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Assembling value in carbon forestry

Practices of assemblage, overflows and counter-performativities in Ugandan carbon forestry.

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The Leverhulme Centre for the Study of Value

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Assembling value in carbon forestry: Practices of assemblage, overflows and counter-performativities in Ugandan carbon forestry

Adrian Nel

Abstract. Assemblage approaches are increasingly being used to understand new social formations arising in relation to the multiple crises of capitalism, climate change and environmental degradation (Larner, 2013). The valuation of nature is key to these new formations, with the creation of new 'valued entities', through calculative practices, that can be accounted for, costed and circulated in monetised and financialised forms (such as within a market in which they have a price) in order to attempt to fix certain outcomes (Bracking et al, 2012). Through this intensification of the neoliberalisation of 'nature' (Castree, 2008) we have seen the rise of prices for carbon emissions, biodiversity offsets in varied contexts, as well as to land and water. Valuation structures and the new socio-natural assemblages that attend them however have been most prominent in regard to forestry, with the emergence of 'global' transnational projects and initiatives such as carbon forestry offsetting and REDD+; which aims to tackle global CO2 emissions by saving forests for the good of the globe through particularly complex, multi-scalar interventions within the global south (Mwangi and Wardell 2013). This paper uses an assemblage approach in relation to carbon forestry in Uganda, arguing that it has utility in this respect, but that the fixity of the assemblage should not be assumed a priori, or its stability or permanence assumed. Rather, there are multiple overflows, tensions, and counter-performativities – primarily attendant to unstable social relations – such that the forestry assemblage, as a governance form, offers multiple opportunities for reflexivity and resistance.

Keywords. Assemblage approaches, valuation, neoliberal environmentalism, forestry, REDD+, Uganda

1. Introduction

In the contemporary moment, characterised as the Anthropocene, assemblage approaches are increasingly lauded to apprehend new social formations arising in relation to the multiple crises of capitalism, climate change and environmental degradation (Larner, 2013). The valuation of nature is key to these new formations, with the creation of new 'valued entities', through calculative practices, that can be accounted for, costed and circulated in monetised and financialised forms (such as within a market in which they have a price) in order to attempt to fix certain outcomes (Bracking et al, 2012). Through this intensification of the neoliberalisation of 'nature' (Castree, 2008) we have seen the rise of prices for carbon emissions, biodiversity offsets in varied contexts, as well as to land and water. Valuation structures and the new socio-natural assemblages that attend them however have been most prominent in regard to forestry, with the emergence of 'global' transnational projects and initiatives such as carbon forestry offsetting and REDD+; which aims to tackle global CO2 emissions by saving forests for the good of the globe through particularly complex, multi-scalar interventions within the global south (Mwangi and Wardell 2013).

As Braun (2006, p.644) puts it, global natures such as carbon forestry are always specific: this configuration here, that network there, with intricate, transnsational geographies that form "tangled webs of different length, density and duration, and whose consequences are experienced differently in different places" (Braun 2006, p.644). In this light assemblage approaches afford significant potential in examining the particularities of formations pertaining to the valuation of socio-ecological resources in particular localities, and the issues related to them (Fredriksen, 2014). In the first instance this is because assemblage accounts propose a non–dualistic understanding of new socio-natures that allows greater specificity in setting out the contingency and complexity of the knots that bind biological, social, geological and technological forces together, as well as the destructive potentials that reside within them (Collier & Ong 2008).

However, applications of assemblage approaches to the forestry context have been somewhat limited and there is significant scope for refinement. While Li has notably applied an assemblage approach to community forestry management (idem.), there has only been one similar attempts in regard to carbon forestry (Whittington, 2001), where uncertainties in carbon forestry are contextualised in terms of a diverse assemblage of agreements, conventional practices, durable artefacts and rules held among people who operate in very different contexts around the world. In apprehending transnational forestry assemblages Li advances an 'analytic of assemblage' which relates directly to theorisation in a way which does not highlight the resultant formation under examination, but its *making*; the 'hard work' required to draw heterogeneous elements together, forge connections (both spatially and temporally) and sustain them in the face of tensions and fractures (Li 2007a, pp.264). Such accounts have however been criticised for being too formulaic and rigid (Featherstone 2011, 141); good at specifying the forms of what Bennett (2009) calls commodity enchantment, but lacking in specificity in outlining how assemblage 'take place' through processural relationalities, and order what outcomes cohere in particular places. Thus in order to provide a more robust account others

such as Fredriksen (2014) have argued for a focus on processes of territorialisation and deterritorialisation, and the forms of 'overflows' and feedback effects attendant to attempts at valuing nature. This is particularly relevant for the empirical material of this article, which considers how a carbon forestry coheres in Uganda, as what might be termed a transnational, hierarchical (arborescent) territorialised assemblage; which promotes order and hierarchy and make claims to jurisdiction over social space (Rivkin & Ryan 1998, p.378).

In this article then I utilise an assemblage approach to specifying how carbon forestry, in its manifestation as a contemporary assemblage that is simultaneously local and global (with for example multiple local level projects, transnational actors and institutional reconfigurations), coheres in a particular place, Uganda. I ultimately work towards the assertion that such an approach is useful in political ecology in affording a space for making sense of how and where contestations, violence and resistances in and to forestry interventions occur, and affords an opportunity to think through how things might be different. Firstly, however, I proceed to set out some elements of assemblage theory, and specifying an assemblage approach to carbon forestry by adopting and going beyond Li's focus on 'practices of assemblage', before considering how it applies when considering carbon forestry in Uganda.

2. Assemblage theory

Assemblage approaches – a part of a literature on 'vital materialisms' – are for De Landa constructionist accounts of socio–spatial relations, which seek to reconstitute conceptions of the social and blur divisions of social–material, near–far and structure–agency to explain extended social formations comprised of heterogeneous interacting elements that can come into contact with other entities (DeLanda 2006). As Shaviro says of Deleuze and Guattari's distinction of assemblage:

> The aim is not a totalization, a definitive tracing of limits, or a final theory of everything. It is rather an expansion of possibilities, an invention of new methods and new perspectives, an active 'entertainment' of things, feelings, ideas, and propositions that were previously unavailable to us (Shaviro 2009, p.148).

