Natural Capital and Biodiversity

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Introduction

This chapter is concerned with the commodification of biodiversity, and in particular with the development of offset markets as a means to achieving "no net loss" or "net gains" in biodiversity. The first section places the arguments about commodification of biodiversity in the context of wider debates about the commodification of environmental goods. What are the sources of environmental problems such as biodiversity loss? Market-endorsing arguments in neo-classical welfare economics claim that their source lies in the incomplete commodification of environmental goods and the solution in their commodification. In contrast, market-sceptical positions are critical of arguments for commodification and more strongly claim that the generalised commodification of environmental goods is itself a source of environmental problems. The second section focuses specifically on the commodification of biodiversity and offset markets. It argues that environmental problems such as biodiversity loss have their source not in incomplete commodification, but, rather, in their commodification.

Some initial clarification is required here about the concept of commodification used in the chapter. Commodification is the process of transforming a good into a commodity. Two senses of the concepts of "commodity" and "commodification" can be distinguished:

1. In its primary sense, a good is a commodity if it is the object of market exchange. A commodity is a good that has exchange value. Correspondingly, commodification in its primary sense involves the transformation of previously non-commercial goods into objects of market exchange. Typically this will require the definition and assignment of a set of rights over the goods that render them possible objects of market exchange.
2. A good is a commodity in a secondary sense if it is conceptualised and valued as a marketable good. Commodification in this sense involves the extension of relationships, attitudes and forms of valuation typical of the market to objects which were previously characterised by non-market modes of value and spheres of activity constituted by non-market relationships. Consider for example the account of commodification offered by Anderson. Markets are characterised by impersonality, the freedom to pursue individual advantage, goods that are exclusive and non-rival, want-regarding attitudes to goods, and the exercise of exit rather than voice as an expression of dissatisfaction with a good. Market modes of valuation are contrasted with other modes of valuation, for example those characterised by attitudes of respect for intrinsic value, by personal attachment and by shared values (Anderson, 1993, ch.7).

The secondary sense of commodification is parasitic on its primary sense. The social sphere of market exchange is constituted by particular social meanings and modes of valuation. Commodification in the secondary sense occurs when goods that are not actually marketed are conceptualised and valued according to these social meanings and modes of valuation. Both senses of commodification are at play in conflicts about the commodification of environmental goods.

Commodification and the environment

Environmental goods are currently the object of incomplete commodification. Much of non-human nature has long been commodified. Land, timber, crops, domesticated animals, fish, coal, oil, minerals and other inputs into manufacturing are exchanged in local, national and international markets. They are typically conceptualised as market resources and valued as such. However, much of non-human nature has been hitherto uncommodified. Commons and publicly held land and resources are typically inalienable and not subject to market exchange. The atmosphere and its absorptive capacity, clean air, and many water resources have not previously been an object of exchange. Neither have much wild animal and plant life. Biodiversity – biological diversity at the various genetic, species, habitat and ecosystem levels at which it is described – has been until recently uncommodified. However, these items of previously uncommodified nature are being subject to commodification. Their commodification has been a site of conflicts. The conflicts raise questions about the relationship between commodification and environmental problems. Those questions and conflicting answers to them have been subjects of debate that have a long history between market-endorsing and market-sceptical positions (O'Neill, 2016; Neuteleers, 2022).

Market endorsing positions

Arguments for the claim that the solution to environmental problems requires a more complete commodification of environmental goods take various forms (O'Neill, 2016). The most influential on policy is that from neo-classical welfare economics (Pearce and Moran, 1994; Helm and Hepburn, 2012). This approach assumes a preference satisfaction account of well-being. An attraction of the account is that it brings well-being under the "measuring rod of money". A person's preference for some marginal change in a bundle of goods can be measured by their willingness to pay for that change. On the neo-classical approach, the source of environmental problems lies in the fact that preferences for environmental goods, such as biodiversity, and preferences to avoid environmental harms, such as pollution, are not captured in market transactions. These "market failures" entail that markets do not realise the Pareto optimal outcomes of the "ideal markets" described in welfare economics. They are "externalities", costs and benefits that are not captured within market exchange (see Bertrand's contribution in Chapter 3 of this volume). The solution to the problem is to internalise them within market exchange through the extension of market prices to unpriced environmental goods. This can be achieved directly through commodification of environmental goods in its primary sense:

