adjustment.

The extent to which inquiry should be comprehensive, as required by the rational model, is discussed in Section 7.2.3. The section considers the applicability to EA of the contrasting notion of satisficing decisions, which the economists March and Simon (1958) use to characterise decision taking in administrative settings. The discussion examines issues of uncertainty in EA and proposes a model for choosing the extent of inquiry in particular cases. The model is informed by the precautionary principle and the assumptions of adaptive environmental assessment and management. Section 7.2.4 discusses the implications of critical rationality for the EA report.

7.2.1 Collective inquiry by citizens and functionaries, for knowledge creation and innovation as inputs to decisions, supported by specialist investigations

The question raised and discussed in this section turns on the issue of postmodern respect for traditional or local knowledge systems. For example, Friedmann (1998) insists that, for a common understanding to occur, professionals cannot be the only source of knowledge in environmental planning. He stresses the importance of "*allowing for a variety of equally valid, and equally limited, ways of knowing*" (Friedmann, 1998: p. 30). Similarly, Forester (1998) argues that, in order for a larger truth to be revealed, all parties need to be present and their knowledge systems given voice. This requires that the professional remains open to other socio-cultural realities and listens empathetically (Friedmann, 1998).

In turning these exhortations into practice in the assessment stage of EA, is it realistic to expect lay people to contribute meaningfully to an understanding of complex natural and social systems? Phrased in another way, should public input be limited to the scoping and evaluation stages, or is there a role for lay inquiry in the assessment stage? In order to address these questions, it is necessary to consider relations between the lay public and experts, in general and in the context of EA.

In many of the activities of life in modern societies, lay people operate under conditions of trust in expert systems (Giddens, 1990). Lay people periodically consult individuals who offer special services in a range of disciplines such as law, medicine, engineering, and finance. While such consultations are irregular, expert systems influence life in a continuous way. In this context, expert systems are the technical accomplishment and professional expertise that underpin and organise many aspects of the social and (human-made) material environments. No one can have expertise in all sectors of these complicated knowledge systems.

The engineering design and management of the built environment is one example of the expert systems that surround and support human activities. For instance, an investigation of water resource management in the western United States found that the process of constructing and operating

> "*the monumentally complex system of reservoirs, dams, aqueducts, and canals could not escape the tendency for power to coalesce in the hands of the experts who could efficiently manage such a technical challenge*" (Waller, 1995: p. 157).

In the environmental field, the US government in the 1970s and 1980s employed increasing numbers of natural and social scientists, in response to the proliferation of environmental statutes (Brown, 1990). Environmental politics shifted from legislation to administration and management, transforming the public environmental debate into an array of technical issues (Brown, 1990, citing Hayes, 1987). In a context of technical complexity, it is argued, experts alone have the understanding to dictate the transition to sustainability (Waller, 1995, citing Ophuls, 1977). Ophuls proposes that both the generation of understanding (assessment) and the process of dictating action (evaluation and decision making) are the domain of experts, which positions him as a positivist.

Boothroyd (1995) claims that the EA tradition is inherently positivistic: "*the formal EIA/SEA model still keeps proponents with narrow goals in the driver's seat with positivistic assessors in the navigator's seat*" (Boothroyd, 1995: p. 101). He equates positivism in EA to science-informed EISs, which is not strictly correct. A process is positivistic where experts take decisions for functionaries (Faludi, 1986, citing Fay, 1975). Even if scientists take control of the assessment stage, they are not the takers of EA decisions. EA can be more or less positivistic, depending on the influence exerted by specialists over the decision making process. The theoretical arguments against positivism in EA are considerable: it is widely accepted that the use of knowledge by functionaries and the public in decision making is both necessary and achievable. Of interest here is the extent to which Ophuls's proposition is appropriate to the process of accessing or generating information, which is the purview of the assessment stage of EA.

The two sub-sections that follow consider relations between lay people and experts, including environmental experts. The first section discusses these relations in general, while the second examines lay-specialist interaction in the context of EA.

7.2.1.1 Relations between lay persons and environmental experts characterised by respect and trust tempered with scepticism and hostility

Giddens (1990) attributes widespread respect for experts to the influence of a hidden curriculum in school education, which instills regard for technical knowledge. Only if one stays with science education, he notes, is one likely to be introduced to contentious issues and the fallibility of scientific claims to knowledge. Only informed lay persons are typically aware of the limits of expertise, manifest in fragmentary and inconsistent information. Experts are as divided on many issues as are less informed individuals, and the determination of probabilities in risk assessment is controversial.

Public confidence in experts was shaken by environmental and public-health incidents such as Love Canal, Three Mile Island, Bhopal, Chernobyl, ozone depletion, and global warming, and has declined since the late seventies and early eighties (Waller, 1995, citing Piller, 1991). Giddens (1990) observes that there is widespread lay awareness of human-created risks such as radiation and pollution. This awareness of risks, coupled with incomplete understanding of the processes and pathways of systemic cause and effect, link lay people and experts in what Giddens describes as relations of trust. There is ambivalence in these relations: lay attitudes towards experts incorporate respect, deference, and tacit acceptance, tempered with scepticism, even fear and hostility. Indeed, as interest group networks and government agencies employ ever more sophisticated analyses, the cycle of claims and counterclaims around policy issues can incline non-specialists "*to concede everything and believe nothing*" (Taylor, 1984: p. 323, citing Heclo, 1978).

Trust is related to absence in space and time: there is no need to trust someone if their activities are continuously visible (Giddens, 1990). Codes of professional ethics seek to maintain the trustworthiness of those within expert systems. Trust in expert systems has two components: faceless commitments, where one vests trust in an expert system without engaging with the many unseen individuals who construct and manage the system; and trust in representatives of a system, which involves facework commitments (Giddens, 1990). Lay persons' attitudes towards experts are shaped by their experiences at the access points where they connect with representatives of expert systems. These contacts are periodic and transitory, and can either build or damage trust (Giddens, 1990).

The level of security (or risk of danger) experienced by an individual in a particular situation is related to the extent of his/her trust in the expert systems that underpin and control the situation (Giddens, 1990). For example, Giddens notes that most people have sufficient trust in the expert systems of the aviation industry to feel confident flying in aeroplanes. In the context of some environmental risks, however, consumers using (or choosing not to use) genetically modified foods, mobile phones, and household chemicals have to make choices informed by sometimes conflicting information in a context characterised by an absence of certainty (Geary, 2003).

The variation in public attitudes towards environmental experts is illustrated by a 1998 MORI opinion poll of a representative sample of the British population, which probed

public confidence in what scientists have to say about environmental issues. Over three annual surveys (1993-1996), an average of only 36% of respondents had great or fair confidence in scientists working for government, with 45% of respondents expressing confidence in scientists in industry. Fully 77% of respondents had confidence in scientists working for environmental groups (O'Riordan, 2000b, citing Worcester, 1998). These findings suggest that the British public has recognised that scientific knowledge is institutionally framed, socially constructed, value laden, and an instrument of power (O'Riordan, 2000b).

7.2.1.2 Can lay persons contribute meaningfully to the assessment stage, in terms of information, prediction, and innovation?

The three sub-sections that follow consider the question of lay contributions to assessment in terms of the provision of information on environmental conditions, the prediction of potential impacts, and innovation in conceiving alternatives better suited to a local environment.

Lay people can contribute part of the knowledge required in assessment:

Lay people become familiar with at least the basics of expert systems through regular interaction with them, such that lay people reappropriate technical knowledge (Giddens, 1990). For instance, Giddens notes that lay individuals who use a bank account demonstrate a practical mastery of a number of economic concepts, such as capital and investment, even if they cannot provide formal definitions of these terms. In sociology too, the expert is only one or two steps ahead of informed lay people. This is because of the reflexivity of social knowledge, in which knowledge circulates in and out of the activities being described, causing constant revision of social practices such that they are "*pervaded by sociological thinking*" (Giddens, 1990: p. 43). Because of the lived nature of the social sciences, lay persons may be more capable in matters of economics and sociology than in the subject matter of the earth or life sciences.

Lay knowledge of ecology is unlikely to be sufficient for the purposes of EA. The complexity and partial invisibility of ecosystem processes militate against lay understanding. Furthermore, under conditions of modernity, particularly in the urban settlements of industrialised societies, relations between people and the environment are mediated by the economic system. Industrial and agricultural processes that meet basic and other needs are typically far removed from the point of consumption, such that the consumer may not be aware of the environmental implications of the processes of production (Dickson, 2000). Giddens (1990) explains this separation as the time-space distantiation (from place) of modernity. Time is no longer linked to place as it was in pre-modern times when time could only be ascertained at a particular place (where, for instance, a sun-dial was situated). With international time zones and ubiquitous watches and clocks, time is coordinated across space. Space, being the arena for human relations, is distantiated from place, through the fostering of relations with others who are locationally distant and may be faceless or unknown.

In traditional (pre-modern) settings and in rural and agricultural environments, subjects may live closer to, and be more aware of, the cycles of nature than city dwellers. Newly modernised people gradually lose their traditional or vernacular knowledge of place, land, and nature (Orr, 1990). In conditions of high modernity, where modernity has moulded society for long periods, popular knowledge of ecology grows through the communication of scientific information in the mass media. Over time, awareness of the implications of collective human activities on the environment increases, in spite of the spatial divide between individual consumers and the environmental impacts of their consumption.

Local environmental knowledge is gained from lived experience over an extended period. The short term investigations of baseline environmental conditions in EAs cannot match the time span of local knowledge. This temporal advantage notwithstanding, it is unlikely that local knowledge would be systematically recorded in the style of science. This need not be a problem provided there is some form of systematic capture over time, even if through an oral tradition in which the knowledge base is maintained, supplemented, and communicated to others. In the absence of systematic capture, the validity of local knowledge would be open to doubt, given the frailty of the human memory. Thus, if used in an EA, local, lay knowledge would need to be expressed and documented, alongside or integrated with specialist inquiry. These modes of investigation (or epistemologies) could be employed together in a form of complementarity.

In some instances and with regard to certain impacts, lay people can contribute part of the knowledge garnered during the assessment stage. In their analyses of 29 EISs prepared under NEPA, Culhane *et al.* (1987) found that the most common predictions were of social impacts (40% of a total of 1105 predictions), followed by physical (27%), economic (15%), and biological (15%) impacts. If biological systems are complex and difficult for lay people to grasp, there are opportunities for the use of lay knowledge in the other categories of environmental impact.

Lay ability in prediction is limited, and may not extend beyond first-order, physical impacts; experts can facilitate lay participation in heuristic systems modelling and normative prediction:

Provided a proposal is concrete and the subject of lived experience, which includes most of the structures and facilities that constitute the built environment, potentially affected lay persons should be able to imagine the insertion of such projects into their local environment. They should further be able to envisage at least the first-order, physical impacts (that would be experienced through sensory perception), and could even conceive, if not design, more locally appropriate variants for components of a project, or alternatives to a proposal as a whole.

While lay people have local knowledge of the past and present, specialist skills are probably more crucial in structuring an analysis of future consequences, which are inevitably more abstract and less tangible, and hence more difficult to anticipate. Nevertheless, Boothroyd (1995) criticises the striving by scientists, inherent in much EA

practice, for ever more precise, quantitative and replicable predictions, particularly if this means that broad understanding is sacrificed for accuracy. Complex issues that cannot be readily quantified "*are avoided or improperly simplified ... method determines questions, tool becomes master*" (Boothroyd, 1995: p. 85). This critique echoes Caldwell's (1991: p. 83) censure of a preoccupation with detail and quantification "*that elevates precision over relevance*" in the analytic phases of EA. Such technicality thwarts participation by lay persons.

Boothroyd's answer to this problem is to divert some resources from learning more and more about less and less, to understanding the full implications of what is already known. This can be achieved through the use of (what he terms) participatory, heuristic methods for prediction. Mouton and Marais (1990) define heuristic as serving to find out or discover something. Such prediction would use the soft systems concepts of feedback, entropy, variety and recursion to model social and ecological systems (Boothroyd, 1995). These concepts are easily explained to lay participants, Boothroyd claims, and they yield rich insights that aid thought and dialogue. Prediction should focus on ascertaining system processes over system states, and the direction of change over the quantity of change. Computers could be used to aid in the analysis of consequences, subject to caution lest their use impart a false sense of certainty: "*felt pens and sheet paper, whiteboards and markers, could be the most useful hardware ... analogies and meditations the most useful software*" (Boothroyd, 1995: p. 116). In short, assessment should be sufficiently empirical to adequately reflect reality, and be broadly insightful.

The choice of methods for prediction has further implications for the possibility and ease of lay involvement. Methods for impact prediction may be classified as either extrapolative or normative (Glasson *et al.*, 1994). Extrapolative methods use past and present data to make predictions or forecasts about future conditions. Normative methods work backwards from desired outcomes in ascertaining what actions (i.e., what alternatives), or what project modifications, are necessary to achieve these outcomes (Glasson *et al.*, 1994). Holmberg and Robèrt (1999), citing Dreborg (1996), use the term backcasting to describe the approach used in normative methods. They suggest that, when current trends are part of a problem, such an approach is more useful in enabling the transition to sustainability because radical, rather than marginal, changes are required. EA has often been criticised as creating marginal changes to projects without fundamentally challenging current approaches to development. This predilection of EA may be a function of the predominant use of extrapolative methods that are based on scientific responses to proposed developments, when development itself is inherently value-laden. The claims that heuristic and normative methods can facilitate lay prediction are convincing, but need to be tested in practice.

Lay people have a right to participate in conceiving, if not designing, alternatives, in the innovative component of EA:

With due assistance from specialists and EA professionals, affected persons would probably be more proficient at participating in the application of normative, rather than extrapolative, predictive methods, that is, more adept at creating rather than anticipating

the future. In addition to the reactive provision of information about the consequences of a given proposal, which has been described as the passive role of EA, the assessment stage is also concerned with the active creation of alternative means (Brown and Hill, 1995; Brown, 1998). With regard to the relationship between EA and the design process, Boothroyd (1995) terms these the scrutinising (passive) and intrinsic (active) roles. In the second role, EA is intrinsic to, or integrated with, the design process rather than a process of critique after a proposal has been formulated. Because designers may have vested interests, a design role for EA must still be supplemented by a fully public scrutiny at the stage of final design and authority approval (Boothroyd, 1995).

Shepherd and Bowler (1997) advocate a more proactive, innovative role for EA. They argue that the public does not always need more information but rather more meaningful involvement in creating a mutually acceptable project, better suited to the local environment. This argument is corroborated by theoretical developments in the field of public participation in sustainability initiatives, notably the demise of one model and the emergence of a more promising alternative.

The first theory is the information deficit model – the public participation equivalent to the information processing model of EA. This model assumes that lay people are ignorant of environmental issues, and would be more rationalist in their approach if better informed (Agyeman and Angus, 2003, citing Burgess *et al.*, 1998). While this model is based on a right of access to information, it is typified by a one-way flow of information from specialists to citizens, which is argued to be relatively ineffective. Too often, reports penned from this perspective end up gathering dust because of a lack of attention to the institutional arrangements that would facilitate more active involvement in the design, evaluation, and implementation of proposals (Agyeman and Angus, 2003, citing Blake, 1999).

The second model includes a group of approaches described as deliberative and inclusionary processes (DIPS). These approaches are founded on the premise that better information is a necessary but not sufficient condition for better action. DIPS have a transformative potential for those with little or no power to influence decision making, resulting in more effective implementation because of wider support for, even a public sense of ownership of, a negotiated proposal. Agyeman and Angus (2003) describe DIPS within the context of civic environmentalism where, in recognition of the limits of top-down environmental regulation, citizens participate in sustainability initiatives with local authorities. In the US, such thinking formed part of the regulatory reinvention of the Clinton-Gore presidency. DIPS are appropriate in the practice of EA, but are likely to be resisted by proponents who are accustomed to exercising their power to largely frame the need, purposes, and alternatives to be considered, notwithstanding the inclusionary intent of scoping.

A number of factors thus combine to produce a powerful argument for a more proactive, design-centred role for EA, which displaces extrapolative prediction from its central position in assessment to a technical function in support of normative design choices. These factors are summarised as:

- the often ineffectual and costly nature of the assessment of completed designs (Boothroyd, 1995);
- the weakness and drawbacks of extrapolative methods (further elaborated in section 7.2.4);
- the normative foundations of development;
- challenges to (if not outright rejection of) the assumption that specialist values deserve greater emphasis in the process of directing development;
- the greater equality of values than of knowledge, between specialists and lay people and between advantaged and disadvantaged lay people, as specialists and other advantaged persons typically have greater access to knowledge;
- the empowering nature of meaningful participation;
- the wider support garnered for proposals collectively conceived; and,
- the proposed greater competence of lay people to broadly shape a proposal than to engage in prediction.

