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Initial Research Design

‘Human, non-human and environmental value systems:
an impossible frontier?’

Sarah Bracking

Patrick Bond

Dan Brockington

Bram Büscher

James J Igoe

Sian Sullivan

Philip Woodhouse

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The Leverhulme Centre for the Study of Value
School of Environment, Education and Development
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The Leverhulme Centre for the Study of Value

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Initial research design: 'Human, non-human and environmental value systems: an impossible frontier?'

Sarah Bracking, Dan Brockington, Patrick Bond, Bram Büscher, James J Igoe, Sian Sullivan, Philip Woodhouseⁱ

Abstract.

The research programme to which the title refers was initially submitted for funding to the Leverhulme Trust in January 2012, discussed in London in May, awarded in July, begun in September, with the group holding their first workshop in December 2012. This first paper reproduces, with some alterations and reflections, our research design and derivative research protocol. It seeks to show how we are researching the broad and somewhat amorphous concept of 'value' through case studies in which the social articulation of valuation takes place. The paper outlines the research protocol by which we will make our empirical results commensurable across the three research domains of development, environment and conservation. We are analyzing how humans, non-human species, the environment and policy interventions are variously valued using *calculative technologies*, within *institutional assemblages* and *discursive framings*, this latter being the particular narratives, value framings and discursive meanings used to explain or understand the valuation process. We are also studying what emerges from this valuation process, which we term *valued entities*, which are new subjects and objects which have latent, emergent and unique properties.

Keywords: research design, value, social articulation of value, methodology, case studies, research protocol

Introduction

New markets and commodities are being created in a number of key policy arenas that are putting prices, and thereby imputing a particular value, to a number of previously unpriced (but not necessarily unvalued) things. Carbon, ecosystem services, commonly held land, and even human lives are being valued, and revalued thus. Our task is to understand how valuation technologies are designed in order to understand the deficiencies and possibilities of value in political, social and environmental terms. The research will explore the production of markets and prices, and through these the quantification of value, legitimacy and care in five separate contexts. Its ultimate purpose is to suggest better ways of doing value calculations that will make our economic system less harmful for human and non-human worlds.

Context

At the heart of human life and social change is a profound uncertainty around the frontiers of our current valuation systems. Economics generally presents the economic system as a complete and unified totality, but this is inaccurate. There are frontiers to this utilitarian valuation system (beyond which, in classical economic terms, lie 'externalities') where some humans and non-human life are rendered apparently valueless. The composition of the 'valueless' changes historically according to moral, social, and economic forces, but there is no explicit research on how social change and social struggles affect valuation frontiers, and vice versa. Humanitarian and development efforts have reduced (but not completely) allowable deaths from famine, poverty, climate change, disease or war, but despite the human rights discourse, a value of life for all has not yet been reached. Instead, development practice has generated various proxies such as 'quality-adjusted life years' and 'value for money' expenditure, which assume from the start that not everyone is savable. Similarly, the efforts of the environmental and climate justice movements have brought more of the non-human world into calculations of value, initially as stores or sinks in the 1970s, with increasing attention to species conservation and more recently to issues of climate change. As use of the planet is argued to approach finite limits (cf. UNEP, 2011) attempts to insist on a moral value for nature and other species have become more quantitatively calculated, and sometimes financialised. This is the case, for example, in market arrangements for carbon and other environmental services, for marketised units of some species through species banking, and for some habitats via REDD+ and through biodiversity offsetting instruments. However, paradoxically and against the avowed intent of those calculating, the valued entities which emerge, although more quantitatively defined, often then appear to lose their earlier intrinsic value, emerging more disposable than ever. It is these paradoxes that need explaining in order to ensure that development, conservation and environmental care can be advanced successfully into the future.

This research will explore a number of these separate experiments in the articulation of value within the humanitarian, development, environmental and agricultural fields that calculate values for people and the non-human world. Most of the technologies to be explored are 'calculative devices' (Callon, 2007), new techniques and tools of quantification either working alongside traditional balance sheet cost accounting at the firm level, or being used to influence social outcomes by public and private actors. Following Callon and co-authors, we argue that these calculative devices are best understood in the context of the institutional assemblage in which they are embedded, and by exploring the overall discursive framing and ideological representation of those involved. These three dimensions – calculative devices, institutional assemblages and discursive framing – are the three nodes of our research protocol, to the extent that each case study includes an examination of each in order to understand how a valuation process proceeds (see below), and how as a consequence of that process, a newly emergent 'calculated entity' is made.