the construction of markets for the goods, through definition of rights such as rights to pollute (see Chapter 24 by Berta in this volume) or biodiversity offset credits that can be the object of exchange. It can be achieved indirectly through commodification in its secondary sense – through the practice of placing shadow prices on environmental goods through individuals' willingness to pay at the margin for such goods if there were a market. Shadow prices are inferred either through market behaviour (e.g. travel costs or property markets), or through stated preferences in some hypothetical market contexts (e.g. contingent valuation). The shadow prices can enter into cost-benefit analysis that mimics the outcome of ideal markets. The criterion of choice used is an efficiency criterion, potential Pareto improvement – "the Kaldor-Hicks compensation test": a situation S1 is an improvement over S2 if the gains are greater than the losses, so that the gainers could compensate the losers and still be better off. An outcome is optimal if it maximises gains over losses. Commodification in either the primary or secondary sense is a condition for the solution of environmental problems.

Market sceptical positions

Against the view that the solution to environmental problems lies in the commodification of environmental goods stand various positions that challenge arguments for expanded commodification, some of which, more radically, hold that the very commodification of environmental goods is a major source of environmental problems.

Commodification, growth and environmental destruction

One central argument against increasing commodification is that it fails to address, and indeed exacerbates, one of the major underlying structural causes of environmental damage, the systemic imperative to economic growth. Particularly influential here is Marx's characterisation of capitalism as a form of society in which "commodity production is generalised" (Marx, 1970, ch.24. section 1): both labour power and nature are commodified and subordinated to the end of the accumulation of capital, to "production for production's sake" (Marx, 1970, ch.24. section 3), to the detriment of both the labourer and the natural world (Marx, 1970, ch.15. section 10). The forces that drive accumulation are systemic: the capitalist is forced by market competition to continually recycle surplus value into expanding production (Marx, 1970, ch.4). The expansion of the commodity frontiers for the extraction of resources for accumulation puts increasing pressure on biodiversity and habitats, and the dispossession of those whose livelihoods depend on them (Moore, 2000; Temper et al., 2015). In the absence of an absolute decoupling of economic growth from increasing greenhouse gas emissions and material throughputs in the economy, it will continue to drive climate change and biodiversity loss.

Commodification, commensurability and compensability

A central set of arguments against both primary and secondary forms of commodification are those that reject the claim that there is a single measure of value, specifically a monetary measure, through which different options, states of affairs and goods can be ordered.[1] The assumption that there is a single monetary metric is grounded within neo-classical welfare economics through a preference satisfaction account of human well-being. Against this view stand versions of value-pluralism that hold that there exist a variety of different values, irreducible to each other or some super value, which cannot be captured by a single metric of value or more specifically a monetary metric of value. One form value pluralism might take is that other things matter apart from human well-being. A pluralist account of value might appeal to the intrinsic value of the flourishing of non-human beings and states. However, a pluralist view can also be sustained within a framework concerned with human well-being, given a pluralist understanding of well-being according to which there is a plurality of constitutive dimensions of well-being – physical health, personal relations, wider social relationships, autonomy, knowledge, aesthetic experience, accomplishment and achievement, sensual and intellectual pleasures, a well-constituted relation with the non-human world, and so on. Pluralist objective accounts of well-being that appeal to needs (Wiggins, 1998, essay I) and capabilities (Sen, 1993; Nussbaum, 2000) offer influential examples. No single monetary measure is able to capture these different dimensions of well-being. Some central dimensions of well-being are indeed constituted by a refusal to treat them as tradable commodities that can be bought or sold. For example, certain social relationships such as friendship and love are such that they cannot be the objects of market exchange (Raz, 1986: 345ff.; see Panitch's contribution in Chapter 4 of this volume). Correspondingly, those with whom we stand in such relationships are the object of non-market modes of valuation. Constitutive incommensurability is evident in refusals to place monetary values on environmental goods discussed below.