Using Lindblom's (1990) notion of probing of means and ends together, local groups should be encouraged to generate alternatives, with support from specialists of the abstract tradition. The seed of the potential for achieving what Lindblom calls the self-guiding society is illustrated by the following example.

The Federal Environmental Assessment Review Office (Canada: FEARO, 1988) reports a case where indigenous people from the north of Canada suggested an alternative for a 500KV hydro-electric transmission line through a delicate delta and wetland area near a lake. The route location engineering team had been unable to find a route that did not either impact on the delta and wetlands, or involve excessive costs for underwater alignments across the lake. At a major team meeting, a local person put up a hand and suggested that

> "*if several artificial islands were constructed, during winter when little environmental damage would occur, these islands could be combined with several existing islands and a relatively inexpensive route alignment could be constructed. As you can imagine, there were a few red-faced members of the route location team when this was stated in front of the department minister. And guess what, the solution was proven viable*" (Canada: FEARO, 1988: p. 5).

Why should engineers be embarrassed when a local person finds a solution to a design problem? Only because experts are taught to believe in the superiority of their modernist education. Attitudes of superiority lead to domination over others, which is justly rejected by the poststructuralists. Formulaic and rule-based engineering education is no substitute for ingenuity.

The implications for the practice of EA are obvious and revolutionary, if not new. Assessment of consequences and alternatives requires inquiry by citizens and functionaries supported by scientific analysis, more particularly in heterogeneous, multicultural societies. Thus, a key contribution of postmodernism to a theory of EA is to forcefully challenge the assumption that the assessment stage of EA is the sole

domain of scientific specialists and professionals. Insisting on a search, in the scoping stage, for local knowledge, and its use in assessment should such knowledge be available, would go some way to countering the domination of power over knowledge in EA. Thereafter, EA can be structured to give voice to difference by ensuring that the concerns and volitions of civil society are heard without prejudice, regardless of gender, age, race, ethnicity, religion, ideology, way of life, class, and speciality, in creating desired futures together.

7.2.2 Shifts in the relationship between specialist knowledge and decision making: from policy analysis through trans-science to civic science

In contrast to the discussion in the previous section on shifts in approaches to lay participation, this section examines changes in the theoretical understanding of the use of specialist knowledge in decision making. Specialist knowledge does not provide direct prescriptions for action and is not independent of values.

Lindblom (1990) challenges the *raison d'être* of policy analysis, which is stated as attending to the information needs of functionaries as policy makers. The top half of Figure 9 (see page 182) shows the conventional view of the relationship between knowledge and decision making in policy formation or EA. Lindblom argues that policy analysis thus imagined ignores the information needs of citizens participating in decision making. In addressing this shortcoming of policy analysis (and to a lesser extent, of EA), specialists involved in social problem solving need to free themselves of three limiting perspectives. The notion of social problem solving incorporates the activities of EA, and is not to be confused with addressing problems related to social impacts. The activities of EA are directed at issues identified through social processes (e.g., initiated by law, focused in scoping), and may be contrasted with the technical problem solving of the natural sciences and engineering. While EA may invoke technical problem solving, this is in support of the social processes of decision making and management.

The first limiting perspective to be overcome in social problem solving is that a single analyst can achieve a comprehensive overview, as though from the top of Mount Olympus (Lindblom, 1990). No one person can grasp the totality of a situation, nor do justice to the volitions of all of those involved in complex social problems. Any overview is partial because it excludes what has not been illuminated by the process of inquiry. While EA seeks to broaden the view through multidisciplinary studies, mutual adjustment as 'analysis in politics' seeks to make decisions more intelligent through the dispersed inquiry of many participants. Lay observations are tested by numerous individuals "*in a wide array of conditions in space and time, to a degree that professional testing cannot match*" (Lindblom, 1990: p. 174).

The second perspective that specialists involved in social problem solving need to reject as unsatisfactory is the myth of a centralised, unitary, and non-partisan decision taker. In the context of EA, authority and influence is likely to be distributed amongst a plurality of participants, who interact through a policy network in a process of multi-actor decision making (Kørnøv and Thissen, 2000). Such networks are defined as a relatively stable pattern of social relations that coalesce around specific proposals for the

duration of a policy, programme, or project (Kørnøv and Thissen, 2000, citing Kickert *et al.*, 1997). EA reports should thus present information to support the inquiry of a multiplicity of partisan participants, in recognition of the complexity of democratic politics in polyarchic systems of governance. To summarise, "*Mt. Olympus is never high enough*" for a single analyst and "*the decision maker is plural*" (Lindblom, 1990: p. 265).

In the US context (at least), EISs are not primarily written for the decision taker of the proponent agency – the statement is written by the proponent for decision makers in other governmental agencies and groups in civil society to inform them what his/her agency proposes to do. The EIS discloses information from analyses conducted (or commissioned) by the proponent for subsequent mutual engagement and adjustment between the proponent and a range of stakeholders. In contrast, EA systems that are based on the information processing model tends to assume that EA reports are used by a unitary decision taker. There is more hope for good assessment (and better subsequent action) in the contestation of information by partisan participants, each aided by specialist information, than in the positivist notion of expert and decision taker together approximating Plato's philosopher-king.

The third limiting perspective (on the relation between knowledge and decision making) to be overcome is that analysis must be value-free. Sayer (2000) identifies three meanings for the word objective, as follows:

- objective$_1$ – value-free, or value-neutral;
- objective$_2$ – used in the search for knowledge as a synonym for true or practically adequate (the transitive or human-constructed realm of knowledge); and,
- objective$_3$ – pertaining to objects, in the sense of the nature of things as they are (the intransitive realm) rather than as experienced by humans (as in objectivity$_2$).

These three meanings are commonly confused. Sayer argues that it is not necessary to conflate the first two meanings in stipulating the first as a condition in the attainment of the second type of objectivity. One **can** arrive at true statements about an aspect of the world while having strong feelings about the matter. Values need not be a problem provided one interrogates one's research to ensure that the circumstances illuminated are acknowledged regardless of whether they align with one's value system or not. If facts and values are logically independent, then the absence of values is not a necessary condition for establishing facts (Sayer, 2000). Furthermore, values need not be beyond reason: the passion of ecologists for biodiversity conservation is a value founded on factual knowledge of species loss in many ecosystems. Finally, Babbie (1995) declares a working principle to substitute intersubjectivity for objectivity$_3$ – if several people agree that something exists, it is treated as having an objective existence.

The concept of trans-science has been described as an appropriate vehicle for science in policy making, which has arisen from the recognition by scientists that "*facts and judgemental bias are interconnected*" (O'Riordan, 2000b: p. 6, citing Jasanoff and Wynne, 1998: p. 8). Trans-science is shown schematically in the lower half of Figure 9 (overleaf) as the interstice of the Venn diagram where EA and science overlap. The facts

presented in an environmental impact report are value-impregnated, or socially constructed, in that the values expressed in scoping guide the choice of issues to be investigated in the assessment stage.

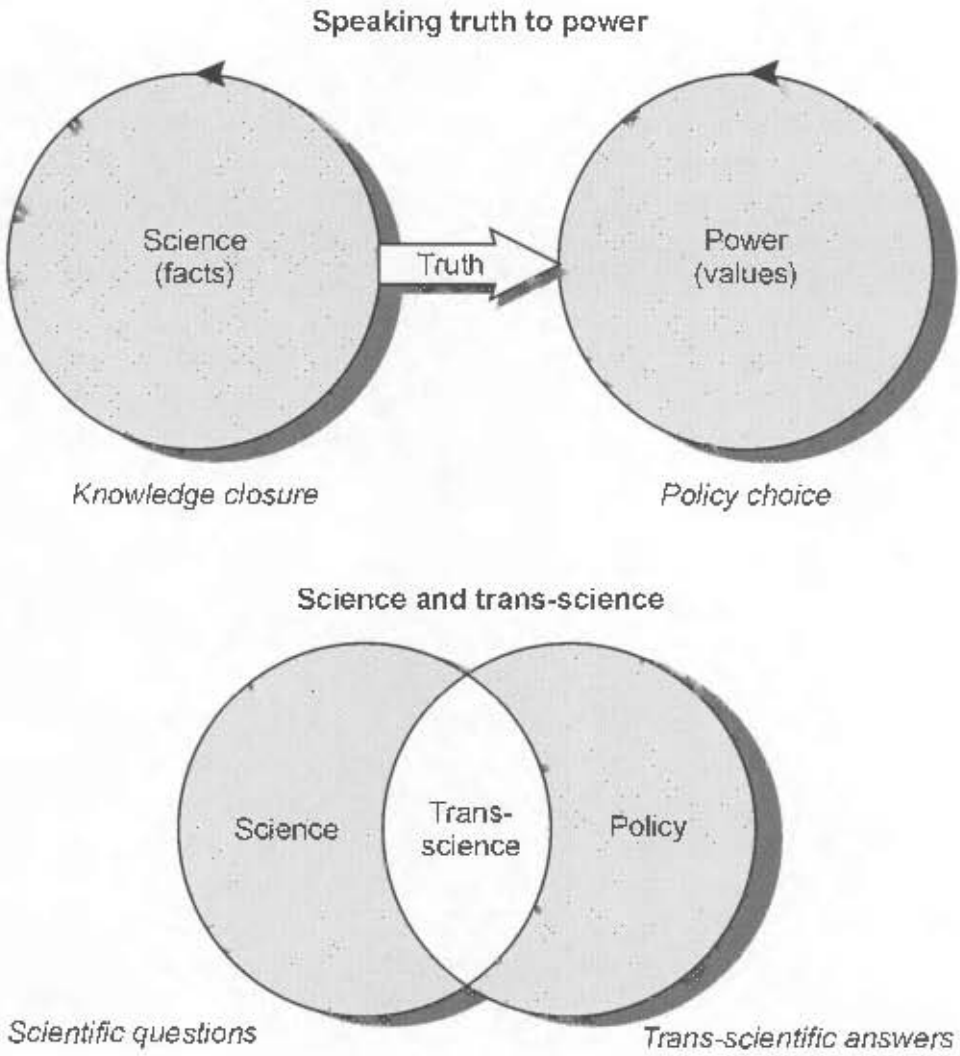

Figure 9: The conventional view of the relationship between knowledge and decision making in policy formation or EA (above); and the perspective of trans-science (below) (Source: O'Riordan, 2000b: p. 6, based on Jasanoff and Wynne, 1998: p. 8)

O'Riordan (2000b: p. 9) takes trans-science a step further and argues for some form of deliberative and inclusive science, to provide "*a more widely-based validation arrangement*". Managing large ecosystems calls for a civic science that is "*irreducibly public in the way responsibilities are exercised, intrinsically technical, and open to learning from errors and profiting from successes*" (O'Riordan, 2000b: p. 9, citing Lee, 1993: p. 161). Civic science calls for dialogue between scientists and citizen groups, so

that science can be linked to the empowerment and activism of citizens, who can take control of their lives (Agyeman and Angus, 2003, citing Warburton, 1998).

In the practice of civic science in EA, intrinsically technical investigations are directed by the social concerns identified in scoping. The inclusive validation required by civic science is made possible through widespread dissemination of an impact report followed by review by other specialists, lay persons, and functionaries. Deliberative and inclusionary validation requires a more interactive process of review than the submission of written comments, which forms the minimum requirement of validation.

The following three sub-sections deal with aspects of civic science, namely, the setting of standards, the key role of ethics in environmental decision making, and argumentation in the attainment of critical rationality in EA.

7.2.2.1 Relating predictions to standards: significance as both technical and normative in nature, and determined through deliberation

Sadler (1996) notes that under the Canadian Environmental Assessment Act of 1995 public concern and social values are not used to determine the significance of adverse impacts. The determination must be "*objective, based on scientific and credible technical and other relevant information*" and "*reasonable so as to withstand court challenge*" (Sadler, 1996: p. 118). He contrasts this with the approach in the United States under NEPA where public opinion and the degree of controversy are used, *inter alia*, to determine significance. He promotes a 'two-track' approach to evaluating significance, based on a framework by Hilden (1996), that uses:

- negotiation (or qualitative interpretations) in situations when factual information is limited and / or there is a high degree of uncertainty; and,
- technical criteria to determine significance where impacts can be accurately predicted.

Sadler (1996) suggests the use of negotiation in the early stages of EA (in scoping), with later reliance on more technical approaches as more information is made available from specialist investigation. Both 'tracks' are needed in the evaluation of impact context and severity, which together constitute impact significance.

Taylor (1984) provides an example from the research and development of the American Supersonic Transport (SST) aeroplane to illustrate how value choices in determining impact significance masquerade as technical choices. Most of the environmental and social impact studies for the SST focused on the unprecedented noise levels on take-off from airports and sonic booms in flight. The Federal Aviation Authority (FAA – the proponent) concluded that noise levels on take-off were acceptable. Two engineers sceptical of this claim discovered documents showing how the 'acceptable' noise standard (used to reach a finding of no significant impact) had been set years earlier just below the level that "*transformed merely irritated and angry airport neighbours into organized protest groups*" (Taylor, 1984: p. 13). This choice of noise standard reflects a value choice: "*a forum more open and visible than the FAA's*

rule-making proceedings would have produced a different standard-setting rationale" (p. 13).

The UK Department of the Environment (1976) guidelines for the calculation of noise levels along roads recognises the social nature of noise pollution. The guidelines include the findings of a social survey that show, in graphical form, the cumulative distribution of ratings of specific noise levels (from 50 to 85 decibels) on a seven point scale from definitely acceptable (score 1) to definitely unacceptable (score 7), with a neutral score of 4. Thus for any predicted noise level (entered on the x axis), the graph shows the proportion of the population surveyed who found this noise to be acceptable (scores 1 to 3) and the proportion who found it unacceptable (scores 5 to 7). Even this approach would benefit from discussion, by those potentially affected, to decide on an appropriate level of environmental quality in their specific context.

O'Riordan (2000b) cites the innovative approach of the UK Royal Commission on Environmental Pollution (1998) which endorsed the principle of incorporating values into standard setting. The Commission urges government to use face-to-face inclusive processes where the issues to be addressed by standards are broad in scope and complex. Specialists could support the deliberative choice of standards by delineating a range of environmental quality targets – an upper, middle, and lower level, together with information on the technical aspects and value assumptions underpinning each level. This could inform discussion leading to selection of targets (for optimum quality), and the delineation of thresholds beyond which (in a worst case) remedial action is triggered. It is affected parties, not usually the specialists engaged in prediction, who have to live with the environmental impacts of a proposal. Participation by affected parties in an EA process imparts a sense of control over one's situation, which is an important element in helping people adapt to change. Specialist interventions should assist these parties to participate meaningfully in the choice of appropriate standards and in the process of decision making towards the end of creating a more suitable proposal.

The contextual nature of standards used in EA is likely to prevail over attempts to subject the process to technical control. Taylor (1984) describes EA as a process of analysis informing a contextual balancing act between the economic, social, and environmental components of sustainability, in acknowledgement of the difficulty and undesirability of basing EA outcomes on standards set centrally. In this conception of EA, appropriate amounts of environmental care vary from case to case, and are ascertained by analysis of the relative value of the environment in a comparison with the economic benefits accruing from a proposal. In returning to the issue of the limitations of SEA (first raised in section 2.7.2), if EA works through substituting contextual analysis for standards set centrally, the balancing of local contexts in EIA can be guided but not determined by SEA.

7.2.2.2 Multiple inquiries, contested information, and ethics structuring intersubjective decision making in EA, rather than scientific consensus

In science, empirical evidence is the primary criterion on which scientists agree, or disagree. In EA, criteria that compete with science for influence in the decision making

process include financial costs, the need to act quickly, values, and the likelihood of further analysis actually changing peoples' minds (Taylor, 1984). Science cannot bear the burdens of problem solving in EA because its standards are too high (Taylor, 1984). The search for illumination of environmental conditions and foresight of possible consequences requires inquiry that is much less conclusive than science. Social science investigations of issues can even result in divergence of understanding, rather than convergence, through identifying a number of explanations and a bevy of possible scenarios (Lindblom, 1990). EA cannot wait for science to answer all questions and usually has to act on the basis of limited and imperfect information. Confronted with inconclusive and even diverging evidence, Lindblom argues, functionaries and citizens must leave their scientific escorts behind.

The following quote summarises a number of important points about the process of knowledge generation for decision making in EA.

