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A ROLE FOR DIVERSE ENVIRONMENTAL VALUES IN BRINGING ABOUT POLICY CHANGE: AN EXAMPLE FROM IRELAND

Craig Bullock

ABSTRACT

Craig Bullock (email: Craig.bullock@ucd.ie. ORCID iD: <https://orcid.org/0000-0002-3010-1772>), Environmental Policy, APEP (Richview), University College Dublin Belfield, Dublin 4.

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For many years, environmental valuation has been dominated by a singular reliance on economic methods. However, despite their increased sophistication, these valuation studies have, for the most part, only alerted policy makers to the existence of public good environmental benefits rather than achieving a significant re-focusing of policy in agriculture, forestry or the marine. Nevertheless, while we are continuing to experience losses in biodiversity and environmental quality, there are signs of a growing recognition of the importance of sustainability principles, exemplified in the EU's proposed Green Deal. In this context, there is potential for policy to be informed by wider environmental values. This paper explores how a recognition of such diverse values as relational or shared values can complement economic valuation to add more sustainability principles to policy.

INTRODUCTION

For at least the last four decades researchers have been working to understand the benefits that people realise from the natural environment. Much of the early charge was made by economics, specifically environmental economists, who argued that the environment and environmental quality matter to people (Pearce 2002). However, the importance of the environment is obscured by the fact that its value is not accounted for by normal market transactions. Negative externalities may follow for quality of life and well-being, for example, impacts on physical or mental health when poor environmental quality discourages outdoor activity. Losses of environmental quality further undermine ecosystem functions and environmental sustainability, including the environment's ability to produce renewable goods such as food, fish, forest products or clean water (Daily 1997). In all instances, there are social costs and equity considerations that need to be addressed: decisions on environmental resource use are made by the owners of property or user rights, including private individuals and companies, while the external costs are borne by wider society, including those who have least income or rights, and who are often most dependent on access to environmental goods.

In recent times, we have seen some recognition of environmental costs and benefits in government and EU policy. There have been positive measures to protect valued landscapes and species that are at risk from human impacts (e.g. the EU Habitats Directive, Landscape Convention or CAP Pillar II agri-environmental measures). Likewise, there have been steps

to mitigate environmental impacts. Some of the most obvious examples of environmental damage—serious air pollution, the hunting of whales, toxic pesticides or tanker oil spills—are now infrequent news items, at least in the developed world. Environmental impact assessment is also now routinely applied to larger public or private projects that might have negative implications for the environment.

Nevertheless, environmental quality is still deteriorating. The latest Article 17 report on the status of protected habitats and species submitted by Ireland to the European Commission finds that 85% of protected habitats are in 'unfavourable conservation status', with 46% being in a declining condition (NPWS 2019). Thirty percent of species are assessed as 'unfavourable', with 15% being in 'bad status', while 15% have also declined since the previous assessment report in 2013. These losses are mirrored internationally: a recent study by the World Wildlife Fund and the Zoological Society of London (2018) reported a halving of the abundance of species in the last twenty years, including abrupt and precipitous declines in insect populations (Sanchez-Bayo and Wyckhuys 2019). These trends have been replicated in Ireland with losses of species critical to soil productivity, pest control and pollination (Fogarty 2017).

Ironically, some of these losses have arisen in economic sectors that are fundamentally dependent on environmental quality and ecosystem services, including agriculture and fisheries. We are confronted with a gradual but persistent loss in biodiversity in every wild space or valued landscape, a loss akin to the 'Silent Spring' predicted by Rachel Carson (1962) half a century ago. Now this gradual

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deterioration in environmental quality seems destined to be accelerated by climate change, a threat compounded by the failure of political leaders to appreciate humans' profound dependence on the natural environment.

Therefore, one is tempted to ask what has environmental valuation achieved? This paper reviews the history of efforts to demonstrate the importance of the natural environment. It considers how environmental valuation is changing and adapting to a wider set of values identified by disciplines other than economics and what this can potentially offer in terms of more sustainable environmental management and a reversal in the loss of environmental quality.

THE CONTRIBUTION OF ENVIRONMENTAL ECONOMICS

Market failure is evident in many environmental goods because there are no market prices by which to judge their supply or quality (including their scarcity or vulnerability). In these circumstances, there is the risk of misuse due to the absence of price signals to influence people's behaviour or to reduce use or exploitation. The ultimate result could be the loss of the environmental goods or their extinction, particularly given that many such resources are common property (i.e. shared), open access (freely accessible) or non-rival (consumption by one individual does not reduce the opportunity for consumption by others).