These claims about incommensurability have implications for the possibilities of compensation for the loss of particular goods. The concept of compensation is used in economics to describe relationships between losses and gains with respect to well-being. A loss in a good *A* is compensated for by a gain in a good *B* for some agent if the agent is not worse off after the loss and gain. The state after the gain of *B* is at least as good as the state before the loss of *A*. The good *B* is a substitute in a welfare sense for the

[1] The concept of value commensurability is used in different senses. On one usage, different options are commensurable if their value can be measured on a cardinal scale of value, such as money (Chang, 1997, pp. 1–2; Aldred, 2006). On this use, "commensurability" is distinct from "comparability", the claim that options can be ordered under some value. Others use the terms interchangeably (Raz, 1986, chapter 13). This chapter focuses on criticisms of monetary measures of value.

good *A*. However, given the existence of plural and incommensurable constitutive dimensions of well-being, some losses in goods central to well-being will not be compensable in this welfare sense. The end of a central relationship in a person's life, such as a loss of a close friend or family member, cannot be compensated for by some gain in some other dimension of well-being. The loss has no substitute. The existence of such blocks on substitutability has implications for the commodification of environmental goods discussed further below.

Distributional objections

There are a number of distributional objections to the use of a monetary metric of the value of environmental goods.

i. Willingness to pay is income dependent. If a raw monetary willingness to pay metric of preferences is used, the preferences of those with lower incomes will count for less than those with higher incomes. Monetary metrics might be weighted relative to incomes in response (Kolstad et al., 2014, 3.6.1). In practice, cost-benefit analysis employs unweighted metrics. The consequence is that the preferences of the poor count for less, and the most "efficient" siting of developments, such as a road or mine or of an environmental offset with negative impacts, will fall on those with lower incomes. Similarly, "efficient" markets will tend to allocate goods disproportionately to the wealthy and burdens disproportionately to the poor.

ii. Monetary metrics of goods fail to distinguish the ethical significance of the satisfaction of vital needs as against the satisfaction of trivial preferences. A monetary metric simply measures the strengths of preferences. It does not capture vital needs at stake, such that if the need is unsatisfied a person is harmed, falling below some minimal threshold of human well-being. An agent is not necessarily harmed if their preferences are not satisfied. They are harmed if they are unable to satisfy a vital need (Wiggins, 1998, essay I; O'Neill, 2010).

iii. The criteria that define optimal outcomes in neo-classical defences of market solutions to environmental problems are premised on forms of aggregative consequentialism. The optimal outcome is that which most efficiently improves total welfare. Serious harms are justifiable if they lead to an aggregate improvement in well-being. Given a preference satisfaction account of well-being, environmentally damaging projects that threaten vital needs can be justified in cost-benefit analysis through the satisfaction of numerous but relatively trivial preferences (Wiggins, 2006).

iv. The interests of future generations and non-humans cannot be captured directly in either actual or shadow prices which reflect the preferences of current generations of market actors. At best they are captured indirectly and precariously to the degree that willingness to pay of current consumers reflects ethical concern for the well-being of future generations and non-humans (O'Neill, 1993, ch.4). Injustice to future generations is exacerbated by the practice of discounting.

v. Markets facilitate injustice through displacement. The claim is central to Kapp's criticisms of the concepts of "externalities" and "market failure". On the standard view, environmental problems are "market failures". The concept of "market failure" is founded on the claim that, in the absence of a series of imperfections such as externalities, transaction costs and imperfect information, markets lead to ideal welfare improving outcomes, specifically to Pareto optimal outcomes. Externalities that are the source of environmental problems are grit in an otherwise efficient social machinery. The solution is to "internalise" those externalities by extending market prices to previously unpriced goods. Kapp's criticism of the concept of "externality" and his replacement with that of "cost-shifting" contests these assumptions. The shifting of costs from those who produce them to other individuals or society in general are not "minor disturbances" in an otherwise ideal market, but rather systemic features of market economies (Kapp, 1963, 1978, p. 13). They result from the acts of rational agents in markets who, to compete, need to lower their production costs relative to competitors (Ibid, p. 14). Environmental problems are not market failures that could be resolved by being internalised into markets. Rather they are problems that are the result of the way that markets operate. Kapp's argument points to a wider set of arguments around ways commodification can facilitate injustice through displacement. Offset markets are particularly prone to this for reasons discussed in the section below on the distributional objections to offset markets.

Deliberative criticism

The marketisation of environmental goods takes the formation of environmental policy outside of the domain of public deliberation to which it properly belongs. Willingness to pay and monetary valuations are reason-blind. They express the strength of persons' preferences for some good. They do not reflect the soundness of the reasons they have for those preferences (O'Neill, 2007, ch.1). The preferences do not need to pass the test of being able to survive deliberative scrutiny. In contrast, judgements expressed in public deliberation do have to survive being made public. Hence, participants are forced to offer reasons that appeal to general rather than particular interests. As such, the interests of future generations and non-human nature are more likely to be represented in deliberative as against market-based modes of governance (Goodin, 1996, pp. 846–847).