In assemblage ontology, any entity can be apprehended as an *immanent* historically produced unique individual; be it an organisation, a city, a friendship network or a territorial state. Whatmore's '*Hybrid geographies*' is an example that does not assume a 'firm ground' to the *being* of entities but understands machines, bodies and knowledges (all 'phenomena') as precarious, achievements of *being* grounded in practice, but which are nevertheless important and consequential (Whatmore 2002). Assemblage thus emphasises emergence, multiplicity and indeterminancy rather than the resultant formations and the "fragility and provisionality; the gaps, fissures and fractures that accompany processes of gathering and dispersing" (Anderson and McFarlane 2011: 125). For Anderson and McFarlane (2011) uses of assemblage in social theory also typically emphasise the work of assembling and reassembling diffuse, tangled, contingent socio-material practices (for example the aforementioned work by Li 2007), and connote groups, collectives and disputed and/or distributed agencies (see, for example Bennett 2009). Thus the 'promise' of assemblage analysis to Anderson and MacFarlane (2011) is that

assemblages are shaped, but not overdetermined by the capacity for assembled entities to form connections that are outside it (Deleuze and Guattari (1987) term this the 'exteriority of relations').

There are two axes of 'co–functioning' central to the concept of assemblage according to Deleuze and Parnett (2006, p.52); first between the *material (machinic content)* and *virtual (collective expressions);* and secondly between (re)territorialising and deterritorialising. These are two movements between which 'everything happens', as heterogeneous parts come together and come apart (Anderson & McFarlane 2011, p.149). The real or material accounts for the materiality of the assemblage components, while the virtual is prescriptive and has a form of normative power – what the assemblage *should do*. The second axis, concerning (re)territorialisation and deterritorialisation refers to the ways in which the identity of the assemblage is stabilised and destabilised respectively. This of course includes its spatial identity and territorial footprint; as entities are "organised in relational ensembles or mosaics that have the effect of differentiating segments of social space" (Delaney 2009, p.196). Assemblages thus have both virtual and material components, and they are inherently spatial and territorial. While not all social spaces or territories need be considered as assemblages (though arguably they could be), assemblages are always territorialised, as they certainly are in carbon forestry.

> "[Contemporary] global forms are articulated in specific situations – or *territorialised* in assemblages – they define new material, collective and discursive relationships. These 'global assemblages'... are domains in which the forms and values of individual and collective existence are problematised or at stake, in the sense that they are subject to technological, political and ethical reflection and intervention" (Collier & Ong 2008, p.4).

3. Towards an assemblage account of carbon forestry

With regard to carbon forestry specifically assemblage is important in circumventing the language of scale, beyond the problematic deployment of the 'local', 'national' and 'global' in carbon forestry, which presents a distraction from grounded everyday particularities and the 'hidden enfolded immensities' or 'terra incognita' of geography (Springer 2013, p.1). Utilising concepts of hierarchy and *arborescence*, as well as more horizontal or rhizomatic conceptions of socio–spatial relations between localities, state bodies and multi-lateral institutions such as the UNFCC, assemblage accounts can describe connections with more clarity. They also allow a deeper consideration of given forest territories (such as Central Forest Reserves (CFRs) in Uganda or carbon project boundaries). Instead of viewing them as essentialised, natural entities, an assemblage approach connects how social structures give expression to territory, and how the historical and contemporary transformations affect both landscapes and the geographic imaginaries which relate to them. Assemblage provides a useful framing to conceptualise how the different entities involved in carbon forestry; people, trees, governance systems, forestry officials, methodologies and documentation, forest territories and so forth interact, and is useful in connecting carbon forestry and market environmentalism to broader social processes in Uganda.

Foremost in specifying an assemblage account of how carbon forestry localises in particular places is the description of its two axes of co-functioning. First are the material and virtual practices, which do the work of drawing assemblages together. These can relate to the implicit or explicit authorising knowledges, principles, sets of practices or lines of organisation which set out what the carbon forestry assemblage should do, as well as a variety of material ensembles of things through which it is articulate, including; multiple interacting actors and landscapes; carbon financing from 'global' capital[1]; trees; carbon contracts; state bureaucrats; maps; scientists; carbon quantifications; and project adjacent communities and both state and non-state actors, among others. Second are the axes of re-territorialisation and deterritorialisation. As Legg (20, 13) puts it assemblages fall between processes territorialisation (the establishment of project areas, references areas, jurisdictions), striation, scaling and governing and elements of unscalability, 'overflows' and deterritorialisation that characterise more ephemeral formations, and indeed carbon forestry can be said to reflect this as the paper will demonstrate.

Li's description of practices of assemblage is useful in exploring the dimensions outlined above. The first is that that of is 'problematization' – the often implicit framing of specific problems to be addressed (Li 2007a); where in the first instance the 'problem' of deforestation and emissions from deforestation and degradation is constructed and framed in such as way that it is subject to technological, political and ethical reflection and market *intervention*. Here practices of knowledge construction makes the *governance imperative* of carbon forestry possible, by drawing from interacting appeals to authority based on the terms of the *global public good*, market authority and the *best available science* (Vaccaro et al. 2013). Second is the practice of *forging alignments*, which entails the *enrolment and aligning* of diverse and varied actors into collaborations and partnerships (Li 2007a). Enrolment is self-explanatory, while alignment involves a coming to consensus (a programmatised neoliberal environmentality (Fletcher 2010)), that the assemblage is worth territorialising and defending - a practice that is always challenged and in–the–making, and never a completed accomplishment. The third practice is that of *rendering technical which produces* the 'resourcesness' of a carbon offset itself, through a contingent, mediated and contested process of resource making, commodification, and, as Tsing puts it, 'conjuring' (2005). The commodification of carbon is a 'fetishisation'; an abstraction of nature in both image and value so as to be integrated as a good into the market (Carrier & Macleod 2005). This is because carbon is an intangible 'environmental good, not a 'thing' in and of itself set apart from the complex practices which attempt to render it fungible and commensurable. Indeed some villagers in western Uganda pointed out incredulously that they were 'selling the air'. This production entails the fundamental re–branding of the environment as a pool of resources involving the spectacular conjuring of profits, scale and ostensible benefits (Sullivan 2013; Igoe, 2010).