In our emphasis on how valuation processes are made, we draw on academics in the performative economics tradition who have attempted to develop economic theory to understand how 'the economic' is constructed, rather than simply describing what is, or isn't, an 'economic' thing (Çalik and Callon, 2010; Callon, 2007; MacKenzie, 2006). This is an improvement when compared to classical economic theory, which depicts the

economy as autonomous from human agency in the manner of the 'invisible hand'. Their work explores the actions, science, institutions, and calculative technologies that create markets. Callon's concept of the socio-technical *agencement* or arrangement (STA), a configuration of people, institutions and technologies which conducts the 'performance' of markets, can help us explore how value is made (Callon, 2007; Çali kan and Callon, 2010). The calculative devices within the STA effectively price and value, and have been successfully exposed in a number of studies on sulphur, gas emissions, and fish (see Ellerman et al, 2000; MacKenzie, 2009; Holm, 2007).

We will develop this research by adding social considerations to the performance of markets, and by exploring the context within which socio-technical arrangements are themselves formed, in terms of power, race, inequality and social behaviour, considerations largely missing from this earlier more technical literature by economists and economic sociologists. In this way we will be able to study processes by which value is determined across a range of contexts. We propose five research projects in the humanitarian, development, environment and conservation policy domains in which we will study how value is made. These cover a number of the critical frontiers, contested zones of imperfect knowledge and emergent convention and realms of authority that drive market accumulation.

The development domain

In development practice value calculations outside the price system are often used, since public actors must make decisions about how resources are to be distributed. But the process of quantification fails to respond to some of the biggest challenges of government: namely the morality which must underlie the principles and embedded assumptions that determine worth and value. Thus when desk officers in DfID decide that an orphaned and vulnerable child is a priority for expenditure instead of a person with a disability or an elderly person in terms of 'value for money', they are using a complex calculation which may also attach a value to the expected economic productivity of each, or a moral judgment over who is most deserving. The basis of such decisions is rarely made publically explicit, but they result in inequalities and inequities in care, as well as some of the improvements in performance that the planners had intended. There is little research which directly addresses this problem of how value is produced, and on what basis, despite many studies which take a cost-benefit approach. Our research will explore specific sites where development and humanitarian actors value human life and how they do this.

Development effect is increasingly quantified, particularly after the publication of the UK Department for International Development (DfID)'s *Common Agenda for Development Results* in January 2011, due to an institutional adherence to the 'evidence based policy' model, 'payment by results', and 'value for money'. To achieve these DfID widely employs impact measurement technologies, which have come to lead the field of calculative devices in development, and perform quantified representations of how much of the good thing that is being desired by a public expenditure is actually being produced by a particular intervention. However, impact measurement has many problems and weakly developed mathematical content. The role of impact measurement is often to convince

others of the value of a policy intervention, rather than to prove impact in a scientifically robust way, such that the performance of professional experts contributes to the idea that impact measurements have more calculative worth than they actually have (Bracking, 2012).

Project a) Value in development

We are researching how development value is calculated and represented in both the public and private sectors, and in the hybrid systems of public/private projects and programmes that official development assistance (ODA) and development finance support and bring into being. Sarah Bracking explores impact measurement and its role in creating 'value for money' judgments in private sector development. In this policy area, the dominant model is for DfID to provide money to the CDC Group who then lend it to private equity funds, who in turn invest in firms in developing countries in order to promote development, and impact measurement is used to assess how much development they create. However, past research has shown that the actual impact of investments in firms, both for the firms themselves and the broader goals of poverty reduction, livelihoods, and well-being beyond them are contested (Bracking and Ganho, 2011). This project will explore how the 'value for money' of a particular expenditure in the area of private sector development is produced and framed by the impact measurement technologies in use, and how far this 'value' is related to actual social and economic change. We are simultaneously exploring policy formation in DfID and the CDC Group, and at sites of actual development expenditure in the public and private sectors in the UK and South Africa.

