

**Performativity, corporeality and the politics of ship disposal**

**Nicky Gregson**

**Department of Geography**

**University of Sheffield**

**Sheffield**

**S10 2TN**

**UK**

**[n.gregson@sheffield.ac.uk](mailto:n.gregson@sheffield.ac.uk)**

**IN PRESS – JOURNAL OF CULTURAL ECONOMY**

## **Performativity, corporeality and the politics of ship disposal**

### **Abstract**

This paper provides a posthumanist performative reading of spaces of disposal as sites of economic activity. Its empirical focus is ship breaking, as practices and political techniques. Drawing on the work of Donald Mackenzie, Karen Barad and Jane Bennett, it frames ship disposal as a boundary-making intervention in the world and as part of the demolition assemblage. The paper challenges the oppositional politics that characterise international debate about ship disposal. Through an articulation of the academic register and literary narrative, the paper develops a material politics of ship disposal which draws connections, rather than making distinctions, between labouring bodies in different parts of the world. It reconfigures ship disposal through a material politics that centres the proximate intimacy of human bodies, demolition technologies and vital inorganic materials, highlighting the importance of shared corporeal vulnerabilities, a biopolitics of occupational health and a material politics of globalisation where the long distance associations are temporal, of a 'now' and future-past 'then'.

**Key words:** performativity, corporeality, assemblage, material politics, spaces of disposal, ships

*The salvage yard is the home of second chances: it is the space where second chances are collected and recirculated [...] the act of salvage reminds us that the present is always the second chance of the past. Through the practice of salvage, one can rescue the past for use within the present; one can work to save the present from past oppression. (Soderan and Carter, 2008 p 34).*

*There were six of us, scraping and cleaning the inside of an underground petrol tank; the daylight only reached us through a small manhole. It was a luxury job: no one supervised us, but it was cold and damp. The powder of the rust burnt under our eyelids and coated our throats and mouths with a taste almost like blood. (Primo Levi: 'The Canto of Ulysses' If This Is A Man p 115).*

## **Introduction**

On February 8<sup>th</sup> 2009, at approximately 12 noon, a strange cortege entered the estuary of the River Tees in Northern England. Out in the shipping channels of the North Sea, container ships and bulk carriers hove-to for an hour or so, pausing on their journeys to let an immense object and her four small guides pass. On the shore, thousands of people lined a three kilometre stretch of coast. Adults, children, dogs, TV cameras and crews, radio reporters, print journalists, police and coastguards. Witnesses all, we watched and captured the moment, on cameras, camcorders, mobile phones and dictaphones. Through binoculars at first, and then with the naked eye, 'she' – for this object is most definitely a 'she' – came closer into view. Grey; battleship grey; a massive inverted triangle, with bulges on either side, and a huge platform atop; silent; rust-etched and defined; so shocking in her appearance that people remarked: 'she's seen better days', 'it won't take much for her to come apart', 'rust-bucket', or – more straightforwardly – '\*!@k, what a mess'.

Figure 1 about here

Who is this 'she'? Her name is *Clemenceau*, or R98. Laid down in 1955 and once the pride of the French navy, 'she' is an aircraft carrier, or, more conceptually, an immutable mobile (Law, 1986), a constellation of French military and state power, a materialisation of multiple complex-engineered technical systems, a military hybrid, a mobile air base, weapons system and human life support system, whose mobilities, whilst global, are framed by the rhythms and speed of journeying at sea and the reach of aircraft carried. But this *Clemenceau* is no longer much of a mobile, neither is she immutable. Over 50 years old now, decay manifest, her current form testifies to material mutability (Ingold, 2007), to the importance of repair and maintenance to socio-technical immutability (Graham and Thrift, 2007), and to the transient relation of singular objects to socio-technical systems. Her weapons systems long since removed, her turbines stilled, and her physical mobility entirely dependent on four small tugs, *Clemenceau* is unmistakably an end-of-life object. No longer state of the art, too expensive to maintain, she has fallen out of the socio-technical system which she once held together. Neglect and the passage of time are etched into her form. She is indeed precisely the type of object that exemplifies Tim Ingold's (2007) remark that materials will always win out over objects in the end.

