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SOCIAL PROCESSES OF ENVIRONMENTAL VALUATION

Pathways for environmental evaluation: a walk in the (Hanging) Gardens of Babylon☆

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Abstract

The paper gives a methodological overview of The *VALSE* Project, which was a European programme of research into valuation procedures for aiding the formulation and evaluation of sustainability policy. A notion of 'valuation from the point of view of Complexity' is built up through emphasising the permanent co-existence of multiple perspectives and, more particularly, the permanent possibility of shifts in perspective. Scientific enquiries and analyses are 'tested' — validated or invalidated — partly by reference to 'internal' norms of coherence and rigour, and partly by reference to 'external' considerations relating to the particular social and ecological context of the enquiry. Through reference to the four *VALSE* case studies, it is shown how the application of a chosen method of analysis structures the enquiry, while the researcher also learns about the reality through listening to what is said about the situation and about the research method itself from 'other points of view'. This demonstrates an approach to the design and implementation of environmental valuation studies that fully reconciles scientific and political dimensions of a social science process.

Keywords: Citizens' jury; Complexity; Ecological economics; Environmental valuation; Epistemology; Forests; Institutions; Methodology; Multi-criteria analysis; Participation; Social processes; Sustainability; Water; Wet fens; WTP-WTA.

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'The universe (which others call the Library) is composed of an indefinite and perhaps infinite number of hexagonal galleries, with vast airshafts between, surrounded by very low railings. From any one of the hexagons one can see, interminably, the upper and lower floors. The distribution of the galleries is invariable. Twenty shelves, five long shelves per side, cover all the sides except two; their height, which is the distance from floor to ceiling, scarcely exceeds that of a normal bookcase. One of the free sides leads to a narrow hallway which opens onto another gallery, identical to the first and to all the rest. […] […] In the vast Library there are no two identical books. The Library is total [and …] its shelves register all the possible combinations of the twenty-odd orthographical symbols (a number which, though extremely vast, is not infinite): in other words, all that is given to express, in all languages. Everything: the minutely detailed history of the future, the archangels' autobiographies, the faithful catalogue of the Library, thousands and thousands of false catalogues, the demonstration of the fallacy of those catalogues, the Gnostic gospel of Basilides, the commentary on that gospel, the commentary on the commentary of that gospel, the true story of your death, the translation of every book in all languages, the interpolation of every book in all books ….' (Borges (1964), 'The Library of Babel').

1. Introduction

VALSE was a project of research and demonstration of valuation procedures for policy. Through empirical studies combined with a permanent discussion of methodology, the team sought to design and demonstrate valuation techniques as components of real problem-solving processes appropriate to specific situations.

The *VALSE* project starting point was to seek to understand the ways that the concerned populations (or stakeholders) themselves express the 'values' of environment. (For full documentation see O'Connor, 1998a,b.) In this approach, scientific enquiries and analyses are to be tested — validated or invalidated — partly by reference to 'internal' norms of coherence and rigour and partly by reference to 'external' considerations relating to the particular social (and ecological) context of the enquiry. When well-structured tools of analysis are employed in a process of enquiry, *a two-way learning process* is set up. The application of a chosen method of analysis structures the enquiry, and the researcher also learns about the reality through listening to what is said about the situation and about the research method itself from 'other points of view'.

The *VALSE* project case studies have demonstrated how to implement environmental valuation studies in ways that fully reconcile scientific and political dimensions of a social science process. In Section 2, some main features and findings of each case study are highlighted. These brief recapitulations then serve as points of departure for the methodological discussions that follow in Sections 3–5.

2. *VALSE* as social science epistemology

Within the four *VALSE* case studies, various valuation methods have been applied, and themselves evaluated, from the points of view of contrasting knowledge perspectives and the normative significance attached to the knowledge sought or gained. In this way, the project *VALSE* demonstrates a reflexive social science epistemology and methodology for evaluating the pertinence and performance of various environmental valuation methods. This paper does not offer a full philosophical presentation of this perspective (on which, see Borges, 1964; Latouche, 1984; O'Connor, 1999), but it is useful to give some of the main orienting ideas.

2.1. From uncertainty to complexity

The *VALSE* perspective can best be recapitulated through reference to some well-established

theoretical benchmarks. Valuation in economic theory and practice has often been approached in terms of 'opportunity cost'. This means that the value of an environmental asset or service (or a damage avoided) is assessed in terms of the 'trade-offs' associated with obtaining or maintaining that good. Some approaches further attempt to quantify these costs in monetary terms by identifying a trade-off between the selected environmental benefit (asset, service, or damage avoided) and economic goods and services for which price-tags are already attached. If this approach is pursued zealously, it becomes possible to compare all economic and environmental goods and services (and damages) in monetary terms, and to look for 'highest value' uses of economic and environmental resources in these terms.

There are, however, many difficulties encountered with attempts at monetary valuation of environmental benefits and damage in these terms (O'Neill, 1993; O'Connor, 1997a,b,c; Spash, 1997a,b,c; Martinez-Alier et al., 1999; O'Connor and Spash, 1999). These include:

- systems uncertainties that make difficult the quantification of the trade-offs between different economic and environmental production, conservation and consumption opportunities;
- distributional conflicts whose resolution implies a ruling over the distribution of losses of economic opportunity and access to environmental goods and services, and which cannot be resolved by the search for a 'Pareto efficient' resource use;
- diversity of moral and political claims about the basis for resolution of the conflicts over environmental resource uses.

Noting all these features — the complex character of the systems in question, the existence of distributional conflicts and the diversity of social meanings or significations that the environment can have — the *VALSE* project adopted an approach that avoids making strong presumptions at the outset about the terms in which 'value' should be conceived. This means taking a less stringent attitude to the comparability of values than is implied by the conventional monetary valuation approach.

2.2. A disciplined dialogue of epistemologies

The great variety of environmental evaluation perspectives and practices may, for our purposes, be considered along two axes: (i) the variety in epistemological and normative stances concerning scientific knowledge and its purposes; and (ii) the variety of different valuation techniques or 'tools' that may be employed.

Concerning the nature of scientific knowledge and its purposes, we mention three contrasting perspectives, for convenience called Cartesian, Democratic and Complexity.