For several decades now, economic valuation has been the principal means by which researchers have sought to demonstrate the value of the natural environment (examples of different methods of economic valuation from Ireland are noted below¹). Economic values are based on goods' contribution to personal utility or economic welfare. Individuals are assumed to have a good understanding of this contribution related to their personal preferences and which determines their response to market prices and, in turn, equates supply with demand. Although many environmental goods are not traded—or consequently valued—by normal market transactions it is assumed that people are still able to articulate their preferences for such goods. The application of non-market economic valuation methods relies on this assumption

and has been an important step in demonstrating the value of the natural environment.

The concept of 'total economic value' has been used to define goods in terms of their use and non-use. 'Use values' apply to goods that are used directly or indirectly, and to 'option values' associated with future potential use. 'Non-use values' may apply to goods that are still valued even when there is no distinct personal use, including goods valued for altruistic reasons or for future generations. Total economic value can be used to guide the choice of non-market valuation methods. For example, environmental resources have an *indirect use value* when they are an input to a final product. If that product has a market price, then the *production function* method can be applied to estimate the relative contribution of the environmental resource to the product's final price. Hence, naturally fertile soils or pollination are inputs in the production function of marketed food products. If the soil is less fertile, or pollinators are scarce, then this could reveal itself in lower production. Alternatively, a *replacement cost* method could be used if inorganic fertiliser has to be purchased to compensate for the loss of soil fertility, or if hand pollination is needed to replace the work of natural pollinators. Similarly, if there is a loss of a wetland that protects property from flooding, then the replacement cost could be represented by the cost of a flood wall or another defence. Alternatively, *avoided cost* estimates the cost of property damage—or other damage—avoided due to the mitigation services of the wetland.

The contribution to or impact on welfare is equivalent to people's willingness to pay as defined by their preferences. These preferences can be revealed by behaviour, for example, when a person chooses to spend time or money travelling to a place of outdoor recreation. However, this revealed preference and the indirect valuation methods outlined in the preceding paragraph capture only a part of economic value and not the full consumer surplus, i.e. the maximum utility that people receive from the environmental good. In principle, *stated preference* methods achieve this by asking people directly in surveys how much they are willing to pay to achieve a particular environmental outcome (equivalent to the compensating variation to maintain utility). In many cases, stated preference might be the only means of estimation.

However, stated preference methods such as *contingent valuation* are plagued by potential biases that affect accurate estimates of preference value. For example, there is the risk that respondents will agree to token or donation type sums, fuelled by an altruistic 'warm glow' of doing something positive for the environment rather than as an expression of their true preference (Andreoni 1990). Contrary to the assumptions of neo-classical economics, interviewers often find that people have difficulty in expressing a willingness to pay for something that they might value highly but are not accustomed to valuing in monetary terms.

¹ Some examples of production function, replacement cost or avoided cost are applied to cases in Ireland by Bullock and O'Shea (2013), travel cost by Hutchinson *et al.* (2003) on forests, contingent valuation by Wattage *et al.* (2011) and Norton and Hynes (2018) on the marine, or Bullock and Collier (2011) on peatlands, and DCE by Scarpa (2000) on nature reserves, Campbell *et al.* (2009) or Hynes (2011) on natural rural and landscapes, Stithou *et al.* (2012), Buckley *et al.* (2016) or Kelly-Quinn *et al.* (2020) on water quality, Grilli and Curtis (2020) on salmon conservation.

Nevertheless, an argument often made in support of economic valuation is that of pragmatism. Policy or decision makers manage budgets and so are familiar with the business of weighing up benefits and costs (Spash 2006; Gomez-Baggethun and Ruiz-Perez 2011). Most countries have guidelines on cost-benefit analysis for use in project evaluation and so monetary estimates of environmental values can be slotted into such a process. This is regarded as preferable to treating environmental goods as *intangibles* to be addressed qualitatively or in separate exercises. In this context, *discrete choice experiments* (DCE) have the ability to identify the value of particular environmental components—or *attributes*—based on a hypothetical comparison of two or more varying composite goods between which a survey respondent is asked to choose. Although they depend on respondents' stated preference for alternative scenarios, DCE can provide a monetary estimate of environmental value if a price is included as one of several attributes. DCE are still vulnerable to protest bids or non-response from people who do not like the valuation question or feel unable to answer it, but have the virtue of resembling a normal market transaction choice between products with varying characteristics. The 'price attribute' is more palatable when presented in this format, but there is still a need to identify a meaningful *price vehicle*. This remains an awkward choice for goods that are essentially non-market; options are often limited to marginal increases in tax, journey costs or entry fees. If not convincing, there is the risk that respondents will treat price as hypothetical and pay more attention to the physical attributes in the exercise.

