Research Brief 5

Learning and Environmental Change

From the ESRC's New Opportunities Research Programme on
ENVIRONMENT AND HUMAN BEHAVIOUR (EHB)

environment and human behaviour
esrc new opportunities programme

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INTRODUCTION

This Research Brief describes the research background and main results of two projects in the EHB Programme which explored connections between areas of interest for sustainability policy, on the one hand, and individual and institutional learning on the other. The areas of policy interest were environmental sustainability appraisal, broadly conceived, and the economic modelling of environmental resources as 'natural capital'. Problems that hindered the realisation of the potential of both these approaches to effect pro-environmental behaviour change were found to be illuminated by understanding the approaches as in key respects *learning processes*.

THE MAIN RESULTS

Difficulties in the respective policy areas

- Prior assessment of the impacts of projects, programmes, plans and policies has an increasingly prominent role in the quest for sustainable development. Techniques include environmental and risk assessments, cost-benefit analysis and sustainability appraisal. The traditional, 'technical-rational' model of appraisal assumes that objective analysis 'informs' policy and leads to better (more sustainable) outcomes. But this model is inadequate in many ways. In practice, appraisal has often been used for legitimation, or its findings, when inconvenient, ignored. Furthermore, techniques are never neutral in terms of their underlying pre-suppositions, or the conceptions of sustainable development they are likely to support.
- In many appraisal applications, the concept of sustainability is underpinned by the idea of handing on an appropriate quantum of natural resources. But there are serious problems with the standard approach to valuing such resources on the model of capital stocks, which need to be maintained at given levels. The uncertainty and indeterminacy of environmental futures make difficulties not just for prediction, but also for the social and political authority of attempts to alter engrained present activities on the basis of inherently contestable future scenarios.

Insights from the research

- More deliberative approaches to appraisal may be a constructive alternative to closed, expert-driven procedures. Instead of striving to eliminate subjectivity, deliberative appraisal embraces different problem framings and perspectives, and encourages reciprocal learning through a process of open dialogue. But deliberative practices also raise their own problems.
- A more creative model of natural capital could draw on the concept of real options – features of a capital asset that support the opportunity to make future decisions about how it is used, contingent on knowledge and skills then available. Given such flexibility, uncertainty about the future actually increases the present value of potential benefits. Natural capital assets embody real options in their characteristic self-regenerative capacities, through which their use can realise ongoing value without pre-empting key future decisions.

New ways forward

- Effective appraisal must involve tailoring different approaches to specific contexts, choosing appropriate combinations of systematic inquiry and deliberation. Sometimes quite specific, specialist analysis will suffice. But for complex, non-consensual issues, appraisal must be reconceptualised as a way of opening policy processes to a wider range of objectives and worldviews.
- Relatedly, maintaining natural asset value must be recognised to depend on building relevant social intelligence and learning capacities in the present. This is a matter both of curricular development and of widespread changes in the social relations of environmental learning.

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ECONOMIC & SOCIAL RESEARCH COUNCIL

Appraisal, Institutional Learning and Sustainability: Defining a New Agenda

This project was a desk study involving synthesis of existing material, rigorous analysis of key themes, and development of a future research agenda.

It was motivated by a sense that the field of appraisal is both intellectually dynamic and of considerable practical importance. It is one in which theory and practice must co-evolve, and this points towards particular challenges for research and practitioner communities. Expectations of appraisal – and of a succession of new 'tools' – are considerable. The European Commission, for example, expects that Strategic Environmental Assessment (SEA) 'will help produce decisions that are better informed', which 'in turn will result in a better quality of life and a more sustainable environment …'. At the same time, traditional conceptions and practices of appraisal have been subject to sustained critique, and some have lost legitimacy. The nature of appraisal and its connections with policy processes, the legitimacy of different approaches, and links to normative outcomes like sustainable development, were among the subjects for the study.

Within the appraisal community, which includes academics, policy makers and practitioners, some cling, not always self-consciously, to the premises of technical rationality and/or focus on procedural aspects of appraisal, paying less attention to its wider legitimacy. An emphasis on process (whose worst manifestation is a 'tick box' mentality) may be attributed in part to the need to satisfy a growing number of legal or statutory requirements. At the same time a largely separate body of literature in the social sciences is severely critical of technical-rationality, and urges development of practices that facilitate open political debate about difficult choices.

The two schools differ crucially in their treatment of subjectivity. The technical-rational perspective is that assumptions and judgements, when they cannot be avoided, should be made 'explicit' (with the implication that one can then return to business-as-usual). The more radical perspective is that subjectivity is not an intrusion to be minimised but an essential constituent of practical rationality. Open, participatory approaches to appraisal are seen as fora for exploring different perspectives or frames, in which it is possible to 'learn' and to arrive at inter-subjective judgements through a process of argument and debate. For many, such processes promise a legitimacy that can no longer be commanded by closed, expert-driven procedures.