> "*When technical issues are not amenable to quick resolution, it is preferable to have forums in which the parties are forced to act according to analytic norms of fair play, showing what evidence they have, sharing their data base, responding to the questions of opponents, and airing unarticulated assumptions. When uncertainties cannot be eliminated, it is better to strive for greater clarity than for an unattainable or falsely reassuring "scientific" consensus. Greater clarity about the true range of alternatives and the probable consequences of a proposal allows the potentially affected parties to assess what risks they want to take and what alternatives they want to investigate further.*" (Taylor, 1984: p. 319-320)

The determination of significance of consequences, in adopting norms or standards, rests on well-informed judgement rather than on scientific consensus. Knowledge and judgements are intrinsic to the assessment stage and both should be contested, in the spirit of critical rationality. Discussion and debate among a plurality of participants, each focused on their own interests, brings about an increased richness of information on potential consequences. The exchange of information makes social learning and mutual adjustment possible.

Donald Brown (1990) – at that time a Director in the Pennsylvania Department of Environmental Resources, argues that many, if not most, environmental problems need to be understood as problems of environmental ethics rather than technical scientific problems. He contends that because science starts from the mechanistic (or law-like) assumptions of physics, it can only discover machines. The materialistic, metaphysical perspective of much scientific discourse may trivialise important environmental values such as appreciation of beauty and respect for nature and other species (Brown, 1990). He argues that science provides descriptive statements, while a prescriptive statement about what should be done is an ethical question, "*although scientific descriptions may be very important in structuring the question*" (Brown, 1990: p. 346). This view is consistent with O'Riordan's (2000b) definition of interdisciplinarity as a combination of, on the one hand, measurement, information, explanation and knowledge with, on the other hand, feeling, ethics, participation and judgement. The intent of interdisciplinarity in this definition goes way beyond different specialists working together to solve a

problem: it involves specialist participation with citizens in seeking agreement on a course of action informed by an intersubjective synthesis of knowledge and ethics.

Decisions on what should be done, that is, what means to adopt to meet chosen ends, are beyond science (trans-science) and are part of the civic use of scientific information. The discussion in section 7.2.2 has bridged the artificial divide between assessment and evaluation in its focus on shifts in the relationship between knowledge and decision making. There are still, however, a number of aspects of the assessment stage to be addressed, before concluding the discussion on evaluation and decision making. These aspects are the extent of inquiry, whether comprehensive or satisficing, uncertainty and precaution, and the usefulness of EA reports, which form the basis of the remaining sub-sections of 7.2.

7.2.3 Comprehensive or satisficing inquiry as a function of impact significance: trading off the information cost of rationality versus impact risk in choosing an appropriate level of precaution

The scoping process establishes EA as a form of bounded rationality. Figure 10 depicts a hypothetical and preliminary definition of a decision-situation at the inception of the assessment stage. By this point, preliminary decisions have been made to restrict both the breadth and depth of inquiry. The first decision of scoping relates to the consideration of proposal need – whether to include one or more needs, and how broadly or narrowly a need is defined.

Figure 10 illustrates a situation in which the overall goal (or broad statement of need) is to provide an adequate and assured supply of water to the city of Cape Town for the next ten years. For illustrative purposes, assume that need 1 is to increase the amount of water supplied to the city. Needs 2 and 3, which would partially satisfy the same goal, are to reduce leakage in the water reticulation network and wastage by consumers, respectively. Need 2 has been addressed by a R40 million leak reduction programme; need 3 by water restrictions (Alternative A) and a sliding-scale of water tariffs that steeply increases the price of excessive consumption (Alternative B), both of which have been implemented to reduce consumption. More water will be needed to meet projected demand, so need 1 must be investigated further. Need 1 has been broadly defined to go beyond consideration of a proposal to build a dam at a particular site on a nearby river. Alternatives A and B are projects to supply water from an underground aquifer on the Cape Flats and sea-water desalination, respectively. Alternatives C, D, and E are three dam sites in two different catchments.

Decisions on the breadth of proposal need have implications for the type and number of reasonable alternatives. The purposes or objectives of a proposal also influence the choice of alternatives, as described in section 7.1.2. Proposal objectives overlap with the issues to be investigated in an EA. For example, if maintaining biodiversity is an objective, the issue to be investigated is the consequences of a proposal for biodiversity conservation. Figure 10 shows three hypothetical issues to be investigated in a comparison of the alternatives falling under need 1.

Figure 10 fails to reflect the reality and complexity of decision making in that it assumes that all of the variables (of need, alternatives, and issues) can be determined as inputs soon after the start of the EA process. Such a simplified exposition of the decision-situation reflects a rationalist ideal not fully attainable in the context of EA, particularly in policy assessment, even at the decision stage. Such delineation of the decision-situation is perhaps only possible for physical projects of contained extent, or in reductionist policy analysis, which is not the best way to undertake this form of SEA. Nevertheless, Figure 10 is useful for the purpose of this section, which turns on the extent and cost of inquiry for the production of knowledge, to inform decision making.

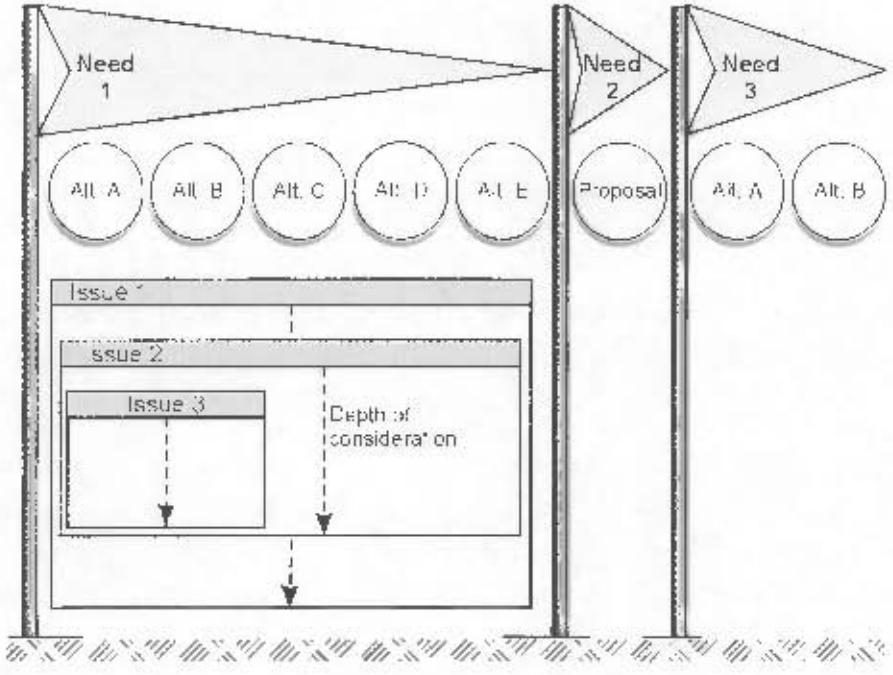

Figure 10: Defining comprehensiveness in assessment: breadth in the selection of needs, alternatives, and issues, plus depth of consideration for selected issues

Within the boundaries set by the definition of the decision-situation, Faludi (1986: p. 74) argues that there is a need for comprehensiveness in using "*all available knowledge*" in an analysis of consequences (termed issues in Figure 10). If satisficing and incremental decisions are a reality, this does not mean one should confuse what is with what **ought** to be. The quest for comprehensiveness raises one's sights, even if the object of the quest remains elusive. What is required, Faludi argues, is to be as comprehensive as possible within the limits of the definition of the decision-situation. While there is no phrase in current usage that captures the gist of this idea, what is meant is a scoped-comprehensive rationality. This is the situation reflected in Figure 10.

Faludi (1986) contends that comprehensiveness is a requirement for democratic planning, to ensure that consequences for certain individuals or groups are not ignored. He suggests that what is needed is comprehensiveness tempered with prudence, which means to be sensible and of sound judgement. Such prudent comprehensiveness can be attained through using all available knowledge (Faludi, 1986). The injunction to use all available knowledge in evaluating a chosen set of alternatives and selected consequences can thus be taken as a requirement of critical rationality. EAs are not restricted to the use of available knowledge or secondary data and information that is collected for another purpose. In numerous instances, EA specialist studies create new knowledge about affected systems.

A question arises as to whether the injunction to be comprehensive in assessment can be reconciled with the conclusions of Culhane *et al.* (1987) that EISs are, and should be, satisficing documents. These authors set out to collect data to provide an empirical foundation to their hypothesis that EAs are not the rational comprehensive planning documents called for in the prescriptive EA literature. In an analysis of predictions in 29 EISs prepared under NEPA, they found the practice so far short of the rational ideal that they chose to use the term forecasts rather than predictions. The word predict means "*to foretell with precision of calculation, knowledge, or shrewd inference from facts or experience*" (Culhane *et al.*, 1987: p. 82), whereas 65% of the forecasts (in their sample of 1105 predictions) were verbal, unquantified forecasts, and only 24% were quantified. A forecast requires forethought, based on present indications to produce a conjectural estimate (New Shorter Oxford English Dictionary, 1997).

What Culhane *et al.* (1987) also found, however, is that three quarters of the impacts (in the sample of four EIS audited) were in the same direction as forecasted, and that the EIS forecasts were not inaccurate. They note that the idealised version of prediction places heavy demands on environmental staff. A conclusion of their research is that EIS writers and users are not rational comprehensive analysts but are inclined towards satisficing decisions. They explain this conclusion by citing March and Simon (1958) who note that the marginal costs of comprehensive prediction and analysis greatly exceed the marginal benefits of an optimum as opposed to a satisficing decision.

In the rational, economic model, decision makers try to maximise in searching for optimal solutions, whereas in the administrative model they tend to satisfice:

> "*making an optimal decision is like searching a haystack for the sharpest needle, but making a satisficing decision is like searching a haystack for a needle just sharp enough with which to sew*" (Kørnøv and Thissen, 2000: p. 193, citing March and Simon, 1958).

While the 'haystack' metaphor is a clever way to illustrate satisficing decisions in an economic context, it is hardly appropriate in the context of EA. The search behaviour in EA is not to select one known thing from a large number of similar options, as is the case when, for instance, one purchases a second hand car from among a huge number of potential options. In EA, inquiry seeks to ascertain what effects a known proposal has on sometimes unknown, but potentially knowable, environmental systems. If the 'haystack'

is the ecosystem under study, then finding a few components (needles) will hardly provide an understanding of how the system functions as a living whole, nor allow a clear indication of how it is likely to respond to external pressures. In order to generate systemic understanding, the 'haystack' may need to taken apart and studied in detail.

Culhane *et al.* (1987) admit that, at least in some instances, a rational comprehensive approach was used in their sample of EISs, specifically in the case of nuclear regulatory decision making. Comprehensiveness, they argue, is appropriate in the case of high cost proposals and high risk assessments. This argument is consistent with Etzioni's (1991) notion that rationality is anti-entropic, that is, rationality is the opposite of disordered, impulsive behaviour.

Rationality has a cost and requires effort, which entails the commitment of resources, energy, time, and dedication (Etzioni, 1991). To act impulsively, without analysis and deliberation, requires no effort. The cost of acquiring information means that search behaviour will often be more limited than has been assumed to be rational (Etzioni, 1991). Searching should stop, according to rational economic theory, when the marginal cost of additional learning is equal to the expected marginal benefit of the extra information. The difficulties of identifying the optimum end point, notwithstanding, EAs will tend to either under- or over-shoot the mark because different groups bear the cost and benefits of further information: the proponent pays and interested and affected parties gain from more comprehensive probing of impacts. This is unlike the situation of individual choice where both sides of the equation are apparent to one person.

Etzioni (1991) argues that normative-affective factors (N/A) shape decision making in individual economic behaviour. The term normative means based on value commitments, while affective invokes emotional involvement. In a radical departure from the neo-classical model of decision making, he argues that these factors influence choice in terms of the information gathered, the way it is processed, the inferences that are drawn, the options that are considered and those that are chosen. For instance, he quotes Katona and Mueller (1954) who found that major household appliances are acquired mostly through habit and impulse buying, with relatively little deliberation. Similarly, he notes the finding of Stern (1984) who reports that only a small fraction of the American public accepted a free energy audit to identify ways to reduce their energy expenditure. Etzioni also uses the example of the search for a new home, where neighbourhood prestige is an important factor of choice, in addition to financial cost. These arguments and examples call into question the notion of rational 'man' or *Homo economicus*.

An article in The Economist titled 'Irrationality: Rethinking Thinking' states as follows.

> "*Economists are starting to abandon their assumption that humans behave rationally, and instead are finally coming to grips with the crazy, mixed up creatures we really are.*" (Anonymous, 1999: p. 69)

Etzioni (1991) contrasts N/A factors in decision making with logical-empirical (L/E) rationality. If N/A factors largely drive individual choice, this does not mean that these factors should be the dominant determinants of social or collective choice in public inquiry. He notes that one may wish to keep the term choice for selection among options, however limited the process of L/E considerations, while reserving the term decision making for deliberative choices.

In EA, a higher risk of danger to people and damage to the environment should translate into a higher willingness to pay for more comprehensive inquiry. This principle of proportionality is illustrated in Figure 11, which shows the extent of inquiry as a function of the context of a proposal. A proposal with reversible impacts of low significance, on resilient systems, is accorded weaker precaution, allowing a less comprehensive or satisficing approach to inquiry. A proposal with highly significant, irreversible impacts, affecting vulnerable ecological and social systems, is treated with strong precaution, which translates into a more comprehensive inquiry.

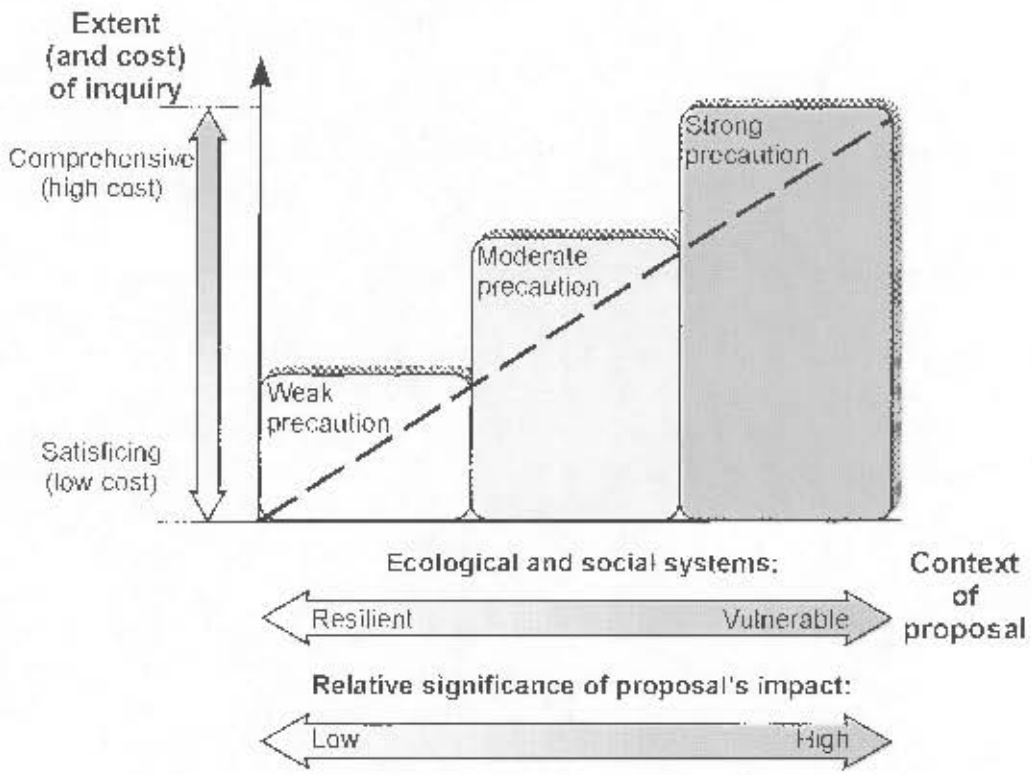

Figure 11: Comprehensive or satisficing inquiry as a function of proposal context, invoking differing levels of precaution (Source: Adapted from O'Riordan, 2000b: p. 25)

A more comprehensive inquiry would include wider consideration of need, alternatives, and issues – including cumulative and higher-order effects and longer-term consequences – and provide for greater depth in the study of these issues, as shown in Figure 10. Decisions on the extent of inquiry (in assessment) fall within the ambit of

scoping, although the initial (and quick) scan of scoping needs to be revisited as further information becomes available. The EA process thus advances not in a linear sequence but rather in iterations of increasing information and more sophisticated insight.