- The Cartesian perspective privileges a disciplined (and usually disciplinary) development of axiomatic foundations as a basis for obtaining theoretically organised knowledge about reality. It aims at an 'objective' description (leading to universal knowledge), and explanation based on axiomatic formulations of the valid categories for system description and behaviour.
- The Democratic perspective prioritises the status of each member of a social group to contribute to both knowledge and judgement through deliberation. It asserts the goodness of decision making based on deliberation with free expression of individual views. In this regard it represents a normative challenge to the 'one dollar, one vote' premise of cost-benefit analyses seeking to identify a 'highest-value' (Pareto-efficient) resource use. Also, through its advocacy of public expression, debate and deliberation, the Democratic perspective makes claims about valid ways for generating and exchanging knowledge for arriving at satisfactory environmental decisions. So it is an epistemological as well as normative stance.
- The Complexity perspective is based on the postulate of an irreducible plurality of pertinent analytical perspectives for a situation of enquiry. Analysis starts 'in the middle of the road' with a willingness to work with several analytical perspectives simultaneously in a sort of permanent 'conversation' seeking mutual understanding (even if not full reconciliation) across the many points of view.

Figure One : Methods and epistemologies

Stance on Knowledge:	"Cartesian"	"Democratic"	"Complexity"
Valuation Tool:			
Survey/interview techniques eliciting WTP / WTA statements	e.g., Contingent Valuation?		
Deliberative Processes		e.g., Citizens' Juries?	
Multi-Criteria Analyses			Linguistic evaluations?
Institutional Analyses			Conflict analyses?
In-depth Interviews			Discourse analyses?

Fig. 1. Epistemological stances and analytical methods.

One can consider specific valuation methods with reference to each of these three epistemological stances. The valuation tools applied in the *VALSE* project case studies were, respectively:

- United Kingdom Wet Fens: contingent valuation (willingness to pay), citizens' jury;
- Canary Islands Water: diagnostic systems analysis, institutional analysis;
- France Rural Woodland: systems analysis, discourse analysis, in-depth interviews, willingness-to accept survey;
- Sicily Water and Development: institutional analysis, multi-criteria analysis, in-depth interviews, attitudes and perceptions survey.

Putting these two classification frames in juxtaposition, the epistemological stances and categories of evaluation tool are presented as the column and row labels, respectively, of Fig. 1.

This schema is essentially a heuristic aid. It certainly does not exhaust all possibilities! The demarcations serve simply to highlight, in the specific context of the *VALSE* studies, the basic understanding that every method of research enquiry carries 'normative' as well as 'epistemological' pre-dispositions. Placement of a tool within a particular cell should be understood in a 'complex' sense that will now be explained.

Suppose that we seek to characterise an analysis activity by locating it 'within' a cell of the matrix. In this regard we can usefully speak of 'diagonal' and 'off-diagonal' cells. The diagonal cells would be those where the analytical method or family of methods (designated by a row in Fig. 1) is strongly congruent with the epistemological stance (designated by a column). The off-diagonal cells would be, by comparison, characterised by some sense of anomaly, surprise or (apparent) incongruence between the internal logic of the tool and the epistemological stance.

It will quickly be seen that, from the point of view of Complexity, often this incongruence is, itself, more a matter of habits of conventional thinking than of intrinsic properties.

3. Valuation from the point of view of complexity

3.1. What is behind WTA and WTP?

The *VALSE* project involved two separate implementations of a survey into individuals' WTP-WTA attitudes and behaviour — the United Kingdom wet fens WTP survey (Spash et al., 1998; Spash, 2000) and the France enquiry into woodlot proprietors' WTA (Boisvert et al., 1998;

Noël et al., 2000). Both of these studies were designed to obtain knowledge of the beliefs and motivations that underlie the stated WTP-WTA responses, based on the view that such knowledge is of crucial importance for well-judged policy and conflict resolution actions.

The method of Contingent Valuation (CVM) is widely presented as a way of 'revealing' the preferences of the populations consulted, based on axiomatic assumptions of, inter alia, a full substitutability between money-valued goods and the non-monetised environmental services/goods in question. On this basis, we could locate CVM as conventionally understood, in the top-left diagonal cell of Fig. 1, as a technique underpinned by a Cartesian epistemology.

However, it was hypothesised that a CVM survey study, carefully conducted, can be an effective scientific enquiry technique for insights into both qualitative and quantitative (monetary) dimensions of people's valuation attitudes and possible behaviour.[1] The UK and France *VALSE* case studies both demonstrate, in different ways, that it is possible to utilise survey techniques to solicit quantitative willingness-to-pay (WTP) or willingness-to-accept (WTA) information simultaneously with qualitative information permitting interpretation of motives and attitudes underlying people's WTP/WTA statements. This places WTP/WTA enquiries under the Complexity column label.

Thus, it is suggested that the CVM enquiry process can be understood not just as a way to obtain information about people's preferences quantified in 'commodity' terms of price for a given good/service, but more profoundly as a reciprocal learning process where both the researchers and the interviewees might come to appreciate more about the range of perspectives that may be brought to bear on the valuation problem. Even within the confines of the information obtainable through a CVM survey format, a researcher who adhered rigidly to a schema of analysis and interpretation based on the neo-classical axioms of optimal producer and consumer choice, would be missing a lot of relevant information. So, in the *VALSE* project, the UK wet fen WTP survey and the France woodland WTA enquiry have both been conducted 'from the point of view of complexity' — that is, with a view to learning about motivations and attitudes rather than trying to establish some numbers that can be fitted into a pre-conceived axiomatic framework (such as utility theory with presuppositions of substitutability). This choice has a strong empirical as well as scientific justification.

- In the France woodland study, a willingness-to-accept survey was conducted to enquire into the conditions surrounding the transmission of individual woodlots from one owner to another. Investigations revealed that the woodlots are transacted mostly in the context of a hereditary transmission. The changes of ownership involve monetary transactions, administered through notary offices in the district. In this situation, an enquiry into the willingness-to-pay on the part of potential or aspiring woodlot owners, and the willingness-to-accept on the part of proprietors, should focus not just on considerations of price, but also on the social circumstances of the transaction. The survey became not just an enquiry into actual and hypothetical market-like transactions (defined by a quantity and a price), but also an enquiry into the motivations for the actions — that is, the social norms, customs, and individual beliefs — of the persons involved.
- The UK CVM survey was designed to permit a distinction to be made between 'zero bid', 'don't know' and 'refusal' responses. In the past, it has been common to discard zero and 'very high' bids for purposes of statistical analysis. However, the question of defining invalid or illegitimate responses is not simple to resolve. Individuals can be reluctant to pay if, for example, they believe that wildlife ecosystems

[1] The suggestion that a survey combining quantitative data and open-ended qualitative question formats can work as an enquiry instrument in this way was already made, with a preliminary empirical demonstration, in Vadnjal and O'Connor (1994). A number of ecological economists including Sagoff (1994, 1998) and Blamey (1994) have highlighted the likelihood that respondents to contingent valuation enquiries may be expressing views as 'citizens' concerned with how society should be, rather than uniquely as 'consumers' revealing their individual trade-off considerations.