In spite of the veracity of three practices, the neoliberalisation of nature is anything but a smooth process, and is far from complete (Smith 2008). We should expect that, attendant to the process of territorialisation and intervention there will be inevitable frictions, contestations

[1]Including donor funding from predominantly Norway (drawing from its sovereign wealth fund) and voluntary payments from individuals and companies 'greening' their image

and tensions. These 'overflows' (Callon 1998) are those things that are framed out of initial value calculations only to force their way back in as 'counter-performativities' unsettling the orders of initial valuation projects, just as contradictory social relations can emerge in ralation to the rescaling activities themselves (Vaccaro et al. 2013). While carbon forestry interventions attempt to rescale forestry governance, there are what Tsing (2012) calls the 'nonscalable' elements of assemblages of value that have been made 'scalable' through the precarious work of obscuring or framing out difference and specificity with similarly unsettling potential (Bracking et al. 2014). Li focus on the management of such tensions and contradictions (or more accurately overflows), less that their emergence, and argues there are practices that "attempt to present failures as the outcome of rectifiable deficiencies in technique, to smooth out contradictions and then devise compromises" (Li 2007, p.277). The function is to keep the assemblage *governmental* as opposed to coercive, while constantly reifying (and at times policing) the line between coercion and governance. This is a dimension that is central to the assemblage, as the tension threatens the assemblage if bare-faced coercion is exposed, indicating communities often do not want or appreciate interventions or reject the problems' framings imposed on them (idem). Secondly, in the face of reality and its contradictions, *antipolitcs* addresses the ways in which actors in the assemblage attempt to frame 'unruly reality' so as to close down debate about the legitimacy of forest laws, and their unequal implications and distributive effects of projects, and re–pose political questions as matters of technique and science. The final practice of territorialisation that Li (2007a, p.284) describes is *reassembling*, and this has the closest link to processes of territorialisation and reterritorialisation in this context. As Li states, this occurs as disparate pre–existing elements and entities are drawn together, and taken up or redefined in the new assemblage. This includes the grafting of new elements onto the assemblage, as well as the reworking of existing elements (such as forestry territories) for new purposes. I now turn to how these practices cohere in Uganda.

4. The assemblage of carbon forestry centred on Uganda

Forests in Uganda for instance have intimate linkages, connections and fractures with each of the other entities in the assemblage. Forests and woodlands cover only about 14% of the land area of Uganda. They are however intimately anthropogenic, where the formalization and gazzetment of forest territies was gradual, unsystematic and often violent, with forced re-locations of many, including the Bennet peoples at Mount Elgon and the Batwa in the South Western Bwindi and Mgahinga forests (Tumushabe & Musiime 2006). Forests have also exhibitied a long relationship to pre–and post-colonial systems of ecological control and agrarian use, which supported an approximate 23.42 % of Uganda's GDP in 2011 and provided 65 % of employment in 2009[2] (World Bank 2011). They are perceived as cultural sites, 'sacred groves' and houses of ancestral spirits by some, and as an important source of subsistence agriculture through the 'opening of the forest'. Cultures of care and ecological control had

[2]Down from 44 percent of GDP in 1999 when the agricultural sector employed 82 percent of the workforce, and accounted for 90 percent of export earnings.

evolved around forests, but later became strained due to colonisation, land competition and population pressure. Forests have also been interpreted by the colonial and post–colonial governments as sites of extraction and state formation, and by private interests as sites of accumulation, whilst at the same time the de jure protected areas and reserves that eventuated from state enclosure were seen as a source of 'empty land' for increasing numbers of landless people (Baland et al. 2007), migrants, and displaced peoples from the civil wars and cross border conflicts[3], which made the management of protected areas in the region difficult (Nampindo et al. 2005). In fact it is an 'open secret' according to some officals in the National Forestry Authority that approximately 90% of Ugandan 'fortresses' protected areas are 'encroached' or contested and the policy model is in many ways sorely embattled (Interviews, Kampala, July 2012). At the same time however, the hierarchical sets of institutions and management practices that have emerged over time have a legacy of conflict, are characterised by highly unequal power differentials, and overtly top-down structures, such that it remains unclear whether forestry policies and laws are acceptable to the local people or appropriate to the local situation (Turyahabwe & Banana 2008).

While Karsenty and Ongolo (2012) have suggested the inappropriateness of REDD+ for 'fragile states', it has been remarked that in the context described above Uganda is a 'funny place to store carbon' (Lang and Byakola, 2006). With high levels of poverty, pressure on resources from population growth, and political conflict over land (Cavanaugh 2013), there have already been tensions and evictions from contested protected areas under the auspices of new carbon forestry project implementation (Grainger and Geary, 2011; Nel and Hill 2013; Lyons and Westoby, 2014), and in the face of these complications the energy and investment requried to draw carbon forestry together has been significant. I turn now to the practices that comprise and legitimise this effort, and the overflows and orderings that proceed from it.

Problematisation and authorizing knowledges

The expressive, or virtual components of carbon forestry relate to the geographic imaginary of global emissions that are to be sequestered in local sites for the *global public good,* a process of legitimisation sustained by appeals to scientific and market authority, and a problematisation or framing of deforestation and emissions from deforestation and degradation in such as way that they are subject to a *governance imperative* and technological, political and ethical reflection and market *intervention*. The *idealised–normative carbon form* that we are invited by project proponents to conceptualise does not merely relate to particular molecules released into the atmosphere, but to valuable TCO2 units comprising a cumulative 'global' profile or edifice of emissions, which are disembedded and context independent of their source. Furthermore this framing constructs a space in which we can and normatively *should* 'offset' our emissions and carbon footprints as

[3] Such conflicts, combined with internal land shortages and labour migrations led to the cumulative effect that something in the order of 20% of Uganda's population (equivalent to about 3.6 million persons in 2009) had migrated from one district to another. Particular destinations include the agricultural estate plantations and relatively less densely populated parts of the country in the Kibale, Hoima and Masindi districts in Western Uganda (Musonda 2006, p.2).

individuals or corporate persons, to institute flows of carbon finance across a general rural / urban divide from the 'economic core' of the Global North to the 'periphery' of the Global South (Sullivan 2008). This is an appeal to *market authority,* in which expression is given to the desire to politically construct the market as the preferred social institution of resource mobilisation and allocation (Swyngedouw 2005), a process which was already in motion more broadly in Ugandan forestry (Lyons and Westoby, 2014).