The physical traces of decay, however, are simultaneously a manifestation of the gap between first and second burial, or social and physical death (Hertz, 1960). They show too that this gap is a socio-technical gap, which – in the case of end-of-life objects like *Clemenceau* - can be considerable. So, what might look as if it will just fall apart can actually take much to effect a coming apart. In the case of *Clemenceau* the gap between social and physical death has been extremely prolonged. Although decommissioned in 1997, it was

2003 before *Clemenceau* was sold to a Spanish-based company, who then proceeded to attempt to tow her to Turkey for breaking. In 2005 she was returned to France, and then destined for disposal in Alang in Gujarat in India. The subsequent interventions by Greenpeace, and then by the Court of Supreme Justice in India, eventually enforced her return to France in 2006. In 2008 *Clemenceau* was sold again, to be broken up by a yard in the UK. Yet she did not journey there until 2009. That *Clemenceau's* death dance has been so protracted is in part because of her status as an immutable mobile. Both her identification with, and significance for, a particular state-military nexus made her an easy target for E(nvironmental) NGOs concerned with politicising end-of-life ships. Thus, Greenpeace's actions worked to gather to *Clemenceau* a range of actors, including environmental lawyers, state judiciaries, governments, policy makers, NGOs, asbestos, oily wastes, and UN agencies such as the International Labour Organisation (ILO), the International Maritime Organisation (IMO) and the Basel Convention (BC). *Clemenceau* herself, then, became, in Latour's (2005) sense of the term, a matter of concern. Along with other end-of-life ships, her particular case has established ship disposal generally as an issue to care about. Geography is central here. *Clemenceau's* death dance illuminates the spatial dichotomies of the world of ship disposal. Oscillating between the EU (France) and South Asia (India) as well as the EU (Spain) and the OECD (Turkey), the intended directionality of two of *Clemenceau's* disposal journeys figure a familiar waste story; of the export and dumping of wastes by wealthy nations and/or corporations on the less wealthy nations of the world (BAN 2002, 2005). In contrast, her final voyage provides a counterpoint, enshrined in the principles of the Basel Convention: that the wastes of wealthy nations be disposed of in their countries of origin, or at the very least that they do not cross the OECD border.<sup>1</sup>

---

<sup>1</sup> That so many turned out to witness *Clemenceau's* arrival in the River Tees is an indication of the degree to

... ..

The above vignette signals the registers in which I work in this paper, its empirical focus, which is end-of-life ships and their disposal, and a concern with material politics in globalisation. Like Law and Mol (2008), I consider material politics to foreground the importance of materialities and articulation, and see practice as a political technique. Disposing of ships involves breaking them up and, like boiling pigswill, breaking up ships in places like the UK is a political technique. It is a means to draw on long distance associations to draw boundaries – in this case between how breaking ships is done ‘here’ and how it is done ‘there’. The spatialising distinctions of ‘here’ and ‘there’ differentiate between the containment of breaking in the UK and the uncontrolled practices of breaking on the beaches of South Asia. They say ‘this’ (meaning containment) is a better environmental practice than ‘that’ (meaning beaching). They work to draw the world together by holding the two practices apart. More strongly, breaking up ships in the UK would not even be occurring were it not for end-of-life ships having been configured as matters of concern. The event that was *Clemenceau’s* arrival in the River Tees, then, has long distance associations. It is both a response to, and infused by, the political debate and controversy that surrounds South Asian ship breaking.

Often material politics are opened up to social scientific scrutiny when practices unravel, leak or break down, exposing that practices are political techniques in need of restabilisation. Untreated pigswill on a Northumberland farm, and its connections to foot and mouth disease in the UK in 2001, is one such case. But there are others, including John Law’s studies of aircraft failure and railway disasters (Law, 2002, 2006) and Brian Wynne’s

---

which not just this vessel but also its destination in the UK figured as controversial. See Hillier (2009) for an interpretation of preceding events.

study of Lakeland sheep farming in the post Chernobyl fall-out (Wynne, 1996). These studies focus on material politics when it spills over into what Andrew Barry (2002) calls 'hot' politics. But material politics as ontological politics is on-going. It is not just a matter of when things go radically or catastrophically wrong. So, a question becomes how to open up that quieter sense of material politics; the type of material politics that characterise the case of ship breaking currently. Law and Mol (2008) point a way here, when they argue that something is not political in and of itself but that material politics can be opened up through the process of analysing it. They ask, 'how might writing be done in a way that opens up a space of contestation, rather than closing it down? (*ibid*, p 142). Their answer is in the articulation of practices. So, pigswill for them becomes messy, associational, but always literal; trackings back and forth between food waste, farming practices past and present, animal feed, veterinary inspections, Argentina and Northumberland, and between documents and texts, from public inquiries to treatises on pig husbandry.