'should' be maintained or that they, as citizens have — or should have— 'rights' to the goods or services.

Zero bids in a WTP context, if taken at face value, can misstate the intensity of some people's environmental preferences (e.g. some people may bid 'zero', not because they don't care but because their view is that protection of the environmental feature in question 'should' be assured). Reliance on 'revealed' monetary WTP bids as a method for appraising the value that people attach to the environmental feature may thus be controversial from both epistemological and normative points of view. The 'refusals' were, in the UK wet fens study, only around 5% of the sample. This suggests that most of the interviewees did accept the survey purposes as meaningful and legitimate. Nonetheless, the analysis of the significance of attitudinal and 'rights' variables in accounting for the level of bids for wet fens shows that many people are motivated by deontological concerns (that is, moral beliefs, principles of good or right action, etc.) that are not adequately captured by the criterion of a Pareto-efficient resource use. As Spash (2000) discusses, many respondents would appear to hold the view that the wet fen creation, and wildlife habitat maintenance more generally, is not a matter of willingness (and ability) of individuals to pay, but more a matter of an appropriate public commitment.

3.2. Democratic values

From a normative point of view, procedures that would permit 'protest voters' to voice and 'have heard' their motivations and intensity of commitments can be readily motivated from a Democratic perspective (see O'Neill, 1996; Jacobs, 1997a). A Citizens' Jury (CJ) is specifically designed to promote the possibilities for deliberation between members of a social group all having standing as individuals within a political unit. So we may, in the first instance, locate CJ within the 'diagonal' cell in Fig. 1, of deliberative processes underpinned by a Democratic value commitment to the public airing and debate of value statements from all members of the social group.

The Ely Citizens' Jury conducted as part of the UK wet fens study has been implemented as a demonstration of the effectiveness of deliberative processes underpinned by a value commitment to the public airing and debate of value statements from all members of the social group. Sixteen ordinary members of the public, selected to represent a cross-section of the local community, came together over a period of 4 days. The members of the jury were briefed by expert witnesses, and discussed the issues with each other in small and large groups, chaired by an independent moderator. On the final day the jurors reached conclusions and made recommendations. The Ely experience (Aldred and Jacobs, 1997, 2000) has shown that, in a suitably designed process, jurors without special expertise can approach their appointed evaluation tasks as responsible citizens and reach measured, well-thought-out conclusions. Not only are a variety of social perspectives and scales brought to bear in evaluating the options, but the building up of shared understanding can be a crucial component for building mutual trust between people and their political representatives for effective policymaking.

A feature of the Ely Citizens' Jury is the way that it was implemented specifically as a component within an ongoing democratic political process. The initial decision to carry out a CJ study on the wet fens was made independently by the research team, and then the design and development took place as a partnership in consultation between the researchers and the main stakeholders concerned. Instead of taking the classical view that a scientific process should seek to 'observe' without perturbing the system under observation, the researchers accepted, on the contrary, the status offered to them of being actors themselves (of a particular type) within a democratic social process.

Certainly this co-operative synergy of research and local politics was possible because of, and perhaps only because of, some fairly widely shared political values (viz. value of public discussion, etc.). Given this underpinning, the insertion of the CJ as a component in coevolution within the pre-existing political process has contributed much to its legitimacy and political impact. It may, however, be noted that the Democratic normative/methodological choice appears, within the epistemological perspective of Complexity, as one

possible perspective among others. The practical importance of this is quite obvious. There could be a great variety of justifications for dissent arising within a Citizens' Jury situation — stemming from (e.g.) tribal affiliation, religious conviction, historical precedent (of the type, my great-great… grandparents were here before me and you), might-is-right, and so on — that neglect or explicitly contradict democratic values.

3.3. What motivates or justifies a valuation?

We have said that when well-structured tools of analysis are employed in a process of enquiry, a multi-faceted learning process is set up.

On the one hand, the application of a chosen method of analysis structures the enquiry. We have seen in the two-pronged Fens study an example of how different structures of enquiry generate quite distinct kinds of valuation statements. In fact, a CVM enquiry, centred around a questionnaire technique of quantitative valuation, and a CJ centred around a deliberative process of evaluation, relate to different institutional needs, cultural roles and social contexts. An outline of these contrasts (which should be understood as didactic rather than hard-and-fast contradictions) is presented in Table 1.

On the other hand, an alert researcher also learns about the reality through listening to what is said about the situation, and about the research method itself, from 'other points of view' not embedded in the method itself. Suppose that a researcher enquiring into WTA or WTP is interested in questions such as 'Why do people make protest bids?' and 'What is the significance of the protest bids for policy?' Suppose that, within a democratic political arrangement, people express an unwillingness to accept the outcomes of a voting or a citizens' deliberation process. We have seen that the question of the meaning and significance of 'protest votes' may, in practice, readily be investigated using in-depth interviews and discourse analyses. Similarly, we may suggest that, if severe dissension arises within a 'liberal' or democratic political framework, a reasonable starting point for understanding the sources of the conflicts may be a sociological or anthropological type of interest into the ways that the protagonists 'see the world'. Methods of analysis such as open-ended interviews, linguistic evaluations in fuzzy-set multi-criteria analysis and hermeneutic discourse analyses (applied to documentary, institutional and interview material) admit Complexity in this precise sense of possible incommensurabilities between multiple perspectives.

In the Canary Islands study, the water situation appears as 'contradictory' both scientifically and politically. From a neo-classical economic theory standpoint, current water resource use appears both inefficient and unsustainable. Also, however, the wealth distribution is highly skewed, with short-term water extraction interests dominating. So, a 'rational' water use reflecting opportunity costs (viz. the norm of allocative efficiency) would require major political reforms.

