

The "Frontier of Monetisation" in Environmental Valuation

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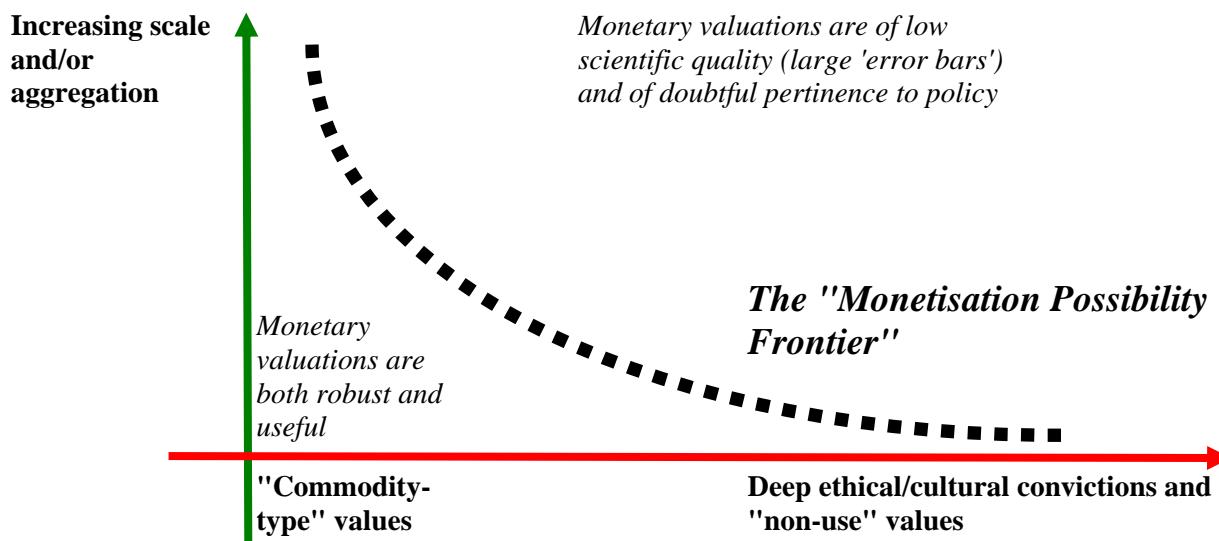
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In principle, monetary environmental valuation is intended to help guide and inform collective choices (community and political decisions at various levels) regarding the distribution of economic opportunity and of access to the services and benefits provided by the biophysical environment. Much debate has taken place over the appropriate extension of monetary valuation techniques to various environmental domains and the aggregation of values to the macro-economic scale (including 'green' national income and wealth). As a simple heuristic, it is useful to distinguish two main dimensions along which this debate is structured and along which obstacles to monetisation may increase. The first concerns matters of scale and aggregation; the second concerns the "kinds" of value involved. Briefly,

- On the one hand, where the physical and temporal scales of the systems under scrutiny become very large (e.g., climate and marine ecosystem changes, irreversible genetic and toxic chemical transformations), the scientific uncertainties about what may come to pass are inevitably high. The definition of relative opportunity costs, as required for monetary valuation estimates, becomes difficult and sometimes arbitrary. Further, the practical choices among variants of applicable valuation techniques get squeezed, thus lowering the possibilities to use one method as a check for the results of another, and availability of suitable primary data reduced.
- On the other hand, when moving from commodified goods to less tangible issues, the choices include ethical components. In part these are seen in questions of present fairness, as in North-South redistribution, and also in the equity issues relating to future generations, to the opportunities afforded to them and to the dangers and burdens we have imposed. In part they are seen, also, in the debates about the moral acceptability or social justifications for (e.g.) intervening in the genetic integrity of organisms, destroying habitats of endangered species, etc. This touches on the environmental valuation dimensions known as heritage and existence values. And again, when moving from market-type goods to cultural and ethical 'values', the choice among methods gets reduced.

A stylised map: the 'Monetisation Possibility Frontier'



Interpretation of the 'Monetisation possibility frontier' figure

The "scale" consideration, along the vertical axis, has important consequences for work with monetary aggregates and 'large-scale' environmental assets. Any attempt to establish a monetary figure for changes in natural capital stocks or in the value of key environmental services at a comprehensive national or global scale will encounter uncertainty problems. The resulting aggregate numbers will be of "low quality" from a

scientific point of view, and putting them in relation to other statistics of economic phenomena (such as current output) gives rise to the statistical quality problem of "horse and rabbit stew".