In this paper my focus is also messy articulations of materialities and practices but I adopt a different writing tactic to Law and Mol, staging a clash between two very different modalities of writing to open up a space for a different sense of material politics in globalisation, located in corporeality, embodiment and temporality. One modality is the conventional academic voice; the other is literary narrative. I do this for three reasons. Firstly, to work provocatively: using Law (2004) as a touchstone, I expose the performative qualities of academic writing, and its conventionality, using literary narrative to show what is lost in that register. Second, writing through literary narrative is a means to writing allegorically. It is a means to say something whilst saying something else; a means to writing indirectly, to leaving tacit, to open gaps, to let readers infer – and that is something that

academic readers are not used to doing when they read academic writing (Law, 2004). So allegorical writing is difficult to work with.<sup>2</sup> But, such tactics are important, particularly when it is perhaps not possible to say certain things clearly. They matter not just in situations of political oppression, where allegory has proven a powerful ally, but in circumstances where research access is conditional and where the boundaries between what can be written and what cannot are clearly maintained. Third, working in literary narrative allows me to open up a corporeal and embodied politics of ship breaking located ontologically, in the proximate intimacy of human bodies, demolition technologies and inorganic materials, including metals, smoke, fumes, rust and oily wastes. Together, proximate intimacy and the collision of the literary register and the academic are argued to provide the basis for developing a progressive material politics of ship disposal which, rather than using practices as political techniques to restate boundaries between places, opens up the possibility of drawing connections between labouring bodies in different parts of the world.

The paper is structured as follows. In the next section I use the conventional academic voice to outline how ship breaking connects to current debates about sites and spaces of disposal, and how it has been figured politically. I also position ship breaking as an economic activity and as a performative intervention. The point here is to show how political debate about ship breaking is typically staged, not as a material politics but as action (separated from any consideration of materiality) and facts. This works to set up a dichotomy between South Asia and the rest of the world. The paper then shifts to literary narrative, staging two material encounters of ship breaking in Northern Europe and in Bangladesh. Working in this

---

<sup>2</sup> A challenge posed by this style of writing is its resistance to clarity. Reviewers are likely to ask that arguments be made clearer, when the point to such writing is that singularity and transparency are not being sought. What gets exposed in such collisions is academic writing's own performativity.



register opens up the space to return to the academic register to both critique the standard political representation of ship breaking and to develop a more progressive material politics grounded in corporeality, performativity and the global connections of labouring bodies.

### **Ship breaking, disposal and performative economies**

Disposal and the sites and spaces of disposal have attracted considerable interest from a range of cultural commentators. Disposal has been conceptualised as a means to think through the trace of absent presence (Hetherington, 2004), whilst the spaces of disposal have provided the vehicle for articulating salvage (Hawkins, 2006; Soderan and Carter, 2008), for interrogating the ruin (Edensor, 2005) and for thinking through decay (DeSilvey, 2007). Whilst acknowledging the rich capacity of such work, I have one reservation that is particularly apt for cultural economy. This is that salvage sites are not just fertile ground for cultural theorising. They are sites of *economic* activity. This is what has got lost along the way in cultural readings. Soderan and Carter's photographic essay on the auto salvage yard provides a case in point. Here, the play on auto salvage permits an interpretation that recognises in the salvage yard a double sense of the second chance, for objects as well as the human subject. But the salvage yard is a scrap yard, and much of the work that goes on there is creative destruction or demolition (Bytes, 2005; Gregson et al 2010). Here labour is directed to preparing degraded and decaying objects – in this case, cars – for the automated technological system of the metal shredder. Shredding, be this automated or manual, transforms materials into secondary materials for exchange in commodity markets. The primary aim of salvage and its associated labour is to maximise the value in materials recovery, and to do so as profitably as possible. This has implications for labour. The second

chance here, then, is not just about objects, or even about the human subject, but about the profitability of material reconfigurations of past materialisations in the present.