A sustainable aquifer water use, on the other hand, would imply constraints on present levels of extraction reflecting a commitment to the interests or entitlements of future generations. Altruism, honour or many other sorts of ethics might here play a role. But the present 'balance of power' is not favouring the sustainable management outcome.

We observe that there are conflicting viewpoints on the severity of the problem and on the appropriate responses, and we observe also that these viewpoints are closely related to (perceived) interests. In this sense, the Canary Islands water resource study presented in a stark way the inseparability of evaluation from politics. The present valuation of groundwater is an outcome of social processes that determine a relative dominance of the 'commodity' conception of the water resource and a technological supply-side view of water shortage and possible solutions. In this context, the ambition of 'policy relevance' becomes the question of 'in what sense policy relevance, and for whom?'.

The plurality of policy criteria and political motivations (Efficiency? Democracy? Sustainability?) has profound implications for justifying policy procedures. There are conflicting views, there is no single agreed axiomatic basis for solution. So, Complexity prevails as a social fact.

Enquiry into water resource valuation would

Table 1
Contrasting features of contingent valuation (CVM) and citizens' juries (CJ) as methods for eliciting value statements[a]

Distinguishing features	Contingent Valuation	Citizens' Jury
(i) Presuppose quite different pictures of the human subject and of human rationality and motivation	People are utility-maximisers; their 'optimising' behaviour is based on preferences that are 'given' from outside the calculation domain	People have mixed motives; their values are often indeterminate, but answer to context, and may be rationally structured on the basis of principled reasoning
(ii) Engage the subject in different ways	Subject is reactive, isolated, individual; views are private and not open to challenge; subject is confined to one role	Subject is interactive group member; views are public and open to challenge; subject is able to try out different roles
(iii) Make different demands on the subject	Practice of the subject's calculative faculties and of their prudence	Practice of the subject's reasoning faculties, skills and virtues
(iv) Promulgate quite different views of how issues are, or should be, framed	Question(s) decided by researchers	Question(s) evolve through negotiation among stakeholders, jurors and researchers
(v) Embody quite different views of the relation between citizen and policy-maker	Citizen as 'customer' whose preferences and values it is the role of the policy-maker to satisfy and accommodate; relationship of mutual benefit — policy-maker invulnerable	Citizen as citizen to whom policy-maker devolves, and with whom he/she shares, responsibility for decision-making; relationship of trust — policy-maker vulnerable
(vi) Produce quite different outcomes	Quantified intelligence about people's concerns which can be used both to validate policy and to estimate likely compliance with policy	Rarely quantified, often unclear and sometimes inconsistent intelligence which reveals how people understand the issues which they face
(vii) Handle 'information' in quite different ways	'Information' is (largely) anonymous and unquestioned	'Information' is owned, defended and contradicted
(viii) See knowledge in a different light	What matters is how much information is provided	What matters is how information is construed
(ix) Proceed according to different 'rules'	Methodology is sovereign, process is theory driven and circumscribed	Methodology is fluid, process is creative, dynamic, open ended
(x) Handle distributional issues differently	Condones existing distributions of rights; silences some voices (protest bids, income effects); open to manipulation by researchers	Can challenge existing distributions of rights; silences some voices; open to manipulation by participants
(xi) Are validated in different ways	Validation through precedent, consistency with previous studies, convergence and methodological rigour	Validation through argument and mutual acknowledgement among participants (stakeholders, jurors, researchers)
(xii) Need different institutional structures for assimilation of 'results'	Digestible by bureaucratic and financial structures	Can be indigestible to traditional bureaucratic and financial structures
(xiii) Have different endpoints in view	The point of the exercise is in the outcome	The point of the exercise is as much in the process itself as in its outcome
(xiv) Have contrasting political significance	Fosters 'customer' habits and a managerial society	Fosters civic habits and democratic values

[a] Compiled by A. Holland, R. Grove-White, J. O'Neill, C. Spash.

imply reopening debates about what the key questions are and what the justifications for present and future water use are, and might become. The country is formally a democracy, but many mechanisms for controlling water resources are covert and quite far from democratic values such as transparency of decision making and equal treatment of citizens. Some powerful interest groups are opposed to reopening this debate. Thus, through invoking reference points of democracy, social equity and sustainability, the case study analysis has sought to make more visible the critical social choices that could be debated, not solely focussed on notions of technological efficiency in an excessively partisan framework.[2] Quality of principled social scientific enquiry and policy relevance together mean to participate in the necessary, and necessarily controversial, social reconstruction of the problem around the requirements for maintaining the aquifer renewability in the future.

Democratic values cannot be deduced by a scientific analysis as being superior to dictatorship, free-market, or covert control. So, specific normative premises are entailed when, as in the *VALSE* case study, institutional analysis is used for a scientific elucidation of the (opaque) political-economic situation, so as to support informed public discussion (Aguilera Klink et al., 2000a,b). The analysis approach thus admits Complexity while specifically developing analyses in a Democratic epistemological and normative perspective.

In the Troina case study, a multi-criteria analysis combined with institutional analysis, in-depth interviews and survey were implemented to explore alternatives for action on a water resource problem with the Comune of Troina in Eastern Sicily. Social process was at the heart of research design from the outset (see Funtowicz et al., 1998, 2000; De Marchi et al., 2000). A decision problem that seemed both vague and intractable, with a mass of conflicting interests, has been transformed through analyses and communication undertaken explicitly in a perspective of Complexity, into the beginnings of a purposeful community dialogue.

In this case study, a prior commitment had been made to apply an analytical multi-criteria analysis method, but it was recognised that such an approach might be rejected by the stakeholders concerned if it was felt that outside self-appointed 'experts' were intruding with concepts, ranking criteria and conclusions alien to the sentiments of the people themselves. Thus, the attempt was made to avoid the pitfalls of the 'technocratic' approach, in part by an early process of enquiry and consultation with key stakeholders within the Troina township, and in part by applying in synergy a range of different methods of sociological research — both qualitative and quantitative, some participatory and some non-participatory. This triangulation of methods proved very powerful. First of all, the various methods provide opportunities for cross-checking of opinions and facts, as well as important inputs into the multi-criteria analysis. Also, the institutional, participatory and perception information permitted the members of the research team to develop competence in communication with the local people in their own terms. On this foundation, the results obtained by the researchers (i.e. the data, findings, interpretations and insights) have been able to be returned to the Troina community, which is now building on them in development of their own public information, deliberation and decision-making processes. This type of extended evaluation process has thus satisfied two desired features — the goals of being *trans*-disciplinary (with respect to the research team) and also participatory (with respect to the local community).[3]

[2] There is something of a parallel here with the theme of Costanza and Folke (1997) on 'Valuing ecosystem services with efficiency, fairness, and sustainability as goals'. The three criteria can, in principle, be achieved simultaneously — but this does not happen 'naturally'. In the Canaries study, fairness is understood in the procedural sense of an outcome of a democratic process, rather than in a substantive sense of quantifiable equity.