In the field, firms are encouraged to adopt impact measurement technologies sponsored by DfID in order to prove that they have beneficial effects on the human and non-human world around them. However, there is a deep seated contradiction between them proving value for money because they are a profitable firm which contributes to growth, and proving their development value in terms of being good employers (which might mean paying higher wages and registering lower profits), or being environmentally sustainable (which again could compromise profitability). The hypothesis to be tested is whether the way in which impact measurement defines, calculates and produces the value of private sector development represents its effect accurately, which would include producing a transparent representation of these contradictions, or whether, by processes of abstraction and calculation, it produces a representation of value which supports some stakeholders' interests, while obscuring and abjecting those of others. Acting as a proxy value, it could be that the calculative technology here – the impact assessment – creates a value, but does not in fact measure anything of worth to the policy maker or financial provider (see International Development Committee, 2010). This project will involve field research in southern Africa, where much of the investment in infrastructure, mining and utilities comes from development finance institutions. Long interviews will be held with a subset of 50 managers and private equity investors to see how they frame development and environmental value, how they perform impact and value assessment, and what function this assessment has for them.

Project b) Allowable death: how is human life valued or not? ⁱⁱ

As part of the research on valuation in development we have chosen to make a particular focus on ill-being and the most vulnerable people using insights from the growing literature on surplus population, necropolitics and biopolitics, a literature which critically explores the expendability of human life (Foucault, 1977, 2007; Mbembe, 2003; Banerjee, 2008; Li, 2009; Redfield, 2012; Du Toit and Neves, 2013). Historically there have existed people who are not valued enough to be counted even when they die, as in the immeasurable loss of life in the colonial Congo, in the Chinese famine of 1961, or in the contemporary violence in the eastern region of Congo. Lost lives have a particular political economy context, as the death of one person can improve economic opportunities for others, but the context of expendable people is not well understood. This project will examine the context in which it is possible to have allowable death from poor health or malnutrition by detailing narratives of when people don't matter to others or to potential assisters in government and NGOs, and how this is made 'normal', and legitimized through narratives of necessary scarcity of resources, or of stigma and blame. It will ask how people's social value is calculated using the particular case of HIV affected persons in Zimbabwe, to see how the value of people in chronic poverty confers on them an allowable death.ⁱⁱⁱ

The environmental domain

c) Climate change futures

Climate change futures is a rapidly growing area of research, but one in which natural and social scientists have been having some difficulty in connecting their positivist and normative fields. In our research we are looking at both mature carbon markets and the morality of carbon trading through a case study of the United Nations Framework Convention on Climate Change (UNFCCC) Carbon Development Mechanism^{iv} and private sector carbon traders, alongside a specific exploration of the new Green Climate Fund (GCF).^v We are interested in mapping the institutional arrangements and lay normativity within the carbon trading industry globally, and in relation to the CDM, in order to account for the apparent disjoint between claims that carbon trading is significant in reducing emissions, and global data which suggests that this is not empirically the case.

Meanwhile, the Green Climate Fund, established at the UNFCCC Conference of the Parties (COP) in Durban in 2011 will be central to the effort to create a better climate future, by providing climate finance for both mitigation and adaptation in developing countries.^{vi} Its institutional and operating practices are in the process of establishment. If the GCF is seen as another in a sequence of efforts to make or liquidate carbon markets, with the CDM a former iteration, then we have research which can account for the performative character of actors involved in creating carbon markets. In these, the calculative practices of how different types of emission reduction projects are valued are not well understood, even by carbon traders, or within the national institutions which accredit successful projects with tradable certified emissions reduction (CER) credits. The CERs have to apply to an *additional* reduction in emissions that would otherwise not have taken place in the absence of the funding. For example, a firm may claim to have expansion plans of 100 per cent, which they then promise to reduce to 50 per cent in order to reduce their (hypothetical) emissions. If the assessor believes them, they can be granted CERs for the

50 per cent growth they have foregone. Thus how various emissions reduction projects are certified relies on opaque counterfactual quantifications and on the value of narrative around the technical issue of additionality. The extension of carbon markets through the GCF will aggravate this pre-existing problem of valuation. This project will examine the emerging functionality of the GCF globally within the epistemic community attached to and within the Green Climate Fund, and partly through South African case studies. South Africa is the largest CERs receiver in Africa to date, despite an industry profile of high fossil fuel use and low pollution control in construction, infrastructure, mining and energy.