Precaution has four meanings, according to O'Riordan (2000b), which are outlined below. The first two meanings bear on the assessment stage of EA, the third relates to EA follow-up, and the fourth requires pre-emptive action if monitoring identifies a possible threat. Precaution entails (O'Riordan, 2000b: p. 23):

- *"leaving ecological space as room for ignorance"* – this applies to both resource extraction and levels of development;
- *"shifting the burden of proof from the victim to the developer"* – shifting responsibility to developers to show that their actions will not cause harm and, if some harm seems possible or likely, requiring funds to be set aside for possible cleanup of the environment or compensation to affected individuals;
- *"care in management"* – the uncertainty of EA forecasts means that the attainment of sustainability is akin to a process of trial (or experiment) and correction of errors (Carpenter, 1990), which requires a successful monitoring programme incorporating both baseline and impact monitoring with feedback loops to management should remedial action be necessary (Hill, 2000); and,
- *"thoughtful action in advance of scientific proof of cause and effect"* – in this sense precaution requires action over inaction in dealing with a possible threat, identified by a process of reasoning, in advance of convincing empirical evidence of either the cause or the presence of the threat.

The application of strong precaution in the assessment stage improves understanding through better knowledge, and reduces, but does not eliminate, uncertainty. Thereafter, in evaluation, participants use the knowledge provided by inquiry to decide if precaution, now considered as leaving room for error, should prevail in decision making, and whether this should be in the form of delineating prudent action or deciding not to act.

7.2.3.1 Dealing with uncertainty through assessment of alternatives and adaptive management rather than ever more comprehensive inquiry

EA theory acknowledges that the process is subject to a range of uncertainties:

- uncertainty of prediction – based on inadequate understanding of complex systems, which can be reduced by further inquiry (a distinctly modern response, which is not always feasible in the limited time frames of most EAs), or reduced in the process of considering a range of alternatives (a postmodern response of invention and innovation) (De Jongh, 1988);
- uncertainty of values – which cannot be resolved but only managed by communication, negotiation, and mediation (De Jongh, 1988);
- uncertainty of related decisions – which can be reduced by coordination (De Jongh, 1988);

- uncertainty in implementation – proposals are subject to implementation amendment in the process of turning an idea into a design and then into action, and may be modified a number of times, during and after an EA (Freudenburg, 1993);
- uncertainty in management – the extent to which those involved in implementation are more or less conscientious in making a better outcome a reality; and,
- unpredictability (or volatility) of human behaviour in responding to change once it has occurred.

With regard to the difficulty of knowing complex and dynamic systems, the nonlinearity of ecosystem response to perturbations makes it difficult for ecologists to predict future states (Taylor, 1984). Carpenter (1990) notes that four uncertainties pertain to the biophysical measurement of sustainable development. Firstly, data and statistical information on the environment are scarce, may be inaccurate, and are rarely available for a sufficient number of years to reliably indicate trends. The limitations of data are more acute in the context of developing countries. Inadequacies in the understanding of relationships within ecosystems, more a lack of knowledge than uncertainty, bedevil attempts to model systems to allow prediction of impacts caused by changes in one or more input parameters. Secondly, there is uncertainty about threshold values beyond which catastrophic or irreversible degradation of ecosystems occurs. O'Riordan (2000b) describes a school of thought that argues that certain natural processes are indeterminate, chaotic, and hence not modellable, such that prediction is beyond comprehension. Thirdly, there may be time lags – sometimes decades long – between human manipulation and ecological responses, making cause and effect difficult to correlate (Carpenter, 1990, citing Magnuson, 1990). Fourthly, the natural variability in ecosystems is so great that it is difficult to detect the effects of human intervention: "*the signal is lost in the noise*" (Carpenter, 1990: p. 356).

Similarly, with regard to uncertainty in social assessment, Freudenburg (1993: p. 243) expresses postmodern scepticism when he concludes that the challenge for social assessment, in managing uncertainty, is to outline "*the most prudent steps to take when even the best of projections are virtually guaranteed to be wrong*".

There are two pragmatic measures that can side step the problem of uncertainty in prediction, rather than seeking to confront the problem through ever more comprehensive inquiry. The first is comparative assessment of alternatives and the second is the adoption of adaptive environmental assessment and management (AEAM) (Holling, 1978).

A comparative assessment of the consequences of alternatives relieves some of the burden of precision expected in prediction, because the objective is to choose the least damaging alternative rather than to provide an exact prognosis of change. This is what De Jongh (1988: p. 76) means when he notes that "*the reduction of uncertainty can be found only in the comparison of alternatives*". With alternatives included, the emphasis shifts towards relative indications of change. What is then required is to highlight the differences between alternatives and not to attempt detailed prediction of impacts (Lichfield, 1996). There are thus two foci for impact assessment: one of a comparative nature for selecting a preferred alternative, in which the extent of inquiry at the level of

choosing a major strategy is wide rather than deep, followed by an assessment of the impacts of the chosen alternative, as per the mixed scanning approach of Etzioni (1991).

If prudent action is the chosen outcome of precautionary decision making, the adoption of AEAM is a further response to uncertainty in EA (Gustavson, 2003). AEAM allows implementation without full knowledge, in an experimental way, subject to ongoing monitoring of environmental and social variables during and after proposal implementation. Impacts are measured as they occur, and a proposal is adapted if observed outcomes are unsatisfactory. AEAM provides a further warning against attempts to provide comprehensive information on consequences, based on recognition of the difficulties of knowing systems as a whole. Holling (1978) notes that choices made in the selection of key environmental variables and the delineation of boundaries for measurement mean that everything will not be studied. Nor should we try, he cautions. Inherent uncertainties always remain and call for "*ongoing investigation into, not a one-time prediction of, impacts*" (Holling, 1978: p. 133). Holling calls this monitoring as postdiction, to proceed experimentally in a process of adaptive environmental management.

In situations where impacts on a system may be catastrophic and irreversible, AEAM alone is reckless. H R H The Prince of Wales (2000: Foreword) comments that a sense of the Sacred is needed in matters of sustainability lest we treat this "*precious planet as a gigantic, experimental laboratory*". The essence of ethics, as enunciated by religions all over the world, "*is personal humility, respect for fellow, sentient creatures, and a sense of reverence*" (Tudge, 2003: p. 31). The proper approach to uncertainty in EA is a combination of precaution informed by reverence, scoped inquiry, comparison of alternatives, and action to deal with problems as they arise.

7.2.4 A prerequisite for the attainment of critical rationality: multi-media communication, and sequential versions of a living document evolving into an EA report

The conventional EA report is the culmination of specialist inquiry in the assessment stage, as shown in Figure 4, Chapter 2. It is, therefore, not surprising that a sceptical public perceives EA as a merely symbolic activity and an alliance between knowledge and power – a union roundly criticised by poststructural thinkers. Weston (2003) argues that EA is subject to a crisis of legitimacy because the public no longer trusts science and expert opinion, and further questions whether rational planning is possible and desirable. The adoption of critical rationality requires meaningful public involvement in the assessment stage, which can assist in re-establishing the legitimacy of the process.

What is the preferred approach to documentation in EA when striving to uphold a critical rationality? It seems counter-productive for opposing groups to craft two or more strategic arguments or discourses, each replete with substantive information and the values inherent in interpretation and recommendations. Given the nature of the exercise of power, there is a concern that these discourses would contain much rhetoric. It seems preferable to aim for an incremental critical rationality where, at each step of the EA process, disputes are resolved through mutual adjustment, so that the process can move

forward a step at a time. This process has been called the rounds model of multi-actor decision making, where agreement reached in one round forms the basis for the next round of interaction and negotiation (Kørnøv and Thissen, 2000, citing Teisman, 1992).

How does the conventional EA report fare if evaluated according to the processal requirements of critical rationality? Miller (1984, citing Linstone, 1981) critiques both the type of questions asked in an EA and the use of a technical report as the primary mode of communication. In his work on technology assessment, Linstone (1981) notes that participants approach assessment from three differing perspectives: the technical, the organisational, and the individual. While the important users of EA reports (the public, proponents, decision makers and takers) typically have an organisational or individual perspective, the compilers of EA reports usually have a technical orientation. This mismatch of perspectives bedevils the purpose of EA, which is to elicit action from decision makers and proponents. Thus, stating the problem as 'What are the impacts?' is counter-productive. Instead, the problem should be restated as follows.

> "*What are the agencies, actors, and systems that that will most strongly affect or be affected by this innovation and how can the key actors be led to understand – ultimately be able to act on the understanding of – the situation?*" (Miller, 1984: p. 293)

Miller argues for a shift from quantitative analytical techniques towards an investigative reporting approach, in which the use of interviews is a major source of information for an assessment. Miller may be overstating the extent of the shift required. Technical information on impacts is likely to remain an important output of assessment, alongside information on the interests of participants. The interviews could be used to develop an understanding of the power relations amongst participants – Foucault's (1980) power analytics. In terms of how information on impacts and interests should be shared, Miller contends that alternative media – scenarios, stories, role playing, and discussions – are more effective than EA reports because they engage the intuitive and aesthetic as well as the rational faculties of the mind. A 'both/and also' logic (rather than 'either/or') suggests that a non-technical report can be useful but should be supplemented by other forms of communication.

Kørnøv and Thissen (2000: p. 199) similarly argue that the dissemination of information "*should be tuned to ... (the) capabilities, interests, and timetables*" of the various participants in decision making. Overly technical reports are not tuned to the needs of lay participants who predominate in most decision situations. Technical reports and complex methods such as "*opaque multi-criteria analysis*" (Enserink and Monnikhof, 2003: p. 316) inhibit inquiry by lay participants, which in turn limits the possibility of social learning and the formulation of mutually acceptable alternatives.

In arguing for closer integration of EA and planning, Brown and Hill (1995) emphasise the importance of ongoing communication between participants. The solution to EA's limited influence on planning "*lies in EA metamorphosing from a **report** into a **process***" (Brown and Hill, 1995: p. 227). The process proposed is characterised by repeated interactions between those involved in EA and those engaged in either policy

formulation or project design. These interactions are planned in decision-scoping, which predetermines the staging and substantive content of each communication. Kørnøv and Thissen (2000) also contend that EA should be an ongoing process, not a once-off report. They warn against writing a report based on a fixed problem formulation. Even if such a report is well researched, it will not be used if the proposal agenda and issues change during the EA process. Change in the way issues are framed is inevitable as the process proceeds, through the generation of new information, the expression of a wide range of perspectives, and the process in which participants form volitions. A flexible process requires multiple opportunities for communication, using media appropriate to the context of each specific interaction involving two or more of the groups of expert designers, assessors, and lay persons.

Enserink and Monnikhof (2003) propose a role for EA as a continuous process bridging the separated worlds of participation and design, to improve attainment of the planning and design objectives of EA. They describe this role as information management for public participation in the co-design of proposals. The process is characterised as a quick scan approach rather than a lengthy evaluation in isolation from proposal formulation. The premise of an integrated and continuous role for EA in planning is similar to Brown and Hill's (1995) process of decision-scoping, which focuses on repeated interactions between proposal designers and assessors. Enserink and Monnikhof (2003) add a third group to these interactions in the form of participation by stakeholders and decision takers. The process has "*a continuous messenger function between design and evaluation*", which necessitates

> "*a way of working in which fast, rough, preliminary estimates of impacts are made, communicated to designers and (co-designing) stakeholders and remade after new designs or alterations are made ... these evolving iterative impact assessments could be supported by a living document, produced alongside the evolving designs*" (Enserink and Monnikhof, 2003: p. 340).

The impact assessor acts as information manager, facilitator, intermediary, and mediator between expert designers, on the one side, and stakeholders and decision takers, on the other side. The content of a living document is amended at workshops and by e-mail, fax, or mail correspondence, to form a body of negotiated knowledge created by all stakeholders. Where disagreement prevails, the document should incorporate the differing perspectives. Four sequential versions of a living document were produced in the EA for a proposed high-speed rail line through the Dutch town of Ede, where the fourth version of the living document formed the final EA report.

The concept of a living document in a rounds model of decision making resolves a question related to the optimum staging of the EA report – whether it should be released after specialist assessment of impacts (as depicted in Figure 4, Chapter 2), or whether it should be released after incorporating information from an evaluation of stakeholder preferences. A living document would be updated and released at both of these stages, as well as before and after the scoping stage, as shown in Figure 6 at the beginning of this Chapter.

These various comments on the transformation of the EA report are used to formulate two propositions relating to the attainment of critical rationality in EA.

- The release of a draft and final EA report, with an opportunity to submit critical responses (comments) on the draft report, is a minimum requirement for critical rationality.
- The greater the number of opportunities for interactive improvement of information and the EA living document, the better the process will satisfy the requirements of critical rationality.

Transformation of the EA process and report is easier said than done.

> "*Experts and engineers are reluctant to make way for an input of laymen in the definition of the problem and the generation of alternatives. They resist renouncing their claim to superior knowledge and problem-solving capabilities. They hold a genuine fear of loss of quality of decisions. This defensive attitude, however understandable, contrasts sharply with the openness and flexibility required for successful participation.*" (Enserink and Monnikhof, 2003: p. 319)

In establishing critical rationality as the hallmark of assessment, the EA report has to be preceded by a continuously evolving, living document, created through communication, argumentation, and intersubjective agreement in each round of the EA process. Review of an EA report is similarly transformed from a step into a process, with repeated opportunities for critical response (comments) to consecutive versions of a living document, which ought to be supplemented by other forms of communication. The final EA report would incorporate information from the previous versions of the living document. The resistance of experts to these changes is a challenge to be overcome in reinvigorating EA and re-establishing its legitimacy in the public domain.

7.3 Mutual adjustment in evaluation and decision making

Sections 7.3 and 7.4 are relatively short because their respective foci, on evaluation and the decision stage, have been the subject of comprehensive discussion in previous chapters. For instance, the role of mutual adjustment in evaluation is introduced in Chapter 2 and discussed further in Chapters 3, 4, and 5. Previous sections of this chapter, on scoping and assessment, also deal with the role of values and ethics in planning and decision making. Sections 7.3 and 7.4 incorporate conclusions from previous chapters.

Ex ante evaluation is the decision-shaping area of EA in which participants decide the significance of impacts and identify preferred alternatives. While informed by the inquiries of the assessment stage, evaluation is essentially normative in nature and ought to be directed by stakeholders and not by the specialists who investigated impacts. The evaluation that is undertaken just prior to a decision is linked to, and influenced by, previous evaluations at the stages of screening, scoping, and assessment. The boundaries of evaluation are thus initially determined during scoping. The preliminary evaluation of

scoping needs to be open to subsequent "*emergent insights and shifts in problem perspectives and objectives over time, with the consent of all those involved*" (Kørnøv and Thissen, 2000: p. 196).

In evaluation, participants explore their preferences in the process of comparing alternatives. Preference trade-offs relate to marginal choices between decision factors (or objectives) and can only be meaningfully exercised after alternatives and their consequences are known. Kørnøv and Thissen (2000) describe this as a process in which the balance struck between different objectives is an output of evaluation rather than an input determined at the beginning (as in the rational model). Implicit values, preferences, and ends are thus incorporated in an individual's choice of a preferred alternative. Shaping decisions collectively means discovering courses of action that satisfy a whole set of constraints, in a dialogue between social actors. Decisions reached represent a consensus that different participants can agree on, often for different reasons. The preferred approach is one in which participants adjust to each other's interests, thereby learning how to balance competing social values.

7.3.1 Choosing disjoined or joined mutual adjustment according to the significance of impacts

Mutual adjustment incorporates a social, communicative, and normative rationality exercised by a collection of individuals or groups, who together give form to and define the decision-situation in scoping and evaluation, respectively. The mutual adjustment of EA is structured by procedural rules and norms of analysis.

In evaluation, mutual adjustment among many dispersed participants may be disjoined, in which a proponent would receive written comments on an EA report from a range of agencies and interested and affected parties. The various commenting agencies would not necessarily have contact with each other, although a proponent would engage in bilateral discussion with some of them. The participation of disjoined mutual adjustment should be invoked as the starting point for evaluation in all EAs.

In EAs that are the subject of much controversy and conflict, by virtue of the significance of potential impacts or issues of environmental justice, more effort is required to obtain agreement. In such situations, mutual adjustment can be joined, with participants engaging in face-to-face deliberation, which is akin to communicative action but without necessarily achieving the ideals of discourse ethics. Such deliberation amongst stakeholders, possibly facilitated by environmental mediators, can bring about accommodation of different interests through formulating new and mutually beneficial alternatives (Forester, 1998). Fischer (2003) is critical of communicative action in EA because, he claims, there is nobody present to argue for the quality of life of future generations. In practice, ecologists and environmental activists typically argue for mute forms of life and future generations.