[3] The insertion of the multi-criteria analysis within a community process seems an important achievement. Joubert et al. (1997) in their recently reported MCDA study of a South African ecosystem/water management problem, emphasise that analytical approaches need to 'integrate public input more fully in the process'. The Troina study goes further than simply to 'integrate public input' — rather, it got itself integrated into a public/political process!

3.4. Complexity as a methodological frame

We see that for a given valuation problem there are — both theoretically and in practice — many feasible procedures and justifications for obtaining scientific and policy relevant information. An overall sense of valuation from the point of view of Complexity can be built up through emphasising the permanent co-existence of multiple perspectives and, more particularly, the permanent possibility of shifts in perspective — that is, the possibility of considering the same object or method of enquiry from two or more quite distinct normative and epistemological positions. In this sense, the 'Complexity' perspective is not only represented by a column in the Fig. 1 matrix, but also by a particular way of regarding the whole set of possible methods and epistemological perspectives.

In this sense, we are in Borges' 'Library of Babel' (Borges, 1964). Yet, as Borges' own apocryphal metaphor insists, this emphasis on plurality does not mean that all methods and perspectives are 'equally good'. On the contrary, various tests of adequacy can be invoked. For environmental valuation practices, these include traditional scientific quality criteria such as internal coherence, falsifiability, ability to account for observed phenomena, fecundity for orienting research. They also include social considerations such as usefulness for conflict resolution or for a policy need, perceived relevance to stakeholders, compatibility with ethical convictions, etc. The important thing is that judgements about pertinence and adequacy relate not just to the scientific quality (or defensibility) of the information obtained, but also to the roles that can be played by (or claimed for) different sorts of knowledge in the social and policy context.

The distinctive *VALSE* starting point has been to seek to understand the ways that the concerned populations (or stakeholders) themselves express the 'values' of environment. The scientific enquiries and analyses are thus situated, and validated, partly by reference to 'internal' norms of coherence and rigour, and partly by reference to 'external' considerations relating to the particular social (and ecological) context of the enquiry. This pragmatic approach can be thought of as a sort of 'agnosticism' (Latouche, 1984), meaning that one starts with an 'open mind' concerning the terms in which 'value' might be conceived. This does not, however, mean that the approach is theory-free. On the contrary:

- This 'agnostic' departure point actually entails certain epistemological considerations such as the postulate of complexity, that is, of an irreducible plurality of useful descriptions of social reality.
- The researcher, even if open-minded, does and must employ well-structured tools of analysis in the process of enquiry. There is a 'dialogical' learning process, where the application of a method of analysis partially structures the enquiry, but does not totally pre-determine the sense of what what may be learned.
- Research conducted in this spirit certainly entails normative dimensions — e.g. views on the standing of research participants (e.g. 'respect of diversity') — which has a major impact on conceptions of reasonableness (indeed 'rationality'), on the framing of decision support processes and goals, and on political objectives for seeking out consensus or compromise solutions, and so on.

These points are demonstrated at length in the reporting of methods and results of the *VALSE* project. Concerning the first point, we do not offer an explicit philosophical account (see, however, Latouche, 1984; O'Connor, 1999). Rather we appeal to a certain type of common sense.

What determines people's 'willingness to pay,' or to make sacrifices, for this or that aspect of environmental protection or enhancement? What determines what they are 'willing to accept' in exchange for present or future environmental degradation? We know empirically that individual and societal choices can be formulated in both monetary and non-monetary terms, that they can be based on a variety of motivations and justifications, and that they are co-ordinated through a variety of different institutional forms (Holland et al., 1996; Jacobs, 1997b; O'Neill, 1997; Godard and Laurans, 2000). In some situations people will express a willingness to make or receive monetary payments; in other cases people will insist on

non-monetary considerations or on matters of principle (Holland, 1997; Aldred, 1997). Valuation statements about the environment may be expressed in people's overall lifestyle choices, in their attachments to place of life and of work, in their commitments to family, tradition and community, in their political activity and goals of justice, and so on. Groups and individuals may struggle to defend access to what they believe is an entitlement or a right or inheritance (patrimony, ethnic identity, village identity, citizenship). In the context of sustainability people express disparate views about their own interests and the entitlements (or not) of others — such as children, future generations, different cultures and other species — to 'fair' life opportunities, and so on (e.g. the conflicts over Canary Islands water). This observed plurality of motivations and justifications, which finds its expressions through all the different forms of social organisation, debate and (sometimes) antagonisms, can be postulated as an irreducible basis for enquiry into value. The *VALSE* research task was to show practicable methods by which diverse value statements can be expressed (or 'revealed') and, in full recognition of this irreducible diversity, given political effect.

4. Social process: discovery, action and politics

4.1. Social process and policy-relevant research

We have mentioned that the Complexity perspective starts 'in the middle of the road' with a willingness to work with several analytical perspectives simultaneously — a sort of permanent 'conversation' seeking some mutual understanding (even if full reconciliation cannot be always attained) between the many points of view. This epistemological stance on irreducible plurality also has far-reaching political ramifications, such as the meaning(s) that can given to a search for rationality or compromises in conflict resolution.

The *VALSE* project has designed and demonstrated valuation research as a process of both discovery and social action. For all the parties involved the research can contribute to both learning and social change. As such, any research process will have different sorts of significance for the various stakeholders involved — including the 'researched' as well as the researchers, the 'decision receivers' as well as the policy advisors and formal decision makers. The researchers in each case study are themselves understood as 'actors' within a wider social process. A choice of method and of the way in which analytical valuation 'tools' will be applied is not a purely scientific affair; it is also necessarily an action charged with social, cultural, political meaning. This has been illustrated in the *VALSE* studies for the cases of: surveys of WTA or WTP, Citizens' Jury, Multi-Criteria Decision Aid, and Institutional Analyses.