Natural capital, biodiversity and offset markets[2]

Environmental policy making at local, national and international levels has been increasingly articulated in the language of natural capital. The various environmental goods that matter to people, such as woodlands, wetlands, rivers, rural and urban landscapes, biological variety at the different levels it is described – eco-system, habitat,

[2] This section draws on arguments in O'Neill (2017; 2020).

species and genetic – are conceived of as forms of capital and are valued as such. What is it to value environmental goods as natural capital? A number of different claims need to be distinguished (O'Neill, 2017, pp. 3–5):

1. Ecosystem services: The core claim that all accounts of natural capital share is an account of how environmental goods should be conceptualised and valued. Like "produced capital" (machines, roads, buildings, etc.) and "human capital" (health, education, skills) they are to be conceptualised as assets to be managed and valued for the services they provide for human well-being (Dasgupta, 2021, ch.1). Natural capital provides a series of "ecosystem services": provisioning services, such as inputs into food production, water, plant-based medicines; regulating services, such as carbon sequestration, waste assimilation, pollination; cultural services, such as recreation or aesthetic enjoyment; supporting services, such as soil formation and photosynthesis (Millennium Ecosystem Assessment, 2005; TEEB, 2010; Chapter 25 by Martin-Ortega and al. in this volume).
2. Compensation and substitutability: The claim that environmental goods should be valued for their services grounds a second set of claims about compensability and substitutability. Given that goods are valued for their services, the loss of one component of capital can be compensated by a gain in another component of capital if the services they provide either maintain or improve total well-being. As Helm puts it "the aggregate of natural capital should be non-decreasing" but "there can be substitutability between different types of natural assets" (Helm, 2014, p. 111). The approach to sustaining an overall level of "natural capital" is influential through "no net loss" or "net gain" approaches to environmental policy. Policy should aim at maintaining or improving total aggregate levels of natural capital through compensation of loss in one component of natural capital with gains in another. The loss of one habitat can be compensated for example through the protection, restoration or the creation of another.
3. Monetisation: The claim that environmental goods should be understood as natural capital, valued for the services they provide for human well-being, grounds their monetisation, given the further assumption that well-being consists in preference satisfaction where the strength of preferences can be measured through agents' willingness to pay. The determination of this monetary value can be ascertained either through revealed or stated preference methods for ascertaining a shadow price or through the construction of markets for the goods (see Chapter 25 by Martin Ortega et al.).
4. Marketisation: The use of markets, and in particular offset markets, is defended as the most efficient and effective means to maintain aggregate natural capital. Given "unavoidable" environmental losses through development, offset markets are taken to offer an effective route for compensation for that loss: payments by the developer causing damage for environmental gains elsewhere leave aggregate levels of natural

capital as good or better than they were before the trade. Payments can take a variety of forms. The developer might directly pay a third party, for example an NGO, to create an offset: consider, for example, the payments made by Rio Tinto Zinc to environmental NGOs to protect forest discussed below. The developer might make payments to a central government offsetting fund, such as the Indian Compensatory Afforestation Fund discussed below. Finally, a conservation bank might assign credits to land-owners or environmental organisations for preserving, creating, restoring or enhancing a site of biodiversity which can be bought by developers to offset environmental damage. Market efficiently at sites where the cost of maintaining aggregate natural capital is lower.

The claim that environmental goods should be understood as natural capital involves a number of distinct claims, involving forms of both primary and secondary commodification. The first three claims involve potential and actual forms of secondary commodification. The first core claim, that environmental goods should be understood as assets to be valued for their services, reconceptualises nature in an instrumental and impersonal manner and is a presupposition of the stronger claims about substitutability and compensability. The monetisation of environmental goods can take either a secondary form of commodification, where the good is the object of shadow pricing, or a primary form where the good is priced in a market. Marketisation involves primary forms of commodification.

Offsets, accumulation and the creation of a perverse asset set

One of the promises of biodiversity offsetting is that it overcomes the potential conflicts between the protection of biodiversity and continuing economic growth. Offsets are presented as part of a "mitigation hierarchy." Development should first attempt to avoid or reduce biodiversity loss, then mitigate losses on site where possible, but where avoidance, reduction and on-site mitigation are not possible, offsets allow for the compensation of the loss of biodiversity through payments for its maintenance or enhancement at another site. The result is claimed to be no net loss or net gain in biodiversity. It is a policy mechanism that renders the goal of "preserving the aggregate level of natural capital" consistent with "major increases in consumption that economic growth will bring" (Helm, 2014, p. 109).