What results is impetus for a market orientation in climate policy across the capitalist state system, for which the Stern Review (2007) on the *Economics of Climate Change* providing the risk calculus necessary within a neoliberal environmentality; concerning the 'serious global risks' of climate change at estimated damages at 5% of global GDP each year (Stern 2007). We are to re–imagine nature through the costs of its degradation (Corbera & Schroeder 2011), and after forestry and deforestation (estimates at 7.3 million ha per annum) garnered particular focus as a primary climate mitigation vehicle[4] in the IPCC's Fourth AR (IPCC 2007), it follows within this environemntality that what we should do is make it 'make economic sense not to cut down a tree'. The production of Payments for Ecosystem Services (PES) interventions have arisen in response to this exigency, schemes which operate on the assumption that market forces can offer an efficient and sustainable means of offering sustainable development objectives (IUCN 2007). These 'efficient' solutions are preferred to ostensible state 'command and control measures' of taxation and regulation as contemporary governments try to shield themselves from environmental decisions by voluntarily tying their hands to both placate markets and avoid public pressure. Nonetheless, interventions still necessitate significant institutional restructuring. At the local level appeals to legitimising legislation were required over rights to carbon, provided in the form of the National Forestry and Tree Planting Act of 2003 – where the protected Forest Estate is 'held in trust' for the people, and the biomass in 'private forests' is owned by the land title holder. It also required the implementation of programs such as Uganda's Ready for REDD+ process under the auspices of the UN-REDD project, a national REDD steering committee and a USAID funded SCRIPT project, which did the initial work of localising the concept of natural capital in the country by providing economic estimations of value for varied resources (Pomeroy et al. 2002). Other mediators involved in knowledge creation, such as the Forest Trends consultancy (2011), did scoping exercises and feasibility reports geared to ascertain the legal and institutional contexts for project creation, and ran 'sensitization' workshops and project 'incubator sessions' for information dissemination.

Forging 'stakeholder' alignments

> "Nothing in this space is easy; you do not align greedy, hungry and commercial in one neat little overlap quickly. You just do not." (Interview, September 2012, Johannesburg) - Carbon Broker, Johannesburg.

[4]Stating that in the long term, sustainable forest strategies aimed at maintaining (REDD) or increasing (afforestation/re–forestation) whilst also sustaining annual timber yields, energy and fibre yields would generate the largest sustained mitigations benefits (Pachauri 2007).

There are a wide variety of actors drawn into the Carbon Forestry 'space' in Uganda, where different state, private sector and NGO actors are being responsibilised as agents of carbon sequestration in respective carbon forestry projects, gaining new normative roles through which they are to either fund carbon sequestration through offsetting, facilitate reforestation and avoided deforestation through project implementation, or conform to specific neoliberal environmentalities (as, for instance, an individualised, rational homo economicus who is to be paid to conserve their trees) in order to utilise forest resources in desirable ways. Actors range from multi–lateral institutions, donors, national authorities and ministries, private companies, a variety of civil society and NGO groups and 'community' groups – all instrumentally manoeuvring and positioning to capture perceived new flows of carbon finance.

The World Bank for instance funds CDM activities through the purchase of credits, while Norway is the major REDD donor, after it withdrew funding from the NFA subsequent to its corruption scandals. International environmental NGOs (eNGO) enrol in carbon forestry schemes for a variety of reasons. Conservation NGOs such as the Jane Goodall Institute for instance aims to secure 'forest corridors' for chimpanzee habitats, whilst the Wildlife Conservation Society WCS are more concerned with maintaining tree stocks and local community 'co–benefits'. Such differences can be problematic when organisations combine in a single project with intermittent funding[5]. There are also Voluntary Carbon forestry projects implemented by carbon providers, who broker and sell carbon credits, or projects and NGOs who market for themselves, leveraging funds from Corporate Social Responsibility (CSR)/'greening' flavoured offsets in the Voluntary Carbon Market. These projects, such as Ecotrust's Trees for Global Benefit project, deal with indigenous tree planting on 'private forest lands', as pines and eucalyptus are considered alien, exotic species. At the same time carbon forestry incorporates three of the 'big 4', international industrial plantations companies including Green Resources, (and its local subsidiaries), Global Woods and New Forests, and the private equity funds and large institutional investors that invest in them. These include Agri–Vie, the International Finance Corporation (IFC) of the World Bank, HSBC and Citibank. The big 4 establish projects on their leased Central Forest Reserves (which at times conflicts directly with local community interests) to justify novel, additional carbon finance revenue streams from the World Bank's A/R CDM, for exotic pine and eucalyptus plantations on 'degraded forests', supplementing what they describe as narrow profit margins. In this respect, while acknowledging the multiple actors in the emergence of the current carbon forestry dispensation, there is a clear bias towards foreign investors, NGOs and carbon developers. At best there are partnership linkages to local government, but there is minimal or at times tacit acknowledgement of local indigenous actors or specific community groups.

