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Evaluating environmental issues -Valuation as co-ordination in a pluralistic world

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Résumé: Les méthodes classiques d'évaluation des ressources environnementales et des impacts sur l'environnement font implicitement l'hypothèse que la détermination des bonnes valeurs est la question clé pour la décision publique. Le processus de décision est alors compris comme l'application d'un classement univoque et objectivement déterminé d'un ensemble d'actions possibles. Quelle que soit la complexité du processus de décision dans le monde réel, concepts et méthodes d'évaluation demeurent intangibles. Le paysage se transforme lorsqu'on considère les pratiques d'évaluation comme une composante d'un processus de coordination publique impliquant des acteurs en conflit et porteurs d'enjeux variés. L'hypothèse explorée dans cet article est que la reconnaissance du caractère complexe et conflictuel de la décision appelle une nouvelle compréhension de l'évaluation elle-même. L'article propose de considérer l'évaluation comme le support de la recherche d'un accord légitime entre plusieurs types d'acteurs. Ce faisant l'évaluation doit répondre aux exigences générales de justification sur la scène publique. De ce point de vue, l'évaluation économique offre un cadre important, qui n'est toutefois qu'un cadre parmi d'autres. L'article pointe une direction clé qui est la recherche de compromis de justification et l'adoption de conventions méthodologiques qui soient en ligne avec les repères de justification utilisés par les acteurs concernés.

Abstract: Standard valuation of environmental assets and impacts are made as if the determination of the 'proper' values was the key question. The decision-making process is then reduced to an implementation of an objectively determined ranking on sets of possible actions. Whatever the complexity of real world decision-making, valuation concepts and methods are supposed not to be modified. The whole framework changes when valuation is understood as an element in a process of public co-ordination among conflicting actors who hold various concerns. The hypothesis being explored in the paper is that acknowledging complexity and conflicts in the decision-making process calls for a new analytical perspective on valuation itself. Here, valuation is viewed as a support for the search for legitimate agreements among actors. It has to satisfy the requirements of justification processes on the public stage. Standard economic valuation is a prominent framework, but one among others to this regard. A key direction is brought by shaping justification compromises and choosing methodological conventions in line with basic justification benchmarks used by the involved actors.

Mots clés : Environnement, évaluation, ordres de justification, décision publique.

Key Words : Environment, evaluation, justification orders, public decision-making

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Introduction

On many occasions, official recommendations have urged to include more economic valuations in the design and choice processes of public policies and projects related to natural resources and the environment: the European Commission, the OECD, the World Bank, national governmental bodies or local authorities have expressed such a concern. As far as environmental issues are concerned, welfare economics has developed a research programme since the 1960s, which is mainly conceived as an extension of standard economic conceptions about the origins of value: they are to be found in the concept of individual preferences. A feature of this programme is the supposition that, to make valuation exercises, it may be sufficient to see collective decision-making as a mere application of expert valuation outcomes, supposed to reveal genuine individual preferences. Though searching for other bases (thermodynamics and various new concepts from energetics for instance) as foundations of valuation, ecological economics sometimes seem to share the same intellectual attitude: the determination of the 'proper' values seems to be the key question, as if everything will be resolved when these values are provided by experts.

Then, decision-making is deprived of any richness and complexity of its own. Of course any economist or natural scientist will acknowledge that actual processes are more complex than it is assumed in models. The point we make here is that, if the view is taken that policies should aim simply to implement a valuation result, critical features of the richness and complexity of decision-making contexts are not allowed any feed-back on how valuation exercises should be approached and carried out. This assumption may well fit contexts in which there is complete and stabilized scientific knowledge and a single decision-maker who can have his or her decisions strictly implemented without significant loss of strength. It does not fit social contexts where decision-making is related to complex negotiations and agreements among many different actors holding diverse points of view, and where science is still affected by controversies and uncertainties. These are however the sorts of contexts that environmental valuation must most often address. The hypothesis being explored is that acknowledging such complexity in the decision-making processes calls for a new analytical perspective on valuation itself.

The viewpoint we develop in this paper focuses on the role of valuation practices in the collective process of co-ordination regarding the use and conservation of environmental resources and media. Valuation is viewed as a support to the search for legitimate agreements (or legitimate partial agreements) and for the achievement of co-ordination between the various agents who are involved in situations of conflicts where environmental resources and media are at stake. In some cases, explicit valuation practices may not be a very useful tool for co-ordination; in other cases, they may critically help if well-designed as a co-ordination device. At any rate there are many aspects, often neglected in formal valuations, which can exert an influence on such a process. Accordingly appropriate valuation tools vary with decision contexts, putting into question the relevance of a mechanical use of standardized tools and values. This does not mean that scientific and methodological requirements are given up, but that they must be satisfied with reference to the specific features of the co-ordination situation and the logic of conflict-resolution.

Here, valuation processes are considered in the context of an environmental *policy* discussion related to public action or collective action. This includes economic and social assessments intended to give various insights into collective choices, designed to help public decision-making, to suggest directions to institutions, to bring out priorities in public action, or to improve the knowledge of the stakes in environment in some particular areas, topics, countries, etc. Conversely, we will not consider valuations made for trials and other legal conflicts focused on compensations to the victims of ecological damages, or valuations carried out in the context of private development projects when their scale does not justify their being considered as collective stakes.

This paper thus proposes a methodological frame for taking environmental valuation as part of a social process of co-ordination. It is organized as follows:

Section 1 introduces key assumptions and directions.

Section 2 makes a brief survey of the problem of valuation considered as a co-ordination device. The choice of considering environmental valuation as a social process rather than a value-revealing approach will be explained, and we outline our vision of what it means for the status given to the decision contexts, to the evaluators, and to the resource-people and data.

Section 3 proposes some lessons to be extracted from some formal properties of the standard value-revealing approach

Section 4 discusses limits of this approach as a device for environmental issues, notably in controversial contexts.

Sections 5 to 7, the core of the paper, are devoted to a presentation of the several analytical steps required by the alternative approach to valuation; key benchmarks are co-ordination mechanisms and justification tests. The valuation process, when taken as a 'test' for co-ordination within controversial contexts, is itself appraised through this series of steps.

1. Key assumptions and directions

The way in which we suggest to approach environmental valuation has to be specified at a theoretical and a practical level. As a departure point, we define the *key assumptions and directions* upon which we intend to elaborate the approach, to characterize the *object of valuation*, to define what should be included in or excluded from the field of *knowledge*, and to define which status is given to the *actors* of a valuation process. These key orientations frame our views of the social process of valuation.

(1) *Valuation does not consist primarily in sharing common visions of the world or moral values, about which social actors may quite legitimately have different views, but in helping to co-ordinate their actions in a public context.* For that purpose, it may be necessary to agree on either the rules of the game, identification of practical issues or the content of action. One typical case is one in which actors try to agree on a given common action, without reaching agreement on more fundamental aspects (future directions, values)[1]. Nevertheless, sharing common visions of the world or values is neither

[1] This statement is comparable in some way with the analysis proposed by O'Neill (1997) and Holland (1997). They suggest notably that social values, and not only interests — and sometimes simply not

forbidden nor excluded, but just represents one possible, much-demanding, way to achieve co-ordination.

(2) *Valuation does not concern individual perceptions as such, but the co-ordination of commitments in a social game framed by the rules of some legitimate justification order*. There are two types of reasons not to accept any perception individuals may express: (a) they may be wrong, based on partial and inappropriate information, pure beliefs, etc.; so, they have to be checked and to pass some sort of 'reality check' founded on accepted types of knowledge[2]; (b) they may not be legitimate as inputs in a collective decision-making process; for instance, in a democratic regime, racist perceptions cannot be acknowledged as a right basis for making decisions; illegitimate views of nature may raise the same type of difficulties.

(3) *It is environmental valuation that must be framed by the requirements of social co-ordination procedures, and not the contrary*. Valuation is related to given situations and its outcomes do not necessarily have a universal value applicable to all cases. Which degree of generality should be sought regarding the type of procedures and information used in concrete decision situations should be decided after an assessment of the co-ordination context. The latter refers to the actors and the types of things involved in the situation to be co-ordinated by public decisions. The requirements may differ for global warming and local management of water resources…

(4) *Valuation does not consist in revealing an objective pre-existing 'true' nature of individual preferences*. A classical assumption, which we do not share, is that preferences have an independent existence whatever situations are. Two main arguments explain why we suggest departing from this view.

First, due to the limited capacity of attention and computation of individuals, the assumption of a full *ex ante* ordering and ranking of all possible combinations of choice components appears as rather inappropriate for describing actual individual involvement in social processes of decision-making. When a context calls for a new public decision, the actors have to build a position adapted to the nature of both the decision and the context; they cannot just express pre-existing abstract preferences.

Second, as the actors' preferences depend on the roles they play in a given decision context, it is no longer possible to assume that individual preferences have one and only content whatever the collective situations in which they can be used as inputs (Godard, 2004). The type of valuation that is relevant is not private valuations for private decisions,

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interests — are at stake in most environmental conflicts. Then the treatment of these conflicts should be done through a particular kind of deliberative process that they call an *accomodation*, which means for them re-designing the institutional rules and modifying the general frame of the situation raised by the conflict. This idea of accomodation is indeed close to those that will be developed here and below, in the framework of the justification theory, around the ideas of tests of justification and search of compromises across justification orders.

[2] Again, this statement may be compared to the analysis of the differences between *preferences* and *beliefs*, in the fundamental process of *judgement*, by Holland (1997). Along with Holland, we consider that judgement is a process involving and combining some part of objectivity and subjectivity. Objectivity results from the use of tests (because it relies on criteria and observable elements, it can give birth to a legitimate contradiction unveiling mistakes); subjectivity is linked to a process of integration of various pieces of information and feelings to which a subject reflexively adheres; thus a judgement cannot be *demonstrated*, but *justified* on the basis of results of tests and arguments.

but a valuation built in a given co-ordination and decision context involving social actors with specific roles and places. There exist several basic legitimacy frameworks in which preferences and values are elaborated. According to the nature of situations, the actors will find appropriate to refer to one or another of the legitimacy frameworks and then to a specific way to define appropriate values. For instance, independent individualistic preferences are relevant only in one justification order, the 'market' one (see below). For others, orderings are based on other constructs in which individuals are taken as members of groups contemplated from different angles.

(5) *Valuation is about giving a representation to both relevant things (described in different ways according to justification orders) and human subjects (those definition also varies with the justification orders), having to make judgements about things.* Then, valuation for collective decision-making is not just about things, as it may be the case of natural sciences, for instance.