The face-to-face deliberation of communicative action would inevitably take more time than a standard EA process. It has even been argued that "*upholding any concrete institutions to the demands of discourse ethics would paralyze institutional life to the*

point of a breakdown" (Flyvbjerg, 1998b: p. 197, citing Benhabib, 1990: p. 352-353). Additional resources are needed to implement deliberative processes, which can be a significant constraint militating against their use. This suggests that deliberative and inclusionary processes (DIPS) should be reserved for special cases.

7.3.2 Discovering mutually acceptable decisions rather than an optimum decision

In addition to a focus on the process of evaluation, this section also addresses the question of postmodern relativism in decision making. The first aspect of postmodern relativism is a refusal to judge explanations of reality. For the purposes of assessment, this aspect of relativism is rejected on the basis of counter arguments from critical realism. For instance, Forester (1998) argues that claims about impacts – from whatever source, proponent or opponent – should be subject to critical testing to ascertain the extent to which each claim is more or less justified, that is, roughly sound or deceitful.

The second aspect of postmodern relativism opposes the modernist notion of an optimum, correct, or best decision, and argues instead that legitimation of action can only ensue from communicational interaction. This aspect of postmodern relativism is accepted as characteristic of the social nature of evaluation and decision making in EA. Nevertheless, the prevalence within EA circles of the modernist notion of an optimum decision is illustrated by a recent, consensus-based set of principles for SIA that exhorts practitioners to contribute "*to the determination of best development alternative(s)*" (Vanclay, 2003: p. 9).

Faludi (1986) argues that there can be an optimum decision although he acknowledges that "*strategies are formulated from subjective points of view, and it is only from such a point of view that there can be talk of an optimum*" (Faludi, 1986: p. 19). Faludi's argument is less than satisfactory in multi-actor decision making. A group decision could be described as an intersubjective optimum, but five arguments are listed below why the use of the notion optimum seems inappropriate. Firstly, the pronouncement of an optimum decision implies undue confidence given that EA is often characterised by fallible understanding of environmental systems and uncertain predictions. Secondly, group decision making usually relies on the contributions of representatives who may not adequately reflect the preferences of their constituencies. It appears presumptuous to talk of an optimum decision when persons outside of the group of representatives may disagree with the outcome. Thirdly, a decision reached through the accommodation of mutual adjustment may not be optimum for any of the participating groups, but rather reflects a pragmatic acceptance that agreement is better than the possibility of no action. Fourthly, postmodern theorists argue that decisions should be provisional. Leaving decisions open to contestation through appeal may result in the discovery of new (and better) variants of an adopted proposal. The process of further argument moving participants closer to a better decision is intrinsic to critical rationality. Fifthly, Tonn *et al.* (2000) argue that tests of optimality may be appropriate for present day concerns but are much less appropriate for decisions that aim to promote sustainability.

> "*There is no single, optimal 'environment' or 'society'. Instead, there are many acceptable future states ... the strategy should be to move from one acceptable*

world to another, all the while working to increase the 'option space' of acceptable worlds for present and future generations." (Tonn *et al.*, 2000: p. 175)

Modernist confidence in the notion of an optimum decision cannot be justified in environmental decision making. Instead, a good decision is one that has been well probed (Lindblom, 1990), and meets the test of reasonableness to the community of actors involved in the decision making process (Tonn *et al.*, 2000).

7.3.3 Evaluation as analytically intensive politics

The approach to decision making described in Section 7.3 is rooted in theory developed by the Institute for Operational Research (IOR), in which planning is viewed as a political process of bargaining between actors (Faludi, 1987, citing Friend and Jessop, 1977). The IOR approach is variously described as the strategic choice approach and an agency-centred view of planning. It draws attention to uncertainty as militating against rational choice and enthusiastically adopts Lindblom's concept of mutual adjustment (Faludi, 1986, citing Friend *et al.*, 1974).

The informed bargaining of mutual adjustment is a more democratic form of decision making than centralised, expert-informed approaches. Indeed, the principle of subsidiarity, adopted as one of the guiding principles for SIA, requires that decision making be decentralised "*as close to an individual citizen as possible*" (Vanclay, 2003: p. 10). Lindblom (1990) describes the ideal balance as an 'island' of centralisation in a 'sea' of democratic deliberation. In the 'sea' of deliberation, an objective outcome is not possible, because the step between knowledge and action involves choice. In such situations, a more useful conception of objectivity is to do justice to the object of inquiry. In order to do justice to ecosystems and people, EA procedures should allow participants to shape decisions "*in a now more analytically intensive kind of politics*" (Taylor, 1984: p. 328). The 'island' of centralisation refers to those situations in which deliberation fails, when a decision taker has to impose a solution on at least some of the participants.

To be a political actor in EA and planning is not to assume the role of a politician.

> "*The decision-centred view ... extricates planning from the backrooms where rarified analyses are undertaken, and places it where the action is: in the council chambers, around a bargaining table, indeed everywhere where debates take place on matters of policy ... in court also.*" (Faludi, 1987: p. 134)

A political focus in evaluation would shift the emphasis of the EA review process. In seeking to improve information on consequences, review prolongs the task of assessment. More effort ought to be expended in the evaluation phase on getting the politics right rather than improving the EA report. In so far as review pronounces an EA process to be satisfactory, it soothes the conscience of central decision takers when the process at this point ought to be thrown wide open to conflicting opinions.

Faludi (1986) outlines a number of principles to be applied in the politics of planning, all of which aim to expand the range of alternatives considered and the scope of criticism of these alternatives, so as to reach agreement on the definition of the decision-situation. The principles, which are arguments for flexible and democratic planning, apply equally well to EA (by replacing planner with EA official or professional, in the points below) and include (Faludi, 1986):

- rescinding the bureaucratic concept of the role of planners as loyal servants of their political masters, and encouraging planners to engage in political debate;
- opening up discussion to all echelons of the bureaucracy, so that it is not only the leaders of the bureaucracy and politicians who engage with each other;
- encouraging political parties to join forces with groups of planners to make sure that alternatives are analysed in terms of their feasibility and their consequences;
- laying planning open to being influenced by those affected; and,
- preferring planning which merely sets a framework within which actors can choose freely.

The politics of evaluation in EA could involve even more participants than the archetypal planning situation outlined above. In EA, there are usually numerous commenting authorities, each with their own bureaucracy and head of department, under leadership of a politician. There are at least two politicians involved in evaluation, typically an environmental minister and a minister whose department is proponent or authoriser of a proposal. As described in Chapter 2, in many jurisdictions (including The Netherlands, UK, USA, and Canada) decisions on proposals subject to EA are taken by the minister who is the proponent, not by the environmental minister. The environmental authority may prepare an evaluation report for submission to the decision taker.

In the evaluation stage of EA, decision takers ought to engage in mutual adjustment with other authorities and civil society before exercising their statutory power to choose a course of action. An appreciation of how decisions are made through the EA process "*requires acknowledgement that policy decisions are shaped, channeled, learned, reasoned, and structured before they are "officially" made*" (Bartlett, 1989: p. 3). The analytically intensive politics of evaluation is thus vitally important in establishing EA as a catalytic public control rather than a coercive one.

> "*Catalytic controls ... direct the bureaucracy towards certain goals but do not rob it of the capacity for creative-problem solving ... They prod, stimulate, and provoke bureaucrats but also allow them to be both innovative and efficient.*" (Bartlett, 1989: p. 3, citing Gormley, 1987: p. 160)

7.4 Decision taking in EA: critical rationality in the ROD, appeal, and litigation

If a decision cannot be reached through mutual adjustment, a fairly common situation, it is necessary to turn to political institutions and leadership for the element of imposition. In the application of the information processing model of EA, the imposition of decisions is the norm, although this situation is far from ideal.

Critical rationality in public decision making is enshrined in constitutional provisions of due process and in the requirement that decisions stand up to public scrutiny (Faludi, 1987). This does not imply that decisions can be judged with reference to a 'bedrock' of objectivity. Indeed, the subjectivity of decisions is encapsulated in the definition of the decision-situation and in the balancing of factors, both of which are based on values and preferences. As described in the section on scoping (section 7.1.1), rationality is relative to the definition of the decision-situation. In the decision stage, rationality as a methodological rule refers to the preparation of arguments to describe and justify a decision after it has been taken (Faludi, 1986). The demarcation between responsible and indefensible decisions relates to likely consequences viewed in terms of stated objectives (Faludi, 1989).

Flyvbjerg's (1998a) notion of *Realrationalität*, in which the principle strategy is decision first – then rationalisation presented as rationality, is distinct from the process described here. In the context of this discussion, it is assumed that the definition of the decision-situation has been determined through debate and mutual adjustment rather than solely through the imposition of power. Faludi (1986) admits that justification is a process of rationalising decisions, but views this as positive in the sense of being answerable to others and open to challenge.

A decision taker in EA must be able to:

- describe arguments for a decision that show due consideration of the issues raised by participants in scoping and evaluation; and,
- show that she/he has applied her/his mind and has not acted in an unreasonable, arbitrary, or capricious way (Rivkin, 1987).

The Record of Decision (ROD) and procedures for appeal put the stamp of critical rationality on the decision stage of EA. A ROD should explain the reasons for a decision, including the importance attached to environmental and other decision factors. In making public these reasons, a decision is rendered transparent and a decision taker can be held accountable for his/her choice. A ROD provides an opportunity for challenges to be presented if anyone objects to the stated (subjective) grounds for a decision. The action-forcing mechanism of the ROD would be improved by a requirement to describe the process and outcomes of defining the decision-situation, to supplement the current focus on the substance of a decision.

A procedure for appeal is a necessary condition for the decision process to be critically rational. Appeal makes it possible to contest the justification for a decision documented in a ROD and requires (re)consideration of counter arguments.

> "*The emphasis on argument and its justification stems from respect for others. It conceives of our fellow humans as our equals, whom we have a duty to take seriously. In particular, we have to take seriously their criticisms.*" (Faludi, 1986: p. 115)

Faludi (1987) is critical of mutual adjustment as a method of decision taking, as he claims that it is incapable of discriminating between correct and incorrect decisions. (The discussion in section 7.3.2 argues against the notion of a correct decision: Faludi's (1989) later use of the terms responsible and indefensible decisions seems preferable.) This discrimination he ascribes to critical rationality. Faludi may be misplacing the value of mutual adjustment, which is not to be found in decision taking, but rather in the process of proposal formulation and in decision making. It is the operational decisions following plan making – akin to approval decisions in EA – that he insists must be rationally justified. Faludi's argument is that rationality does not apply to the making of decisions – what he terms the context of discovery – but to the context of justification of a decision. Seen in this way, the fear that rationality is a straightjacket is removed: the decision making process can be imbued with creativity (Faludi, 1986).

Table 11 differentiates between decision making and decision taking, a typology that originates from the IOR school of planning (Faludi, 1986, citing Friend and Jessop, 1977). The adoption in EA theory and practice of the distinct meanings ascribed to these terms would likely improve understanding and effectiveness of the processes at work in these two phases of the decision process.

Table 11: Distinctions between decision making and decision taking in a representative democracy

	DECISION MAKING	DECISION TAKING
Outcome	Shaping the decision-situation	Defining and acting on the decision-situation
Activity	Argumentation to shape and identify preferred outcomes	Reasoning to justify decision, ito objectives & consequences
Public objectives	Democratic participation	Transparent decisions; decision taker responsive and accountable
Nature of process	Interactive, intersubjective, and creative	Unilateral, subjective, and analytical
Context	Discovery	Justification
Spatial character	Dispersed (Lindblom's 'sea' of decision making)	Centralised (Lindblom's 'island' of decision taking)
EA stage	Scoping and evaluation	Decision/Approval
Approach	Mutual adjustment	Critical rationality

Decision taking should be responsive to the process of decision making, indeed preferably shaped by intersubjective agreement. If a decision taker is not responsible in exercising authority, participants can initiate an appeal or litigation in the courts to turn

the process back to the decision making phase. The iteration of appeal provides an opportunity for decision making to continue after a decision is announced.

Lindblom (1990: p. 252) describes the decision taker as "*a centralist only with respect to some island of decision making in a sea of mutual adjustment*". Using the terminology of Table 11, Lindblom is actually referring to an island of decision taking in a sea of decision making. He notes that central coordinators of policy in one state department cannot grasp the entirety of their task as it stretches beyond the jurisdiction of their department. These coordinators cannot fully control others within the state outside their own department, nor can they fully control actors outside the public sector. So, to the extent that they fail as coordinators, they can only succeed in influencing those outside their power through a process of mutual adjustment. This process is more effective for society as a whole than unilateral decision taking because each of the possible solutions to a given problem has repercussions for the solutions to other related problems. This is the third area of uncertainty identified by the IOR school – the uncertainty of overlapping areas of choice (Faludi, 1986) or, expressed differently, the uncertainty of related decisions (De Jongh, 1988) – the IOR's first two areas of uncertainty are listed (in order) in section 7.2.3.1. The greater the number of participants there are in mutual adjustment, the greater their collective knowledge of related problems, and the better the potential for concurrently resolving a number of related problems.

> "*To the extent that they can withdraw into an exercise of unilateral authority as centralists, they lose many of their opportunities to respond to and take part in a broad reconsideration of volitions.*" (Lindblom, 1990: p. 252)

The interconnectedness of decision takers as mutually adjusting decision makers is a useful notion that can advance democracy if applied in structuring decision processes. The following section completes this theory of EA by considering the potential of power to thwart democracy in planning and decision making and what can be done to regulate this force.

7.5 Rationality within the context of power: the need for social justice as a major consideration in EAs

In the 1970s, Marxist scholars criticised mainstream planning as ignorant of the real power it was serving (Sandercock, 1998). According to this critique, planning has three functions in the service of capital, as an instrument of (Sandercock, 1998, citing Castells, 1978):

- rationalisation and legitimation of the actions of capital;
- negotiation of the differing demands of the fractions of capital; and,
- regulation of the pressures and protest of dominated classes.

While a pertinent critique, it ignores other forms of domination and oppression through its exclusive focus on class interests.

In the power-in-politics model, EA stands accused of the first and the last of Castells's three functions. EA is said to provide scientific rationalisation in support of decisions taken by powerful interests in society, while deceiving participants into thinking that they have some influence in the decision making process. The EA report confers an unjustified legitimacy because proposals are hardly ever turned down by authorities; and mitigation measures introduce marginal changes to proposals to reduce their worst external effects thereby undermining opposition to proposals as a whole. As EAs are typically paid for by proponents, it is understandable why opponents often conclude that EAs are duplicitous.

According to this critique, development is imposed on local environments by powerful actors through "*hegemonic, rational, 'truthful' discourses*", with the parallel dismissal of "*the 'mythological' discourses of peripheralized and dominated peoples*" (Peet and Watts, 1996: p. 16). In seeking to counter this imposition of outside power, poststructural theory advocates that a wide range of people's beliefs, logics, and discourses should be brought to bear in decisions about social and environmental change. This makes possible what Peet and Watts (1996: p. 38-39) have called liberation ecology, which seeks to broaden debate about "*environmental issues into a movement for livelihood, entitlements, and social justice*".

> "*Such a liberatory ecology retains the modern notion of reasoned actions on nature, accepts much of the Marxian and poststructural critique of capitalist rationality, but wishes to substitute in its stead a democratic process of reasoning in a transformed system of social and natural relations.*" (Peet, 1998: p. 229)

Upholding the premises of liberation ecology can strengthen EA and undermine its detractors who argue that EA is merely symbolic. The theoretical framework of the EA planning process outlined in this chapter goes quite a long way towards satisfying the premises of liberation ecology. The first premise, the need for reasoned actions on nature, echoes the argument in section 7.2.1.2 that specialist ecological knowledge is indispensable to EA because of the complexity of ecosystem processes. The second premise of liberation ecology relevant to EA is the adoption of a critical modernism, in which rationality is contended in an arena of free and audacious discussion (Peet and Watts, 1996). This premise is similar to the proposed combination of critical rationality and mutual adjustment in the EA planning process, the adoption of which poses a direct challenge to specialist domination of the process. The third premise of liberation ecology is much harder to achieve. EA alone cannot reduce inequality in social and natural relations, but it can be one of a number of means towards such transformation.