Key to forging alignments is the way in which contrasting positions can be reconciled into common objectives. The catch all or 'token object' of sustainable development is agentic itself in forging a common group consensus predicated upon making conservation 'pay'; ostensibly affording compensation for alternative land uses so that communities engaged with the projects

[5] Dr Agrey Panta of the JGI, which is enrolled in the Northern Albertine Rift Conservation Group's REDD project, laments that 'REDD is not ready'. He argues that "REDD in theory is a good thing but getting the system set up is so complicated that a poverty stricken villager may not be able to wait" (Interview October 2012, Kampala).

will plant trees or avoid cutting them down. Furthermore, because of the discursive formation of a 'triple win' for conservation, development and commercialisation, carbon forestry projects can claim success even if, in meeting one aim, they flaunt the others. The Green Resources Bukaleba plantation project for instance makes the quite spectacular assertion that the overall objective of the project is to "contribute to mitigating climate change while meeting the growing demand for quality wood products from well managed plantation forests and contributing to sustainable environmental management, community development and poverty alleviation in Uganda" (Green Resources website, 2013), while it is demonstrably the case that there have been negative social and environmental impacts of the project (Nel and Hill, 2013; Lyons and Westoby, 2014).

It is evident then that enrolment and alignment in the assemblage is not unproblematic. The actors also range across a variety of local, global and glocal scales, and axes of rural or urban spatial, ideological, institutional and political difference. They each have their own rhythms, flows of activity, and funding and short staffing cycles, which can become problematic within the long time horizons that carbon forestry projects adopt to be 'cost–effective' in mitigation activities (for instance short staffing cycles within donors and NGOs leads to a loss of institutional memory and critical local knowedge). This extends to government positions where, as one project proponent put it, "as soon as somebody does something somebody doesn't want them to do, they generally get replaced and that is problematic... you are permanently starting from scratch" (Kevin Whitfield, Nedbank, Interview, September 2012, Johannesburg). Some non–project actors actively oppose projects. Local politicians at election time for instance have promised communities land within the project areas at the Green Resources Bukaleba project, to the dismay of project implementers. Communities utilising tactics reminiscent of 'weapons of the weak' (Scott 1998) have burnt trees at the Global Woods, FACE Mount Elgon, Green Resources Bukaleba and New Forests projects. As such alignments and collaborations can be held together across a continuum from tenuous (where projects are contested, tentative, exploratory and opportunistic) to persistent, institutionalised and durable.

Rendering technical – framing the area of intervention and performing carbon sequestration.

The practice of rendering technical is the key to the framing of the area of intervention and the performance of carbon sequestration. Understood as made up of *calculative technologies,* carbon forestry interventions operate through a *bio-political engineering of the social* to produce 'calculating individuals' engaging in 'calculable spaces', working to "represent the unruly array of forces and relations of the 'forest' as a bounded area in which *calculated will* produces beneficial results" (Li 2007, p.270). There are mountains of documents (such as the all important Project Design Documents (PDDs), thousands of hours of consultations, flights to various yearly COP meetings and conferences in different places around the world, reams of media articles, promotional films, and much sweat and effort dedicated to continually producing the figures and discourse that go towards accomplishing this, and keeping carbon forestry in the international and national agenda. The terms utilised in this discourse are themselves complex: Safeguards, Drivers of deforestation and degradation, Non–market–based approaches,

Reference levels, Measuring, reporting and verifying (MRV), Results–based finance, Non–carbon benefits, etc.

Projects themselves have a specific aesthetic form and must conform to an accepted *methodology*, or set of principles and practices delimiting the relevant prerequisites and procedures for a project to actualise its 'mitigation activities'[6]. The varied technological interventions include Afforestation/Reforestation Clean Development Mechanism (A/R CDM) projects which are generally large industrial scale initiatives, Reducing the Effects of Deforestation, Degradation projects which are generally more cogniscant of community dynamics, and a range of Voluntary Carbon Market (VCM) projects. An obviously crucial part of this process is the *boundary setting* of projects, and the characterisation of the drivers of deforestation. The quantification of carbon benefits also requires the establishment and solidification of a hypothetical non–reality against which carbon sequestration changes can then be measured; a 'without project' or 'business as usual' scenario which must be projected into the future to substantiate what deforestation *would* have been like without the intervention. This is an integrative socio ecological project that homogenises the landscape under an 'ecosystem services' lens (Robertson 2012), and entails a compartmentalization (or parcelisation) of those various landscapes into fungible tracts capable of incorporation into markets (Thaler 2013).

The 'simpler' elements of quantification involve the calculations of the prospective amounts of carbon sequestered given the activities undertaken, and appeals to the *best available science*, which can be read as a complex of awkwardly relating, and at times contradictory, scientific, institutional, economic and cultural knowledges; the central organising concept that they cohere around being 'carbon'. In contrast to countries such as Tanzania, Uganda does not have nationwide 'baseline data' on deforestation or carbon stocks from which to draw. Projects thus set out to measure and quantify an estimation of the carbon sequestration, reliant on the relative projects technical capacity and application of *appropriate* scientific knowledge though estimations of carbon storage (in tonnes of Co2) and Above Ground Biomass (AGB) through sampling, measurements of tree diameters at Breath Height (DBH) and estaimations. However as Cochoy (2008) demonstrates both calculation and qualitative judgment (what he termed 'qualculation') are co-implicated in evaluative practices such as carbon sequestration. Here the quantities of carbon are irellevant without the situated agency of human users (who are paid) and stabilised as calculative agents who allow such technologies 'travel', and be enacted when they are *translated* by intermediaries, or mediators who have the ability to affect and multiply difference (Callon 1986).

Carbon offsets are *performed* through acts of *certification*, *monitoring* and *verification* over time to prove their integrity and sustainability, and to ensure trust and protect revenue. Lansing (2011) details carbon verification as a technology of performance within uneven power relations, where various actors become stabilized as *calculative agents* to simultaneously maintain both the carbon offset as a commodity object and establish a field of action and communication that allows for such an object to be exchanged. There are thus a multitude of paid mediators and

[6] Ugandan examples include the CDM approved methodology AR–AM0004 for the CDM projects, the Plan Vivo methodology for Ecotrust, or the Carbon Fix methodology at Kikonda CFR.

boundary actors who are instrumental in allowing carbon practices to travel in Uganda, and are crucial to the coherence of carbon forestry in conjuring 'meaningful and measurable economic benefits' which are also tax deductible for the offsetter. These actors include external consultants, arbiters or 'verifiers' from multinationals like SGS and TUV SUD which are primarily involved in the projects on plantations and central forest reserves, from local NGOs like Nature Harness or eNGOs like the Sierra Club. There are also boundary actors who move across projects, or between national forestry institutions and projects (for instance individuals previously employed by the NFA, who since the reforms and corruption scandals have moved into roles as project staff, or consultants for multilateral agencies such as the World Bank).