Project d) *Land and Water markets in Africa*

Low levels of industrial employment in much of sub-Saharan Africa mean that development policy in the region continues to be framed in terms of agricultural development (World Bank, 2007). Yet this policy arena is marked by a sharply polarised debate on the commoditization of land and water for agriculture. On the one hand, access to land through customary land tenure is argued to provide a (non-commoditized) safety net providing a means of subsistence for the rural poor. On the other hand, the creation of tradable private property rights in land is argued to be a pre-condition for capital investment to raise agricultural productivity. These contradictory valuation premises underlie uncertainty as to how land policy should respond to changing political and economic relations of land, exemplified by two recent debates. First, large-scale foreign investment in agricultural land in Africa by commercial and sovereign financiers has brought unprecedented attention to the question of how land is valued, and highlighted discourses of 'under-utilised resources' that are deployed to justify new forms of enclosure and trade in land (Borras et al, 2011; Cotula, 2011). Secondly, widespread evidence of commoditized transactions in land within customary tenure, constituting informal or 'vernacular' land markets (Chimhowu and Woodhouse, 2006) suggest a more deep-seated shift in social relations within African rural societies (Colin and Woodhouse, 2010). In each case, the question of land valuation is inextricably linked to development of other resources, notably water for agricultural use (Woodhouse and Ganho, 2011; Woodhouse, 2012). This research will identify the formal and informal processes by which land and water used in agriculture are quantified and valued, and the key actors involved in these contested processes. Philip Woodhouse has been joined in this project by Dr Elisa Greco. Dr Greco's work will focus on current debates about land in Africa, and in particular the investment of foreign capital in the acquisition of agricultural land in sub-Saharan Africa. The work will have three components, briefly described below.

First, a theoretical paper (Woodhouse and Greco, forthcoming) will review definitions of value in the field of political economy; (e.g the labour theory of value, the relation between use value, exchange value and value, cf Saad Filho 2003) and their relationship to 'performative' processes of valuation. While valuation processes play a key legitimising role in providing the appearance of 'self-evident' quantification and calculative rationality in markets (e.g. carbon and biodiversity offsets markets), critical political economy allows analysis of valuation processes as a function of the politics of property relations in

capitalist society. Thus, the paper will explore how study of valuation processes can benefit from a complementary investigation of 'value' from a political economic perspective (labour processes at one level and finance capital at another).

Secondly, a further working paper will review the relevance of these theoretical findings to contemporary processes of agrarian change in Africa that have been marked by a resurgence of interest by agribusiness corporations in African agricultural production and African farmland. This will review the production of value in African agriculture and valuation processes in land and water markets in Africa. Valuation processes in land and water markets – as land surveying, mapping and zoning, or water valuation techniques – will be analysed empirically in terms of their role in the politics of land in Africa (e.g. the agendas and agencies that they serve).

The third element is an empirical investigation of connections between the ideological aspects of land and water markets – such as land and water politics – and the political economy of agrarian change. Multisite ethnographic research on land, water and labour markets in rice producing areas, initially in Tanzania and Uganda, will provide an understanding of labour, productivity and 'surplus value' extraction, and trajectories of land and water markets and the manifestation of rent. Case studies will be selected to include production at different scales to allow investigation of the contemporary relevance and role of finance capital in African agribusiness, and its impact on the politics of land and water valuation.

The conservation domain

e) Conservation banking and the new calculative regimes associated with offset markets and payments for ecosystem services

Environmental management for conservation is currently animated by attempts to make legible the value of non-human nature in cost-benefit decisions regarding economic development. Policy effort and funding are being directed towards creating calculative frameworks for 'valuing nature' that are global in reach, such that environmental externalities under conventional accounting practices can be clarified in terms of equivalent and apparently commensurable monetary representations (see, for example, the influential United Nations Environment Programme (UNEP) initiative on The Economics of Ecosystems and Biodiversity). These are permitting non-human nature to be both conceptualised as, and aligned with, financial measurement, at the same time as facilitating the emergence of new marketised exchanges in these representations (Sullivan 2010; Sullivan 2013).

This research project builds on recent work by the co-PI Sian Sullivan on the regulatory framework and performance of new markets associated with species banking in the United States (Pawliczek and Sullivan 2011). Species banking permits developers to offset impacts on populations of threatened species by purchasing credits allocated for healthy populations of this same species in a different location, known as a 'species bank'.