This argument is open to the objection noted in the previous section, that the source of environmental problems lies in the systemic imperatives within a capitalist economy for growth and capital accumulation. The extension of the commodification of nature through offsetting does not address these systemic imperatives. It rather attempts to shift the boundaries of nature and sites of biodiversity to accommodate them to the growth imperatives (Spash, 2015). Indeed, the monetary value of biodiversity as an asset becomes structurally tied to the continuation of economic growth and the environmental losses this brings.

Offset markets create a perverse asset class: the economic value of an environmental good becomes dependent on the existence of environmental losses. For example, the economic value of a site of biodiversity as an offset is dependent on the loss of biodiversity elsewhere. Without that loss it is economically worthless. Offset markets create a structural dependence of nature conservation on the existence of environmental losses. Correspondingly, environmental organisations engaged in biodiversity market transactions find themselves structurally dependent on companies engaged in the destruction of sites of biodiversity (Seagle, 2012). One consequence is the limits this places upon their capacity to respond to environmental damage on which their own finances have become dependent (O'Neill, 2017).

Valuation, compensation and substitutability

The core claims about environmental goods as natural capital involve a particular conceptualisation and mode of valuing those goods. Biodiversity, habitats, landscapes and other environmental goods are valued for their ecosystem services. What is it to value goods for their services?

Consider the following influential characterisation of services and their place in economic theory offered by Ayres and Kneese:

> Almost all of standard economic theory is in reality concerned with services. Material objects are merely the vehicles which carry some of these services, and they are exchanged because of consumer preferences for the services associated with their use or because they can help to add value in the manufacturing process. (Ayres and Kneese, 1969, p. 284)

Ayres and Kneese make three claims about the concept of services that can be distinguished (O'Neill, 2017, p. 6):

1. Instrumental value: To value goods for their services is to value them instrumentally, as a means
   for some specified end.
2. "Mere vehicle": The good is valued "merely as a vehicle" that provides those services.
3. Scope: The ends for which the goods are valued are the direct satisfaction of consumer preferences through their use, or their indirect satisfaction through their role in manufacture.

The concept of ecosystem services widens the scope of services, including for example through the regulating and supporting role that environmental goods offer. However, in standard economic literature, the assumption that well-being understood as preference satisfaction is the end for which services are valued remains. So too are the first two claims. Environmental goods are valued instrumentally as mere vehicles for the provision

of services.

The valuation of environmental goods for their instrumental value for human well-being is open to objections concerning the value of those goods that are independent of human well-being. It fails to capture the value that non-human beings or states have independent of their contribution to human well-being. These are important objections, but they will not be those I consider here. Both the instrumental value assumption and the mere-vehicle assumption are open to objections where we simply consider the relationship between environmental goods and human well-being.

Consider first the mere vehicle assumption. A good is valued "merely as a vehicle" that provides services. For what class of objects is the mere vehicle claim true? A starting point for an answer to this question is the distinction between *de re* and *de dicto* valuations. A joke about the socialite Zsa Zsa Gabor illustrates the distinction:

> Zsa Zsa: "Ah! People misunderstand me! They think that I am just a creature of leisure, that I do nothing useful, but they are wrong. I am constantly finding new ways to do good for people."
>
> Interviewer: "Like what?"
>
> Zsa Zsa: "I have found a way of keeping my husband young and healthy, almost forever." Interviewer: "Eternal youth… that is quite a discovery! How do you do it?"
>
> Zsa Zsa: "I get a new one every five years!"
>
> (Hare, 2007, p. 514)

The statement "Zsa Zsa Gabor values a husband who is young and healthy" is ambiguous. On a *de re* reading what is valued is a particular person – the husband of Zsa Zsa Gabor – who is young and healthy. Under the *de dicto* reading what is valued is that whoever falls under the description, "the husband of Zsa Zsa Gabor," is young and healthy. The joke plays on the ambiguity. When Zsa Zsa claims that she is doing good in keeping her husband young and healthy we assume a *de re* reading. The object of her concern is a particular person. It turns out her claim is to be given a *de dicto* reading – that whoever falls under the description "the husband of Zsa Zsa" is young and healthy.