The manner of how material reconfiguring is done, through the conjuncture of human labour, technologies of destruction and their degree of environmental containment, has prompted much political controversy and dissent over salvage sites such as ship breaking yards. Highly schematically - and this has come about largely through the activities of NGOs - the international trade in end-of-life ships and their disposal has come to stand for the dark side, or black sun, of globalisation. The sight of container ships, the work horses of globalisation, or of ex-naval vessels, the symbols of state military power, being torched apart by armies of workers, including child labourers, with no environmental containment, on the beaches of South Asia has become a potent symbol for the environmental justice and human rights movements and, notwithstanding the Basel Convention, the evidence for the continued trans-boundary movement in hazardous wastes (YPSA, 2005). In response, and in tandem with the actions of the IMO and the ILO, a plethora of actors including governments, policy makers, businesses, local authorities and environmental consultants, have attempted to develop a contained and highly mechanised form of ship breaking capacity in parts of the world where the activity has long been largely moribund, notably in Europe.<sup>3</sup> At the same time, there have been continued international efforts at enhancing the governing of ship disposal.<sup>4</sup>

---

<sup>3</sup> Key reports and papers informing the development of the UN agencies positions are: Rahman and Ullah (1999); Bailey (2000); Basel Convention (2002); ILO (2004); International Metalworkers Federation (2007); Mikelis (2007). Key NGO reports are: Greenpeace/FIDH/YPSA (2005) and FIDH/YPSA/NGO Platform (2008). See too: EC Green Paper (EC, 2007) and the UK's Ship Recycling Strategy (DEFRA, 2007). An earlier response

Currently, political debate in the assemblies that gather to debate and discuss ship disposal is articulated as actions and facts. It has little to say about materialities. Mostly the facts go something like this. On average, somewhere in the region of 600 commercial ships are scrapped annually.<sup>5</sup> Most of the world's ship breaking activities occur in South Asia, notably in India and Bangladesh. This is so because there is cheap labour there in abundance, little or no regulatory control of wastes, and because there is a high demand for scrap steel, which means that South Asian ship breakers pay more, much more, for end-of-life ships than breaking operations elsewhere in the world. For the latter, the costs of waste remediation and labour, and the distance from scrap metal markets, means that they are uncompetitive against their South Asian counterparts. Shipping companies, looking to maximise their returns on vessels sent for scrapping, normally sell them to the highest bidder, usually an intermediary known as a cash buyer. Cash buyers are the means by which end-of-life ships move to South Asia. Conditions in South Asian yards are such that there are high numbers of deaths and injuries at work.<sup>6</sup> Environmental pollution is widespread (Srinivasa et al, 2003). Be it NGOs, supra-national policy makers or western governments

---

occurred in the US, triggered by a Pulitzer Prize winning piece of investigative journalism in the *Baltimore Sun*. The industry there, however, is labour intensive.

<sup>4</sup> The most notable instance of this is the IMO-led Hong Kong International Convention on Safe and Environmentally Sound Recycling of Ships held in May 2009. As the UN specialist agency for the safety and security of shipping and marine pollution, the IMO's point of departure in governing ship disposal is different to that of the Basel parties, where the concern is with hazardous waste, and the regulation of its management and movement (BC, 2002). Under the Hong Kong Convention, the onus for compliance is with the shipping industry and its regulatory states (port, flag and recycling). The slippage between these, and the ease of reflagging ships, is one means by which end-of-life ships move to South Asia.

<sup>5</sup> The figure fluctuates depending on the state of the global economy and global trade, with recession characterised by a peak in the supply of vessels for scrapping and the converse being the case during economic upturns. Employment estimates range from a minimum of 30 – 60000 in India and Bangladesh combined to > 500000 including indirect employees (Bailey, 2000).