ECOSYSTEM SERVICES AND NATURAL CAPITAL

The concept of ecosystem services emerged following the publication of the Millennium Ecosystem Assessment (MEA 2005) and earlier work by, for example, de Groot *et al.* (2002). Ecosystem services are the means through which biodiversity and ecosystems contribute to human well-being. As such, ecosystem services are essentially instrumental and broadly coincide with the notion of 'total economic value'. The concept is complemented by that of natural capital, namely the stock of living and non-living components of ecosystems. Even though the term emerged prior to ecosystem services in the 1980s or arguably earlier (Missemer 2018), it serves to emphasise the value of the natural environment and the flow of goods and services it provides.

Ecosystem services provided economic valuation with a shot of respectability as researchers sought to demonstrate the benefits. The Economics of Ecosystems and Biodiversity (TEEB 2010) presented a range of economic values for different services based on international studies. In principle, the

instrumental value of provisioning and regulating services can often be valued using production function or related methods, although the incremental physical contribution of many ecosystem services may be under-researched and poorly understood (Bullock 2016). By comparison, the contribution of cultural ecosystem services to well-being—for example, natural settings and sense of place—can be partially valued through the use of revealed or stated preference methods (Fish, Church and Winter 2016). Here again, though, the role of the ecosystem in providing cultural services may be only partial as there could also be input from other factors, including abiotic factors such as sea or land forms, cultural heritage, or even facilities such as footpaths, seating or toilets. Indeed, the importance of these factors is often pointed out by survey interviewees themselves. Hence, environmental goods get bundled with place-based values that can make the respective contribution of the environmental attributes difficult to distinguish (Beiling *et al.* 2014).

VALUE PLURALITY

Environmental economists have long fought a rearguard action against those who resent the use of monetary approaches to value environmental goods. It has been argued that such methods promote the 'commodification of nature' (Bresnihan 2016; Gomez-Baggethun and Ruiz-Perez 2011) by which nature is reduced to a commodity to be assessed alongside other products. It is argued that not only does this commodification overlook the unique characteristics of nature, but such treatment potentially exposes the natural environment to new user allocations with the risk of further disenfranchising those who have previously accessed it freely. Economists counter that valuation methods are only applied to the extent that the environment provides goods of instrumental or utility value and that such approaches do not preclude the existence of other values such as intrinsic value. Although acknowledged by economics, intrinsic value—namely the value of nature in and of itself—is not captured by market transactions or, in principle, by non-market valuation. The accusation of commodification presumes that monetary valuation risks formalising this omission.

The younger discipline of ecological economics rejects the assumption that nature can be substituted by other goods for which a price can be identified or negotiated. The existence of a smooth production function represented by continuous substitution possibilities is denied. Over time, efforts to explain the full plurality of benefits provided by the environment have fundamentally exposed the limits to economic valuation. The environment can be a commodity that is owned or purchased by individuals for its utility or productive value. However, it will

continue to have a wider value for others, including for non-instrumental reasons such as wildlife habitat (Jax 2013). These include a wide range of value domains including intrinsic values, but also relational values. As the natural environment is a public good, it is also a social good with values that are shared. Consequently, choices are fundamentally ethical as use by an individual determines how much is left for others (Vatn 2009). Shared values cannot be estimated simply by aggregating individuals' values. Individual values comprise the preferences of some people who are focused on their own utility as 'consumers', but also the values of others who are motivated by wider communal or societal benefits. From its beginnings, ecological economics has argued that many environmental values will simply be incomparable, or incommensurable, with utility-based economic values (Pascual *et al.* 2010; Gomez-Baggethun and Martin-Lopez 2015). Applying monetary valuation further aggravates this omission by relying on the prevailing distribution of income and the values of those most able to pay.