Researchers who seeks to justify their activity by its putative scientific basis alone is not fully facing up to the unavoidable political dimensions of the work they do. All policy-relevant social science research is necessarily a social act charged with cultural and political weight, and will be assessed by stakeholders primarily as such. We amplify around this point starting with three themes: the social and ecological scale of the problem; the degree and nature of conflict; and the social role(s) of 'agency' ascribed to the researchers.

4.1.1. Scale

Water resources management in the Canary Islands is critical for the population of several hundred thousand people, and has repercussions for public policy of mainland Spain. Lessons drawn for the Canaries may have visibility throughout water-scarce zones in the Mediterranean region. This contrasts with the rather diffuse initial nature of the Troina water resources management problem, and the extremely local nature of the French Bois de Bouchereau. Yet all studies reveal linkages across different geographical and political scales. The woodland study in France yields insights into demographic and economic trends of rural/agricultural France which are inseparable from large-scale questions of European agricultural and environmental policy (notably reforms to the Common Agricultural Policy), and the same linkage is evident in the East Anglia wet fens study where agricultural policy was explicitly a dimension of discussion.

4.1.2. Conflict

The case of the woodland in rural France is marked by fairly high local consensus on the 'value' of the forest. There are local disagreements over specific woodlots or management actions, but the situation overall is one of not enough 'interest' to ensure future sustaining of the value. The water resources situation in the Canaries is, by contrast, marked by explicit political and economic conflicts the terms of which have deeply stratified the island populations. The tensions are so strong that open discussion of the issues is difficult. The cases of Troina water futures and East Anglia wet fens are intermediate. Differences of interests have been clearly identifiable but it has proven possible — partly through the valuation studies themselves — to have exchanges of views and to build procedures of stakeholder negotiation.

4.1.3. Agency of the researchers

The case studies may be compared and contrasted in terms of the roles played, or potentially played, by the researchers in the wider social-political process. This is not just a matter of the researchers' own choice, but depends largely on perceived possibilities of alliances and the decision stakes.

- In the UK case, the question of agricultural versus wet fens has an important local reality with possible 'litmus test' importance on a larger scale. The researchers were recognised to have a legitimate role, not only for improving the information base, but also in the process of public debate; this multiple role was epitomised in (but not limited to) the Ely Citizens' Jury.
- In the France Bois de Bouchereau case there were not any 'crisis' decision stakes; the researchers could pursue peacefully the social scientific question of understanding the socio-economic basis of the woodland value. Yet, it was necessary to develop the enquiry with respect for the sensitivities of the host community (e.g. through tactful initial contacts with local leaders and polite conduct throughout). Once a respectful interest was expressed in the local community and their forest, the researchers were (despite having no prior links with the locality) solicited as potential friends or allies in the sustaining of the local values. This is, of course, quite coherent with the proud tradition of patrimonial values.
- In the Troina water study, the question of prospects for the future is a major matter of community concern. In this situation of a deep but diffuse concern, the options for research design were rather wide. The researchers were confronted by the necessity to make explicit the key social, ecological and economic dimensions of the water valuation problem that were partly implicit in the established management structures (electricity, irrigation); it was also desirable to maximise the perceived benefit of the research to the local community. The needed problem clarification was made possible because the researchers were accepted as 'partners' within the local community. This co-operation (notably with the Troina municipality) gave the researchers an 'entrée' to the local scene and also established a dimension of legitimacy and pertinence for the study. The high perceived pertinence was preserved because, as it turned out, the methods of analysis and implementation were successfully formulated in ways that were congruent with the local culture. The Troina water valuation research became accepted locally as a positive contribution to the community, leading directly to the initiation of a water public information campaign and the beginnings of a structured stakeholder negotiation process to consider future water management options.
- In the Canary Islands case, the political situation concerning water is highly polarised which means that any expression of opinion or scientific judgement is considered as a political act. Economic and political stakes are high, and there is no such thing as a 'disinterested' scientific enquiry in such a situation. Inevitably the valuation analysis starts with an institutional analysis, and finishes with explicit observations about the significance of the research process itself within the conflictual political process.

4.2. The discovery and the construction of value

The *VALSE* project has been developed through specific case studies, and there is no general model being put forward for universal applicability in analytical valuation research design. Rather, a series of methodological reflections, with supporting empirical examples, are offered as guidelines to effective procedures for clarifying the dimensions of choice for renewable natural capital management problems.

There is an ongoing debate in the academic literature about whether environmental values are being 'discovered' or 'constructed' through valuation research enquiries (see, for example, Gregory et al., 1993; Willinger, 1996; O'Connor et al., 1999). For example, it is often suggested that the purpose of CVM studies is to reveal something about preferences as measured by the money–object or money–service tradeoffs that — hypothetically — individuals would be willing to make. The preferences are considered to be pre-existing and the emphasis is on an instrument of enquiry that can reveal the hitherto obscure features of the existing reality. Other researchers, however, emphasise the ways that the social conditions and instruments of enquiry can themselves influence people's perceptions and the terms in which they consider an environmental issue. In this view, people's preferences are not 'given' or wholly pre-existing, rather attitudes and valuation statements emerge and may be transformed within an evolving social process within which use of scientific valuation instruments is a contingent part.

The *VALSE* case studies show clearly that all procedures for eliciting value statements involve simultaneously both discovery and construction. This point is highlighted by brief comparative observations in Table 2.

In short, we certainly do discover something about a given social-economic-ecological reality, and about the significance that people accord to features of their environments, whenever we conduct a scientific enquiry. (The four *VALSE* case studies do indeed document significantly different social, ecological and economic realities!) But also, what we discover is 'constructed' in the sense of being — always and already — culturally and historically contingent. The selection of scientific observation and interpretation techniques needs to be based on recognition of this socially constructed aspect of people's attitudes, motivations, beliefs habits and actions.