2. A comparison between two valuation approaches

2.1. Three basic elements

To start with a very trivial approach of what a valuation process is, a typical framing of roles can be considered: somebody (the *evaluator*) plays a specific role for somebody else, while this 'somebody else' may be another actor (generally defined as the '*principal*', or the '*decision-maker*') or a group of actors having reached an agreement on the need to have a valuation made (one might then refer to a '*social demand*'). The work of this *evaluator* consists in many tasks including *questioning* some other people (called below the *resource-persons*), asking their *views* on some aspect of the objects that are targeted by the valuation, and/or obtaining *data* from them. Information obtained this way can be viewed as expert knowledge, opinions of key people, or an indirect but efficient way of gathering data. This approach may be supplemented by the direct observation of 'physical' things (the 'field work', the technical objects), or of some 'social phenomena' (protest meetings, negotiations, various discussion processes...)[3].

To summarize, three basic elements can be distinguished in the process of valuation: a *collective decision-making process* from which the valuation needs are derived, the *evaluators* themselves, and *resource-people* involved in the valuation as a source of information and knowledge. Considering valuation as a social process (the 'social process approach', named SPA below) entails specificities that will be illustrated for these three elements. The contrast with what can be called the 'standard' approach of valuation will be underscored. The latter regards valuation as the use of neutral technical *instruments* supposedly likely to *reveal* a true value (monetary if possible) of environmental assets, benefits or damages, in order to include this value in a global valuation supposed to be the basis of decision-making (the 'value-revealing approach', named VRA below).

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[3] Direct observation is much less current in economic valuations than in some other social sciences applications. So direct observation is probably exceptional in valuation processes intended to give a representation to absent parties. As a matter of fact, the use of experimental economics is rather infrequent in policy contexts.

2.2. On collective decision-making

2.2.1. The value revealing approach (VRA)

Within VRA framework, value is seen as originating in subjective judgements made by individuals according to individual-specific preferences patterns. According to this view, rooted into neo-classical consumer theory or decision theory, individuals are supposed at the same time:

- to provide the ultimate reference of normative judgements (principle of consumer's sovereignty);
- to benefit by the abilities and information required to make rational choices (a consistent and efficient way of combining the means at their disposal to achieve the specific ends to which they are committed);
- at least in basic models, to be self-interested to such an extent that the normal way to behave is to compete with others in order to gain access to scarce goods or to achieve their own plans and projects to the detriment of the plans and projects of others.

Given this way of framing issues, environmental valuation would be marked by two features:

- collective valuation is supposed to be directly derived from individual valuations computed by individuals facing individual choices; the collective dimension of the situation intervenes only through the problem of aggregation of individual valuations; 'decision-makers' for collective bodies are supposed benevolent and guided by the goal of maximizing the satisfaction of all the individuals taken as a whole (the standard utilitarian view);
- environmental goods are considered as ordinary market commodities, but with additional complications originating in the non-market form of supply; this way, the main problem is to find appropriate techniques to reveal individual preferences for non-market environmental goods. They should mimic what would be obtained on a perfect market. The hedonistic prices and contingent valuation methods, for example, are supposed to be a proxy of market valuation, inasmuch as market valuations are interpreted as genuine expression of individual preferences.

Hence, for VRA, collective decisions regarding environmental matters are reduced to a case by case valuation approach: for each public policy or project, there is a need to *weight* decision options in terms of aggregate costs and benefits. Economic valuation must provide an assessment of the environmental goods' monetary value. Then, a good and full valuation is sufficient for a good decision-making. If benefits are higher than costs, the decision is good, or *socially profitable*. If there is a need to choose between different socially profitable decisions, the ranking must be established according to the benefit/cost ratio. Therefore, obtaining 'good' economic valuations, including environmental aspects, *is* supposed to be making the decision: basically, a rational, benevolent and maximizing decision-maker should not depart from the ranking given by a well done valuation.

Much contemporary environmental evaluation literature presupposes that collective decisions are or ought to be derivatives of the standard economic model of an individual,

rational choice, though this presumption is generally implicit. The 'decision-maker' is only vaguely mentioned; he or she only needs to be supplied with information that might be missing because the market fails to reveal it all. Organizational features of collective decision-making are considered to play little or no part in the search for the right decision; if they do play a role, then typically they are held to constitute imperfections and impediments to the acceptability of 'right' decisions and as such they appear as something to overcome or reduce. Ideal public institutions should be transparent, and, more than this, they do not need to get legitimate consistency by themselves. To summarize, for VRA, public mechanisms are exogenous elements, rather imprecisely determined, and they act either positively as means of revealing true values, or negatively as sources of imperfection and irrationality. In this negative connotation they can be viewed as sources of confusion in rational decision-making. According to the VRA, the precise concrete forms of collective decision-making ought, ideally, to have no effect on the normative content of the 'right' decisions; so if outcomes are sensitive to the institutional arrangement this is *prima facie* a sign of 'distortion' or 'imperfection'.

2.2.2. The social process approach (SPA)[4]

The SPA starts out, by contrast, with the hypothesis of the positive existence of interaction processes between actors and the framing of public decision mechanisms and actions by basic conventions that have both a cognitive and a normative content. The presence of such phenomena must be acknowledged by evaluators as an external (to them) reality. They have to elaborate or use valuations that can assume the different shapes taken by collective decision and public action when environmental matters are at stake, even if their own project is to alter these very shapes. The first question that should be raised by evaluators is: what *are* the *actual* processes of action and choice at work in this environmental policy[5]? Such a method is closely akin to that of organization sociology and socio-economics, when applied to public decision making, and particularly to environmental issues[6].

Considering valuation as a device for achieving social co-ordination and conflict-solving in specified situations has several implications.

First, situations vary by the degree of universality of principles, methods and information they require: there may be broad contexts of co-ordination involving a wealth of social actors involved in very different political and geographical contexts, as in the case of the global warming international scene or, at a regional level, of non-point source agricultural pollution; some co-ordination contexts also show far smaller ranges of actors and less diversity among the latter (for instance a so-called NIMBY case, but also a well-stabilized international scene of negotiation). In the latter case, less varied people will be concerned by the search of

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[4] Some parallel and stimulating views on environmental valuation are gathered in the book edited by John Foster (1997).

[5] The actual implementation of economic policy most often differs by a wide range from what theory prescribes. This fact is widely acknowledged by social scientists. For example, Bressers and Huitema (1996) point out seven factors through which social-political contexts may alter the course of designing economic instruments and policies.

[6] In France, see for instance Michel Crozier and Erhard Friedberg (1977); Olivier Godard (1980); Claude Henry (1984); Gilles Barouch (1989).

solutions. The two situations will not necessarily imply the use of the same type of valuation processes or the same values.

Second, several usual assumptions about valuation have to be replaced, as for example the usual ways to characterize 'individuals' and 'things'. With the SPA, elaborating individual preferences according to roles, situations, and justification orders can only be the result of interactions within a social process made of tests involving things that belong to the objective world, gain in information, explanation, mutual exchanges about normative benchmarks and deliberation. Relevant preferences are not a given; they are the outcome of a collective building process.

2.3. On the role of evaluators

Within the VRA, the role of evaluators is simply to *use an instrument*, a calculation tool (most often a preference-revealing survey, and its statistical processing). Thus the evaluator's personality and competencies is of no consequence if the instrument is properly used. Two capable evaluators are supposed to be entirely equivalent, without any effect on the result. Their personal, ideological and epistemological preconceptions would not influence the outcome. The practice of valuation could be standardized — and there is much work in this direction — to set it as a constant, and no longer as a variable, of the valuation process. To sum up, the vision of the evaluator in VRA approach is purely *instrumental*.

Within the SPA, evaluators have to be seen as *actors*, in the sociological meaning: as any actor, they have to find a compromise between their personal attributes and orientations, and the social rules of the game in which they want and are asked to take part. In doing so, they have to assess of the situation and resort to their capabilities of judgement. Generally applied to for their expertise[7], they have to deliver a specific product. In this regard, they can as well be described as *producers* of environmental valuation. The way they manage this process of involvement is a key element of the result. Therefore, the *practice* of economic valuation does really matter when conveying significance to results. This is why it is suggested to give more attention to the situation-related aspects of social and economic valuation in the environmental field.

2.4. On the place given to resource-people

VRA considers values attributed by people to things, and then the choices deriving from values, as a reality external to evaluators, and consequently not fundamentally dependent on observation procedures and modes of intervention surrounding the questioning. Variations in results are ascribed to the vicissitudes of methods, not to any inherent uncertainty. The aim of evaluators is to have individual preferences revealed by means that allegedly replace missing markets. So, the only relevant 'resource-people' are individuals, who should be led by evaluators to express their preferences. The technical part of their work mainly consists in statistical analysis and aggregation methods so as to reach a total amount of economic value related to an environmental issue. Preferences have to be expressed, not explained. To sum up, the approach is positivist insofar as it targets individual behaviours under a constraint of

[7] In some cases evaluators might be self-appointed; in all cases they might also try to influence the decision process in pleading from an advocacy position.

choice[8], and axiomatic (we can speak of moral individualism[9]) in postulating that behaviours are expressing free choices and preferences, and that public decision should be based on these choices and preferences.

Conversely, SPA comes within the scope of a '*constructivist*' view of the individual's rationality, preferences and opinions. It is so because, *inter alia*, replacing market choices in order to have access to individual's preferences is deemed *not* to be practically possible. Questioning people, animating debates and gathering data *amount in fact to trigger off and to shape a process of elaboration* of judgements and preferences: resource-people are placed in new hypothetical situations by the context of questioning. We cannot assimilate statements obtained in a specific social interaction and observed behaviours.

It is commonplace to stress that it is necessary to take account of the questioning techniques to understand and interpret the answers produced. We contend more generally that the individual expressions of valuation (what is ordinary called 'preferences') depend on the type of situation and legitimacy principle which is collectively agreed upon, at one moment, as the main matrix for achieving social co-ordination. The 'individual preferences' resulting from the collective interaction will vary with the way the situation is socially qualified, without taking into account the usual 'impossibility theorems' à la Arrow, which apply to VRA itself, but may lead to SPA as a way out of the impasse. This means that preferences depend on the principle(s) of co-ordination chosen by the participants as relevant for the situation, which determines in turn the way things, including natural ones, and persons should be qualified and represented.