This offsetting and payments model for species conservation is rapidly accelerating as a core market-based method for valuing and conserving biodiversity. It has significant implications in terms of both the conceptual disaggregation of species from the ecosystemic fabric in which they are embedded, and for the foreclosure of non-marketised motivations for valuing non-human nature. This research will analyse two cognate case studies where non-human nature at the frontiers of monetary valuation practices is being incorporated into conventional neoliberal economics by means of formal property arrangements and particular efficiency and rationality assumptions. The sites of this internationalising valuation discourse and practice are:

1. *Reconfiguring conservation as Payments for Ecosystem Services: a developing country case-study*. This will build on twenty years' of research by Sullivan in north-west Namibia (e.g. Sullivan, 2002, 2006) to engage with the recent reframing of conservation endeavours in this landscape in terms of Payments for Ecosystem Services (Naidoo *et al.* 2011) and biodiversity offsets (MME 2010-11). It will investigate how value is being calculated and assigned to this particular conservation landscape, and consider the implications for use- and intrinsic values for these same natures as well as for different customary value and tenure practices.

2. *A comparative analysis of value creation in selected DEFRA habitat banking and biodiversity offsetting pilot areas in the UK*. This study is undertaking detailed comparative investigation of the way that conservation banking and biodiversity offsetting practices are being created and conducted in the UK. These practices were framed in the UK government's recent White Paper on the Environment as core new policies for permitting sustainable development (DEFRA 2011). In this case study we are conducting an institutional analysis of the emerging constellation of organisations in species and ecosystem management markets, the calculative devices that are being designed and the discursive value framings supporting these. Using long interviews and participant observation, the research asks how habitat banking and offsetting values are being calculated and performed.^{vii}

Calculative rationality

This study derives conceptually from an august history of work on calculation and rationality: Weber (1930 [1905]) persuasively showed how a 'calculating rationality' was associated with the emergence and consolidation of capitalism; Foucault argued that states employ 'governmentality' using such devices to abstract, measure and rationalize bodies and nature (1977; 2007); while Deleuze and Guattari's (1987) isolated productive 'striations' (of time, space, bodies, nature etc.) as associated with the formulations of State or Royal Science. Graeber's *Toward an Anthropological Theory of Value* (2001) is also seminal here, wherein he identified three "large streams of thought that converge" in the meaning of 'value', these being

"values" in the *sociological sense*: conceptions of what is ultimately good, proper, or desirable in human life; "value" in the *economic sense*: the degree to which objects are desired, particularly, as measured by how much others are willing to give up to get them; (and) "value" in the *linguistic sense*, which goes back to the

structural linguistics of Ferdinand de Saussure (1966), and might be most simply glossed as “meaningful difference” (Graeber, 2001, 1-2).

In our work these are seen to perform, relate, condition, reinforce and contradict each other, and we are exploring how a particular thing might become subject to calculative processes, and then become subsequently valued differently from that engagement.

Calculative rationality is immensely important in shaping society and economy, *and* may be associated with particular *power-effects*. Calculative rationality thus acts, for example, to:

- generate consistent patterns in the distribution and organisation of wealth;
- extend an emphasis on particular forms of value and value-making activities/institutions (namely money as measure of all value);
- amplify particular subjectivities, including that we are self-interested rational accumulators of particular forms of value, and that we have no kinship with nonhuman nature
- and enhance a whole host of exclusions, inequities and environmental degradations as a result.

In other words, there are very real and pragmatic reasons for studying how calculative rationality produces different calculative technologies and calculative devices, notional values and value framings which then are used to increasingly incorporate ever more things into socially articulated markets and spaces, enabling them to emerge as new ‘valued entities’. The case-study areas we have identified will assist with the identification and investigation of the ‘real world’ effects on human and environmental wellbeing of these contemporary and expansionary calculative and market-oriented technologies.

We understand a calculative device as a specific package or technique, such as a scorecard or equation, whereas we understand a calculative technology as including the means and context in which the calculative device is used. Examples of calculative devices would be statistical packages, a software programme, an equation, a pro forma, audit technology and so forth which can be used to measure a thing or person in some attribute. For example, the International Finance Corporation (IFC) employs a calculative device (the DOTS system) in order to measure the development impact of its investments in private sector development. Here the DOTS scorecard (the indicators and their weightings) is the calculative device; while what is being done, development impact assessment, is the calculative technology. This impact assessment is done in a particular way, within specific institutions, (normally by consultants contracted to the IFC), which together make up an institutional assemblage for performance standards and safeguarding within the private sector development industry. They hold particular understandings of the process, or discursive framings, which in this case can be summarized as deriving from a positivist world view, in which modernist growth is valued, and their expertise is a professional and technical attribute which guarantees development value. Thus our protocol provides a means to empirically explore development impact valuation, by means of investigating the calculative device, the calculative technology, institutional assemblage and discursive

framing (on impact assessment see Bracking and Ganho, 2011). What emerges at the end is a new, partially abstract 'valued entity', in this case, 'private sector development'.