Finally, with the hard work of commiditisation performed, the move of marketisation is pursued, through an attendant labour of institution building, to re–embed the now abstracted carbon into an apparatus of surveillance and exchange. It also requires a financing mechanism to monitor, verify and assign monetary value to the newly produced commodity of carbon. To gain legitimacy projects attempt to comply with independent *Standards*[7], or more exactly 'eco–voluntary certification schemes'. These differ widely; from a focus on community co-benefits, biodiveristy or accounting standards, but they enforce and produce the image of compliance requisite for legitimacy, and they also act as 'premium enhancers' and quality guarantees for 'gourmet offsets'. However as voluntary corporatist governance standards (Thaler 2013) these have been criticised for their inability to guarantee the types of biodiversity and social benefits projects claim, including in Uganda (Eklof 2012). Further more even the most ardent supporters of carbon finance would admit that assigning a 'proper' market value for environmental services constitutes one of the main challenges in the establishment of PES schemes (Mayrand & Paquin 2004), let alone questions of the sustainabiity of demand for carbon credits. A Nedbank South Africa broker who has been financing carbon forestry projects in eastern and southern Africa describes the capriciousness and spectacular nature of carbon finance starkly:

> None of these projects have inherent value. They are all captive relative to the emotional value they instil.... Three years ago they wanted REDD forestry. Easy. But this year they want REDD+ Rhinos (REDD with biodiversity value) where you get bang for your buck to save the 368 Rhinos from being killed each year in the most horrible way. So once off sex and violence credits everybody is keen, as it gives marketing spin and hits the right buzzwords... but buying the forestry credits for 10 years? Ain't gonna happen! (Interview, September 2012, Johannesburg).

Overflows and counterperformativities: Anti-politics and the Management of Failures and contradictions.

The process of *rendering technical* results in certain *critical omissions* and *erasures* (Li 2007), and there are 'overflows' and counter-performativities to the project of valuation of carbon more broadly, some of which have already been suggested. Most obviously it seems many problems are to do

[7] Examples are the Verified Carbon Standard (VCS) which incorporates the NARCG and Kibale FACE projects, and the Climate, Community and Biodiversity Alliance (CCBA) for the TFGB (and which Green Resources failed to achieve accreddiation).

with the inherent limitations and contradictions of carbon forestry implementation. Not least are the financial constrains where a lack of demand for credits and declining carbon prices are evident, and Ugandan projects are struggling in this context[8], often failing to live up to the expectations of participants. Secondly, the types of actors who are vocal in opposition to, and advocacy against carbon forestry – using framings of green grabbing and human rights violations – are much less restrained than the 'friendly critics' and academics whom Li describes in relation to community forest management (Li 2007a). Through online platforms, actors are readily able to disseminate their opposition (see reddmonitor.org), and this vast platform greatly increases their capacity to discredit projects on various grounds, even if the projects are well intentioned. As one project actor put it, "with carbon credits you could be the archangel Gabriel and still be accused of all sorts of things" (Bill Farmer interview June 2012). Apart from more open and vocal critiques, the contributions and concerns of civil society and more moderate environmental NGOs must be also subsumed into the discourse of REDD and carbon forestry to ensure their concerns are rendered technical, and contained. The establishment of 'safeguards' in line with UNFCCC and World Bank standards, consultation and participation plans, grievance mechanisms, best practice advocacy and attempts at institutional strengthening – all technologies meant to speak for the dis–empowered or allow them a voice (Carothers & Barndt 1999) – has occupied the time of many civil society actors in Uganda to little effect[9]. In practice what this means is that contradictions are managed "less by technique than by compromise in its dual sense – [where actors] make compromises [in joining the carbon forestry debate] and in doing so become implicated, their positions compromised and critiques contained" (Li 2007a, p.279).

On closer examination, however, there are more subtle omission and erasures, which include the simplification of landscapes and complex processes driving deforestation, in the selective (de–)emphasis of regulatory, disciplining approaches in sovereign control over enforcing the boundaries of the protected areas of the Uganda forest estate, and in the overlaps this has with the new neoliberal environmentality (Fletcher, 2012) and its simplistic depiction of exemplary 'communities' who are to receive benefits. Project boundaries are at times superimposed over contested de jure protected area boundaries where land conflicts are in progress, or delineated over what are simplistically described as private/local 'forests'. The Uganda Wildlife Authority (UWA) and National Forestry Authority (NFA) approach the issue of the contested territoriality of the forest estate with some trepidation, acknowledging the problem but at the same time attempting to cope with its everyday reality. The tension in keeping the assemblage governmental, as opposed to coercive, however, was laid bare in the eviction of 'encroachers' from the New Forest Companies' plantations and CDM project in Kiboga District of Western

[8] The Northern Albertine Rift REDD project is struggling to secure donor funding, and looking to Tullow Oil drilling in western Uganda for finance, the Ecotrust TFGB and FACE Kibale projects are selling few units, while the Green Resources Bukeleba project is struggling to sell their credits in the absence of compliance markets.
[9] An appraisal of eight national REDD Readiness Proposals (R–PPs) submitted to the World Bank's Forest Carbon Partnership Facility (FCPF) by Dooley (2011) found that the process, rather than strengthening REDD safeguards, had created a dense set of guidelines that watered down existing policies and obfuscated minimum standards

Uganda. Backlash to the project took the form of an Oxfam report that gained global attention, and elicited an international outcry following its publication (see Grainger & Geary 2011).