For instance, according to the situation and the principle of co-ordination postulated, persons can alternatively be taken as 'individual consumers' devoted to their own projects and satisfaction, 'citizens' devoted to the common good or general interest of society, 'member of transgenerational family groups and local societies' responsible for fulfilling obligations of transmission of specific traditions or inherited patrimony, or 'components' of productive systems devoted to performance and scientific management for the satisfaction of objectively defined needs (see below). The comparison of VRA and SPA is summarized in Table 1 below.

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[8] As a matter of fact, when they miss true or experimental markets, evaluators cannot really observe behaviours in a choice context: they have either to trust discourses as a good proxy of behaviours (the whole debate about the sincerity of individuals turns around this proxy), or to observe some behaviours, that however do not express pure preferences, but a set of constraints and behaviour routines altogether.

[9] Here, we are not only facing 'methodological individualism', since the latter is intended to be an analytical position to explain social phenomena and, as such, implies no normative content.

Table 1: status of environmental valuation

	Environment valuation as a 'social process' (SPA)	*Environment valuation as a value-revealing process (VRA)*
Status given to the *actual collective decision process*	**Object for knowledge** Relevant for valuation, and for the meaning and use of results.	**Irrelevant object** Actual decision mechanisms are viewed as imperfect or irrelevant versions of an ideal concept of collective decision mechanisms
Status given to *evaluators*	**Actors and producers in a social process** Supposed to provide appropriate information according to legitimacy frameworks, and to find compromises between personal attributes and social roles.	**A technical instrument** Ideally, individual attributes of evaluators are of no significance
Status given to *people's preferences*	**A social construct** Preferences are not fixed as essential characteristics of individuals but framed by social interactions. Answers and data are co-produced by the subject and the resource-people	**Object for knowledge** Individual's preferences are real, and pre-existing. Positivism.

Adopting SPA, there may be several ways to evaluate environmental goods, since there will be, in any given situation, several ways to qualify things and persons and several principles for co-ordinating situations asking for a collective process of decision-making. In that prospect, environmental valuations is but one way to help social co-ordination and conflict solving; it belongs to a more general category, that of 'tests of greatness' for persons and things. According to justification theory (Boltanski and Thévenot, 1991; Godard, 1989, 1990, 2003a ; and Thévenot, 1989), the usual way to arbitrate disagreements is to make use of such agreed tests which, in following conventional but precise rules distinctive to each justification order, imply observable results that 'anyone accepts', at least temporarily, as incontestable facts — this is a criterion for a successful test.

The key issue to be addressed by persons involved in such situations, and also by the social scientists trying to analyse them, is the extent to which *qualifications of things and persons and the corresponding principle of co-ordination fit with each other so as to achieve an efficient co-ordination of the situation*, taking into account the relevant empirical features of the latter. Assessing appropriateness of processes of co-ordination for the situation will involve a judgement about the performance of the co-ordination obtained both between people and between people and things, in an interactive way. To some extent, co-ordination processes can be seen as a trial/error approach aiming at testing what the situation really comes to be: before the co-ordination is obtained and implemented, no one knows with certainty what the situation is — there may be surprises caused by some new inputs or social actors previously disregarded[10].

[10] Quite obviously, the situation may also evolve as a consequence of the decisions made. Decisions and situations are co-evolutionary. This co-evolution is framed by steps and bifurcations associated to decisions.

Regarding natural things or technical objects, tests should 'prove' (that is, demonstrate or verify) the relevant functional properties, their limits and their reactions to various types of disruption. With regard to human persons, tests will have to prove their relevant qualities (in turn: abilities, skills, fame, origins, income...) but also to authenticate their commitments in connection with the situation: to what extent are they committing themselves to the claims they present as to the choices having to be made? Which moral resources (attention, social relationships) and material ones (time, money, tools) are they ready to devote to the evolution of the situation towards the agreed course? This dimension of commitment is a critical aspect for the collective progress of the situation through investment and management decisions. This is one important lesson drawn from the construction of economic valuation, as it will be underscored in the following section.

3. On VRA valuations in contexts of collective co-ordination

We will first consider some formal positive properties of VRA embedded in welfare economics, since such properties demonstrate a more general interest and deserve reflection applicable to any other type of valuation. Then, we will insist upon some specific features, in order to establish that VRA is not the only way to organize a rational co-ordination. Finally we will point some limits and inadequacies to current contexts of environmental decision making characterized as 'controversial universes'. These three steps are based on Godard (1996).

3.1. Lessons to be extracted from some formal properties of standard economic valuation

A key feature of valuations in VRA is the effort to place local situations or singular decisions in a broader framework, by looking for the means to make them comparable. Comparison is thus taken to be a key feature of co-ordination procedures. The larger the context of co-ordination, the broader should be the comparison. Then, interests and issues are weighted one against the other, and action strategies are assessed in view of the quality of the overall allocation of scarce resources. In this context, 'to evaluate' is to widen local or sectoral contexts to a broader range of concerns and interests.

The extent of the generalization process entertained by VRA has no theoretical bounds other than those of the community of human beings: that is, there are no *a priori* reasons to delimit the field of valuation by national borders or present generations, for instance. This does not mean that adopting the broadest context is always relevant. However, a keynote of this generalization process is the enlargement of the list of social groups whose interests are of concern, for example going beyond the direct stakeholders having interest in the achievement of a given project, as promoters or beneficiaries. In other terms, VRA provides a means to give representation to a larger set of social groups or persons who may be forgotten by commercial or financial appraisals of action.

Another interesting feature is the way that VRA is framed by the idea of 'choices' and 'decisions'. It is true that many social sciences have brought these notions into question for many years on the basis of such arguments as the following: more often than not, it would be impossible to identify clearly the moment when a decision is taken and who is responsible for

it; the most common situation of collective decision-making is allegedly characterized by complex interactions among many actors, none of them being able to govern alone the whole process, but only to give small impulses introducing deviations in the course of an action that will be further re-deviated by others. The standard economic vision is just based on the opposite assumption: identifiable decisions can be taken; they can be seriously prepared and assessed; great collective progress would be achieved if it was what occurred in most cases.

Does all this mean that VRA is based on highly unrealistic views regarding decision-making processes? As a matter of fact, the conflicts related to a project act as catalysts: the more intense conflicts are, the more the social interactions crystallize around some clear-cut alternatives. The existence of conflicts thus gives evidence of the possibility of alternatives, that can be decided upon thanks to a collective choice. Valuation, generally speaking, is intended to take place in and to settle contexts distinguished by a critical divergence of the course of evolution or a bifurcation in the trajectory of a system.

VRA is also impressive by its constant preoccupation for measuring things. A whole set of statistical instruments and methods are used to this end: data collection, accounts, statistical processing, modelling. Through these codified processes, valuation is intended to accede to objectivity, which brings further evidence that objectivity is the result of a human construction. With that methodological apparatus, valuation feeds tests that could be used to arbitrate between opposite views about such and such claims being pushed by various social actors. The use of valuations in collective decision-making procedures can thus be seen as a way to channel conflicts and disagreements towards tests that would rank alternatives according to objective information.

To act as arbiters setting the ranges, the tests require a strict coding of rules. By way of this coding, valuation may be mastered by virtually anyone interested to conduct it. As a general scientific requirement, methods should be reproducible independently on the people using them. Situation to this regard is rather similar to the chess: any player can master the rules of the game but some players succeed better than others in making a profitable use of them. The coding of rules is an essential prerequisite for the public debate to be made productive. The debate is indeed delimited and framed by such tests intended to introduce objective representations of relevant elements. The role of 'tests of greatness' is to overcome fruitless arguments strictly confined to rhetoric exercises. There is no way out of the co-ordination dilemmas without the benchmarks of objects and tests introducing reality in the intersubjective 'face to face' encounter.

The basic assumption of the neoclassical 'welfare economics' is that valuation is based on the normative value given to individual preferences regarding the consumption of goods. In a market context, this is translated into the concept of 'willingness to pay'[11] as the primary means to reveal preferences. Regarding environmental issues, this basic postulate and its subsequent translation are often strongly criticized by various social scientists (Sagoff, 1988, Foster, 1997). However, before contemplating the possible dismissal of the concept, it might be useful to mention one of its valuable features. 'Willingness to pay' can be seen, from a

[11] Or into the linked concept of 'willingness to accept'; which one is relevant depends on the initial distribution of rights.

theoretical angle, as a test of the truthfulness of the commitments expressed by the agents[12]. What is important is not the monetary form of expression, though this form is rather interesting in practice to solve the aggregation issue. 'Willingness to pay' seeks to place the expression of preferences in a context of choice where, in order to obtain something, people must acknowledge that they have to renounce other things.

This framing of preferences as choices (opportunity costs) is quite realistic in that it reflects a basic condition of collective decision making. Obliging agents to address a situation of choice is critical to avoid vague expressions of opinions, such as those collected through most polls. In short, preferences have to be authenticated by commitments; the claim to tell right from wrong has to be authenticated by the real will to implement the right. Such a requirement does not come down to a reductionist approach of noble causes. On the contrary, it may contribute to maintaining common people in their position of ethical subjects. Too often, the reference to ethics, as opposed to welfare economics valuation, just amounts to deny to individuals their position of ethical persons and to confine the ethical powers of judgements in the sole hands of a supposedly moral elite; lay persons would be supposed to be driven by interests, while elite would decide on the basis of ethics, morals and a concern for the common good[13]!

3.2. Singularities of the welfare economics perspective on valuation

Welfare economists can be seen as auto-designated (but frequently solicited or accepted by institutions) spokesmen of the community of individual economic agents, directly or through state's involvement. In their professional activity, they claim to represent the interests and preferences of agents within their valuations. In so doing, they propose a form of representation competing with other forms of social representation established by various institutions for guiding public affairs. This is the reason why public interventions of economists are often framed as a denunciation or a criticism of existing rules or resource allocation, perceived as perverted by inadequate institutions. Since their claims of spokesmen cannot be directly authenticated by individuals being represented, a substitute for authentication procedures is to be found in the standardization of techniques of representation that economists use, which make these techniques shareable by other people, and in the acceptation of the critical discussion by all the people having reached a sufficient degree of understanding of the technical background.

But what is the specific form of representation that this 'welfare economics' valuation is promoting? The basic initial convention derives from an interpretation of the prices of a market economy. Such prices are supposed to be a reflection of, simultaneously, individual preferences of consumers and the best productive combinations that suppliers can provide.