All our case studies contain a valuation process, and within that a 'calculative technology', which probably incorporates a calculative device, which acts to create valued entities in these different contexts in pecuniary and non-pecuniary terms. A pattern is already emerging that many of the valuation processes we are studying act to replace or obscure non-pecuniary prior value with values in terms of price (for the new markets cases) or costs (in the cost-benefit model for the development and allowable death case studies). Each of our case studies focuses on the production of 'value' by mapping the valuation process in which new 'valued entities' are made, and how these can be accounted for, costed and sometimes also circulated as commodities in monetized and financialised forms. Thus by 'valued entity' we mean that it has emerged from a valuation process which has assigned it a value, rather than it has some intrinsic high worth.

These new valued entities include 'allowable death', carbon credits, species credits, biodiversity offsets, marketable title deeds, water allowances, and development impact scores, and the important contribution of the concept of 'calculative technologies' is that it provides a way of critically theorising and investigating how new entities such as these are able to be created and *accounted for*, such that they can assume 'market values'. This research, as stated above, thus draws upon the performative turn in economics and economic sociology and applies it within each of our case studies. Thus we are not exploring the existence and implications of an exogenous 'economic x' (as in conventional economics), but instead exploring *how* 'economic x is made'. In our case studies, we are applying the idea of a marketization process, to understand the way that a value comes into being, and why it may, or may not, end in pricing, or financialisation. Part of what we will do collaboratively is show how these newly created, quantified and variously marketised valued entities have emerged, so that we can draw comparisons and conclusions across our different case studies about how values are made *in situ*.

An initial typology of the range of calculative technologies in use can be made by broadly distinguishing them by what they produce. In other words, as Jim Igoe suggested in May 2012, we have those which produce:

Numeric values

This type of calculation can allow for a full quantification leading to pricing or further financialisation, and produces financialised 'valued entities' (certified emissions reductions, biodiversity offsets, water allocations in case studies c, d and e)

Notional values

Computed in statistical and management tools (development impact assessments, quality of life adjusted years, ecosystem services in case studies a, b, e)

Value framings

Even softer, as in biopolitics and 'letting die', social categories (people and development in case studies a and b)

In these categories of calculation technology, most employ a calculative device specifically, although in the latter (i.e., value framings), the process could be more amorphous, and involve people applying value through their learned social stigmas and standpoints, which would include racism, misogyny and homophobia, or more positively, from within principled and codified frameworks of rights, humanitarianism or solidarity. All, however, lead to an emergent 'valued entity' which is the social framing or social category which can be assigned to the person, the value of, for example, the 'orphaned and vulnerable child', the 'HIV/AIDs affected person', or more generally the 'aid recipient' or 'project affected person'. To clarify, it is not the person themselves who is the valued entity, but the social category that has been formed, which may then attract a derivative income stream, such as income from a development intervention.

However, it becomes quickly clear, and is elaborated upon in forthcoming working papers, that there are temporal, spatial and virtual processes which can rapidly change the type of calculative technology in use, and that movement between and among these various different calculative technologies can produce, in turn, a valued entity with quite different characteristics. These movements between categories are conditioned by actors who may encourage, resist or attempt to reframe the valuation process. The case studies, a year later, are proving fluid, moving frontiers with contested and unclear value renderings.

We are researching the social articulation of value by focusing on the importance of these emergent valued entities in terms of:

- *how* these new valued entities are coming into being in each of our case studies
- *what* (calculative and value) assumptions are required on the part of their protagonists to enable the creation of these new value entities (for example, the possibility of creating a marketable biodiversity offset for the mitigation of environmental harm requires a whole host of assumptions and constructs regarding 'the nature of nature', accompanied by a whole other set of assumptions regarding things like development pathways, what it means to be human, the appropriateness of markets for best allocating environmental health and harm, etc., etc.). In the case of water valuation, there appears to be an overarching need to create the notion of scarcity in order to introduce pricing, even in contexts where material scarcity is not apparent (also see Woodhouse and Muller, forthcoming). Through our research we will be able to access and make explicit some of these assumptions.
- what the *implications* of these new circulating and value-accumulating entities might be, e.g. for the problems they are constructed to address/redress, for the distribution of wealth and for the design of progressive policy. We will apply our empirical and theoretical findings to explore how development, poverty alleviation, conservation, climate justice and 'let live' strategies can be delivered today.