<sup>6</sup> See ILO (2004, Table 1 p 87) for a list of common hazards and frequent causes of accidents in the industry. Accurate figures are notoriously difficult to come by. NGO accounts suggest that deaths in the industry have totalled several thousand in 20 years (YPSA, 2005), whilst a 2004 Indian government report states 434 accidents and 209 deaths at Alang between 1998 and 2003 (ILO, 2004). YPSA maintains a web-hosted bulletin to record deaths in the Chittagong yards in Bangladesh. 16 died in 2009 (till end October); 14 in 2008 - see <http://www.shipbreakingbd.info> – last accessed August 2010.

articulating these facts, they always come out the same way: what matters in ship disposal is human labour conditions, environmental pollution and waste containment (Crang, 2010). The result is an oppositional politics which pits places in one part of the world (South Asia) against other places.<sup>7</sup> It is this dichotomous way of thinking, and the politics it results in, that I want to move beyond in the paper by recasting ship disposal through a material politics.

Underpinning this intervention is a reading of ship breaking which is part of a wider commitment to the development of performative accounts of economies. What I want to do here is to bring Donald Mackenzie's recent work into conversation with the posthumanist accounts of performativity developed by Karen Barad (2007) and the vital materialism of Jane Bennett (2001, 2004, 2007), both of whom take serious account of matter's liveliness, dynamism and activity in the world's becoming. Mackenzie has demonstrated the performativity of economics, specifically its models and devices (Mackenzie, 2006; Mackenzie et al 2007). Most recently, in *Material Markets*, he extends this account of the performative to include the corporeal and physical alongside the socio-technical, construing this in terms of assemblage (Mackenzie, 2009). This latter position has as much in common with Jane Bennett's notion of assemblage (Bennett, 2004) as it does with the acknowledged connections to Michel Callon's arguments about the performativity of economics (Callon, 1998). But, the relation between materiality, performativity and economies can be pushed further, by drawing on the 'agential realism' of Karen Barad. Located at the interface of science studies and feminist studies, Barad works from Niels Bohr's proto performative analysis of apparatuses to show that apparatuses are more than

---

<sup>7</sup> A clear instance of this oppositional politics is the NGO Platform's rejection of the Hong Kong Convention for its alleged legitimization of beaching.

the current articulation of assemblages, as including humans and non humans. '(They - apparatuses) are not passive observing instruments ... (but) ... are productive of (and part of) phenomena' (2007, p 142). For Bohr, and for Barad, the primary ontological unit is not 'things', or objects, but phenomena – a differential pattern of mattering produced through the intra-actions of material-discursive practices, which include scientific apparatuses (*ibid* p. 140). Barad defines these interventions in the world as boundary-drawing practices. They materially reconfigure the world, in ways that matter (semantically and ontologically), but in an open process of mattering. Hence, the world is 'a dynamic process of intra-activity and materialisation' (*ibid.* p. 140). It is possible to think of many economic activities as interventions that are similar to, if not the equivalent of, apparatuses. Albeit that they are, at least in part, stabilised, routinised and repetitively ordered, many of the activities that go by the name of economic activities, are material-discursive practices, 'cuts' or interventions in the world that produce particular, intended material (re)configurings of the world, but in a process of mattering that is more open than is frequently acknowledged. So, the activities that characterise work in sites of disposal such as ship breaking yards are material reconfigurations, in Barad's sense of that term. They are boundary-making interventions in the world, in which the activities of breaking produce both these activities and differences that matter, in the sense of reconfiguring past materialisations, rendering them mutable, and then attempting to stabilise them as recovered materialities and new materialisations open to future use or captured and sequestered as wastes. Materiality is an active and integral factor in these reconfigurations. Indeed, this is Barad's core point about performativity; that a posthumanist reading of the performative should insist on iterative intra-activity, or doing with matter, and not rest on either an external relation to matter (Pickering, 1995, 2005) or a citational reading of the performative (Butler, 1993). In this way,

a focus on an iterative, corporeal reading of performativity will both foreground and start from praxiology – in this case, the practices, doings and actions that constitute the interventions of labour in the ship breaking yard - and focus on these interventions’ realisation of differential agential possibilities in an open process of mattering. This, and the agential possibilities opened up by these interventions, is what I take to be at the heart of a material politics.