These perspectives have stimulated experimentation with inclusive and deliberative approaches and in some cases, as with the 'New Approach to Appraisal' in UK transport policy, to their institutionalisation in practice. However, the impact of new thinking has been relatively modest to date. Despite their persuasive diagnosis of problems, critics of technical rationality have failed to provide a coherent alternative paradigm: even its most ardent proponents accept that the deliberative model entails substantial, unresolved difficulties of a conceptual and practical kind. Deliberative approaches may be no less susceptible than technical ones to the exercise of power, nor do they noticeably influence outcomes to a greater degree.

So it would be misleading to see the deliberative-inclusive model as a simple replacement for the technical-rational approach. Indeed, the dichotomy itself is unhelpful, not least because even quite technical procedures have provided important apertures for learning, helping to change beliefs and values, and ultimately environmental behaviour, over time. We need to find sensitive and constructive ways of combining both approaches. The less consensual the issue under scrutiny, the greater the need for dialogue, and for inclusion of diverse knowledges and positions. When problems are severely 'unstructured' (for example, when there is profound disagreement about ends as well as means) we cannot look to appraisal to produce consensus, clear recommendations or legitimised outcomes. Rather, we need to reconceptualise the relevant processes as means of opening debate to different social purposes and worldviews.

Three substantial articles on these themes by the researchers are at various stages of publication, and related papers have also been presented at a number of conferences and seminars in the UK and abroad.

Natural Capital: Metaphor, Learning and Human Behaviour

This project was driven by convergent developments in and around recent UK environmental policy. An economic vocabulary for addressing environmental issues has gained purchase within government departments and agencies. A debate has been growing in environmental education circles about dominant instrumental approaches to environmental education and learning. At the same time, there are growing signs that sustainable development is failing to capture public imagination or lead to significant individual or institutional behaviour change.

Researchers felt that a richer understanding of the central environmental-economic concept of natural capital might help to reconnect it with public concern, and this might be encouraged by recognising the metaphorical status of the concept as an invitation to exploratory learning at least as much as an analytical tool.

Accordingly, the project initiated a structured dialogue (taking the form of a sequence of two-day interdisciplinary research seminars) among social researchers, ecological economists, educational theorists, political scientists and policy-world actors. Two Working Papers (www.lancs.ac.uk/fss/projects/ieppp/naturalcapital), and others presented during the series, are to be published in a special issue of the international refereed journal *Environmental Education Research*, planned for early 2005, and in due course as an edited book.

An original contribution of this work has been the insight that natural capital assets lend themselves inherently to a real-option value model. A *real option* is a feature of the structure or organisation of a capital asset which embodies the opportunity to make a future decision about how the asset is used, contingent on relevant circumstances at that time. This concept comes originally from financial markets, but recent innovative thinking has applied it to physical as well as financial assets. Building such features into human-made capital items usually costs extra, but buys us future

flexibility. A good example here would be a power plant with burners that can run on either oil or gas, the switching capacity providing managerial flexibility to respond to future fuel price fluctuations. The "real option" element is the set of material and organisational features allowing fuels to be switched, which are obviously going to be more complex and costly than for single-fuel burners. But their present value rises significantly with uncertainty about future conditions of operation. Importantly, this value doesn't depend on present predictions which managers make about these conditions, but is all about being able to cope with them as and when they arise, though of course such value is only going to be *realised* if managers keep on top of fuel price movements and switch in anticipation at the right moments – good intelligence, proactive management and capacity-building are vital to real option value.

The relevance of this to environmental capital is that very many ecological systems and services seem to contain a naturally-given "real option" element: their inherent capacities for self-regeneration. These capacities offer (uniquely among the various kinds of capital) a potential baseline of *non-depreciation*. The sustainable use of such assets can realise ongoing value from them without pre-empting key future decisions affecting the future realisation of their value under possibly different circumstances – and this avoidance of pre-emption is the essential function of a real option. This is the basis on which, historically, humanity's natural capital endowment has provided it with permanent scope for material development in response to emergent knowledge, technologies and values.

This perspective on the natural capital metaphor yields an account of maintaining natural asset value which turns on *building relevant social intelligence in the present*. Such capacity-building would include:

- significantly increasing the curricular emphasis given to environmental issues at all levels of education:
- developing a widely-distributed and richly-conceived environmental "knowledge base"; and
- equipping an increasing range of people to engage in discussion of, and decision-making informed by, the social, cultural and ethical dimensions of new technologies.

It would be possible to get some operational grip on this process of value-maintenance by adding a range of new measures to the Government's current set of headline indicators for sustainable development. Some initial suggestions which arose from the research are at Table 1, below.

More generally, the approach developed here leads towards the radical idea that viable *sustainability constraints* on human activities cannot take the form of determinate obligations constructed with reference to projected future states of affairs. Under the kinds of uncertainty and indeterminacy which are an inescapable feature of the environmental context, concern for a future which we are always projecting under present pressures cannot reliably resist or remediate those pressures. Rather, the necessary kinds of constraint must be encountered (whether by individuals, institutions or societies) in the form of the practical conditions on permanent openness to change and potentiality. Such openness characterises genuine creative *learning*, where this is understood as the process of continually re-making habitable human sense of the world.