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[12] This requirement should be satisfied by any valuation method based on welfare economics. As a matter of fact, it is not sure that the present use of contingent valuation methods really provide such a result. Their ability to elicit real commitments from individuals has often been questioned. On this see for instance O'Neill (1996, 1997).

[13] Along the acknowledgement of the work of Amartya Sen, we can observe a new tendency of some economists to take seriously the ethical dimension of human behaviour in their analytical models. At the same time, dialogue between ethics and economics is tightened and the partition is no longer between economists on one side and ethical philosophers on the other side, but rather between utilitarians and others. See for example Francesco Farina et al. (1996).

Regarding consumers, the marketplace is seen as a procedure for revealing their individual preferences about the traded goods. A ranking of all possible combinations of goods is supposed to exist before the conditions of exchange. It is thus possible to introduce a conceptual distinction between the preferences ordering and the procedure that will reveal this ordering. All this leads to a specific form of 'common good' or 'public interest', which is described as the 'best equilibrium among individual preferences' (Pareto-optimality). This is the central norm of standard welfare economics valuation. Using any piece of economic information shaped by this economic framework or derived from market prices indirectly comes to accepting this norm for processes of social co-ordination: insofar as that collective decision-making is based on this type of economic valuation, what is good for the community is nothing else than to allow each individual to pursue its own satisfaction for the best, as it is defined by himself or herself on the basis of his or her specific tastes and needs.

Such a framework would seem to require a scarcely above-zero degree of community and interactions! Nevertheless, it can lead to a wide scope of positions regarding the philosophical conceptions of society, from a well-tempered balance of market and State intervention (because of the very existence of public goods and natural monopolies), to more extreme views according to which institutions and society should be exclusively driven by the search of pure individualistic self-achievement, presented as the highest moral value; a well-known example of the latter is to be found in the work of Friedrich Hayek[14].

This conception of the common good as 'the best equilibrium among individual preferences' can be contrasted with other political or moral theories. For example, it is well-known that the Social Contract tradition from Rousseau to John Rawls is based on a construction in which the common good is not seen as an aggregation of individual singularities, but as a result of an abstraction process through which 'citizens' can put aside their particularities in order to judge on the general interest of the community - the 'veil of ignorance' of Rawls (1971) partakes of this logic. There are still individual judgements, that may also be called 'individual preferences', but they originate in a very different construction process, and the usual tests propounded by welfare economics are not appropriate to capture them.

On the whole, following Mark Sagoff (1988) there are probably areas where the principle of consumer's sovereignty can be called legitimate and others where it cannot; this principle should then give way to other types of representation and co-ordination procedures. One of the main sources of practical problems arising when such an analysis is applied in the environmental field is that many issues do not concern the sole 'consumer' or the sole 'citizen'. Some issues concern both of them, for instance those regarding the category of tax-payers. A tax-payer can be viewed as a hybrid person, one who is firstly a citizen, while viewed and viewing himself as firstly a consumer. Many complications coming from

[14] For example, in his book *Law, Legislation and Liberty*, he writes, (quoted from the French version) : 'La thèse de cet ouvrage est qu'une situation de liberté dans laquelle tous ont la faculté d'employer leurs connaissances à la poursuite de leurs objectifs, bornés seulement par des règles de juste conduite applicables en toute circonstance, leur fournira probablement les conditions les plus favorables à la réalisation de leurs projets.' (Hayek, 1992, p. 65).

empirical situations originate in this ambiguity of situations, which is linked to the manifold dimensions of legitimacy of environmental conflicts[15].

Another point worthy of a discussion is the fundamental semantic distinction made between 'agents' and 'goods'. The whole economic world is built on this first conceptual opposition that seems to be so self-evident in our modern world. Agents have intents and preferences; they promote projects and pursue some ends. They are human beings. Goods are things supposed to be at the disposal of the agents to provide them with satisfaction and welfare, according to their desires and preferences. Yet, such a construct is not a natural one. History and anthropology have demonstrated for a long time that not all societies are based on this 'vision of the world'. The contemporary deep ecology, posing the intrinsic value of natural beings and animal rights movements are examples of disruption to this framework emerging within modern societies. In those cases, what was considered as goods is given some of the properties of agents — they have rights or their well-being matters, for example — in such a way that the welfare of these 'goods' should be taken into account when looking for the common good[16]. On another plane, some forms of systems theory or urban ecology make no ontological distinctions[17] between human agents and things: they all are involved in energy flows and they are materials processors. If the distinction between agents, who bear the ultimate normative reference, and goods, whose justification for existence is reduced to their capability of bringing welfare and satisfaction to agents, may be accepted for ordinary goods as pencils, cars, or petrol, it is not straightforward it is still the case for animals, ecosystems or the planet Earth as such. The relationship between Humankind and Nature cannot be reduced to the criterion of instrumental utility without essential losses, even if this instrumental dimension is an evident part of this complex relationship.

Other technical points have often been stressed. One is related to the assumption of economic substitution. It is assumed that since ordinary goods can be traded, and as exchanges express individual preferences, goods are substitutable to one another for the best satisfaction of individuals, provided that the appropriate quantitative exchange rates are supplied. Relative prices are then called 'marginal rates of substitution'. This concept of substitution is rather different from the technological concept of substitution that relates to the possibility for various combinations of goods to produce the same physical output or the same unit of service (heating, transportation ...). This raises many questions: what becomes of goods and services which are not tradable by nature (public goods)? Can we assume that all the sorts of goods are substitutable according to a welfare criterion? Are not there some classes of goods within which welfare substitutions are accepted and between which there are no accepted substitution and no justified equivalences? Can we look at natural elements as factors of production within production functions, in the same way as capital and labour for which they would be substitutes? Such questions are not addressed to the basic conceptual

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[15] With these examples, we limit our analysis to the opposition between these two figures, 'the market' and 'the political city'. Later we will increase their number to six, so as to account for concrete types of environmental conflicts generated by land use and development programs. In the context of France, see the synthesis by Claudine Lafaye and Laurent Thévenot (1993).

[16] For a useful survey by a French philosopher, see Catherine Larrère (1997).

[17] There may be empirical classifications separating human activities from other activities but they have no ontological value since both classes are looked at the same way: they are viewed as processing energy and materials.

foundations of welfare economics, since the latter acknowledges the possible existence, for instance, of lexicographic ranking of goods; they are addressed to the usual practices of applied research.

Behind such causes for questioning, lies the issue of compensation: can some losses in some goods be compensated for by an increase in supply of the provision of other goods? If the reply is positive in any case, there is nothing specific about environmental issues: any environmental loss can be compensated for by an increase in the provision of industrial commodities. However, as far as environmental elements are concerned, one may reply in the negative for various reasons. For instance, some critical level of environmental quality provides a necessary condition of existence for the human society and its economy; being a logical pre-condition of exchange, it cannot be evaluated on the basis of trade values; if such minimal conditions exist, they would ideally have to be revealed by scientific investigation and to be represented as natural conditions of existence of the economy, which are beyond the scope of its self-regulation.

A structural difficulty is met to qualify environmental events once the environmental preconditions of human existence have been acknowledged as distinct from current valuation of environmental benefits and damages. They can be clearly called neither 'damages' nor 'benefits', since their designation depends on the organizational level at which an economist-observer is going to consider these events: losses at one level contribute altogether to the regulation of the economic and ecological systems at an upper level of organization[18]. Talking of damage costs and benefits implies first to consider the existing distribution of rights and wealth as legitimate, and second that some boundaries have been defined for the field of impacts within one level of organisation, so that the viewpoints are stabilized; these requirements are contrary to the open-ended nature of the concept of environment (Godard, 1995). The long run natural preconditions of human society are far from being known, especially since we are very far from having a full understanding of the conditions of reproduction and regulation of the Biosphere. Scientists can only make provisional and partial statements giving insights but not final conclusions, across a complex multi-level organisation of the environment.

Our human condition implies that we have to rest on our manifold interpretation of natural events; and interpretation depends on the frameworks we are using. Here, basic uncertainty on the ultimate meaning of natural events for Nature is redoubled by the plurality of interpretation frameworks that coexist in modern society. So the basic questions open to debate cannot be mechanically translated into valuation processes. They should be reappraised in each and every context of decision-making so as to find an agreement on the relevant contextual features: this way, a framework of agreed conventions on the environmental background, which would be situation-dependent, should be built.

Several results stem from all these arguments. We summarise three of the main ones: (a) standard welfare economics is but one way among others to take into account environmental issues in social co-ordination contexts; (b) a key feature of the valuation exercises is the irreducible plurality of the constructions by which human beings give sense to Nature; (c) when valuation is carried out, many conventions and specific methodological

[18] This feature has been pointed out by the historical 'predator-prey' model in ecological sciences.

choices must be made to elaborate a relevant valuation process answering the several types of concerns.

Even if the use of standard economics methodologies is agreed upon, it is not possible to envisage a mechanical application of general concepts, theories and methodologies, without making important judgements as to conventions and assumptions. This is one of the reasons why applied economics generates such varied results. Applied valuation exercises should rather be seen as a compromise between abstract but (putatively) general theory and specific circumstances. According to circumstances and situations, general concepts and methodologies are not implemented in the same way, in the sense that the set of conventions and assumptions supporting valuation differ; the resulting valuations should not be given a general value at once: generalization also implies a process of its own to translate 'local' values into conventions used for general purposes (see below).

4. Some limits of VRA as a co-ordination device in controversial contexts

4.1. Minimum common competencies for the co-ordination game

As a tool for social co-ordination, welfare economics valuation runs up against several limits. Some are related to the competencies that people should develop to get a sufficient understanding of economic concepts and methodologies to be able to take part in a co-ordination process based on the use of economic valuations.

The old view according to which economic experts could be simply trusted as the real representatives of one and unique economic science, allowing a delegation of powers of judgement to them, is no longer acceptable nor accepted by the agents who take part in a collective decision-making process. So, to be a satisfactory tool of co-ordination, a valuation should in principle be comprehensible for and usable by all the people having to participate in the co-ordination. Practically speaking, the basic understanding gained by the persons themselves may be supplemented by the advocacy of experts providing assistance and advice to them, like barristers in court procedures. Nevertheless, this entails that the acceptable level of sophistication of methodologies for economic valuation is bounded by the requirements of the situation of co-ordination. The ability to build some common meaning and to share tools is more important than the degree of accuracy or the use of the most up-to-date models. Expectations regarding the use of economic valuations are similar to those regarding means of daily social life: everybody should be able to understand and use the basic rules of behaviour.