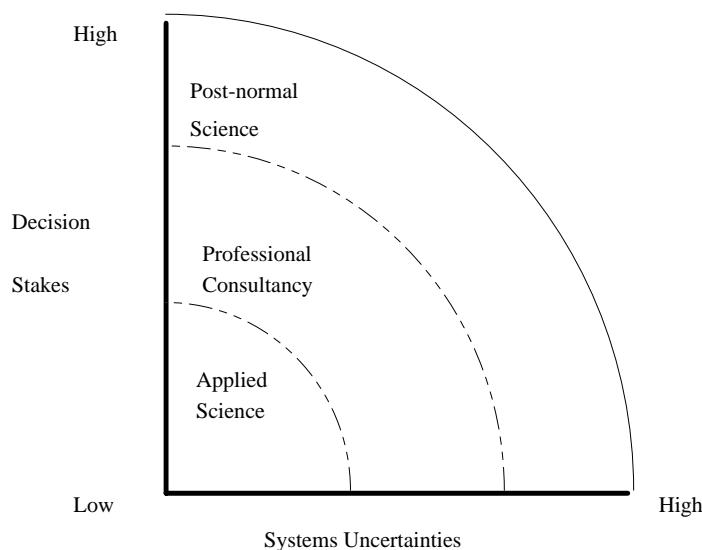
The "value type" consideration, along the horizontal axis, has important consequences for measurability, but also for the pertinence of monetary valuations. When moving from commodified goods such as crude oil or timber, to health risks or recreational services of e.g. forests and finally to issues essential for life-support or for cultural identity, measurability problems will increase and resulting values will become less reconcilable with current money transactions. Where cultural or ethical convictions are fundamental, and where the values of nature in question are not oriented towards commodity production and consumption but involve notions of self, of justice and honour, cultural identity or cosmic harmony, then the management of conflict resolution problems do not take the form of an economic optimisation. While some quantification of the opportunity costs of respecting this or that value commitment may be pertinent, this places us more in the domain of "cost-effectiveness" studies and multi-criteria decision support than of generalised monetary valuations.

On this stylised map one may imagine to place the various natural assets and environmental services. For example, the world's oil reserves or the recreational function of a forest close to a big city may well be within the monetisation frontier, whereas e.g. issues related to loss of species may not. The monetisation possibility frontier may be pushed inwards or outwards with changes in scientific knowledge of large-scale and complex phenomena, technical progress as to their substitutability (e.g. increased control over health issues or climate stability, long-range space travel may 'commodify' planets) and with changes in cultural and ethical norms.

Risk and uncertainty in applied science

Interestingly, a similar structuration to the problems of quantification and pertinence has emerged in a related domain of risk and uncertainty in contemporary applied science domains. In work by Jerome Ravetz and Silvio Funtowicz, the concept of "Post-Normal Science" has been developed as an orientation in science practice that is appropriate to major contemporary environmental management issues. It is a perspective to be applied when, typically, facts are uncertain, values in dispute, stakes high, and decisions urgent.

Funtowicz and Ravetz visualise this situation as one where either or both of "Systems Uncertainties" or "Decision Stakes" are large. When they are both small, traditional "Applied Science" is adequate, with self-contained analysis responses. When either is medium in intensity, then mere research expertise is insufficient; we may think of the tasks of the surgeon or architect, involving personal judgement and responsibility to clients, and this is "Professional Consultancy". Then, in the new classes of environmental problems, where either uncertainties or stakes are high, they suggest a new approach. Given the impossibility of resolving in a decisive manner the scientific uncertainties, and given the wide divergences that can exist between stakeholders as to what matters and why, they reconsider the question of who can and should be a legitimate participant in the evaluation process. This leads to the notion of an "Extended Peer Community", including all stake-holders in an issue who are prepared for a dialogue, regardless of their formal certification. Such an extension is necessary, they insist, not merely for the acquiescence of communities in decisions taken on their behalf, but equally for the effective quality-assurance of the scientific inputs into the decision process.



The lessons from this systematic investigation into scientific uncertainties and policy, can thus appropriately be taken across into the field of environmental valuation.