Thus we arrive at a core research question which concerns how calculative rationality conditions the types of calculative devices and technologies in use, and how the social articulation of these, in the full context of place, leads to emergent valued entities with differing characteristics. We explore these processes as moving subjects, where the nature of the relationships between notional value and its framing, social categorisation, commodification and financialisation and how these processes work together and in contradiction creates contested and morphing valued entities. But since calculative devices and technologies do not exist as *deus ex machina*, but arise in social processes, the key insight from the literature on socio-technical arrangements, (which are specific, material and empirically researchable configurations of people, devices and things), is that we need to understand the institutional arrangements in which calculations are made. The first means to do this is to map these institutional arrangements, and thus the second key node of our original research protocol was to recognise the importance of institutional assemblages, and the third node, to explore the ideological narratives in which actors within them understand and explain the valuation process, and thus iteratively change their behaviour.

Institutional assemblages

It became evident, and was discussed further by Fredriksen, Carver, Greco and Igoe in particular, that the initial research design did not elaborate clearly on how agency was to be theorised in terms of 1) how this would relate, or not, to labour and the labour theory of value; or 2) how far researchers would, or could, share a common definition for the term 'institutional assemblage', given our differing paradigmatic and ontological assumptions. In terms of the first, the relationship between our research protocol, as a means to explore valuation processes in their embedded social and economic contexts, and prior understandings of the economic structure of capitalism as understood by using the labour theory of value remains to be clarified. This opens a wider discussion of the different conceptualisations of value in political theory. In particular, a future working paper (Greco, forthcoming) will discuss the relation between valuation processes and value as a fundamental relation in capitalist societies (Saad-Filho, 2003).

In terms of the second, agency in this research is viewed as active and strategic, and allows for different futures, albeit that some 'laws' in markets and accumulation more generally, might appear to participants as immovable and unchangeable. It is indeed at the core of how generalised commodity production comes to condition history as class relation, that economic and social relations and their associated inequalities, comes to appear as inflexible, 'natural' and normal. By undertaking empirical research that focuses on events and processes where normalisation is occurring, firewalls^{viii} are being built, and thus the future conditioned into certain parameters, we can unsettle the apparent fixity, inevitability, and perpetuity of commodity relations. To do this requires that the concept of assemblage be understood in an active and strategic way, as opposed to an institutionalist one. For example, and as supported by the discussion group that emerged,

we draw on Foucault's definition of apparatus (*dispositif*) in our thinking about institutional assemblages. He defines it as:

"discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions' assembled to address an 'urgent need' and invested with strategic purpose (Foucault 1980: 194).

This important lacuna over the conceptualization of agency, and the ontological friction that underlies it, will be explored further in future working papers, as theory develops iteratively.

There is also an outstanding issue of which of our three nodes of research within the protocol (calculative device/technology, institutional assemblage, discursive framing) is most critical to shaping valuation processes or whether they should be equally weighted. Relatedly, there might be a missing element that prevents us explaining *why* valuation takes the social and economic form that it does, conditioned as is it from outside the assemblage in the wider world of global capitalism. It has been suggested that if we give an overarching weight to the notion of assemblage, we are better positioned to understand the political context of both the valuation process in itself, and in a better place from which to relate our empirical findings to global processes of financialisation, accumulation, inequality and environmental crisis. The tension over how to take empirical research in place, and use it to explain and theorise at global scale is one we have begun to appreciate.

Research methodology

The common challenge in all our case studies is to examine how value is produced by different networks of agents and organisations. We will use a modified form of multi-sited ethnography, which attends to the "lumpiness" of the networks that we study (cf. Collier and Ong 2005). Qualitative methods will be used to capture the contextual detail and complexity at key sites and nodes of interaction, where policy makers, institutions and calculative devices and calculative technologies come together in the valuation process. Our case studies are fast-paced policy arenas and involve contemporary and ongoing framings of value within new markets and social spaces, so that we will need constantly to review whether or not our methodological toolbox is capturing the complexity of social agency, institutional design, discursive framing and calculative technology *in situ*. This demands a methodology which combines ethnographic closeness, expert interviews, actor network analysis, discourse analysis, institutional analysis, participant observation, semi-structured interviews, surveying, quantitative analysis and modelling at each of our field sites. In most case studies, semi-structured interviews feature as a means to investigate the institutional settings, the actors, and the discourses that are making the creation of these new valued entities possible within each of our case studies.