To say it this way, however, does not do much by way of illuminating these interventions. It is all too rarefied, abstract, and sanitised. In short, it conveys nothing of the mess of the ship breaking yard and the techniques of breaking ships. This mess is critical to opening up a sense of material politics. So here I begin to stage a shift in registers. To open up a material politics, and to analyse it, seems to me to require an articulation that goes beyond the literal. In this instance it requires finding a way of writing that places readers in the midst of the kinds of practices, doings, actions, becomings, unbecomings and open practices of mattering, that are the intra-activity of sites of disposal such as ship breaking yards; that can show how the type of work that goes on in these sites *assaults* human bodies, challenging them to breathe, to move and even to be safely; and that can show how human attempts to re-order materialised worlds, and past materialisations in the present, are themselves ordered by the conjuncture of human embodiment with a host of agential possibilities, many of which have profound implications for human life . Direct correspondence, as I have just attempted to show in conventional academic language, just doesn’t do it. And it doesn’t do it because it is outside this world, external to it. The language of direct correspondence, then, deadens this world materially as it admits it. So, at this point I go back to an argument that I have made elsewhere; that cultural economy needs to be more, not less, cultural,

particularly when it writes the material (Gregson, 2009). The two material encounters that follow, then, deliberately suspend any pretence at academic writing. Instead, they are encounters framed through the short story and some of the devices of literary narrative. They write these sites through practices and techniques, embodiment and corporeality; through their assault on the senses, emphasising the smell, taste and sounds of these spaces, the materials breathed, felt and left untouched, as well as the visual. This is what follows.

### **Ship disposal: two material encounters**

Framed by arrivals and departures, the two short stories in this section stretch from Northern Europe to Bangladesh and are grounded in fieldwork in early 2009.<sup>8</sup> Temporal compression works to highlight the synchronicity of these geographically distant activities and to allow for drawing points of connection across space. The encounters also span the dichotomy of contemporary political debate about ship disposal. On the one hand there is beaching; labour intensive, deregulated, and environmentally degrading. This is the South Asian practice. On the other hand, there is mechanisation, environmental containment, protection and regulation. This is the practice associated with Europe in particular. But, polarities blur in the face of material encounters. In these liminal yet temporally proximate locations between sea and land, thousands of miles apart, one of the sites gripped by the intense cold of a bitter Northern winter, the other by the heat of the tropical sun, fumes,

---

<sup>8</sup> Methodological note: although written as single encounters, these narrative accounts are underpinned by ethnographic fieldwork conducted in ship breaking yards and related office settings in Northern Europe and Bangladesh between 2008 and 2010. They are grounded in repetitively observed and recorded practice. Fieldwork was conducted primarily by Farid Ahamed, Melania Calestani, Faisal Mahmud and Helen Watkins. The stories were written initially as a means to articulating a material politics and to begin to analyse this politics. As such, they have informed the subsequent development of interventions beyond the academy. But they were also a means to experiment in finding ways to say certain things that were impossible to say in the literal register. The stories, then, need to be read open to the allegorical register (Law, 2004).

smoke, metal, rust, mud and water conjoin, entangling spatially distant bodies and materials in distinctive yet similar technologies and practices of demolition.

*Somewhere in Northern Europe, February 2009*

Exiting the taxi, the unmistakable aroma of hot burning metal fills the air. It grabs my respiratory tract, pulling it tighter, cloaking my throat with the taste of metal. A few minutes later I begin to cough. As Helen and I stare into the depths of an open container stacked with things stored for posting on eBay – telephones, beds navy style, door handles, switches, dials, mirrors - confetti-shaped petals float on the air, falling softly on hair and sleeve, resting like snowflakes on a nose. But these are no snowflakes. They are fragments of paint; blistered and peeled by oxyacetylene torches, blown on the wind by the drafts that sweep over the dock gates and that eddy in the basin far below. On my sleeve, two skins meet: fleece – protection from the remembered piercing cold of this place – traps paint, the protective outer seal of what remains of this vessel. Onboard, large puddles of rust-filled rainwater have accumulated where doors have been removed. Aft, deep in the bows of the vessel, another puddle, knee deep, blacker, inky, on which floats a mass of unknown fire-damaged sediment. The air here is smoke-filled, betraying the fire that was contained in this place. Further aft, smoke hangs still, caught in the beam from our hand-held torches, trapped by the minimal circulation in this confined pitch-black space, no bigger than a human frame. The tightness in my lungs grows more and more insistent; the coughing more and more persistent. How does anyone breathe in this space? We retreat. Balancing delicately, boots standing on knee-high door lips, hands on door frames, we navigate the abyss of the yet-to-be-tested char-filled pool, stretching to climb a vertical ladder, and another, and another, hard hats banging against metal unseen, beyond the light of torch