7.5.1 Theories of social and environmental justice and their application in EA

In the theory of EA presented in this thesis, the premises of critical rationality are applied to the assessment and decision stages in a process that does not claim to reach correct decisions. Faludi (1986) claims that his planning methodology of critical rationalism identifies correct or optimal decisions on the basis of consequentialist ethics. Such ethics are based on teleological theory, in which an act is right only if it produces

"*at least as great a balance of good over evil as any available alternative*" (Faludi, 1986: p. 127, citing Frankena, 1973: p. 14). This is a utilitarian theory of justice. Faludi admits that criticisms from deontological theory may be problematic for his methodology. Deontology is the ethics of duty or moral obligations (New Shorter Oxford English Dictionary, 1997). Deontological considerations relate to factors other than consequences, such that an act may be right if it "*keeps a promise, is just, or is commanded by God or the state*" (Faludi, 1986: p. 127, citing Frankena, 1973: p. 15). Frankena notes that an action may maximise the sum of beneficial consequences, but be unjust in the way it distributes these consequences. His theory of obligation seeks to fulfil the requirements of utility and distributive justice (Faludi, 1986, citing Frankena, 1973). A similar perspective proposes that if planning is both rationally and ethically sound it becomes conscientious (Faludi, 1986, citing Singer, 1979), that is, incorporating an internal conviction or conscience – a moral sense of right or wrong. The question is how to incorporate conscientiousness in multi-actor decision making.

Rawls (1971) declares that justice is to social institutions what truth is to human thought – its foremost virtue. Rawls presents a notion of justice as fairness and argues against utility as a guiding principle of justice. A preferable principle holds that greater benefits (from a proposal) for a few persons can only be justified if there are compensating benefits for everyone, particularly for the least advantaged members of society (Rawls, 1971). A just solution in EA would thus give more emphasis to ameliorating adverse consequences for disadvantaged groups, because affluent groups have resources they can mobilise to offset adverse impacts. Rawls admits that not every one would accept this principle. In all situations, however, he argues that the principles of justice to be adopted need to be agreed in a social contract between participants so that the appropriate division of advantages is acceptable to all parties. He emphasises the importance of establishing a fair process in which the problem of choice is formulated and defined in an initial situation (akin to defining the decision-situation), and in which participants agree to adopt specific principles of justice. Rawls's contractarian method expects conflicting conceptions of justice to be explained and justified (as in critical rationality) and acknowledges the public nature of adopting political principles (as in mutual adjustment).

Notions of utility underpin many evaluation methods, including cost-benefit analysis and other quantitative approaches in which alternatives are chosen through rating and weighting of consequences in an optimising calculus for a given population as a whole (Taylor, 1998). Meredith (1991) distinguishes two situations typical of many evaluations in EA. The first type of evaluation is for a development that provides local benefits but also causes local impacts. While there may be collective acceptance of the need for a project, such as a waste disposal facility, no one wants it to be sited nearby – the Nimby syndrome (Not In My Backyard). Justice as fairness would seek to ensure that the costs of health-impairing pollution are not born by those with the lowest wages. Yet property values adjacent to noxious facilities are lower, which makes such areas more affordable to the poor and the disadvantaged (Harvey, 1996). The second situation involves an evaluation where a proposal is developed in one area for the benefit of communities in another area. Meredith illustrates this type of evaluation with examples of resource development in northern Canada that benefit the economy in the industrialised south of

the country. Justice as fairness holds that those in the north should also be better off after proposal implementation.

Table 12 introduces four dominant discourses about the environment, categorised by Harvey (1996, citing Hajer, 1995), each a form of power with its own institutional base. The table lists the principles of social justice adopted by each of these movements, and the corresponding principles of ecological justice. The first two theories of justice – utilitarian and contractarian perspectives – have already been introduced. The table outlines two further conceptions of justice, namely libertarian and egalitarian perspectives.

Table 12: Principles of social and ecological justice adopted by different environmental movements (information sourced from Harvey, 1996, citing Hajer, 1995)

THE DISCOURSES OF ENVIRONMENTAL MOVEMENTS	PRINCIPLES OF SOCIAL JUSTICE	ECOLOGICAL JUSTICE
Early view of environmental management: clean-up and end-of-pipe solutions; *ad-hoc* state regulation of firms to internalise external costs; technical decision making	Utilitarian: maximising benefits for a majority, without considering distributional consequences for minorities	Rights to as many species as possible
Ecological modernisation: systematic regulation aimed at prevention; environmental management by international organisations, national and local governments, firms, and NGOs; decision making subject to debate over values	Social contract: justice as fairness, particular concern for least privileged and future generations	Rights to the less well-off, such as endangered species, and conservative approach to habitat transformation
Wise use movement: private property-owners in decentralised democracy sustaining their land; preferably limited state intervention	Libertarian: classic liberal view in which individual freedom paramount	When extended to all subjects of life, produces animal rights perspectivess
Environmental justice movement: inequality of power as dominant discourse; survival of people as central concern, with twinning of social and ecological justice; suspicion towards expert discourse; marginalised groups seeking political, economic, cultural and environmental self-determination; *ad hoc* militant campaigns	Egalitarian: sometimes individualistic, frequently communitarian demand for more equitable sharing of environmental advantages and burdens; struggle for respect and empowerment	Deep ecology – sanctity of Mother Earth: egalitarian, all species and habitats have equal rights

With the plurality of theoretical perspectives outlined in Table 12, Harvey (1996: p. 93) comments that "*we are then left with a case of determining which is the most*

socially just theory of social justice". A possible solution would be a flexible, pluralistic theory that combines principles from different theories as appropriate in a particular context (Harvey, 1996, citing Wenz, 1988). The struggle then is over which principles prevail in the process of forming a social contract among participants, as proposed by Rawls (1971).

In an earlier work, *Social Justice in the City,* Harvey (1973) argues for a move away from a conception of social justice as a matter of eternal morality to something that is dependent on the social processes operating in society. Harvey (1973; 1996) perceives the central problem to be the relentless process of capital accumulation and its associated asymmetries of power and wealth. Environmental justice is thus not only a politics of morality but also relates to issues of production and consumption, and how to balance (Harvey uses the term displace) the dominant powers of capitalism. The environmental justice movement can only succeed in this challenge, he argues, if it adopts propositions of ecological modernisation in "*a rather more complex politics that recognises how environmental and social justice must be sought by a rational ordering of activities at different scales*" (Harvey, 1996: p. 97). This ordering refers to the arbitration of abstract and complex conflicts over production and consumption at a range of scales from global to local, rather than the current focus of the environmental justice movement on militant campaigns aimed at specific proposals.

Of the discourses outlined in Table 12, the progressive practice of EA best fits with that of ecological modernisation. The institutionalist perspective of EA is consistent with the notion of environmental planning and decision making by a multiplicity of organisations including national and local governments, firms, international and local NGOs, in which decision making is subject to debate and mutual adjustment. If social justice and ecological modernisation are indeed complementary, as proposed above by Harvey (1996), EA (as an instrument of ecological modernisation) would be strengthened by principles of environmental and social justice. Indeed, the International Principles for Social Impact Assessment emphasise the importance of justice in at least four different ways (Vanclay, 2003):

- the second of six core values of SIA makes reference to "*justice applied equally and fairly to all, and available to all*" (p. 9);
- the second of eight principles for development holds that "*promoting equity and democratisation should be the major driver of development planning, and impacts on the worst-off members of society should be a major consideration in all assessment*" (p. 9);
- the first of 12 principles specific to SIA practice asserts that "*equity considerations should be a fundamental element*" (p. 9); and,
- the principle of intragenerational equity states that "*social impacts should not fall disproportionately on certain groups of the population, in particular children and women, the disabled and the socially excluded*" (p. 10).

In a recent report, a commission of the International Labour Organisation declares that deep-seated imbalances in the global economy reflect an ethical vacuum at the heart of globalisation (Denny, 2004). According to this report, unemployment worldwide has

reached its highest recorded level; the US currently exhibits the highest level of income inequality since 1920; and, while wealth is being created, many countries and people are not sharing its benefits.

> "*Global governance is in crisis ... the economy is becoming increasingly global, while social and political institutions remain largely local, national or regional.*" (Denny, 2004: p. 19)

These systemic social problems raise fundamental questions about the efficacy of a global society, given Rawls's (1971: p. 64) notion of "*society as a cooperative venture for mutual advantage*". If the function of major social institutions is to "*distribute fundamental rights and duties and determine the division of advantages from social cooperation*" (Rawls, 1971: p. 66), the current political, social, and economic arrangements appear to be in need of reappraisal and restructuring. In this context, the role of EA in addressing inequality in matters of social and natural relations is circumscribed and can only be of limited leverage. Nevertheless, the measures that can be implemented in EA to improve consideration of social justice and regulate power are outlined below.

7.5.2 Regulating power and improving consideration of justice in EA

Inquiry and power are interspersed throughout the EA process. In screening, both are brought to bear in deciding if a proponent must undertake an EA. Even when there is no legal requirement to prepare an EA, proponents may be subject to social pressure to do the right thing and undertake a voluntary study. Legal mandates and social pressures are prior impositions that condition the attitude of proponents, such that their participation in EA would more likely be cautious than whole-hearted. Proponents would thus be wary of, and seek to avoid, further demands on their proposals. The imposition of power by a proponent over other participants in scoping could lead to a selective focusing of attention to suit the proponent's interests. Inquiry and power further intermix in that the solutions or outcomes identified in inquiry commonly require the imposition of power in implementation (Lindblom, 1990). For instance, conditions of approval attached to a decision exert control through restricting environmentally damaging activities.

Proponents and affected stakeholders may resort to strategic behaviour to advance their respective interests, which is what Lindblom (1990) calls the uglier aspects of partisanship. Critics of the Habermasian ideal of non-distorted communication argue that there will always be those who turn to manipulation. In such situations, calls for deliberative discourse, free of the exercise of power, are idealistic if not altogether unrealistic. Thus, Foucault warns that "*to respect rationalism as an ideal should never constitute a blackmail to prevent the analysis of the rationalities at work*" (Flyvbjerg, 1998b: p. 198, citing Foucault, 1980: p. 317).

Lindblom (1990) observes that the 'rationalities at work' include obfuscation and the provision of misinformation that can distort and block analysis. Of a more fundamental nature, however, there are sociological limits to inquiry. All participants "*live in a network of existing impositions and coercions, born as they are into an economy, polity*

and culture that they never chose" (Lindblom, 1990: p. 46). These limits invalidate the Habermasian ideal of the resolution of conflict through no other influence than the force of the best argument. Arguments "*never go beyond analysis of how best to adapt an outcome to prior continuing impositions, the outcome then no more the result of the arguments than of the impositions*" (Lindblom, 1990: p. 47).

There are two mutually reinforcing approaches to the topic of this section, which are regulating the abuse of power and affirming the interests of the disadvantaged. These approaches are discussed in the following four sub-sections. Section 7.5.2.1 outlines the method of power analytics and discusses its applicability to EA. It is argued that social scientists should be commissioned to undertake social probes in scoping to inform the design of participation processes. Section 7.5.2.2 describes a typology of interest groups to assist in determining the extent to which a particular group is likely to advance or undermine pluralistic democracy. In section 7.5.2.3, existing strategies for counteracting misinformation in planning and EA are emphasised, with reference to Habermas's four criteria for judging the validity of information. Participant funding is an existing strategy, practised in Canada but not widely employed elsewhere, which can partially address the imbalance in resources available to proponents and interested and affected parties, thereby contributing to fairer outcomes. Finally, section 7.5.2.4 discusses the importance of EA professionals balancing their responsibility to civil society with their role in proposal planning.

7.5.2.1 EA professionals acting with an awareness of power, and commissioning social scientists to probe power relations and design participation processes

In considering how to practice rationality in the context of power, it has been noted that the environmental and gender initiatives of civil society attained a place on the public agenda "*through the power struggles and conflicts characteristic of activism and social change*" (Flyvbjerg, 1998b: p. 206). Indeed, Rickson *et al.* (1990: p. 6) state that "*conflict, at a certain level, improves both the quantity and quality of information*". For Flyvbjerg (1998b), methods of advancing consensus through deliberation are not sufficient, and he favours Foucault's power analytics over Habermas's discourse ethics. Power analytics aims to understand the realities of power through the empirical study of power and its net of relations (Flyvbjerg, 1998b; 2001). Its central question – how is power exercised? – is probed by analysing strategies and tactics used in the process of exercising power. This section considers the extent to which power analytics is relevant and appropriate to the practice of EA and planning.

Flyvbjerg (2001) provides a number of methodological guidelines for a reformed social science. These include focusing on values, placing power at the core of analysis, engaging in dialogue with a polyphony of voices, and emphasising little things. The emphasis on context and minutiae requires the use of meticulous (even tedious) procedures and thick description. Foucault, following the tradition of Nietzsche, enjoins that such research requires "*patience and a knowledge of details*" and depends on a "*vast accumulation of source material*" (Flyvbjerg, 2001: p. 133, citing Foucault, 1984c: p. 89). This is the nature of the research undertaken by Foucault (1979) in his analysis of

biopower in the French prison system, and by Flyvbjerg (1998a) in illuminating the role of power in the planning of the built environment in Aalborg.

The intensive research of power analytics is not easily incorporated into the relatively short time horizons of EA processes, and would be limited in scope by the availability of financial resources. Power is not always wielded in the open, and it may be difficult to trace widespread power relations. Furthermore, unlike the relatively permanent organisational structures of prisons and the planning departments of local authorities, EA planning teams are brought together for relatively short periods, and each proposal is directed and influenced by a diverse set of organisations, groups, and individuals. Whereas Flyvbjerg's long term research on the Aalborg project has raised a number of interesting propositions on power relations in planning, this intensive type of research can not be implemented in the planning of every policy, plan, programme, and project, although its potential role in EA case study research is acknowledged.

Flyvbjerg (2001) proposes a number of measures to be applied in planning and decision making to avoid the problems experienced in the Aalborg project. He returns repeatedly to four value-rational questions, which add a concern for mechanisms of power to the questions that typically focus EAs.

> "*(1) Where are we going? (2) Who gains, and who loses, by which mechanisms of power? (3) Is it desirable? (4) What should be done?*" (Flyvbjerg, 2001: p. 162)

In enhancing the effectiveness of multi-actor decision making in EA, the rider to the second question requires that assessment of alternatives and their consequences should be supplemented with analyses of actor configurations and power relations – their respective positions, perceptions, and interests, and the interrelations between actors (Kørnøv and Thissen, 2000). This is consistent with Miller's (1984) proposed shift in assessment towards the use of interviews as a source of information on the interests of participants. The analysis of the dynamics of power should continue throughout the EA process, to trace the exercise of power in action. Such empirical analyses can raise the awareness of those working in EA, challenging them to reconsider what they do and how they do it, in achieving fair outcomes.

Flyvbjerg (2001) emphasises the importance of dialogue, in research and planning, for informed and democratic decision making. The dialogue required is "*not necessarily detached and without combat, but with respect for other parties and a willingness to listen*" (Flyvbjerg, 2001: p. 159). His primary recommendation – to local authorities in general and Aalborg in particular – on how to improve the planning process is the establishment of planning panels. These panels should include representatives of all stakeholders and interested and affected parties, and should participate actively in all decision making from proposal idea through design to ratification and implementation. The authorities should facilitate the identification of participants, which is an important political action – to ensure that decisions are widely supported. Such panels (or forums) can be constituted in the EAs of proposals where joined mutual adjustment is considered necessary. The irony of Flyvbjerg's main recommendation is that it is not focused on analyses of power but involves setting up and managing a deliberative and inclusionary

process that would not be readily distinguishable (to an observer) from a process designed according to the discourse ethics of Habermas. The difference between these philosophers lies in their views on how far it is possible and desirable to regulate power.

Power is defined as the capacity to secure specific outcomes or to accomplish change (Mouton, 1990). Consistent with this definition, the aim of participation is to achieve power to influence decisions that affect one's life and livelihood (Cock, 1995). Cock declares that concepts from sociology provide the social technology for the ideology of participation. Social scientists should be involved in the design of EA processes and participation plans to make them more effective in addressing power imbalances. Designing a participation plan should start with a social probe in scoping, followed by a more detailed social profile in the assessment stage. The objectives of a social probe are to (Fowkes *et al.*, 1995):

- elaborate the social context of a situation, including a time line of the main events over the last 30 years, in that the past shapes contemporary events and attitudes;
- identify the actors (individuals, groups, and organisations) who should be involved;
- describe the power structures, divisions, and imbalances within and between actors, and diagnose the possible power dynamics to prescribe appropriate interventions; and,
- identify the issues involved, and which organisations are the legitimate representatives of these interests throughout the process.

This information assists in designing an appropriate institutional arrangement – "*a forum or coalition or liaison structure*" (or Flyvbjerg's panel) – to ensure effective communication between interest groups (Cock, 1995: p. 6). On a practical level, analyses of actor configurations can identify the weakest groups for capacity building and anticipate and limit the opportunities for domination by more powerful alliances. In addition to the provision of information on consequences, an analysis of values and arguments relevant to a decision-situation may provide insights that could bridge different perspectives and create workable solutions (Kørnøv and Thissen, 2000).