Other limits are related to the gap between some of the basic theoretical assumptions and the characteristics of the situations in which valuation is to be used. In the following sub-section we consider two lines of analysis of such gaps.

4.2. Elaborating valuations at the appropriate level of generality

The current use of economic valuations often consists in taking some measured values that are drawn from precise situations and to use them in other contexts taken as similar or supposed to obey to a common central standard, for instance the choice of a given value for a statistical human life, or the discount rate to use for various development projects.

This is certainly an economical way to proceed. A few empirical works for determining values can then nourish a lot of applied work in cost-benefit analysis for any decision. But the justifications given to such a practice do have to be tested: they must prove their adequacy to the particular situation.

Using universal values in any local context is a practice rooted in the 'opportunity cost' concept: if some resources are consumed for one specific use, they cannot be used for another one in another place; to be rational, agents — and society altogether — have to consider all the alternative course of actions and choices. The implicit condition underpinning this intellectual frame is that a unified economic field does exist, with agents and resources that are mobile within this field. In this ideal-type situation, resources and agents are supposed to be 'free', that is detached from particular social and physical attachments or commitments.

Although this corresponds to the archetype of a flexible market world[19], such a view is quite unrealistic in most practical contexts of public decision-making touching environmental issues, in which some structural features are limiting possibilities of re-allocating resources to other uses. Many basic economic resources (raw materials, technologies, intermediate goods…) are specific assets; they are not available for a wide range of alternative uses, or they lose much of their use value if re-allocated. These limitations are especially stringent for environmental components. A sensible way to implement economic valuation should then include special thought about the practical scope of alternative uses, in order to elaborate a system of valuations which would represent available alternatives within the specific co-ordination context in which the interest for environmental valuation emerged. As a general rule, no unique set of values can be expected to be practically valuable in all local contexts.

Bringing all these local contexts together is another problem of co-ordination, which defines 'supra' co-ordination situations. Such 'supra' games involve the same sorts of issues of representation and choice about relevant justification orders. In this regard, a new meaning can be given to the usual distinction between vertical and horizontal integration. Vertical co-ordination, as for example the one implemented within a sectoral Ministry (say for industrial development or civil works and roads) between central and local services, can be defined as a concatenation of co-ordination games at several levels of aggregation and representation. Presumably this takes place under the auspices of the same stabilized balance ('compromise') between justification orders and of shared conventions that direct the general course of action. Horizontal co-ordination raises more difficult issues since such contexts presumably involve a greater variety of justification orders and conventions, with more diverse actors and concerns and less strong institutional forms of communication and co-ordination.

All these supra-games are generally structured by various institutional mechanisms and rules, including competition, hierarchies, political or administrative integration, formal or informal networks. The point is that when explicit agreements among actors are needed, a construction of specific valuation related to the problem at stake is needed as well; these valuations could not just be borrowed from other contexts.

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[19] This is not to say that there exists one only theoretical representation of the market world!

4.3. From 'stabilized universes' to 'controversial ones'

Another difficulty which applied VRA may suffer from, can be appraised by introducing the distinction between 'stabilized universes' and 'controversial ones' (Godard, 1992, 1997a). Environmental issues are usually affected not only by critical uncertainty but also by long-lasting scientific controversies. The latter do not keep within the bounds of scientific community, but spread across society, sustaining social controversies. Both sources of uncertainty combine to generate 'controversial universes' (see Box 1) in which scientific theories become social stakes around which strategic games are developing among economic and social actors.

Such contexts contrast with 'stabilized universes' that have been explored in depth by standard environmental economics within the framework of the theory of public goods and external effects. The basic assumptions for these stabilized universes are the following:

- individuals do have a right perception of environmental phenomena and the latter concern directly their own welfare of which they are the best judges;
- all persons having legitimate, protected interests are actually present on the co-ordination stage, and so they can have their interests and preferences defended by appropriate social procedures (market, vote, protest);
- scientific knowledge is stabilized and is shared by all the agents involved; the causal relationships that surround environmental damage (who bears the consequences in terms of welfare and who is responsible for them) are defined without any ambiguity;
- phenomena are reversible so that attention can be focused only on the immediate consequences of decisions.

Under these conditions, the principles of standard economic valuation may have direct relevance and practical meaning. The situation is quite different in 'controversial universes' where, among other things, the problem of representation of the interests of absent third parties takes a central place and introduces further complexity in the social game. This game cannot be reduced to conflicts of interests among present social groups: issues in recognising new rights overlap with approaches focused on the revelation-elaboration of preferences. As such, the usual willingness to pay methods can account, at best, only for a part of the game. Also, the standard condition for rational action, that is the antecedence of a fully developed state of knowledge over decision making, then enabling the calculation of the outcomes of the alternatives ('learn then act') has to be reversed to some extent ('act then learn')[20], because preventing a presumably irreversible damage is at stake.

In 'controversial universes', cognitive issues and stakes of collective action are intertwined and give rise to new forms of strategic competition among social and economic actors. This competition is about agenda-setting and how to shape action. Scientific theories, including economic valuation exercises, tend to be instrumentalized by social and economic actors. Environmental uncertainty tends to become a strategic variable used by actors to achieve their ends (stopping the development of a technology, ensuring a market,...), and it reflects the existing level of social consensus or dissent. Experts' activity epitomises this tension

[20] This opposition between 'learn then act' and 'act then learn' was introduced by Alan Manne and Richard Richels in the context of the global warming debate. See for instance Manne and Richels (1992, 1995).

between the logic of knowledge and the logic of collective action, and receives new implicit functions focused on the stabilization of the action contexts, beyond what science can provide[21]. To some extent, they act as conventions-builders.

Box 1: controversial universes

- Individual representation of issues cannot be based on direct perceptions, but it is built through the medium of a previous scientific and social construction involving mass media, political settings, governments and civil services, which, due to scientific uncertainty and controversies, is a source of instability of preferences. All the persons who are acknowledged to matter for the decisions being considered are not actually present; those ones being absent are consequently unable to express their preferences and judgements. There emerges a specific problem of representation of the interests and/or rights of missing third parties.

- A long-lasting controversial state of scientific knowledge affects critical parts of the problem relevant for policy-making. It induces a basic uncertainty between several visions of the world and causal patterns. Scientific controversies nourish social controversies; then social actors tend to make strategic use of competing scientific theories and influence the subsequent course of development of science. At the moment of policy decisions, scientific uncertainty cannot be resolved on a scientific ground.

- Due to potential irreversibility, there is a strong perception, among some social actors, that there is a need for immediate and firm preventative action, without waiting for the time of certitude. The choice of the action to launch is a question to consider in relation to the precautionary principle, which asks for an early consideration of potential hazards and risks without waiting for full certainty. But the precautionary principle commands proportionate and provisional measures (Godard, 2003b) and cannot be confused with an 'abstention rule'[22] that has been shown to lead to inconsistence and dead-end (Godard, 1997b; Godard et al., 2002). Case by case precautionary strategies (casuistry) aiming at cost-effective and proportionate measures have then to be elaborated, deliberated and decided upon among a whole range of possible measures, from biowatch and scientific research to stringent regulatory measures banning some products.

- Since rational action cannot be decided on the basis of science and complete economic valuation, policy measures tend to be adopted on the basis of existing, ready-to-run technologies promoted by influential networks of stakeholders. Such answers generally have a loose relationship with the initial definition of problems supposed to be solved. They may impose new sources of irreversibility embedded within institutional rules and technologies, which will make it difficult to further adapt to new information.

- A critical dimension of any decision is its relationship with the development of future information: inducing more information through research, preserving the capability to profit from new information, gaining time by reducing the pressure of phenomena in order to be in a position to decide in the future with more appropriate information, etc., are key components of precautionary policies. Long run, once for all, intertemporal optimising is not the key issue, but only organizing a time-sequential decision-making process; this would include learning and periodic revision of action courses, with a due attention given to avoid the manifold sources of irreversibility.

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[21] A description of the implicit roles played by, or expected from, experts in such contexts is given in Godard, (1997a and 2001).

[22] This abstention rule, asking to forbid any technology or product that has not been scientifically proven to be harmless is sometimes proposed by NGOs as a practical translation of the Precautionary Principle. It is based on three components: the zero-damage norm (harmlessness); a focus on the prevention of the 'worst-case' scenario, since the futures are uncertain; a reversal of the burden of proof, since harmlessness has to be proven. Promoters of a project or a new technology would then be submitted to the obligation of proving that they are not going to cause any damage at all to the environment before they can be authorised. Whatever attractive it may seem at first sight, these components cannot be held in a non-positivist view of scientific knowledge. Going in a different direction, the precautionary principle asks for the decision making process to depart from the strict requirements of scientific proof, be it proof of damage or proof of absence of damage, but to consider scientific elements at disposal, gauged by a criterion of plausibility; on the issue of how to tackle uncertainty also see Brian Wynne (1992).

The adoption of this or that convention is entrenched in the perception of practical possibilities (a question regarding an uncertain and controversial environmental problem is translated into a question of technological capabilities), of side interests (i.e. gaining a diplomatic success, capturing new competitive advantages, etc.) and in the basic benchmarks that belong to main universes of justification relevant for the type of problems under examination (see below). The role of economic valuation cannot be the same as in stabilized universes. In the following section we will focus on the framing of co-ordination situations that bring into play several coexisting legitimacy orders for collective decision-making, and look at various valuation approaches that may correspond to them.

5. Steps in analysis of co-ordination situations: searching for appropriate tests

5.1. Characterizing the empirical contexts and identifying co-ordination scenes

The first step is the definition of the empirical social contexts of problem and conflict solving at stake, about which progress is expected from valuation. There may be several motives to ask for a valuation. In the collective processes considered here, basically three main reasons can be observed: the first is an hesitation or self-questioning of authorities, about a possible future course of action which would implicate environmental resources, in a social climate still being quiet, i.e., without social mobilisation or crystallization of conflicts; the second is a decision to begin hostilities in attacking present institutions, policies and practices and showing how inefficient they are; the third one is the search for an agreement able to solve a conflict, in attempting to develop some common statements which would be based on an objective construction of the present reality and its transformation by action. If the first motive is nearer to the usual views about the role of economic valuation in enlightening a rational decision-making process, it can quickly derive towards the two other motives, because the very achievement of the valuation may become a source of conflicts by giving life and shape to sleeping stakes.