In what might be thought of in terms of a 'black box', such contestations over protected areas (particularly CFRs), as well as the complexities of land tenure types[10] (when considering projects on so-called private land), are not adequately accounted for, or actively avoided, in carbon forestry project documentation. Similarly to this spatial homogenization there is a tendency to characterise and problematise abstract 'drivers of deforestation' as primarily centred around smallholder or encroacher clearances, or for 'timber extraction', and not macro and structural issues which underpin the problems in the forestry sector (see Mwenda and Tumushabe, 2011). The result is both a focus of policy and funding framework in which timber planting is favoured over the planting of indigenous species for woodfuel or biodiversity conservation, and a selective focus on maintaining state forestry territories where they intersect with private sector interests. This focus often works against the interests of the rural poor through both direct violence, and through policies which conflate informality with illegality (Cavanagh and Benjaminsen, forthcoming). However, it does dovetail with declining state and donor support for the maintenance of the forest estate in general, and even degazettments of protected areas for Oil exploration (in the albterine rift) or for biofuels production (on the Ssese islands in Lake Victoria) (Carmody, forthcoming).

Further tensions are indirectly managed, often through the application of practices of assemblage at work in *managing failure and contradictions* and in *anti–politics* to suppressing potential spaces of contestation and questions of unruly nature, by reframing of political issues and questions as matters of technique (Ferguson 1994) or obfuscating them in 'rituals' which are established and performed to normalise and lend validity to conservation practices, despite their contradictions (Büscher 2013). *Antipolitics* highlights that perceptions of 'self-evident' benefits, relating here to climate mitigation and avoided deforestation, have the ability to obfuscate the systemic political economy and ecology underpinning the 'problems' they delimit (Büscher 2013; Ferguson 2004; Li 2007b). For instance, rather than leading to a questioning of the territoriality of the protected forest estate itself, the embattled state and degraded nature of forest territories paradoxically described above re–enforces the *urgent* governance imperative of carbon forestry and renders them ripe for a variety of interventions; including the ostensible reforestation, care, and protection deployed by an apparatus of state, private and non–governmental governance. Similarly at the project level when tensions and overflows are experienced, the premise of PES is maintained, but on the proviso that further revisions and demanding preconditions need be in place for it to properly function. This only serves to give impetus to further rendering technical, but doing it better next time; through more MRV, more FPIC, better governance, better market guarantees, which fail to address the core concern with REDD+ as a top–down intervention (Elson 2013). The first carbon forestry project in Africa provides an example: where the FACE (Forests Absorbing Carbon Emissions) at Mount Elgon experienced tensions with communities and boundary disputes over the area (Lang & Byakola 2006) to such a degree that they resulted in the failure of the project in spectacular fashion

[10] The four types of tenure include communal land, Mailo land, leasehold and freehold land.

(Cavanagh & Benjaminsen 2013). FACE's response to this predictable eventuality (the threat of which was clearly outlined in initial project documentation on the area), was to erase mention of the project on its website and documentation, and to re–brand under the name Face the Future.

Reassembling governance

Thus far I have suggested that the carbon forestry assemblage promotes a shift way from, or a reassembling of, the centralised control of the colonial and post-colonial state over forest territories. This happens through practices of rescaling of governance through processes of upscaling, downscaling and outscaling (privatisation, deregulation and decentralisation), towards what Sywngedouw (2005) calls 'governance-beyond-the-state'. A key part of this is the process of *downscaling* which carbon forestry accomplishes. This is the devolution of governance to 'local' projects such as the carbon forestry initiatives studied here, away from the resource poor, with 'hollowed out' national management bodies and local government actors (Jessop & Kennett 2004) that are nevertheless charged with oversight of non–state actors at the local level (see Cohen and Bakker's (2014) eco–scalar fix for a good example relating to wetlands). This downscaling of functions does not however effectively extend to community groups, where limited decentralisation coupled with continued central control over natural resources, including forestry, undermines popular decision making, local autonomy and weakens the government's poverty reduction strategies (Muhereza 2003; 2006). Thus downscaling is limited to creating greater local differentiation and the incorporation of new social actors in the governance arena, many of them private and foreign, and this extends a process of the *outscaling* of governance functions.

Firstly with regard to outscaling there are changes to the way in which conservation is governed, through NGOs and the private sector, in dialogue with the state, even if they do not directly acknowledge their 'non–governmental governance' role. It is evident carbon forestry as a calculative practice re–produces state control, in the face of declining capacity and the increasing activity of non–state actors[11]. For local government actors carbon forestry projects provide a degree of what they term 'facilitation' – resources and opportunities to achieve parts of their mandate. Such funds can go towards bolstering protected territories and generating resources for its managerial mandate; in a forestry sector that has been afflicted by corruption scandals that percolated the removal of external donor support. These actors include the quasi decentralised local/district government officials, District Forest Officers (DFOs), Community Development Officers and District Environment Officers. Just as NGOs and multi–lateral actors take on governance roles, the state retains some modicum of co–ordination over their activities. While project proponents or private planters have become the 'prime movers' in carbon forestry and in the privatized contemporary arrangement, they come into friction with state actors over the degree of ownership and control between government and the non–governmental developers. What is clear, though, is that the state's role is limited and facilitatory

[11] While such conduits of state power in the new governance arrangement are 'lodged' in space, they exercise reach to draw in other actors (Allen & Cochrane 2010).

within the emergent mode of neoliberal environmentality. By limited I mean that it is relegated to agenda setting, and facilitatory in that it is involved in the creation of a context within which some objectives such as carbon sequestration and industrial tree planting are possible, while the interests of others are marginalised. The voices of 'encroachers' (residents on Central Forest Reserves, some for over 40 years), for instance, are precluded from having their 'stake' in governance recognised, while more abstractly alternative communal, non–rational land uses, or mixed farming and agroforestry systems in forest territories (a system called taungya in Uganda) are regarded as illegitimate. The state still maintains its disciplining and law enforcing role, however, in a faltering attempting to maintain the integrity of the protected forest estate.