Where goods are shared, there are likely to moral, or eudaimonistic, beliefs present related to common goals stemming from culture or membership of a community (Chan *et al.* 2016; Jax 2013; Kumar and Kumar 2008; Thrift and Whatmore 2004). These beliefs, along with ethical, or deontological, beliefs in what is fair or right, inform transcendental values that guide people's behaviour (Raymond and Kenter 2016; Arias-Arevalo *et al.* 2018; Berger and Luckmann 1967). A sense of stewardship for the environment is often contained within these transcendental values, along with a relational value justification informed by people's interaction with nature and one another (Chan *et al.* 2016; Muraca 2011). Relational values can also be stronger where socio-ecological relationships derive from an interdependence between humans and nature. Classically, these relationships form in traditional farming systems, artisanal fishing or hunting communities where the fragility of people's existence introduces a relational value through the respect and knowledge that people derive for nature or ecosystems (Berkes 2004). However, they can also apply to people who engage in recreation in the natural environment or to those with specific interests such as birdwatching (Verbrugge and van den Born 2018). They are further informed by contextual values associated with particular experiences or with settings or places (Wessells 2010; Brown 2013), including where one's sense of being or belonging is informed by such places. Increasingly it is recognised that intrinsic values may be present alongside relational and contextual values, especially where values are guided by a belief in a oneness with nature or the rights of nature.

The need to recognise a greater plurality of values has been argued by Martinez-Alier *et al.*

(1998), Gomez-Baggethun *et al.* (2011), Arias-Arevalo (2017), Arias-Arevalo *et al.* (2018) and others. Diverse conceptualisations of value have been described by the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES) (Pascual *et al.* 2017) to account for the diverse range of benefits that flow from ecosystem services and which exceed purely material or utility outputs. In particular, IPBES is now preparing a values assessment for 2022, which is likely to describe the plurality of social and shared values in more detail. The term 'Nature's Contribution to People' (NCP) has been adopted to account for this wider conceptualisation of values, including instrumental as well as relational, shared and intrinsic values.

Whereas neo-classical economics assumes that people can objectively articulate their preferences, socio-cultural valuation believes that the complexity of people's associations with the natural environment means that these values are best estimated through a process of social value construction (Spash 2002). The use of deliberation within a workshop setting provides people with an opportunity to reflect on their values and to discuss these with others and with experts, i.e. through a process of social learning (Lo 2011). To this end, Kenter *et al.* (2016) have proposed a Deliberative Value Formation Model to guide deliberation, beginning with contemplation of core transcendental values.

INFLUENCE OF ENVIRONMENTAL VALUATION ON POLICY

While environmental valuation methods have been with us for over 40 years, it seems they have only made a modest impact on policy (Laurans *et al.* 2013). Monetary values may indeed be appreciated by policy or decision makers who are familiar with cost benefit analysis, but they have not had as great an influence on their decisions as we might have hoped. Certainly, policy does now demonstrate some recognition that the public good value of the environment cannot simply be set aside as 'intangible'. It has been the case that some applications have been commissioned to provide a rationale for existing policy choices even when presented as research. However, discrete choice experiments do have the capacity to demonstrate the relative benefits of alternative actions or levels of provision and the utility of this approach is beginning to be appreciated, for example in relation to alternative agricultural or forest management. Most State and EU expenditure is still directed at supports for higher intensity farming or fast-growing exotic trees even though these can have adverse implications for environmental quality and biodiversity (Purvis *et al.* 2009; O'Callaghan *et al.* 2017). To date, environmental measures have had a slight peripheral effect (Finn and O'hUllachain 2012; Batáry *et al.* 2015; Kleijn

and Sutherland 2003), but could yet become more prominent given EU policy trends.

Public surveys reveal a relatively high willingness to pay for measures to protect the environment or biodiversity, but these findings have not nudged policy onto a new environmental course. National policies are—together with spending on the environment or biodiversity—guided by European Union policies (Cahill 2011), including the c. 70% of biodiversity-related expenditure paid out through the Common Agricultural Policy (CAP). Agri-environmental payments are based on compensatory criteria related to the opportunity costs of higher intensity farming underpinned by CAP supports. If this rationale were to be exchanged for one that is more focused on sustainability, then there might be more payments for floristically diverse meadows rather than the monoculture of single sward grassland that dominates Irish rural land cover. Most payments have also been directed at marginal farms that have a relatively low environmental impact as they possess land whose productivity is low and where farmer incomes can most benefit from the financial transfer.

Water quality is another area that attracts high economic values, but which is also closely related to land use policy. In the UK, the National Ecosystem Assessment (UK NEA) included a working paper by Morris and Camino (2011) who estimated the ecosystem services value of improved water quality in England and Wales at £1,140 million. In Ireland, Norton *et al.* (2012) demonstrated how household compensating surplus values from a primary survey of the River Boyne (Stithou *et al.* 2012) could be transferred to 15 other river catchments across Ireland; with the respective public good benefit of achieving Good Ecological Status (GES) ranging from €26 to €68 per local household per year. Although these values are subject to a significant range of error and cannot simply be aggregated across all of the 46 catchments and 1.6 million households in Ireland, they do provide an indication of the minimum value of improvements to individual rivers.