To value some object for being merely a vehicle that provides services is to value it *de dicto* and not *de re*. It is to value the object in virtue of falling under the description of "provider of services, $\alpha_{1....}\alpha_n$." Consider the statement "P values a site which has biodiversity properties $\beta_{1....}\beta_m$." The statement is ambiguous. It has a *de re* reading – P values a particular site which has biodiversity with properties $\beta_{1....}\beta_m$. It can be given a *de dicto* reading – P values that a site falls under the description of having biodiversity properties $\beta_{1....}\beta_m$. No net loss and net gain policies and the practices of biodiversity offsetting markets assume *de dicto* valuations. The loss of one site can be compensated

by its replacement with another with the same properties. Those who defend particular sites of biodiversity often value them *de re*. It is the particular place that they are concerned to preserve. Another site that falls under the description of having properties $\beta_{1....}\beta_m$ does not compensate for its loss.

The distinction matters to how far substitutability is possible between different objects. *De dicto* valuation does entail a specification of acceptable substitutes. Zsa Zsa Gabor's husband must have the properties of being young and healthy. A site of biodiversity that is valued *de dicto* as a site with biodiversity properties $\beta_{1....}\beta_m$ is replaceable with another only if it also has those properties. Much of the debate about offsetting turns on the description under which a site of biodiversity is valued. If the description is general – for example that the site is deciduous woodland – then substitution by another woodland may not be difficult. If the description is detailed, for example through the specification of a particular species-mixture that a site exhibits, then the replacement with another site with the same qualities is more difficult and might be impossible. Correspondingly, a central debate about offsets turns on the descriptions under which different sites are considered equivalent (Carver and Sullivan, 2017). The valuation of an object *de re* entails stronger limits on the possibility of replacement without loss. If the object of Zsa Zsa Gabor's love is a particular person, his loss will not have a substitute in another person with similar properties. Similarly, if a community values a site of biodiversity as a particular place, then the existence of another with similar biodiversity properties will not be a substitute. The question arises therefore about what objects are the proper objects of *de re* valuations and for what objects *de dicto* valuations are appropriate.

There is a wide range of goods for which *de dicto* valuation is appropriate. A tool is typically valued *de dicto* for its properties that serve the job it does. Another with the same properties will be a substitute. The possibility of sustainability relies upon the fact that many goods are valued *de dicto*. A source of energy valued as such – as a source that provides energy that satisfies needs for warmth, mobility, the cooking of food, and so on – is valued *de dicto*. Any source of energy that meets those needs will be valued as such (Brand-Correa and Steinberger, 2017). Valued for such services, a source of energy with high greenhouse gas emissions can be replaced without loss or with gain by another with lower emissions.

However, there are many objects and beings that are the proper objects of *de re* valuations. Close relationships between persons are valued *de re*. Love is a *de re* attitude towards a particular person (Kraut, 1986, p. 421). What grounds these valuations? What value do relationships to particular persons have for our lives? An answer to that question has implications for the instrumental value assumption above. A distinction needs to be drawn between goods that are of instrumental value to well-being and goods that are of constitutive value for well-being (Wiggins, 1998, essay VI; James, 2022). A good has instrumental value for well-being if it is a causal means for well-being. A good has constitutive value for well-being if it is a constituent of well-being.

Consider the increasingly pervasive language of social capital used to describe social relations such as friendship. While it may be true that a network of friends brings various goods typically mentioned as benefits of social capital – better physical and mental health, employment prospects etc. – the characterisation of friendship as simply a form of social capital misses the place of friendship in a good life. It treats friends simply as having instrumental value – as an external causal means to other goods that matter for well-being. However, friendship is not simply an external means to other goods that matter to well-being. Friendship is itself a central constitutive component of well-being. And friendship involves a concern *de re* for another as a particular person valued as an end in themselves, not simply as a means to other goods. This significance of *de re* valuation in personal relations is grounded in the objective pluralist accounts of well-being outlined earlier. Certain relationships are central constituents of a good life. They are not merely capital, the instrumental causal means for some other end. Correspondingly, when close friends, lovers and kin die, their loss is a loss for which there is no substitute or compensation.