Another rescaling which undermines direct state control comes from the upscaling of governance functions to the multi-lateral level and to Donors. Here state actors must be conversant in carbon forestry discourse and practice, and it is at this point that *ventriloquism* and donor influence can find purchase. This was particularly evident in the development of the national REDD readiness proposal and its participation strategy in the country[12]. With regard to accountability in carbon forestry, Xavier Mugumya, the former head of the national REDD steering committee utilised a popular saying in Uganda, 'he who pays the piper calls the tune'. Upscaling is accomplished in part through institutional reconfigurations 'at home'. Changes included the implementation of national REDD readiness activities through World Bank funding, and a REDD Readiness Preparation Proposal (RPP) which included alterations to governance institutions, laws and policies to clarify 'carbon rights', and a call for the establishment of National Forestry Monitoring Systems, which in Uganda's case occurred in parallel to the neoliberal reform of the forestry sector, which focused on public-private partnerships in timber planting (Nel, 2014). The institutional apparatus that governs carbon forestry now comprises the Ministry of Water and Environment (housing the National REDD steering Committee under the Forest Sector Support Department), the Climate Change Unit (the Designated National Authority for the CDM), and the National Forestry and Uganda Wildlife Authorities. In particular the UNFCCC now holds a key position of authority in relation to the national environment sector and its relation to the global institution building around climate change. This becomes visible when exploring the position and limitation of the newly created 'Climate Change Unit' within the Ministry of Water and Environment. To quote the head of the unit;

> People want to see a divide between the international and national processes... [but] It is important for people to know that it is both... You need to work with that international framework, that's where the UNFCCC remains to guide all of us to act and move in the same direction; but Uganda as you know also has a national development plan and a special chapter on environment sectors and one of them is climate change sub–sector where the government sets out objectives to address climate change (Interview, Kampala, October 2012).

[12] While the NFA (and by extension the MWE), was the official Designated National Authority (and could prepare Terms of Reference, sanction payment and receive reports), NORAD as the primary donor exerted significant influence. The donor withheld funding from state institutions for the preparation of the proposal, and NGOs were contracted to accomplish key tasks; the IUCN were contracted to prepare a consultation strategy (with the Bennet and Batwa peoples only – those defined as 'indigenous' in the country) and CARE to prepare a grievance strategy.

Although the CCU, and other nodes such as the national REDD steering committee may be small, they are powerful, have mediator roles in regard to the claims to territory and legitimacy that are brought to bear in the lodging, negotiation and accommodation of different actors in the herarchical and yet contested assemblage, which as I have described perpetuates asymmetries in power relations to the detriment of the rural poor.

5. Conclusion: Territory, flows and overflows

What an assemblage approach offers is a way to characterise the 'knots' and practices that hold the carbon forestry assemblage together, for it is certainly the case that, similar to Li's characterisation of the Community Forestry Management Assemblage, there is much work dedicated to cohering carbon forestry together. Within the contemporary carbon forestry assemblage, which I have described above, we have seen that Carbon forestry operates across multiple levels of governance, networks and scales (Mwangi and Wardell 2012) and through multiple practices, both material and virtual. What a focus on practices of assemblage as derived from Li shows, is that the work of articulating carbon forestry and solidifying neoliberal environmentality is anything but complete; there is still, and always will be 'more work to be done'. While this approach is both intuitive and certainly useful, it begs both adaption to the carbon forestry context and the application of careful scholarship to describe how contradictions are dealt with: how they are either brought under the governmentality of the assemblage or are created as 'overflows' to the valuation of nature itself. The creation of consensus here requires actors to be responsibilised subjects under the terms of the assemblage. In this light we see that an assemblage is less a constituted 'thing', (Featherstone 2011, 141), to which Li's (2007) account is arguably susceptible, than a processural relationality which is useful for explaining the fractured and fissured ways in which entities cohere and operate in particular places.

We can make suggestions for further research on territoriality and on flows and overflows by expanding and augmenting the assemblage approach. Firstly, it is important to delve deeper into how the asssemblage works spatially, in reconfiguring forest territories, for as Massy points out, it is clear that entities articulate in and through space. Following Delaney we know that depending on how "a given *social order* [or as I read it, assemblage] is organised, certain territorial expressions will be possible and more or less serviceable and others will be less likely" (Delaney 2009, p.207). As I have argued it is apparent that the carbon forestry estate is only selectively reenforced by the assemblage. We can afford due credit to state managerial attempts at land use planning and forestry management, and to the aims of carbon forestry proponents, but must appreciate that technical interpretations and normative interventions are often 'utopian fictions' (Vandergeest and Peluso, 1995) that cannot fully account for the becoming, or lines of contestation in forestry that make governance so difficult. What we see is that what carbon forestry and market environmentalism *does* is to extend a shift – in essence a re–territorialisaiton – from territorial based governance to flow based governance around carbon (see Sikor et al. 2013). This itself builds an 'overflow' which indirectly undermines the territorial

control of the Ugandan 'forest estate' in places where the assemblage does not attempt to 'make nature pay for itself', and here the trope of 'sacrifice' might be applicable. This area for future research highlights how rearrangements to enhance climate security, in this case through neoliberal climate change mitigation, justifies the indirect sacrifice of biocultural diversity (Nel, forthcoming).

Further identifying the overflows, counterperformative entities and nonscalable elements in the Ugandan and other carbon forestry contexts and systems might unveil how this and other assemblages rely on, perpetuate or exacerbate unjust social relations and the destruction of nonhuman nature (Fredriksen, 2014; 7). Assemblage presents to us an ecological future that is open not closed, and brings us "face to face not with the essence of things, but with questions of power, ethics and politics" (Braun 2008, p.206). In the face of such *immanence* made visible, this approach also opens a space for intervention and a more progressive alignment. We see that while contemporary formations and the injustices they sustain might appear to be relatively stable, by making visible their *immanence* we can also see how contemporary alignments are always capable of becoming 'other'. As Deleuze (1992) so aptly put it there is no reason to hope, nor fear, only to look for new weapons, and I would suggest there is further scope for considering how horizontal and rhizomatic forms of organisation between communities of trees and people might be more sustainable and point to a more positive socio-ecological future in Uganda.

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