Further, what researchers learn is partly a function of the particular methods of enquiry employed. This is partly because different methods,

Table 2
Comparison of case study methods

Case study	Features of value discovery and construction
Wet Fens (UK)	A demonstration was given, via the parallel CJ and CVM studies, of the ways that different procedures of enquiry into value can (a) bring into evidence quite different dimensions of people's environmental attitudes and preferences, (b) contribute in very different ways (hence engendering quite different outcomes) in the wider social/policy processes.
Water (Canaries)	A process of scientific observation was conducted that revealed the social-institutional construction of water resource valuation. This observation process, given the circumstances, necessarily also is a component in a political debate process which — to a greater or lesser extent — will contribute to changes to prevailing institutional arrangements and perceptions about water use and scarcity, etc. Thus, a social act of (scientific) observation is inseparable from political (re)construction.
Woodland (France)	The researchers have discovered, through observation, enquiry and measurement, some features of the elaborate social-ecological-economic process which has 'constructed' and which maintains the value of the Bois de Bouchereau. The scientific enquiry thus reveals constructed socio-ecological-economic complexity.
Water (Sicily)	The researchers constructed a social process of scientific (as well as administrative and popular) enquiry in order to help launch an explicit local policy-making process that will (at least partially) reconstruct the visions and implementation of Troina's possible futures.

considered as instruments, permit observation of different features of pre-existing reality. But it is, more fundamentally, because valuation research is not a mere observation. It is an interactive process of communication, encounter of persons, confrontation of interests, ideas and experiences, reciprocal learning, etc., that necessarily changes (a lot or a little) the course of history for the people involved (Jiggins and Röling, 1999).

Finally, the significance the process of discovery might have for the various stakeholders can — in principle — be assessed from more than one point of view. The weight given, or perceived to be given, to one point of view over another will influence the attitude of different stakeholders to the research process and findings. The ways that the research process and its eventual findings may contribute to policy and wider social change depends partly on the interactions of all the actors concerned. Since all of these factors of appraisal, attitudes and interaction are as much a matter of beliefs and ideology as they are of measurable economic interests and ecological function or importance, these social dimensions of evaluation process are irreducible.

4.3. Valuation concerns in terms of different legitimacy orders

The *VALSE* project has highlighted the multidimensionality of environmental valuation problems. Through the case studies it has been illustrated that just as projects and policies can be evaluated according to more than one criterion, so people's statements about the importance of their environment can, depending on circumstances, make reference to a variety of principles or belief systems.

- In the Canary Islands case study it was shown how economic efficiency, democratic political convictions and concerns for sustainability could coexist (often in opposition) as irreducible dimensions of valuation.
- In the UK wet fens study some contrasts were brought out between deliberative enquiry process underpinned by adherence to democratic values) and evaluation procedures based on estimations of individuals' willingness to make monetary commitments to safeguard environmental values.
- In both the France Bois de Bouchereau study and the Troina water futures study, it became clear how valuation statements were, in these situations, inseparable from sentiments of collective identity and communal sustainability concerns.

These empirical findings demonstrate an important methodological proposition, the idea of characterizing the different types of concerns expressed by the social actors in a valuation situation and relating them to basic 'legitimacy orders' within the societies under observation.

In the *VALSE* case studies, as in much social science practice, there has been a 'hermeneutic circle' of observation and interpretation; the analysis oscillates back and forth between theoretical (pre-)conceptions and empirical confrontation. On some occasions the relevance of a particular legitimacy order — that is, form of justification for an action or a principle of conflict resolution — was postulated as a specific design consideration in the research itself (e.g. democratic principles in the cases of the Ely Citizens' Jury and the Canary Islands institutional analysis). On other occasions the question of what forms of justification might be pertinent for explaining environmental values was addressed primarily through empirical enquiry (e.g. the open-ended questionnaire formats of the UK CVM study, the France woodland WTA enquiry and the Troina institutional and interview analyses).

To illustrate how a systematised perspective on legitimacy orders may be built up, we present here a typology based on the work of French sociologists Luc Boltanski and Laurent Thévenot about legitimacy or justification orders in modern society (see Boltanski and Thévenot, 1991; Lafaye and Thévenot, 1993). As explored by some members of the *VALSE* team (Godard and Laurans, 2000; Noël and Tsang King Sang, 1997), the types of concerns that are observed to frame environmental valuation processes in Western societies can plausibly be set out along six axes. These six types of concern can be useful to interpret situations of collective action co-ordination — that is, to characterise actual or potential conflicts, to

Table 3
Six justification orders elaborated viv-à-vis the *VALSE* case studies

The *inspiration-based order* of concern for environmental matters takes up ideas of a Nature having a transcendent value. Argumentation will refer existing situations to a 'transcendent elsewhere' such as true wild, virgin nature or a natural paradise; or to immanent divine presence.	In the *VALSE* case studies such justifications were not much in evidence, but may plausibly underlie some of the wet fen restoration and Bois de Bouchereau value sentiments.
The *domestic-traditional order* of concern is rooted in the will for conservation and transmission of heritage, and can include the focus on traditions in environmental practices and a concern for a right ranking of people, relationships and things in a stable hierarchy related to the intergenerational link. It deals with respect and responsibility for heritage.	This justification order is exemplified in the Bois de Bouchereau in a very pure form, and is also clearly evident (but more entangled with other justifications) in the concerns for community identity and local economic viability in all of the Canaries water, Troina water and East Anglia wet fens studies.
The *opinion and fame order* of concern embodies the preoccupation that an action should be known and draw the attention of a great number of people. It looks for attracting the consideration of people, for gaining celebrity, and having existence in the media.	In the *VALSE* case studies this justification was rarely evoked as such. However concerns for power, fame and prestige can be important motivations for some decision makers, activists and major economic stakeholders, even while appeal is made to other justification orders.
The *civic search for the public good* involves both a concern for fairness (e.g. equal access of citizens to the environment and natural resources) and an affirmation of the mission of the State as embodying public interest for the collectivity of all citizens. Democratic political values and processes can find justification in these terms of a public good. Claims of individual interest are required to be reconciled to notions of collective and public good.	The search for a democratically grounded public good was enunciated non-problematically for the East Anglia wet fens case, and much more problematically for Canary Islands water. In Troina there is a loose amalgam between civic administration ideals of duty and excellence and other more traditional and technocratic orders of justification; and in the Bois de Bouchereau we see the municipal administrative functions hybridised with 'patrimonial' tradition.
The *market world* concern refers to ideals of an affluent society and satisfying individual desires of people. It refers to interests as they can expressed in commercial terms — production, buying and sale of goods and services; benefits and costs for an individual or institution in a market context.	This justification is strongly expressed in the 'commodity' view of Canary Islands water, but is almost wholly absent in the Bois de Bouchereau case. The Troina water and the East Anglia wet fens situations are marked by the confrontation of commercial interests with other sorts of justifications.
The *technical performance or industrial order* of concern places emphasis on scientific and technical expertise as a basis for achieving excellence in social and economic and environmental system management and design.	This sort of justification has been plainly seen in the advocacy by some dominant political and eocnomic interests in the Canary Islands of innovative technological solutions for water extraction and purification.

search out the terms in which to define a plausible common course of action, to search for compromises and so on. The application of this perspective to the four *VALSE* case studies is evoked in Table 3.