De re valuations might be central to our relationships to other human beings. What of environmental goods? Here also relationships to particular places can matter and matter not simply as external instrumental means to well-being, but as constitutive components of a good life (O'Neill, 1993, pp. 23–24; 2020). They do so in part through the personal and community histories that they embody. Many conflicts over environmental goods and their loss turn upon the significance that a particular place has for a community – for the way that it embodies the life and work of a community. What is at stake is a particular place that is valued as such and which does not have a substitute in another that provides the same "services." They involve *de re* rather than *de dicto* valuations. These valuations can be revealed in refusals to accept monetary compensation. Consider an example that I have discussed before, a refusal to accept an offer of compensation by an adivasi community in India whose home is threatened by a dam:

> You tell us to take compensation. What is the state compensating us for? For our land, for our fields, for the trees along our fields. But we don't live only by this. Are you going to compensate us for our forest?…Or are you going to compensate us for our great river – for her fish, her water, for vegetables that grow along her banks, for the joy of living beside her? What is the price of this? …How are you compensating us for fields either – we didn't buy this land; our forefathers cleared it and settled here. What price this land? Our gods, the support of those who are our kin – what price do you have for these? Our adivasi (tribal) life – what price do you put on it?
>
> (Bava Mahalia, 1994)

Some goods mentioned here might be understood as "provisioning services" offered by the fields and river – the vegetables, fish and water. However, thus understood the question "what is the price of this?" has an obvious answer. It is the price of vegetables,

fish and water in the market. What is threatened with loss here is not simply the provision of those goods. Activities such as fishing and growing vegetable are not simply instrumentally valuable for the goods they produce. They are activities that are themselves significant human goods constitutive of the well-being of members of the community. They involve social relationships and the exercise of skills passed across generations that are components of a good life lived by the river. What is threatened by the dam is the life of a community that is embodied in the landscape to be submerged beneath water. It is this particular place with its history and projected future that matters. It is valued *de re*. There is no compensation for its loss.

This way that particular places matter is true of more ordinary landscapes and habitats threatened with loss. Consider the successful campaign by a local community to protect Smithy Wood, an 800 year old woodland of 20 acres that was part of a larger coppiced wood in Sheffield, UK, threatened by loss to build a motorway service station. The development was to be offset by the creation of a larger woodland. One objection to the development is that the new woodland would lack the particular flora and fauna of the ancient woodland (Barnes, 2017). However, even if it were possible to reproduce the particular mix of flora and fauna, this would not compensate for the loss of an embodiment of a particular evolutionary and social history and the historic sense of place it has for the community. It is the particular place with its history that is valued. To put it in terms noted earlier, the specific biodiversity properties $\beta_{1...}\beta_{m}$ of the woodland might already make substitution difficult if valued *de dicto* under that description and not under a more minimal description as a deciduous woodland. However, the woodland is also valued *de re* by a community as a particular place with its particular history.

To make these points about *de re* valuation and constitutive values is not to claim that such values are trumps in public decision-making. Where other vital needs are at stake (as opposed to trivial interests typified by a service station) then a development might be justified. However, the claim that the needs can be met with “no net loss” or “net gain” is false. The goods lost have no substitute.

Distributional objections to offset markets

Biodiversity offsetting and the no net loss or net gain policies they are used to implement are aggregative. Total levels of biodiversity are to be maintained or improved. Offset markets achieve this by shifting sites of biodiversity. As such, they raise distributional questions at two different sites: the site in which biodiversity loss takes place and the site in which the compensatory gain in biodiversity is made. Injustice can occur at both sites.

The site of biodiversity loss is that at which injustice is most immediately evident. It is no compensation to a community who loses a site of biodiversity that matters to them that another site elsewhere has a gain in biodiversity. The problem is true of ordinary urban and rural landscapes that matter to people. However, it is most clearly evident in cases in

which, through a development, a community loses livelihood and a way of life that realises significant human goods. Consider for example the loss of access to common land and forests for communities affected by the Compensatory Afforestation Fund Act (CAFA) in India. CAFA involves a form of offsetting through a central fund: projects that destroy forests, such as mining, pay monetary compensation into a Compensatory Afforestation Fund based on the estimated monetary value of the forest. The funds are to be used to fund forest protection, restoration or development that compensates for the loss of forest. Communities who lose access to the forest and common land for livelihood can suffer losses in basic livelihood resources and at the same time associated forms of community, practice and culture (Saxena, 2019, p. 31; Ghosh, 2017; Worsdell and Shrivastava, 2020). For a community suffering those losses though a development of a place valued *de re*, no additional offers can compensate for that loss.