In fact, actual state spending on improving water quality has been higher than these economic estimates, although the stimulus has been the EU Water Framework Directive and the prospective fines that Ireland would incur if its waterbodies fail to achieve GES by 2027. Ireland has been reprimanded for its poor investment in improving water quality and has worked to invest in better wastewater treatment and to implement agricultural and forestry regulations to manage slurry or fertiliser applications. Nevertheless, despite these initiatives and a sizable investment, the latest report on water quality in Ireland (EPA 2019) reveals a further reduction in water quality with just 52.9% of rivers in GES, of which just 0.8% are now considered to be 'pristine' compared with 13.4% of surface waters in 1987–90. More (429) rivers

showed a decline in status compared with those that improved (301). Nutrients from agriculture were found to be a significant pressure in 53% of vulnerable waterbodies while wastewater was a significant pressure in 29%. Excess sediment and forestry were also identified as pressures.

The one positive trend reported by the latest survey was that water quality had improved in 132 of the 492 Areas for Action. These priority areas have been targeted by the Local Authority Waters Programme (LAWPRO) established by the former Department of Housing, Communities and Local Government (DHCLG) in collaboration with the EPA and other State Agencies. A catchment assessment team of scientists has sought to identify specific pressures and to propose mitigation strategies directly with landowners and others. Sources of pollution have often been narrowed down to a handful of locations or tributaries.

The other arm of LAWPRO has been to engage more openly with local people through community water officers and to encourage public participation to identify strategies to improve and maintain water quality at catchment level. It is in this area that an identification of the range of social values and new approaches to valuation become relevant. For water, it must be acknowledged in the first instance that there is often rather limited interaction between local communities and their rivers. The lack of riverside walking paths in Ireland, or indeed countryside access generally, means that people often have a poor knowledge of their rivers and lakes. It would be unreliable to rely solely on economic valuation to assess the value of these waterbodies. More dependable estimates are likely to be obtained from regular users such as anglers or kayakers, but these interests represent a small element of the population. In public information evenings across the country, LAWPRO has therefore first sought to ask participants an open question: 'what does your local river, lake or beach mean to you?' (LAWCO 2018).

DISCUSSION: APPLYING PLURAL VALUES

There are some indications of fundamental changes in policy towards the environment, influenced by climate and sustainability policy, and to a lesser extent, biodiversity objectives. The new EU 'Green Deal' could yet reorientate some existing policies, such as for agriculture, towards reduced environmental impacts. In the meantime, however, there remains a need to influence behaviour and engage people; this will require an understanding of *why* the environment matters to people. Economic valuation is an important means to weigh up often conflicting social, economic and environmental needs. However, the fundamental reliance of economic

valuation on utility based preferences, means that it should be used in combination with an understanding of the role of wider relational, shared and intrinsic values to provide us with a better understanding of what motivates beliefs and behaviour (Pascual *et al.* 2017). Of course, while our focus is the environment, environmental values are only part of the equation and it will be necessary to understand how these relate to people's sense of community, place attachment or other socio-economic trade-offs. As LAWPRO has demonstrated, communication strategies will need to draw on an understanding of the personal objectives of stakeholders, their sense of identity, and how they rationalise their behaviour and the perception of their standing in the community (see McHenry 1998). An understanding of these factors could strengthen public and stakeholder engagement with environmental policy. For example, there are indications that by acknowledging farmer motivations, the locally led agri-environmental schemes currently being trialled could also achieve more positive environmental outcomes than previous measures.

CONCLUSION

According to Arevalo *et al.* (2018) value pluralism has yet to be operationalised in ecosystem services assessments. However, much of the literature on the plurality of environmental values is quite recent, particularly as it pertains to ecosystem services. Economic valuation, even when it has identified significant positive values for improved environmental quality, has not achieved major changes in prevailing policy. It is also evident that, in many areas, biodiversity and environmental quality are continuing to deteriorate despite high profile EU policy objectives that aim to reverse these trends. However, despite this legacy, there are positive signs in the form of a growing recognition of the importance of public participation and behavioural factors in supporting change from the bottom-up. It is in this context that an understanding of the role of wider environmental values could strengthen public engagement and allow us to raise the profile of environmental quality.²

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