So, most of the time, an environmental valuation process is part of a game of inter-organizational interactions: the valuation of some actions (past, present and future policies, programs and projects) of an organization is undertaken by another organisation; alternatively, valuation occurs in the context of an interaction between two levels of the same organization. Hence, valuation takes place in a context where an organizational body is questioning another one's *legitimacy*, regarding its way to deal with the environment/development dimension.

Thus, environmental valuation appears to be an implicit vector of criticism or dissatisfaction, before being the possible vector of an agreement. As Claude Henry (1984) puts it, economic valuation can be seen at the same time as a stake and as a language of negotiation between actors pursuing different and sometimes opposite goals. In some cases, it may be a good tactical resource for environmentalists aiming at stopping new public works project and seeking to become allies with civil servants of the Ministry of Finance. In other cases, it may be a means for private business to block or downgrade some ambitious

environmental regulatory reform backed by environmentalists... The increasing institutional pressure for including monetary valuation in the discussions about environmental policy options and investment programs, for example in the field of water management (Laurans et al., 1998), may be partly interpreted as an attempt of the organizations in favour of cuts in public expenditure to limit the initiatives taken by 'extravagant' organizations and programs. On another scale, climate change issues and debates are interesting learning experiences. The Intergovernmental Panel on Climate Change (IPPC) was set up at the end of the 1980s to establish a scientific 'state of the art' on all aspects of climate change. Regarding the contribution of economics, this experience of international expertise has shown the importance assumed by economic valuation as a strategic resource in the hands of experts. Some have put forward the idea that early mitigation is too much costly to be valuable[23]; others have backed the opposite idea that an abatement of at least 20% of emissions of greenhouse gases can be obtained with existing technologies and infrastructures for trifling or even negative net costs. How such rival views can lead to some commonly agreed state of the art is an interesting case showing how economic expertise at the same time can be strategically used in the battle for framing decisional issues, but also imposes some rules of the game and benchmarks (Hourcade, 1996; Laurans, 1997; Godard, 2001).

Briefly, in the more general case, a legitimacy conflict is hidden behind the valuation process. This conflict is centred on the usefulness versus uselessness, or the collective 'profitability' of an action, program, policy orientation, or an investment, etc. Therefore the empirical characterization of the contexts of valuation must inform about the main lines of conflicts and disputes which are typifying the situation. This attempt must give due consideration to the type of objects in question (resources, places, uses, constraints) and the nature of the problems to solve, as publicly defined by the various stakeholders.

A basic distinction between two contexts for valuation can be put forward:

1. assessing the economic impact of environmental protection;
2. assessing the environmental impacts of technological and economic development.

This distinction can be used as a starting point to characterize contexts, as it is shown by a few illustrations below.

5.1.1. Economic consequences of environmental action

Questioning the economic consequences of pollution prevention, the conservation of natural heritage and environmental protection generally speaking, is currently done nowadays at very various scales, ranging from global (mitigation of climate change, biodiversity protection, ...), European (the same, plus regional environmental problems such as SO_2 emissions, and European environmental policies and regulations, etc.), to national and local contexts. It also applies to the action undertaken by private institutions for environment protection, management, and promotion (grassroots NGOs, local nature trusts, individuals).

Many situations are embraced by this Type 1 context. They range from studies showing the economic costs of environmental protection (budgetary costs, but also depressing impacts

[23] Some key articles have been influential in that context, as William Nordhaus (1991) or Alan Manne and Richard Richels (1995), for example.

on industrial competitiveness) to those showing the positive impacts of such actions, for instance regarding local employment in rural, marginal areas[24]. In strategic terms, the latter kind of valuation can be taken as a means to improve the ability for environmental protectors to go ahead and release pressure on them by demonstrating some positive economic external effects, in terms of development.

More generally, economic valuation in Type 1 contexts can be the means adopted by an organization to *communicate* about its activities, or lowering contest with or protest against it, by offering more favourable aspects. For example, the growing number of economic studies on the components of the price of water in France can be understood by the need of local authorities to answer to the increasing doubts of the people regarding the fairness of burden-sharing and effectiveness of the water supply system (Laurans et al. 1998).

5.1.2. Environmental consequences of development

Type 2 contexts include numerous appraisals of natural environment heritage to be lost/valorised by economic development, and assessments of the impacts of development projects on the environment.

One typical example is the valuation of 'external effects' of energy policy, like the one achieved at the European-scale, the ExternE exercise (CEC, 1995). On a local scale, the example of an electricity company can be cited. It evaluates the environmental benefits versus the technical costs of shelving a power line, which is demanded by local groups. Valuation is then intended to counter their demand in arguing that the cost is 'too high compared to the benefits produced' (see Furby *et alii*, 1998)[25]. Other typical cases are related to the choice of a strategy to reduce water eutrophication (should we abate phosphate in detergents? develop sewage treatment?), or to the environmental implications of building a dam to protect lands from flooding.

In symmetry with the Type 1 context, public development companies (water agencies, energy development companies, road makers, hydraulic development companies) are also active in 'communicating', and they notably use the argument of the 'environmental benefits' generated by their activity. Hence they participate in evaluating techniques, developing expert knowledge for advocating the positive environmental spin-offs of their activity, or lowering the importance of its negative impacts.

Finally, it is necessary to mention the valuations intended to re-assess the existing environmental constraints (rules, pollution standards, ...) imposed on some economic activity: are they too/insufficiently heavy? should they be released/strengthened? For example, the economic valuation of the positive environmental spin-off from agriculture ('producing landscape') can be considered as a means to neutralize the image of farmers as 'polluters', and push the idea that some kinds of agriculture can be an environmentally friendly activity.

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[24] A valuation of the *economic spin-offs of environmental protection* (green tourism, employment, a more attractive image of a region, etc.) is being more and more demanded by local authorities (Laurans, 2002).

[25] A French analysis of such a case can be found in Laurans et alii (2005).

5.2. Identifying the social actors and the questions raised by their interactions

This step consists in reaching a deeper understanding of the game played by actors and of the driving motives of actors themselves, whether involved in conflicts or taking part in the co-ordination game. It is also about identifying who are the actors absent from the co-ordination scene who have to be represented for various motives (ethics and equity, political realism, etc.). It also deals with the evolution of the situation during the valuation process, as regards the active agents – some appear, other may disappear –, and the changes brought by the valuation process itself.

On the latter issue, we can look at the successive stages of a valuation process as opportunities to redefine the range of actors and objects admitted inside or remaining outside the scope of the valuation and co-ordination game:

- When drafting the terms of reference, the principal (the person who asks for the valuation) will have to specify the needs of co-ordination and decision-making for which he wants to use a valuation: what questions should be answered? what is to be considered? with which methods, resources and data, etc.? Such needs can be defined in wider or narrower terms, in more or less technical terms. As previously noticed, the demand for valuation often originates in a motive of backing or opposing a given project or measure. Briefly, this writing implies a transformation of the *needs (of co-ordination) into technical orders (of valuation)*: it also implies a process of consultation and negotiation among some key actors to make the study acceptable to them.
- The evaluators who have been chosen have their own skills, preferred methods and approaches. When tendering, they participate in the evolution of the valuation process towards some new definition of the valuation frame; they frequently depart then, to some extent, from the demand of the principal.
- Throughout field studies, data collection and the questioning of people, evaluators will change their own understanding of the situation and cause a change of perceptions in the people with whom they interact: for instance, they will refine or adjust their conceptual framework or their methods to the available data; they will perceive new hidden dimensions of the conflicts; they will discover that it is not possible to give a rigorous answer to some of the principal's questions, etc. Difficulties regularly arise in a context of interdisciplinary communication: usual assumptions taken as acceptable within one discipline may be held as irrelevant by another; a persistent gap between the different scales in which ecological, social and economic data are shaped may block exchange of data and hinder their inclusion during the valuation process, etc[26]. Another point is that the project of processing knowledge and data into terms relevant for decision-making may go further than natural scientists are used to in their current practice[27], or alter their original scientific meaning and leave the validity domain of results. All these questions call for negotiations and conventional solutions among the people involved in the

[26] On the general issue of how to conceive and manage interdisciplinary programmes between natural and social sciences in the environmental field, see the book edited by Marcel Jollivet (1992).

[27] For instance asking a natural scientist how a specific natural system would respond to some hypothetical event may be quite new for him/her and hard to answer on a scientific basis.

valuation process. These solutions may be acceptable for the typical case, but have no general co-ordination value for other cases.

- Eventually, the presentation and use of results generate additional changes: in this critical phase of switching from science to decision-making, results are generally isolated from all the process and conventions that allowed them; this is a practical condition for their use and circulation. At the same time, their significance is changed: figures are often given more strength and generality than they can convey according to scientists.

All along this process, a critical feature lies in the forms of representation given or not given by the evaluators to relevant missing third parties, that is to objects (how to qualify ecosystems, landscapes, natural species...) and human subjects (which criteria should be adopted for groupings? do some foreign countries have to be considered? what about future generations?...).

5.3. Characterizing concerns in terms of justification orders

The heart of our proposed approach consists in characterizing the different types of concerns pushed by the social actors and relating them to basic justification orders within modern societies.

5.3.1. The justification orders of Boltanski and Thévenot

Building upon our own experience and adapting from the typology built by Luc Boltanski and Laurent Thévenot (1991) about legitimate justification orders in modern society, six types of concerns that frame environmental valuation processes can be set out as follows:

1. The first is an **inspiration-based** concern for environmental matters. It takes up ideas of a Nature giving access to a transcendent value; personal commitments, individual attraction and desire for natural environments are at stake. Here, specific metaphysics is being developed to support a quasi-religious sense of environmental protection[28]. Practical expressions of this order (in protests, when proposing solutions, etc.) are marked by a tendency towards utopia and mysticism. The basic principles of argumentation is to refer existing, concrete situations to a ‘ transcendent elsewhere ’; some find it in the ideas of a true wild, virgin nature; others in the vision of Nature as a divine creation; in any case communication is made through the channels of intimate desires and inspiration. This order may feed a benevolent attitude towards the general cause of the environment. This is a possible source of ‘existence values’. Tests of discourses can only rely on embodiment of values in the bodies and behaviours of some kind of prophets and rituals of initiation giving access to secret knowledge, which highly depend on personal commitment and conversion.
2. The second is the **domestic-traditional** concern. It includes the will for conservation and transmission of heritage, the focus on traditions in environmental practices, a concern for a right ranking of people and things in a stable hierarchy related to the intergenerational link. It deals with respect and responsibility for heritage. As regards the pure domestic-

[28] The reader can think of the Gaia mythology or remember the pagan cult of mother Nature celebrated at night on the beaches of Rio de Janeiro during the Earth Summit in June 1992.

traditional concern, the value of heritage is attributed to culturally marked objects, i.e. objects able to embody the identity of a cross-generational group, be they a piece of land or of jewellery. As such, cut from its cultural and social meaning, nature has the lowest ranking. For example, domestic animals (horse, dogs) have a much higher standing than any wild species. In some cases, wild species are even treated as harmful ones doomed to destruction (see the 'tragedy' of foxes or snakes).