7.5.2.2 A typology of interest groups: constituency-representing organisations preferred over special interest groups

Etzioni (1991) provides a typology of interest groups according to whether they advance or undermine pluralistic democracy. He notes that public interest groups (PIGs) are mostly concerned with issues pertaining to the community at large, although he remarks that the social scientist "*will be hard put to tell what 'the' public interest is*" (Etzioni, 1991: p. 200). He distinguishes between groups that tend to act as special interest groups (SIGs) and constituency-representing organisations (CROs), which represent the two extremes of a continuum. The defining attributes of these types of groups are depicted in Table 13.

Table 13: Distinctions between special interest groups and constituency-representing organisations (information sourced from Etzioni, 1991)

	SPECIAL INTEREST GROUPS (SIGs)	CONSTITUENCY-REPRESENTING ORGANISATIONS (CROs)
Social base	Narrow	Broad
Scope of interests	Money and possessions	Community and value issues
Beneficiaries	Members	Society & members

The building industry, property owners associations, labour unions, and the tobacco lobby would tend to act as SIGs. CROs could include environmental NGOs, business councils for sustainable development, and black professional organisations. Constituency-representing organisations "*seek to balance service to their members with a measure of concern for the community of which they are a part*" (Etzioni, 1991: p. 198). A group may display the behaviour of more than one kind of interest group in different situations. A labour union of stevedores, for example, may act as a PIG in refusing to load a ship bound for a dictatorial country, while lobbying as a SIG in seeking advantages for its members (Etzioni, 1991).

This typology of interest groups is useful in so far as it sharpens insight in the process of analysing actor configurations. The broader base, wider scope, and community involvement of CROs make them more suitable for the political process of building consensus. In order to reduce participation overload and the potential for a stalemate in decision making, Etzioni recommends the path of building community and containing, not suppressing, interest groups, with CROs favoured over SIGs.

7.5.2.3 Refining existing strategies to regulate the misuse of power: anticipate and counteract misinformation, and provide participant funding

The EA process has a number of features that are designed to address issues of justice and power, including an emphasis on combining process and substance; an openness to participation in shaping the decision-situation, starting in scoping; and the recognition (in theory, if not always in practice) that decisions are based on values.

In his book, *Planning in the Face of Power*, Forester (1989) focuses on information as a source of power. He argues that misinformation in planning is not an accidental problem and may well be systemic, and should be addressed on the basis of this understanding. He observes that strategies to deal with power abound: what is needed is their conscientious application rather than the invention of new strategies. His emphasis in dealing with power in planning is to put in place the processal requirements of Habermas's discourse ethics, as outlined in section 6.4. Planners can anticipate and counter problems of distorted communication that hamper participatory planning through preparing facts and arguments, asking questions, providing early warnings, and

generally countering domination by powerful special interest groups. Problems of misinformation are defined in the list below according to Habermas's four criteria for assessing the validity of claims – comprehensibility, integrity, legitimacy, and truth (Peet, 1998). Each problem is followed by the measures available to planners to counter such corrupt practice (Forester, 1989):

- confusing and deceiving through jargon, ambiguity, or sheer quantity of information – **facilitate comprehension** by weeding out jargon, revealing meaning, and drawing attention to significant issues;
- making false promises, or false assurances of integrity – **gain trust** of a neighbourhood organisation by exposing previous situations in which a developer made promises that were not fulfilled, and by questioning attempts to marshal respectable persons (independent of substance) to gain unfounded trust;
- manipulating a false legitimacy – **achieve consent** by ensuring adequate participation in decision making and managing the failures of formal participation processes through mobilising unorganised groups, and by exposing attempts to present a political issue as one best left to experts; and,
- misrepresenting needs, costs, benefits, risks, or options – **speak the truth** by exposing assumptions, checking and testing factual statements, and marshalling dissenting expertise in review, and by drawing attention to alternatives that dominant interests might suppress.

In translating these measures into the practice of EA, the guidance provided is apt for environmental authorities reviewing EAs, whose situation is closest to that of planners working for the state. Consultants undertaking studies on behalf of proponents would also benefit from the application of these measures, although they have less freedom to challenge their clients than do the authorities. The roles, responsibilities, and attitude of EA professionals are discussed in the final section of this chapter.

In addition to Forester's measures outlined above, the adoption of participant funding seems an appropriate way to make the EA process more consistent with the principles of critical rationality and mutual adjustment. Intervenor funding has been used in the EA process in Canada to partially redress "*the gross inequality of resources between project proponents and the public*" (Lynn and Wathern, 1991: p. 169). According to these authors, such funding is paid for by the proponent but distributed by the state. The rationale for intervenor funding, preferably termed participant funding, is that a small portion of the resources made available to specialists by proponents can be effective in facilitating lay inquiry in EA. Alternatively, the state can provide such funding, which appears to be the approach adopted by the Canadian Environmental Assessment Agency (CEAA) in their Participant Funding Program. In this programme, public funds are awarded to help individuals and organisations participate in both phases of the EA process (CEAA, 2003). In the first phase, funding is for participation in scoping meetings and for reviewing draft guidelines issued by the Agency. In the second phase, funding is for reviewing EISs and preparing for, and participating in, public hearings and mediation processes. Funds can be used to pay for independent environmental, legal, technical, and social advice (although applicants are expected to represent themselves at hearings), for salaries of research and secretarial staff, rental costs, office supplies,

information materials, the dissemination of information to members, and travel and subsistence costs.

Participant funding distributes resources among social groups and can empower disadvantaged groups to challenge proposals. It supports the premise of mutual adjustment that a multiplicity of groups, each looking out for their own interests, can improve proposals through a competition of ideas.

7.5.2.4 EA professionals crossing back and forth between the roles of proposal consultant and proposal critic: balancing autonomy with influence and engagement

Section 7.5 has argued the importance of incorporating issues of justice into EA practice, to reduce the potential for domination by powerful interest groups. This final section considers the importance of EA professionals balancing the roles of proposal consultant and proposal critic. Guidance on planning with citizens is provided below, which is used in the ensuing discussion on EA.

Sandercock (1998) is critical of equity planners who profess to be working 'on behalf of', or 'for a community', and prefers planning 'with and by the community'. Some radical theorists argue that the latter approach can only be achieved if planners forsake their alignment with the state, and 'cross over' to work for communities in opposition to the state and the corporate economy (Sandercock, 1998, citing the work of Heskin, 1991, and Leavitt, 1994). Sandercock (1998) suggests instead that a planner wishing to advance social inclusivity should 'cross back and forth' between the state and communities, in deconstructing 'community' and 'the state' and reconstructing new possibilities. Forester (1998) proposes that professionals designing and implementing deliberative processes need to act with the demeanour of civic friends. Lay confidence in the planning process is bolstered when professionals are seen to be promoting the welfare of all participants. To be held as civic friends entails keeping in check the alienating sensibilities often associated with experts, bureaucrats, judges or generals (Forester, 1998).

EA professionals also have a duty to cross back and forth between a range of participants. Crossing back and forth in EA is not, however, a two-way process between the state and civil society. One should rather imagine this duty as a requirement to engage with each of a number of functionaries, proponents, specialists, and interested and affected parties. In this process, EA professionals cross back and forth in another way, moving between the roles of proposal consultant and proposal critic. To do justice to the role of proposal critic, an assessor should act as a friend of the critics – who may be from civil society, business, or arms of government – and convey their critiques back to a proponent for investigation and resolution.

Taylor (1984) describes how assessors in environmental units within federal agencies in the US have to balance the conflicting norms of autonomy and integration. Private sector consultants undertaking EAs for proponents also need to balance these norms. Integration refers to the early involvement of assessors in proposal planning to increase

their influence on the process. Autonomy refers to the capacity of assessors to decide on the nature and conduct of their environmental investigations and to challenge a proponent's procedures, norms, and proposals. The assessors should not be so autonomous as to be irrelevant to the planning process, nor so integrated as to be co-opted.

A balancing of norms also applies to the relations between EA professionals and interested and affected parties – a balance between autonomy and engagement. Assessors should be sufficiently autonomous so as not to favour particular interest groups – except as partisans for the disadvantaged – yet be effectively engaged with all groups to ensure that their interests are heard and addressed in the EA process. Engagement contributes to social inclusivity, which is a necessary condition for justice to prevail. As few organisations in civil society have a research capacity, the flow of information from assessors to interest groups provides critics of proposals with additional resources thereby contributing to a balancing of power (Taylor, 1984). The effect of this knowledge empowerment is summarised in the quote below.

> "*As general public knowledge increases, elites are forced to consider a broad rather than a narrow array of alternatives, thereby increasing decision making rationality.*" (Rickson *et al.*, 1990: p. 4)

Lay probing, informed by civic science, can produce better proposals that satisfy more participants and meet a wider range of objectives.

Environmental assessors are effective in balancing their roles (as critic and consultant) to the extent that critics and proponents express confidence in their work, which is not an easy task. In fulfilling this task, environmental assessors act as intermediaries and build trust between all participants, which is pivotal for successful EA.

> "*An ideal model of the role of impact assessment would be that community rationality is a joint product of integrative political conflict and research such as environmental or social impact assessment.*" (Rickson *et al.*, 1990: p. 9)

The research component of EA can be improved through encouraging a spirit of critical rationality amongst participants. Integrative (rather than divisive) political conflict can transform into social rationality in decision making through the process of mutual adjustment. For this process to be fair, the voices of all actors must be heard as "*our intelligence is bound up ... with the community of life of which we are a part*" (Bartlett, 1986: p. 110, citing Dewey, 1930). Giving effect to voice in the context of EA requires the exercise of a duty of care for the inarticulate world of nature and the amplification of the interests of the underprivileged. In this way, authorities, proponents, environmental and planning professionals, and the public can make the future, together. The intersubjective understanding reached in the EA of each proposal should teach us a little more about how to be in the world, equipping us for the challenges that lie ahead.

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CHAPTER 8: SYNOPSIS OF MAIN CONCLUSIONS

This thesis has developed theory for the practice of Environmental Assessment (EA) by integrating philosophies with theories and models from the fields of EA, public sector decision making, and city and regional planning. Theoretical integration is approached from a position of critical postmodernism, in which modernist and postmodernist perspectives are combined.

The aim of this thesis is to better understand why EA works and how to do it better, with a focus on two sets of EA objectives – its environmental planning and design objectives and its decision making objectives. The main objectives of the thesis are to:

- develop an explanation of why and how the EA process works to regulate proposals through a set of relations between the state, the economy, and civil society (the political economy of EA); and,
- refine the theory of the EA planning process in terms of how practice might be brought more in line with methodological prescriptions and philosophical ideas.

A synopsis of main conclusions for the first objective is provided in section 8.1, and for the second objective in sections 8.2, 8.3 and 8.4.

8.1 An explanation of why and how EA works to regulate proposals: the political economy of EA – a macro theory

This thesis has compared and contrasted EA and planning with reference to philosophical conceptions of democracy and associated approaches to the structuring of the state and its relation to the economy and civil society. This comparison has led to the articulation of a theory of the political economy of EA.

Both planning and EA are based on an interventionist theory of the state, to protect the rights of individuals from the activities of others. EA arguably requires less intervention by government than planning and leaves more developmental decisions to the market. The premise that EA is a stage in a progression from sectoral licensing to planning is called into question, and it is argued that EA is a significant form of planning, even a preferred form in some jurisdictions. EA fulfils many, but not all, of the social functions of planning. Concurrent with the emergence and evolution of EA, planning has been undergoing significant changes. The emphasis of planning has shifted from prescription to discretion, with the exercise of more flexible control. The aims, objectives, and

activities of a more entrepreneurial approach to planning are close to those of EA, suggesting that these two fields are converging. This convergence provides significant opportunities for reciprocal learning. Accordingly, this thesis has incorporated concepts from planning into EA theory that relate to the use of knowledge in design and decision making.

EA can utilise types of decision making from both planning and market-type systems, as summarised in Tables 9 and 10 (pages 154 and 155). Figure 5 (page 156) shows the domain of EA straddling these two systems. The more participatory types of decision making are clustered in the centre of Figure 5 on either side of the divide between planning and market systems. The more participatory types – mutual adjustment, communicative action, and critical rationality – are selected for the middle range theory of the EA planning process summarised in section 8.3.

In its original form, the impact statement strategy of the United States (US) regulates proposals without subjecting proponents to central coordination and control. In opening up agency decision making to multiple actors, the strategy achieves bureaucratic reform through analysis and disclosure rather than reorganisation, which is less costly to implement than a fully fledged planning system. Instead of directing development via a centrally created and implemented plan, EA responds to proposals originating in the market place of private sector interests and in the mandates of dispersed public sector authorities.

It is the requirement to consider alternatives to proposals that takes EA beyond subservience to markets, in that proponents are called to account and cannot formulate and implement a proposal solely as they see fit. A proponent would usually have formulated a need and purposes and maybe even a preferred alternative before announcing a proposal in public. EA is structured to ensure that proposals are laid open to possible challenge so that unreasonably narrow need and alternatives can be modified to be more broadly tolerable. This has been described as the multiple-sequence decision model, in which proposal need and alternatives are framed unilaterally, followed by disclosure, contestation, and revision. EA provides formal opportunities to express opposition to proposals and forces proponents to listen to, and engage with, other actors from government, business, or civil society.

The injunction to consider alternatives is invoked most strongly when a proposal is shown to have significant impacts, and shifts EA from an essentially cautionary activity to one that is corrective, in requiring proponents to formulate alternatives that reduce impacts. Thus, although EA entrusts the planning of proposals and alternatives to proponents, this is subject to the important proviso that planning and decision making are conducted openly, in the spirit of mutual adjustment. The extent to which opponents to a proposal are able to influence decision making depends on the willingness of a proponent to share power and the counter arguments, influence, and power that can be mobilised by coalitions opposing a proposal (or undesirable aspects of a proposal). EA procedures and ethics direct professionals to ensure that the participation of civil society is meaningful, as a means to advance environmental and social justice and counter powerful interests in government and the private sector.

In implementing EA in other settings, there has been a tendency to adopt the standards of analytical excellence set by the National Environmental Policy Act of the US, but not to adequately recognise the importance of the institutional arrangements of mutual adjustment that invoke a social rationality in decision making. In settings that are more centralised and less dispersed, EA readily assumes the mantle and *modus operandi* of technical rationality, and becomes a corruption of the original impact statement strategy. With current theories of governance providing a justification for a competition of knowledge and mutual adjustment as primary tenets of a successful EA system, the impact statement strategy, in its fullness, can now be acknowledged and incorporated into EA systems around the world.

8.2 Methodological prescriptions and philosophical insights for EA theory building

This thesis analysed implicit and explicit theoretical models from the EA literature that seek to explain why and how EA works. Facets were identified from each model that represent vital contributions to the success or influence of the EA process. These facets are synthesised into two groups according to their role in the attainment of two sets of EA objectives, as listed in Table 14 (overleaf). These facets were used as a checklist in elaborating the theory of the EA planning process for each of the stages of scoping, assessment, evaluation, and decision (summarised in section 8.4).

The theoretical models of EA sourced from the literature were synthesised into two main models that reflect the dialectic of EA – its inherent contradiction. The inquiry-in-politics model provides an aspiration for practice as the way in which the EA planning process ought to work, through the framework of critical rationality and mutual adjustment (summarised in section 8.3). The framework is encompassed and constrained, however, by *Realrationalität*, a concept from planning theory (argued to be common in practice) in which the agenda is set by the powerful and the principle strategy is 'decision first, then rationalisation presented as rationality'. The second EA model – the power-in-politics model – acknowledges that power relations in an EA determine the extent to which rationality will be respected and exercised, or is likely to be blocked. This model requires the implementation of new EA methods and approaches to uncover and regulate manipulation, outlined in section 8.4, which should improve the performance of EA in addressing issues of environmental justice and environmental democracy.

Various philosophies – including poststructuralism, postmodernism, and critical realism – were studied for insights pertaining to decision making. The topics of rationality, pluralism, power, and conflict were considered to be particularly relevant to the development of the theory of the EA planning process.