Table 1: Features and Possible Indicators of an Environmentally Learning Society

FEATURE	POSSIBLE INDICATORS (feasibility to be explored)
A widely distributed knowledge base	% of population with some kind of environmental study background at FHE level Measures of availability of relevant information
Encouragement of self-directed, exploratory and interdisciplinary learning at all levels	Component of quality assessment processes in formal education Participation in relevant adult education / continuing professional development courses
Expert and lay perspectives illuminating one another	Non-expert participation in scientific agenda-setting and advisory processes, and technological R&D
Resources for public judgement	Proportion of environmental study courses including a humanities and/or social science component People in environmental management positions with a wider than scientific background References to sustainable development in the media
Decision processes sensitive to public values	Extent of public engagement processes on key environmental decisions
Review and reflexivity in institutional governance at all levels	Process, inclusiveness and periodicity of major strategic reviews

AVENUES FOR FURTHER RESEARCH

The next major phase of publicly-sponsored environmental and sustainability research will coincide with the United Nations Decade of Education for Sustainable Development (2005-2015). The two projects suggest that this research needs to reflect the true significance of the learning dimension, recognising that the dynamics of learning and the exercise of social intelligence that they subserve are at the core of the sustainable development idea.

This would represent the unification of several hitherto distinct theoretical and practical research agendas, including:

- understanding the gap between increasingly widespread pro-environmental beliefs and comparatively minimal changes in relevant human behaviour;
- developing effective individual and social learning for sustainability;
- considering what appraisal and decision-making processes are effective in different sustainability policy or planning contexts;
- exploring policy processes which could genuinely constrain economic and social behaviour to change in sustainable directions.

At the level of theory, the projects indicate a clear need to revisit the current mainstream model of sustainable development and to reconceptualise its relations to learning processes and the learning society – which, in turn, also need conceptual work to bring out their implications for future-oriented human responsibility.

At the empirical level, the projects point towards specific further research in three broad areas.

First, there is *a need for better understanding of appraisal (including natural capital-based methods) within its policy and political context*. Research might usefully focus, for example, on connections between appraisal techniques and dominant policy discourses (do initiatives like the New Approach to Appraisal in the UK transport sector precede or follow significant changes in the dominant paradigm?), and on outcomes as well as processes and outputs (to what extent does appraisal actually modify human action over time?).

Second, there is considerable scope for *empirical analysis and evaluation of appraisal practices*. We need, *inter alia*, to test the assumption that deliberative approaches have superior learning capacity; and to explore whether Sustainability Appraisal (as opposed to some form of environmental assessment) will marginalise the environment and undermine hard-won protective policies, as some fear. New methods of registering critical levels of environmental capital need to be pursued.

A third and more normative theme is that of '*process design*'. A particularly urgent question is how appraisal techniques might most effectively be matched to context. We need also to consider what kinds of learning take place in appraisal and how 'policy-oriented' learning might be nurtured in new or modified processes.

Addressing the above questions will require well-designed longitudinal work, with retrospective elements where necessary combined with 'real time' studies of appraisal and 'action research' involving user organisations (central, regional and local government, statutory agencies, NGOs and corporations) and the public to explore and engage with concrete problems.

It will be important to acknowledge that sustainability research is *itself* essentially a learning process. It can only promote sustainable development when it, too, is deployed as active, exploratory social intelligence – a learning collaboration between researchers and users which no standard model of 'dissemination' can capture.

FURTHER INFORMATION ABOUT THE PROJECTS AND RESEARCHERS

Appraisal, Institutional Learning and Sustainability: Defining a New Agenda
Dr Susan Owens
Department of Geography, University of Cambridge,
Downing Place, Cambridge CB2 3EN
seo1000@cam.ac.uk

Dr Tim Rayner (now moved to)
London School of Economics

Dr Olivia Bina (now moved to)
New University of Lisbon

Natural Capital: Metaphor, Learning and Human Behaviour
Professor Robin Grove-White,
Mr John Foster
Centre for the Study of Environmental Change, Institute for Environment, Philosophy and Public Policy,
Lancaster University, Lancaster LA1 4YG.
j.foster@lancaster.ac.uk

Professor William Scott, Dr Stephen Gough, Dr Alan Reid
Centre for Research in Education and the Environment,
Department of Education,
University of Bath, Bath BA2 7AY.
w.a.h.scott@bath.ac.uk

FURTHER INFORMATION ABOUT THE EHB PROGRAMME

Professor Paul Ekins
Programme Academic Co-ordinator
Policy Studies Institute, 100 Park Village East, London NW1 3SR
p.ekins@psi.org.uk
www.psi.org.uk/ehb

Designed by Immprint

Printed on Greencoat which contains 80% recycled fibre and 20% totally chlorine free virgin pulp.