3. The third is organized around a concern for **opinion and fame**. It embodies the necessity that an action should be known and draws the attention of the largest number of people. It refers to the idea that action must be visible to be well-considered, that public opinion is what really matters. More generally, it looks for attracting the consideration of people, for gaining celebrity, and having existence in the media. This is another possible source of 'existence values'. Main tests of value are polls and indexes of frequentation or coverage by the media.
4. The fourth type of concern can be labelled as **a civic search for the public good.** It involves a concern both for an equal access of citizens to the environment and natural resources, and the mission of the State, as embodying public interest: effectiveness of the law enforcement, application of rules and norms, importance of collective action, attention attached to democratic representation are key issues to this regard. Within this order, access to greatness implies for citizens to put aside their individual singularities and specificities (tastes, origins, family links) and search for the right and the good for the community; this involves general principles, rules and causes that can be shared with others and justified as basic rules for society. It is the reign of the general Law as expressing the general will of citizens and ensuring basic equality among them.
5. A fifth type of concern is rooted in the **market world**, as a principle for achieving an affluent society and satisfying individual desires of people. It refers to market benefits and costs generated by action, to the wish of individuals for environmental goods, to self-interest in environmental protection. It deals with losing or making money with the environment, individual freedom, and private property rights. The preferred instruments are based on new property rights (fishing rights; tradable emission permits) and the mechanisms of purchase and sale. Nature is valuable if it can be made profitable through trade one way (extractive uses for commodity markets) or another (tourism)...
6. The sixth and last type of concern extends to the whole society and the environment an interest in the **technical performance in production and management**, which supports **an industrial order**. Within this order, social positions should be attributed on the basis of expertise and capabilities of each individual (engineers are on the top), through science-based objective procedures. Attention is focused on the performance of outcomes, the search of innovative engineering solutions, compliance to production and quality standards based on the best scientific knowledge. The approaches defined in terms of equipment and technical response to environmental problems are seen as superior to others. Regarding Nature, this order basically urges to put natural systems and resources to a productive use: there is no greater scandal than resources lying in an unproductive state...

These six types of concern constitute a basic frame that can be useful to interpret situations of collective action co-ordination, i.e. to solve actual or potential conflicts, to define a

common course of action and to set common rules for decentralized actions. It has to be stressed that environmental issues are not built up in the same way within each of these justification orders (Godard, 1990). Public deliberation is often hesitating between them without explicit consciousness of the differences implied and of the origin of the difficulties about mutual understanding: it is not self-evident for actors to know which justification order is the more appropriate to the situations; social groups are supporting conflicting views to this regard, each order being only partially successful in addressing the issues in question[29]. That means that social co-ordination will require some skills in judgement and learning about the very nature of the situation, and not only some arbitration between interests.

5.3.2. Characterizing the situation in terms of justification orders

The next step in an analysis is to link concerns and views expressed by actors with the various justification orders just described. This includes first of all an analysis of the 'critical objects' on which conflicts are focusing, and more generally of the legitimacy features of the situation of co-ordination. This characterization requires confrontation of the concerns of actors in multiple ways: among them, and between them and the relevant objective features of the situation.

This step is intended to establish whether there is a dominant justification order used as a reference by several, if not all, actors or whether the situation is made of a rather balanced combination of different orders. Replying to such questions will enable to define appropriately the co-ordination issue. Is it a matter of disagreement about the greatness of persons[30] or objects within a given justification order, or is it a meta co-ordination problem involving conflicting orders[31]? In the former case, the use of tests belonging to the appropriate order can provide a straightforward solution. The latter case implies a collective hesitation about the right tests to use (see below).

5.4. Identifying possible and legitimate tests

This step deals with the screening of the various justification orders standing as candidates to frame the situation. To this end, the arguments used by actors are screened so as to identify links to key features of alternative orders. The issue consists there in identifying the implications of referring to one of them and not to the others, in assessing the compliance of the claims of the actors with the order they take as reference, and to identify possible tests that could be appropriate to both the order considered and the practical context in which the co-ordination problem is placed.

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[29] For a general use of this theoretical frame for classifying various types of environmental disputes, see Lafaye and Thévenot (1993).

[30] One key element of conflicts comes from the frequent perception of some social groups or NGOs "not to be acknowledged as partners" by public and business decision-makers.

[31] O'Neill (1997, 75-77) also distinguishes situations in which environmental conflicts of value take place in a common reference *framework*, langage, culture, or conversely between different frameworks. The author gives the observed examples of conflicts between ornithologists and botanists over the drainage of land (internal conflict within a common reference framework), and between the criteria of landscape and of habitat (between two different irreducible frameworks).

Elaborating *appropriate tests* is a critical feature of the whole approach. It involves the definition of the nature of the test, the exposition of the particulars of the working rules and of the conditions for its validity and adequacy to sound practical conditions emerging from the situation (as regards resources, information, competencies, timetables and delays). In other words, this step is mainly about *testing the tests*, so as to eliminate impracticable or irrelevant tests; this may contribute to a selection among orders in competition: those unable to give rise to workable tests will be eliminated.

On this basis, we may tentatively characterize the types of 'pure tests' answering to the six basic legitimacy orders mentioned, that is answering to one only justification order:

For the inspiration order: By its very nature, this type of concern is ill suited to 'objective tests', inasmuch as it deals with some 'transcendent elsewhere' and incommensurability. Nevertheless, this order is promoted by 'prophets', self-appointed spokespersons of the type of concerns involved. The tests of this order must focus on the character of prophets and prophecies. What is typical of prophecy is that discourse and arguments have no other means to be attested that by personal consistency between statements, characters and behaviours. Consequently, a type of tests for this order could focus on the consistency between private life and social commitments of the leaders and spokespersons, and then of the people following them. This is what we can see when the leaders of environmentalist movements are careful to use bikes or public transportation in daily life, and not big cars with high fuel consumption. More generally, all the procedures that try to approach the authenticity of claims belong to this order.

For the domestic-traditional order: What is important is the relative ranking of objects within traditional practices in relation to the greatness of persons and groups. The closer to traditions and the higher socially ranked within tradition is an object, the greater it is. Among traditional hunting practices, for instance, some are rather common and others are noble. This social status of practices determines the status and rank of the natural species: rabbits are less valuable than roe-deers. By extension, a forest is valuable for its domestic-traditional uses such as traditional hunting (affluence of game, type of game...) or gathering, and not directly for its ecological value or biodiversity. Here the source of value is to be found in the vivacity of living traditional activities and uses (practices and customs, popular arts) of which resources and environment still form the basis. Tests are related to an analysis of these activities and the persistency of the organizations and groups mobilized to ensure their maintenance and transmission to new generations.

For the opinion and fame order: Here, the relevant greatness is the fame of places and beings (Pyrenean bear, Mont Saint Michel in France), as it can be measured by indices of tourist frequenting, opinion polls, media coverage, and membership of NGOs interested in the conservation of local natural and cultural assets[32].

For the civic order: Typical tests of this order are first related to the democratic quality of bodies in charge of the environment and natural resources management: how are the various groups and stakeholders represented in these management bodies? Another dimension is related to the fairness of the social access to natural resources and assets, and the concern for

[32] For instance, when the conservation of some typical landscape of a region is able to mobilize many people from other parts of the world, this means that its ranking is high in this fame order.

ecological inequalities. Various indicators of access to water supply, energy services but also to wilderness and recreational sites are relevant, as are indicators of distribution of property rights. We may also quote the proportion of common and private property, or analyses of the exposure to pollution according to income groups. A third direction is related to the degree of enforcement of law and public programs, inasmuch as law is supposed to embody the general interest: have the adopted administrative programs been fully carried out, in spite of the many pressures from market forces and local practices?

For the market order: This order is quite familiar. Tests are derived from the market values of things, cash-flows, private profitability and real estate values.

For the industrial order: This order attaches value to the transformation of nature for productive aims. It refers to objective needs to be satisfied by an efficient hierarchical system. Such a system relies on a combination of science and specialized skills. This order appreciates sophisticated scientific and objective methodologies and measures of phenomena. It uses indicators such as rate of use of natural resources, their capability to deliver constant or predictable flows of services to humankind, and technical rates of efficiency (for instance thermodynamic calculations). It would rely more on engineer-types of cost studies than on valuation exercises based on market prices, which depend on business strategies, when markets are not competitive, and on unpredictable variations of demand.

5.5. Environmental valuation in co-ordination frameworks via the elaboration of 'compromises'

We now have a reference point for reflecting about the possible applicability of the various types of valuation of environmental issues. An attempt can be made to identify correspondences between the valuation frameworks and the different justification orders, in order to see to what extent a given type of valuation, including an economically-framed information, can be given sense or meaning. It can thus be proposed that, even when some economic valuation procedure is broadly considered as relevant, the specific use made of its methodologies and the place it is given among other types of tests can vary with the situations, because different situations might correspond to different balances of justification orders.

In order to approach the methodological conventions embedded in applied environmental valuation, we suggest a cross-analysis along the following lines. Considering the six types of justification orders as given, the idea is to look at the valuation of an environmental issue as a compromise-test trying to answer at the same time to several concerns rooted in different orders[33]. To achieve such a task, the applied methodologies must to some extent be adapted and negotiated to fit the situation; hence we will speak of 'methodological compromises'.

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[33] In the framework of justification theory, a 'compromise' is distinct from an 'arrangement'. The first one retains the purpose to come to a solution that is fully justified according to general tests, while the second is defined as a local suspension of the justification requirements: people coming to an arrangement know for sure that the solution they have found is violating some legitimate requirement. Looking for a 'compromise' is then looking for a new, more general justification order in which opposite requirements belonging to different existing orders would be reconciled. For an analysis of the French concept of natural patrimony as a 'legitimacy compromise', see Godard (1990).