Table 14: Facets vital to the success of EA in influencing planning and decision making

Facets relating to planning and design objectives of EA:

- Active (intrinsic) role for environmental assessors who are integrated into the process of proposal formulation, planning, design, and decision making
- Interdisciplinary approach, with particular emphasis on the science of ecology
- Organisational reform through the continued interaction between the staff of a proponent and environment assessors who are most effective in this function if they are internal to the organisation
- Social learning by proponents, who gradually develop understanding of the reactions of potential critics, putting them in a position to select and design proposals and mitigation measures that avoid or manage conflict

Facets relating to decision making objectives of EA:

- EA as political process, with emphasis on the role of institutions, actors, and power relations, recognising that the politics of the environment is a politics of value and interests
- Structured opportunities for a multiplicity of actors to voice concerns and participate in decision making
- Combination of different ways of knowing (epistemologies) in building environmental knowledge base and assessment of consequences (the passive or scrutinising role of EA)
- Disaggregated and many-sided approach to analysis
- Analytical competition to improve understanding of consequences, with specialist analysis in support of inquiry by citizens and functionaries
- EA as balancing different values in development
- Reform of societal institutions and a restructuring of rules to facilitate multi-actor decision making
- Decision making via a formalised system of mutual adjustment
- Opportunity for appeal, most forcefully through the legal remedy of challenge in court

The role of rationality in decision making has been the subject of much criticism and debate. Poststructuralism contends that knowledge, as a form of power, is used for social control and domination. Another criticism, from postmodernism, is that rationality has encroached into every realm of human life, creating an imbalance by displacing the role of values, feelings, and emotions. These postmodern critiques have led most planning theorists to question the role of rationality in decision making, and to argue for a shift to a more overtly political process. As observed in some current planning literature, rationality is considered to be a behavioural rule, in which multiple and conflicting rationalities (or preferences) are brought to bear in decision making. This thesis argues that a reinvigorated and critical approach to rationality, as a procedural rule, is essential

in EA, and may be beneficial in planning. Rationality is re-emphasised as a normative ideal, albeit in a modified communicative and intersubjective form.

A proposed delineation of use in EA would apply rationality to claims about knowledge, exclude it from the evaluation process, and require the exercise of rationality in the Record of Decision (ROD) and appeal procedures. While social rationality is a promising ideal for evaluation, mutual adjustment is the preferred approach to evaluation. The relativistic interpretation of rationality in evaluation, as in the use of the idea of multiple rationalities shaping a decision, would tend to destabilise the integrity of the concept of rationality as a procedural rule in the realm of knowledge creation and in articulating the premises of decisions. With the use of the term rationality confined to specific stages of an EA process, the need for a conception of multiple rationalities in evaluation falls away.

On the question of consensual or partisan approaches to decision making, participation should be ready for conflict because rivalry and mutual challenge are the pillars of a democratic society. The project of modernity has long been associated with the drive to eliminate the power of tradition. This is perhaps too ambitious a goal, and attention might be focused more effectively on regulating and restricting power, in the ongoing struggle for democracy and societal reform. Measures to restrict attempts by powerful agents to control a decision making process are based on the principle of distributing the power to impose among participants. Early in the process, all participants should jointly decide on the rules of the process, to facilitate transparency and more meaningful interaction.

Further contributions to EA theory from debates in the philosophy of science and the sociology of knowledge are summarised below. From the philosophy of postmodernism, two insights relevant to the assessment stage of EA are listed below. These are followed in brackets by complementary requirements from critical realism:

- recognise the difficulty of obtaining reliable knowledge and meaningful projections (apply falsification to choose the more adequate theoretical representation of reality); and,
- provide opportunities for the expression of a heterogeneity of voices and the use of a plurality of knowledge systems (synthesise situated or local knowledges to provide system overviews, and uphold the principle that no knowledge should be above criticism).

For the stages of evaluation and decision, three pertinent insights from postmodernism are: counter the manipulation of knowledge by power; acknowledge the limits of knowledge in ensuring just decisions; and acknowledge that there are no correct decisions, only ones that can be agreed in a political process.

The methodological prescriptions – in the form of facets necessary to the success of EA – and philosophical insights outlined above were incorporated into the theory of the EA planning process as summarised in section 8.3.

8.3 Theory of the EA planning process – a middle range theory

A theory of the EA planning process is presented that interlinks two primary concepts, namely, critical rationality and mutual adjustment, as shown in Figure 6 (on page 159).

Derived from modernist planning theory, critical rationality is most relevant to the assessment and decision taking stages of EA, culminating in possible appeals against a ROD. Critical rationality is a cognitive-instrumental rationality, through analysis of facts and means, potentised in a spirit of contestation and argument. The facts emerge from cognitive understanding of the environment and the consequences of a proposal; alternative proposals are the instruments or means towards the ends desired by participants. In emphasising the link between the critical attitude and the rational attitude, EA can distance itself from the corruption of rationality by power. A competition of knowledge (also termed analytical competition) offers some escape from unilateral control, in that the many people and organisations involved in an EA process dispute with each other, allowing a wider and better understanding to develop. Critical rationality in the assessment stage allows for the possibility of inquiry by citizens and functionaries, supported by the findings of specialist investigation. It further encourages lay people not to accept unquestioningly the findings of specialists but rather to challenge and critique information on the basis of their own knowledge and experience, as far as possible.

A formalised process of mutual adjustment, sourced from theories of public sector decision making and the impact statement strategy of the US, is most important in the decision making (or decision shaping) that occurs in scoping and evaluation. Mutual adjustment is attuned to the multi-actor decision making of the theory of governance, which has led to an institutionalist perspective in both EA and planning theory. In an institutionalist context, there is little agreement on goals and the relation of means to ends. When compared with consensual approaches to decision making, the institutionalist perspective is more accommodating of partisanship, power, and conflict. Participants adjust to each other's interests in discovering courses of action that satisfy a whole set of constraints, in a process that embodies social learning.

The competitive approach of disjoined mutual adjustment may be the most efficient approach to decision making in general practice for ordinary EAs. Proposals with significant consequences and pronounced conflict may need to be subject to the greater effort and control of (face-to-face) deliberative and inclusionary processes, which are inevitably more resource and time intensive. Where mutual adjustment fails and consensual action is not possible, a decision must be imposed subject to the conditions of critical rationality. Critical rationality and mutual adjustment are not easily separated. Figure 6 shows them as a double helix, closely linked and intertwined. Critical rationality accepts that both facts and values should be laid open to challenge by others. The practice of critical rationality thus makes possible the accommodation of mutual adjustment.

Two further concepts from theories of decision making – comprehensive or satisficing decisions and mixed scanning – have a subsidiary role in the theory of the EA planning

process. The extent of inquiry should be decided in the context of each EA, somewhere on a continuum from comprehensive to satisficing, as a function of the significance of impacts and a desired level of precaution. According to the principle of proportionality, stronger precaution is required when potential impacts are severe and the potentially impacted systems are less resilient and more vulnerable. A higher risk of danger to people and damage to the environment should translate into a higher willingness to pay for more comprehensive inquiry. Comprehensiveness in EA translates into a wider consideration of need, alternatives, and issues (including cumulative, higher-order, and longer-term consequences), and greater depth in the study of these issues. Nevertheless, striving for ever more comprehensive inquiry is not an appropriate response to problems of uncertainty in prediction. Instead, there are two pragmatic measures that can be used to side step the problem of uncertainty: a comparative assessment of alternatives and the adoption of adaptive environmental assessment and management.

Mixed scanning provides a conceptual link between SEA and EIA – between early strategic consideration of broader alternatives and subsequent more detailed evaluation of narrower, incremental alternatives. Mixed scanning thus provides advice on how to go about the iterative processes within EA, in which the nature, extent, and depth of inquiry changes as the EA process advances.

This proposed theory of the EA planning process, with its framework of mutual adjustment and critical rationality, should be applicable to most forms of EA, even to sustainability appraisal of policies. Such widespread applicability challenges the evolving notion that separate frameworks are required for different levels of assessment, particularly in distinguishing between policy appraisal and impact assessment of physical development. For example, in describing the evolution of approaches to formulating and assessing national strategies (policies) for sustainable development, Dalal-Clayton and Sadler (2003) list a number of changes from the older master plan strategies to newer continuous improvement systems. The new approach is characterised as a step-by-step, continuous, innovative, adaptive, and inclusive process, with multi-stakeholder forums for participation and negotiation. SEA should be integrated as part of the policy formulation process rather than being applied as a retroactive step (Dalal-Clayton and Sadler, 2003). The theory of the EA planning process developed in this thesis can accommodate all of the above-mentioned characteristics of the policy process and the need for an integrated approach to SEA. The general applicability of this theory supports the assumption, made in section 1.7, that SEA and EIA can be discussed as variants of EA and need not be considered as separate entities.

8.4 Theory for the practice of EA: scoping, assessment, evaluation, and decision, within the context of power

The implications of the theories developed in this thesis for each EA stage are summarised below, followed by key measures to curb power and advance justice in the practice of EA.

Scoping as pre-structuring the decision-situation through the intersubjectivity of mutual adjustment:

The theory of scoping is developed beyond the widespread recognition of scoping as a subjective process to incorporate the notion of intersubjectivity. Achieving agreement amongst participants requires that people overcome their subjective views in favour of an intersubjective consensus. Another concept new to EA theory, sourced from the planning literature on critical rationality, is the definition of the decision-situation. This definition includes all that one must know at the time of taking a decision, namely, a description of alternatives and their expected consequences weighed according to a set of values. Scoping pre-structures the decision-situation, with subsequent refinement as the EA process advances towards the decision stage.

A model is described that can assist in identifying a set of reasonable alternatives in scoping, which is based on the need and purposes of a proposal. The need underlying a proposal determines the selection of alternatives: a wide statement of need makes possible a broad range of alternatives, and *vice versa*. The other determinant of a set of reasonable alternatives is the purposes (or objectives) that a proposal aims to satisfy. In this model, alternatives that meet both the need and purposes of a proposal are analysed in the greatest detail in an EA.

Scoping is thus conceptualised as a process of listening to many subjective voices, and advancing to intersubjective agreement on proposal need, purposes, alternatives, and the design of the EA process, in pre-structuring the decision-situation.

Critical rationality, civic science, and co-design in the assessment stage, formalised in a series of living documents:

It has been argued that EA is subject to a crisis of legitimacy because the public no longer trusts science and expert opinion. The adoption of critical rationality in the practice of civic science requires meaningful public participation in the assessment stage, which can assist in re-establishing the legitimacy of the EA process.

Civic science is easily accommodated in a conventional view of EA practice. The notion of civil society defining the activities of science is already part of the EA process, in that the technical investigations of assessment are directed by the social concerns identified in scoping. The inclusive validation required by civic science is made possible through widespread dissemination of an EA report followed by specialist, public, and authority review. Discussion and debate among a plurality of participants, each focused on their own interests, enriches information on potential consequences. The exchange of information among participants makes social learning and mutual adjustment possible.

A more significant alteration to the EA process is to provide an opportunity for lay involvement in conceiving – even co-designing – alternatives, bridging the separated worlds of participation and design. Lay people can contribute part of the knowledge required in assessment, although lay knowledge of ecology is unlikely to be sufficient for the purposes of EA. Lay ability in prediction is limited, and may not extend beyond

first-order, physical impacts. Experts can facilitate lay participation in heuristic systems modelling and normative prediction. Normative methods work backwards from desired outcomes in ascertaining what actions, that is, what alternatives or what project modifications are necessary to achieve preferred outcomes. In a continuous EA process, quick scan assessments provide preliminary estimates of impacts that are communicated to designers and co-designing stakeholders. Designs are altered and estimates remade in an iterative, innovative approach to EA. Such stakeholder involvement can lead to more effective implementation because of wider support for, even a public sense of ownership of, a negotiated proposal. A number of factors thus combine to produce a powerful argument for a more proactive, design-centred role for EA, which displaces extrapolative prediction from its central position in assessment to a technical function in support of normative design choices.

In establishing critical rationality as the hallmark of assessment, the EA report has to be preceded by a continuously evolving, living document, created through communication, argumentation, and intersubjective agreement in each round of the EA process. Review of an EA report is similarly transformed from a step into a process, with repeated opportunities for critical response (comments) to sequential versions of a living document. The living document should be supplemented by other forms of communication, using alternative media such as scenarios, stories, role playing, and discussions that engage the intuitive and aesthetic as well as the rational faculties of the mind.

The concept of a living document in a multi-sequence (or rounds) model of decision making resolves a question related to the optimum staging of the EA report: whether it should be released after specialist assessment of impacts (as depicted in Figure 4 on page 36), or whether it should be released after incorporating information from an evaluation of preferences. A living document could be updated before and after scoping and assessment, and during evaluation, as shown in Figure 6 (on page 159).

Mutual adjustment in evaluation – decision making as distinct from decision taking:

Two aspects of postmodern relativism are considered for relevance to EA: the aspect relevant to the assessment stage is rejected, while the aspect pertaining to evaluation is adopted. The first aspect relates to a postmodern reluctance to judge explanations of reality. For the purposes of assessment, this aspect of relativism is refuted. Claims about impacts – from whatever source, proponent or opponent – should be subject to critical testing to ascertain the extent to which each claim is more or less justified, that is, roughly sound or deceitful.

The second aspect of postmodern relativism is a rejection of the notion of an optimum or best decision. Modernist confidence in the notion of an optimum decision is misplaced in environmental decision making because there is no single, optimal environment or society but rather many acceptable future states. Instead, a good decision is one that has been well probed, and meets the test of reasonableness to the community of actors involved in the decision making process. Evaluation is essentially normative in

nature and ought to be directed by stakeholders rather than the specialists who investigated impacts (although the values of specialists may also be relevant). Evaluation in EA can thus be conceptualised as an analytically intensive kind of politics.

Distinguishing between the terms decision making and decision taking in EA theory and practice should improve understanding of the processes involved in these two phases. Decision making is the process of influencing or shaping the definition of the decision-situation, while decision taking involves defining and acting on the decision-situation. Democratic decision taking should be responsive to the prior process of decision making, indeed preferably shaped by the intersubjective agreement of a multiplicity of actors. Decision takers ought to engage in mutual adjustment with other authorities and groups in civil society before exercising their statutory authority to choose a course of action. The informed bargaining of mutual adjustment is more democratic than centralised decision taking, with the ideal balance being visualised as an 'island' of centralisation in a 'sea' of democratic deliberation.

The decision stage incorporating critical rationality in the ROD, appeal, and litigation:

If a decision cannot be reached through mutual adjustment, a fairly common situation, it is necessary to turn to political institutions and leadership for the imposition of a decision. The subjectivity of decision taking is encapsulated in the definition of the decision-situation, which includes a balancing of factors based on values and preferences. The ROD and procedures for appeal – including challenge in court – put the stamp of critical rationality on the decision stage of EA. A ROD should explain the reasons for a decision, including the importance attached to environmental and other decision factors. In making public these reasons, a decision is rendered transparent and a decision taker can be held accountable for his/her choice. A procedure for appeal provides an opportunity for challenges to be presented if anyone objects to the stated (subjective) grounds for a decision.

Measures to curb power and advance justice in EA:

A proposal may maximise the sum of beneficial consequences – a utilitarian concept of justice – but be unjust in the way it distributes these consequences. Considerations of distributive justice hold that greater benefits for a few persons can only be justified if there are compensating benefits for everyone, particularly for the least advantaged members of society.

The most important recommendation for advancing distributive justice and regulating power in EA is to commission social scientists to undertake a social probe in scoping and a more detailed social profile in the assessment stage. A social probe should elaborate the social situation, identify the actors – their values, arguments, and interests, and describe the power structures and imbalances. The probe can diagnose the possible power dynamics to prescribe appropriate interventions. Such analyses of actor configurations may provide insights that bridge different perspectives and create workable solutions. In EAs where joined mutual adjustment is considered necessary, the

information from a social probe can assist in the design of an appropriate institutional arrangement – a forum or panel – to facilitate dialogue between interest groups.

Beyond the input of social specialists, EA professionals can undertake their duties with an awareness of power and can draw on existing strategies for counteracting misinformation and enhancing participation. Assessors can check factual statements, communicate information in a way that is comprehensible to lay persons, marshal dissenting expertise in review, and draw attention to alternatives that dominant interests might suppress. Assessors should work to gain the trust of participants and manage the failures of formal participation processes through mobilising unorganised and under-resourced groups. Participant funding can partially address the imbalance in resources available to proponents and interested and affected parties, thereby contributing to fairer outcomes.

Finally, EA professionals need to balance the roles of proposal consultant and proposal critic. In their relationship with a proponent, assessors have to balance the conflicting norms of autonomy and integration. Assessors should be integrated in the planning process in order to be influential, but not co-opted; autonomous but not irrelevant. A balancing of norms also applies in the relations between assessors and interested and affected parties – a balance between autonomy and engagement as a friend of the critics of a proposal. A measure of the effectiveness of an assessor's balancing of these roles is to be found in the degree of trust that they engender in proponents and critics of proposals. This balancing of roles requires assessors to cross back and forth among the community of participants in democratic decision making. In striving for just proposals, EA professionals need to adopt a moral obligation to the disadvantaged and to the environment, to complement the procedural focus of the theory of the EA planning process proposed in this thesis.

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