The site at which the offset takes place is also liable to problems of injustice by displacement of burdens and responsibilities. The responsibilities and burdens associated with an environmental loss are shifted from the agent causing the harm to the agent assigned with mitigation. Notable injustices occur where those burdens are shifted from developers to marginal communities excluded from offset lands. Consider again the impacts of CAFA in India. The places in which the offset projects are implemented often involve the loss of use rights to forests (Saxena, 2019, pp. 31–33; Ghosh, 2017; Worsdell and Shrivastava, 2020, p. 14). The losses here again include loss of access to the means to satisfy basic needs and the loss of relationships to particular places that are valued as particulars that embody the life of a community. A quote from a woman losing use rights to forest affected by mining captures both dimensions of loss: “What do you do when your home and resources are both taken away?…We have totally lost our way of life” (Nagaraj, 2022; see also Larrère’s Chapter 29 on parks and forests in this volume).

Similar examples are evident in other cases of offset regimes. Consider for example the off-setting projects associated with the Rio Tinto QMM’s ilmenite mine in the Anosy region of Madagascar. The development of the mine causes the loss of littoral forest habitat. Working with the International Union for the Conservation of Nature, Birdlife International and other environmental NGOs, Rio Tinto promises that the mine will have a “net-positive impact” on biodiversity (Temple et al., 2012). The promise is to be realised partly through offsets to protect threatened habitats elsewhere in the region thereby “reducing the high background rate of deforestation” (Ibid., p. 2). It is claimed that through forest protection and restoration, the ratio of gain in littoral forest to loss to mining will be 2:1 with a ratio of gain to loss to all forest types of 4:1 (Ibid., p. 30). Who carries the burden and responsibility for the gains? At the offset site, Bemangidy-Ivohibe, run with a local NGO partner associated with Birdlife International, the answer is that a community which relies upon forests for their livelihoods loses customary rights for the use of the forest resources. The agent who causes the losses – a major corporation, Rio Tinto – shifts the burdens and responsibilities for sustaining forest to those with marginal livelihoods (Kill and Franchi, 2016). The additional burdens fall on those who are

already among the worst off, affecting their capacity to meet their basic needs.[3] Two additional observations can be made of the case. First, claims to net gain rely upon counterfactual claims about rates of forest loss in the absence of the development, which themselves depend on a set of contestable claims about the causes of forest loss and how they can be best rectified. Second, the route to preserving forest creates the perverse asset class of biodiversity offsets noted earlier. The economic value of maintaining the forest is tied to its loss through mining. The consequence is that environmental organisations themselves are rendered structurally dependent on environmental damage.

Conclusion

This chapter has focused on offset markets as examples of the commodification of environmental goods. The examples illustrate some of the more general problems with the commodification of environmental goods: environmental governance is rendered consistent with systemic growth imperatives that are a source of environmental problems; modes of valuation foster ubiquitous substitutability; forms of injustice result through the displacement of burdens and the loss of places and livelihoods that meet vital biological and social needs. These problems are related. The design of systems of environmental governance consistent with continuing economic growth requires places and habitats to be substitutable so their destruction can be compensated with "no net loss". The shift in location shifts burdens and impacts. Where it is most "efficient" to shift them is to the poor.

The sources of environmental problems do not lie in their incomplete commodification, but rather in the generalisation of commodification noted in first section, in particular the commodification of wider domains of nature. Their solution lies in forms of decommodification. The forms these might take require larger debates. At the level of decision-making, it entails not the use of monetary valuation within cost-benefit analysis, but deliberative democratic procedures concerned with meeting the plurality of human needs within environmental constraints (O'Neill, 2007). At the level of larger economic structures, writers such as Neurath offer forms of generalised decommodification of goods, replacing markets with non-market economic institutions (Neurath, 1925; O'Neill, 2021). Less radical is the view of Polanyi, which takes social and environmental problems to have their source in the disembedding of markets from social and ethical constraints through the creation of fictitious commodities in labour, land and money (see Chapter 2 by Postel and Sobel in this volume). As such their solution lies not in a generalised decommodification but rather in the re-embedding of markets (Polanyi, 1957; Dale, 2010). It is on the various possible alternatives to commodification that deliberation on solutions to environmental problems needs to focus.

[3] Other offset projects in Madagascar offer similar examples of injustice by displacement (Bidaud et al. 2017, pp. 7–11).

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