To begin this analysis, and demonstrate how the approach can work, we will illustrate how various qualifications of issues related to nature and environmental problems can be interpreted as belonging to one legitimacy order, or as representing a compromise between two of them. The following table, in Figure 1, sets out a square matrix of legitimacy orders. Each square within the matrix defines leading ideas about value either within a single legitimacy order (diagonally), or in some tentative compromises between legitimacy orders (non-diagonal elements).

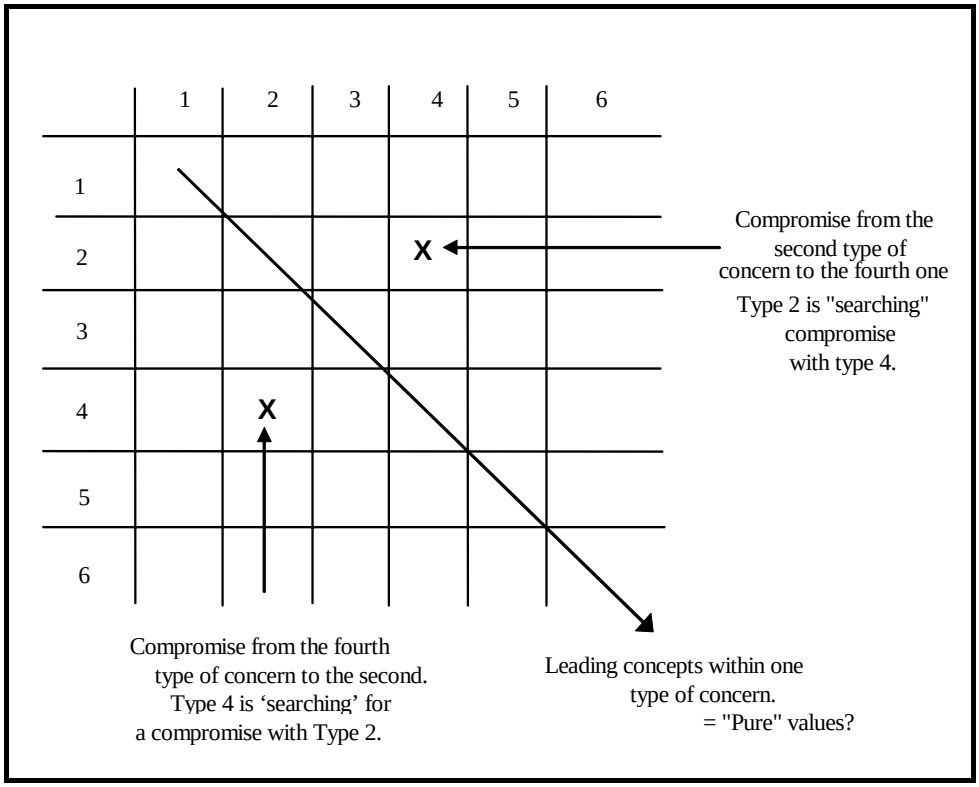

Figure 1: Schematic framework for identifying 'compromise tests'

In the matrix of Figure 1, each non-diagonal block of the matrix thus conveys the idea of an attempt to apply a method or procedure or 'test' rooted in one justification order (signified by the row), in a situation that has been characterised in terms of another legitimacy order (signified by the column). Thus, for example, an entry in the 4th row, 2nd column signifies the attempt for a concept or 'test' from the 4th order to find acceptance or application in a situation characterised within the 2nd order. A compromise process is not necessarily symmetrical: we can capture this notion by proposing that the order signified by the row is the 'active' one seeking to extend its domain of application.

When a situation is framed by several legitimacy orders, no single test built within one unique legitimacy order can be sufficient to achieve conflict resolution and co-ordination among actors. Several ways-out have to be considered. The first one is to engage in a multiple-tests approach analogue to multicriteria methods. The various 'criteria' here will represent different justification orders. As for any multicriteria approach, comfortable decision-support results occur when the orderings derived from different criteria are at least in

part the same. Then a hierarchy is robust. When this is not the case, two directions to find solutions can be explored:

- the final agreement (with more or less coercion) of actors to focus only on one order agreed as the reference for achieving their co-ordination;
- the elaboration of intermediate forms between justification orders, that we have called 'compromises'.

6. Examples of compromise-tests

To explain the sorts of developments that might occur in practice, we outline a few more or less hypothetical examples of such compromise concepts or procedures.

6.1. Valuation starting from the 'Domestic' type of concern

Along the axis of the traditional/domestic type of concern, many valuations are possible, but few seem close to the 'modern' economic world.

The first compromise (' domestic-inspiration 'concern) could emerge in the field of nature conservation. It would lead to a valuation of the performance of traditional practices in achieving environmental conservation or to an assessment of the spiritual roots and meanings of traditional techniques. Some intermediate beings can represent at the same time wilderness and tradition (Pyrenean bear for example).

The 'domestic-opinion' compromise suggests testing to which extent traditional practices are living in contemporary consciousness: what components are sufficiently well-known to be considered common knowledge? What about revival through media coverage and various inquiries leading to interview people about their memories of past practices and perception on famous topics? This questioning can be related to the perception of what forms heritage, and duties towards future generations and future local community, or the importance to be attached to the respect for nature.

The 'domestic-civic' compromise deals with the coding of traditional practices into public norms guaranteed by civil servants, in order to stabilize and protect them from various sources of evolution. The issues of traditional rights of indigenous peoples are related to this type of compromise. It also deals with the ability of state and other public institutions to help local communities to conserve their environmental heritage.

The 'domestic-market' compromise is based on the possibility to give a market value to natural heritage and traditional uses of natural resources, through tourism and craft industry. It encompasses a concern for flexibility and option values. Preserving options of future uses by preserving at the same time traditional knowledge and some natural components is another possible component of the compromise. Not every use is compatible with the future diversity of choices in land use. Taking account of this irreversibility component may lead to support some traditional less-productive uses of lands (for example wetlands).

Last, in the 'domestic-industrial compromise', it is possible to consider the performance resulting from traditional resource management practices[34].

6.2. Valuation as an 'Opinion/Civic' compromise

In this compromise, one criterion for value concerning the environment could be the mobilization of public for environmental causes. Comparisons would then be drawn using the criterion of the number of people joining in public demonstrations on environmental issues. This comparison could be made between different periods (was the concern for nuclear safety stronger before?), between different environmental issues (is public opinion more sensitive to nuclear technology than to air pollution in large cities?), between countries, etc. It is clear for practitioners of environmental debates and issues, that the 'number of people that could be mobilized on a cause' is actually a criterion of weight or strength in environment disputes.

6.3. Valuation as a 'Civic/Inspiration' compromise

The Civic concern for the environment is notably turned towards the rights and needs of future generations for the sake of intergenerational fairness. It may find elements of agreements with inspired-based concerns for Nature conservation. An example from France in the mid 1990s is the official evaluation of public policy for wetland protection (CGP, 1994). A key feature of this study was that it was focused on the policy assessment criteria. In that study, it was chosen to rely on ecological appraisal of the state and evolution of the French wetlands: instead of defining 'objectives' and envisaged means, and measuring their cost-effectiveness, this valuation followed an original way in adopting the evolution of quality of main wetlands in France as assessed by scientists and wetland managers as a valuation criterion. By comparison, a 'pure administrative' valuation would have been based only on administrative categories.

6.4. Valuation starting from the 'Market' concern

Most of the 'values' derived from the 'market' concern correspond to a quasi-standard valuation 'instrument'. But it is not sure that a well-defined economic 'process' is really being implemented for each of these values.

Take 'market-based' compromises. The aesthetic value of nature is supposed to be measurable in market terms through statistical surveys of individual willingness to pay (contingent valuation). Such an approach will in fact set a compromise with a third type of concern, the 'opinion' axis. The 'domestic-traditional' compromise generally places some importance in monographs, as they are the report of individual and personal experiences. A test associating the market order with the two others could be the recording of various personal experiences of attachment to nature, and of individual meanings attached to given elements of natural heritage. The process and the measurement could be close to the usual treatment of 'qualitative questioning'.

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[34] The new fashion for anthropological studies of traditional regimes of resources management is typical of this compromise. See Berkes et al (1989) and Ostrom (1990).

A 'market/domestic-traditional' compromise valuation that might be deemed pertinent is the measurement of the trade turnover generated by the frequenting of natural sites of specific patrimonial value. Such a valuation is not necessarily directly relevant in a social welfare perspective: a part of the trade turnover generated by the tourism in some place is simply diverted from another place, resulting in no net economic benefit. However, economic actors and agents often show a real concern for actual debates on local environment policies. The generation of some gross 'additional' local trade turnover is most often considered as a real economic benefit. This can be seen as an example of the difference between taking economic valuation as a neutral scientific instrument and considering it as a social process implanted in a strategic context: then its meaning is derived from the types of concern borne by the actors of collective disputes.

6.5. An example of valuation with an 'Industrial/Domestic' compromise

Such a compromise may refer to the role played by natural heritage in the running of society. It deals with services that are delivered to the community by this heritage. Such an evaluation involves the translation of scientific concepts, about the *functioning* of nature, into technical terms for action in resources management and use. One should be able to assess the technical consequences of a hypothetical disappearance of natural systems and functions, and the availability of substitution means by technology. It would then be possible to put figures on the costs implied in this technical background (Laurans, 2001). For example, if wetlands are disrupted or transformed into industrial sites, how much does it cost in terms of needs of additional capacities of waste treatment or dams (CEC, 1995)?

Conclusions

The prospect of 'compromise' solutions arises, we suggest, because of the inherent ambiguity and polyvalence of many ideas, events and objects in any social situation. It can thus reasonably be postulated that forms of negotiation and deliberation can be built on those things that may make sense within more than one justification order. This may lead to formulations of the situation and problems that obtain elements of consensus between social actors who nonetheless refer to different orders when they present their claims. Partial agreements on the value of environmental goods may be then expected, although their efficiency to sustain co-ordination is bound to the context for which basic compromises and conventions are accepted.

To this regard the conventional economic analysis perspective is one prominent framework among several possible valuation ones and is led anyway to be adapted to specific features of the situation in terms of balance between justification orders. The appropriateness of economic valuation as a co-ordination tool is to be referred to a characterisation of the situation regarding the relevant orders at work.

Even when a standard economic valuation method is applied, it should not be presumed that the 'test' being conducted relates uniquely to the market justification order; there may be elements of compromise in methodological conventions being used. Especially in what we have called 'controversial universes' the question of appropriate valuation frameworks is

deemed to remain an open issue that can be solved only through the social process inasmuch the latter is considered as an experiment revealing the very nature of the situation.

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