What is to be emphasised is that environmental issues are not built up in the same way within each of the different justification orders. Public debates often oscillate between them without careful attention to deep differences which are, indeed, at the origin of many difficulties of mutual understanding. Different groups of a society may hold conflicting views about relevant justifications, meaning that each order invoked is partially successful in addressing the issues in question but not adhered to universally (see Lafaye and Thévenot, 1993; Godard and Laurans, 2000). That means that valuation research and — going further — public policy conceived as social co-ordination — requires skills in judgement and learning about the very nature of the situation.

A successful valuation study requires that the analysts identify, interpret and confront the concerns of actors in multiple ways, so as to permit appraisal of whether there is a dominant legitimacy order used as a reference by several, if not all, actors (including the researchers themselves) or whether the situation is marked by concatenation of different legitimacy orders. Is it a matter of disagreement about the significance of persons or objects within the terms of reference of a single legitimacy order, or is it a meta co-ordination problem involving conflicting legitimacy orders? On this basis, a reflexive understanding of the conditions for scientific observation and the likely significance (or insignificance) of the research findings for different stakeholders, can progressively be achieved.

If the view is taken that an environmental evaluation may make appeal, for its justification, to a variety of conventions, value systems, collective beliefs or ethical convictions, then it is not self-evident, a priori, which justification order is the most appropriate to a given situation. Individuals and groups in a society may, themselves, hesitate and invoke different justifications as circumstances change and depending on their beliefs, economic circumstances, experiences and habits. More particularly, in situations where different groups and individuals claim different justifications, it is not self-evident, a priori, who decides which justification order is appropriate. This matters a great deal, because environmental issues are not built up in the same way within each of the different justification orders and the policy consequences might be very different.

Consider the findings of the France woodland valuation. A questionnaire format plus conversational interview sought to obtain quantitative and qualitative WTA-type information about possible sale of a woodlot. This enquiry allowed the researchers to assess the meaning as well as the economic value of the woodland as a part of the local communities' way of life. On the basis of the findings, we can explore perspectives for the woodland's future management. The observable demographic and lifestyle changes place at risk the present mode of communally-based 'spontaneous' woodland maintenance. Suppose that the option were to be explored of having an external agency — such as a State ministry or a regional parks authority — assume some of the responsibilities for maintaining the woodland as an amenity value. Can it be expected that the 'demand' for the forest values will be high enough to justify the expense? Will a new generation of owners/users, not having the same sorts of communal roots, be willing to pay enough money (through, for example, taxes to government or access fees paid to the local or regional authorities)?

We can guess that the needed money might not be forthcoming. A standard economists' form of explanation would be that the new aggregate WTP is lower than in the past because, in aggregate, the population's preferences have changed — the demand for the forest values is lower than before. This is not necessarily false. But it is 'biased' in the sense that it lets blindly the 'market order' decide — a putative question of costs and benefits evaluated by individuals on-the-margin. A different form of explanation, more in keeping with the observed patrimonial tradition, would be that the forest-community symbiosis as a structure of lived and shared meaning (and a form of local economic life) has died out. That is, the combined social-ecological-economic capital has not been sustained. This also is a 'biased' explanation, coloured by pangs of nostalgia and (lost) hopes for a type of sustainability.

The pertinence of each form of explanation depends partly on the theoretical reference points preferred. But these preferences, in turn, are strongly connected to visions held about possible and desirable futures in the French society. Is the cost-benefit appraisal or the patrimonial tradition the more relevant perspective for helping to decide about rural and regional development and nature conservation policies? This little woodland case may seem insignificant in the great planetary scheme of things. Yet, when cross-referenced to the Canaries water, the Troina water, and the East Anglia wet fens valuation studies, we can see that the same sorts of questions about which sociological, political, normative and epistemological frames to apply, could be at the heart of divergences over such momentous policy issues as

directions and justifications for (urgently needed) reforms to the European Common Agricultural Policy.

5. Conclusions

In each of the four *VALSE* case studies, the research design and implementation has hinged on hypotheses about and discovery of the meanings attached to the enquiry by the various sectors of the society concerned. This reflects the underlying research objectives and methodological choices:

- First, the desire was to understand the ways that the concerned populations (or stakeholders) themselves express the 'values' of environment. The research was conceived as a process of discovery, not to be limited by axiomatic constrictions of a particular method's own terms of reference.
- Second, the intention was to present results in ways that have high pertinence to the communities and policymakers involved. This means that concern for scientific rigour and clarity in communication was not enough, but also attention had to be paid to the significance of the results and arguments for the actors concerned, formulated in their terms.

The *VALSE* case studies have all offered opportunities to evaluate the hopes that might be placed in particular methods or tools as a means of obtaining, organising and communicating information on the values that concerned individuals and populations attach to features of their environments. In this way, the ambitions, limitations, justifications and weaknesses of differing perspectives and practices of evaluation have themselves been reflexively presented and appraised. More particularly, the political as well as scientific significance of methodological choices has been brought into focus, showing how method choice, implementation and communication of results can — and should — all be made elements of deliberation within wider social process.

Valuation research intended as an input for public policy processes requires not just scientific skills in judgement and learning about the nature of the social situation, but also some sort of moral-political principles for addressing the divergences of justification that may present themselves. This goes well beyond the well-defined (though already 'impossible') welfare economics distribution problem of arbitration between interests within an axiomatically defined utility theory framework.

A reflexive attention to the diversity of preoccupations held by persons and groups is justified by our underlying view of social reality as a meaning-filled, but often conflict-ridden, inter-subjective process. It is further justified by an ethical notion of the 'value of diversity' (or, at least, of the 'legitimacy' of this diversity). Yet, for those for whom ideals of coexistence in diversity seem too hopelessly naïve, there can also be frankly more instrumental justifications for such a methodological stance. Attention to, and respect for the way that different stakeholders view the problem can be important for effective communication of research results to the interested policymakers and public and — as such — essential in order to achieve high public acceptability of the work and, hence, high, reliable and durable policy usefulness of the work.

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