Conclusion

Our task is to understand how valuation technologies are designed in order to understand the deficiencies and possibilities of value in political, social and environmental terms. We are analysing how the valuation of humans, non-human species, the environment and policy interventions are variously performed using *calculative technologies*, within *institutional assemblages* in which they are embedded, and how the socially articulated valuation process itself, in each, involves particular narratives, discussions, value framings and ideological positions, which we group in the term *discursive framing*. The purpose of outlining our initial research design is to show how our individual projects form a coherent group within this overall research objective, because they can all be explored using our original research protocol as a starting point. We are also studying what emerges from this valuation process, *valued entities*, new subjects and objects which have latent, emergent and unique properties, some of which can be sold or exchanged, and some of which confer a particular resource outcome for a particular category of people. This research protocol that links our case studies is being used to create a scientific level of commensurability, albeit by necessity imperfect and including important overflows and observations that do not fit, that will facilitate analysis and theory building to regenerate the concept of value in the social and natural sciences. The building of theory by the group will be carried out in collective work. Our objective is to apply our empirical and theoretical findings to explore how development, poverty alleviation, conservation, climate justice and 'let live' strategies can be better delivered to assist humans, non-humans and nature.

Endnotes

ⁱ *Contribution statement*: This working paper reproduces, with some alterations and reflections, two initial project documents: the proposal submitted to the Leverhulme Trust in response to its major grant award call on 'value' in January 2012; and a second paper prepared in advance of the interview with the Leverhulme Trust in London in May 2012. Sarah Bracking drafted both of these and acted as the lead author on this working paper. Dan Brockington conducted a considerable edit to make the earliest research design cogent. All other named authors contributed comments and editing to both papers, while Sian Sullivan wrote the text for her project d) and contributed text for the section on calculative rationality; Philip Woodhouse the text for his project e) on land and water; and Jim Igoe contributed the introductory typology of calculative technologies (May 2012) and insights on assemblage and firewalls which are incorporated into the last sections of this paper (December 2012). Thanks to Aurora Fredriksen who copy-edited this paper.

ⁱⁱ For those who have seen earlier iterations, this was initially our project c). Aurora Fredriksen has subsequently joined Sarah Bracking as a Research Associate on the valuation in development programme. Since conception we have also developed three new case studies in the development domain,

on philanthropy, humanitarianism and social impact assessment, by researchers Admos Chimhowu, Aurora Fredriksen and Rachael Morgan respectively.

- iii Fortunate Machingura was subsequently appointed as a Leverhulme funded PhD student to lead on this research project, developing work previously done, some with Sarah Bracking, in the EU-ACP Community Based Systems for HIV Treatment (see www.cobasys.eu).
- iv The Clean Development Mechanism (CDM) is defined in Article 12 of the Kyoto Protocol and allows a country with an emission-reduction or emission-limitation commitment (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets, and thus controversially allow a greater level of pollution in the industrialized country itself.
- v Robert Watt and Jonas Amtoft Bruun were subsequently appointed as Leverhulme funded PhD students to pursue each of these projects respectively.
- vi The augural GCF document is annexed to decision 3/CP.17 presented in UNFCCC document FCCC/CP/2011/9/Add.1 (see: <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>). It is now available from http://gcfund.net/fileadmin/00_customer/documents/pdf/GCF-governing_instrument-120521-block-LY.pdf
- vii Louise Carver has subsequently been appointed to a Leverhulme funded PhD scholarship at Birkbeck, University of London, to pursue research on biodiversity offsetting in the UK and the current Department for Environment, food and Rural Affairs (DEFRA) pilot projects.
- viii The use of 'firewalls' here follows from Jim Igoe's (Igoe, forthcoming) conceptualization of a metaphorical filter (as in a computer's defense against viruses, malware and so on) that works to exclude many material things, qualities and relationships in the process of creating abstract commensurable values for circulation at the frontiers between materiality and abstraction. Firewalls are the flipside of those frontiers, which are boundaries that must be transgressed for new kinds of value to be created. Firewalls, conversely, are boundaries that must not be transgressed for new kinds of value to be created. They achieve this by fostering selective forgetting, ignorance [knowing what not to know as Taussig (1999) put it], misinformation, and disinformation in knowledge production. Finally, firewalls protect capitalist systems from their own contradictions by preventing elements of those contradictions from becoming fully and simultaneously visible.

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