beams. Emerging from the subterranean world we blink, our eyes gradually adjusting to the return to daylight. The ship judders and then groans, seemingly absorbing the repetitive pounding she is receiving from below. Suddenly a loud crash and boom reverberates: steel resounds against concrete as a large block of metal falls to the ground. The vessel shakes, trembling as if in a minor earthquake. The tremors come up through my feet and legs, moving my body as well as the body on which I stand. A structure that has withstood forty years at sea is slowly, inexorably, yielding to other forces. Below, a 44-tonne caterpillar-mounted shear trundles past, a plume of diesel fumes emitting from its exhaust. It is returning to renew its onslaught against steel, deep in the bows of the vessel. For eight hours a day, six and a half days a week, 'lobster claws' works thus. Prodding, tearing, mauling, chomping, biting its way through steel; a human-machinic dinosaur with a diet of metal. Jagged metal edges and a myriad of severed wires mark its trace, as do the entrails of human life-support systems – sinks, urinals, mirrors, fridges, crushed and crumpled metal beds, all now exposed to winter in the northern hemisphere. High on the bridge, glass shards lie crushed in carpet, doors hang awry from wooden furniture, ransacked former instrument panel housings and communications' systems lie abandoned. Way down in the dry dock, a pile of steel cuts is growing. A smaller pile of non-ferrous metals lies opposite. Moving between them is 'lobster claws'' twin, sorting and reducing metal. Close by, rising above, the scrap mountain is growing. Visibly higher than on my last visit, these piles-upon-piles are the debris of the ship that is shrinking under my feet. Excavating machinery is forging new peaks and ridges, corries and depressions, crafting a metallic mountain that is a monument to the economic downturn. We leave the vessel. In a few months she will be no more. Returning to more familiar spaces, sitting on a train, covered in rust and grime, reeking of acrid metal, people are looking at us, staring. Who are these strange, metallic

smelling women? For 24 hours I continue to cough, until – eventually – my lungs rid themselves of the memory of the acidity of that place.

Figures 2, 3 & 4 about here

*A beach in Bangladesh, January 2009*

Driven in a 4WD, our driver competes for every spare centimetre of road space with buses, motor cruisers, cars, rickshaws and baby taxis. But, eyes off the road, there are glimpses to be had of ships' hulls and superstructure beyond the highway, towering over palm trees and low-rise buildings. Eyes back on the highway. For kilometres, there is second-hand shop after second-hand shop. By the roadside, people are bundling furniture – settees and chairs, cupboards and tables – onto rickshaws. In a side creek, lifeboats are lined up 'for sale'. In other outlets, doors, kitchen utensils and catering equipment, even toilets, line the highway. These things are all ships made mutable. Akin to whales butchered on a beach, those ships through the palm trees will bleed. To become not just steel, construction rods and buildings, apartment blocks and hotels, but home interiors, hotel rooms and restaurants and the invisible consumption of this country too – its generators, that power homes, hospitals, businesses and factories. A moment's realisation – this country *is* these ships rematerialised. Eventually, we turn off the highway, to arrive at our destination. The metal gates barring the baked dry mud road are finally pulled back. Our entourage – males at the front, women behind – walks through, following a polite distance behind the man, our host. A Bangladeshi businessman clothed in western office attire. This clothing is what marks him as 'the boss'. A lorry loaded to the axles with steel plate pauses beside him, and then, with a revve of its engine, emits a pall of thick, black choking exhaust in the man's face. He reaches for his handkerchief, grimaces, gags, and covers his nose and mouth. Without such aids, the rest of

us wrinkle our noses and begin the process of trying to adjust once more to breathing in these places. The stench and smoke of hot burning metal, acrid yet strangely sweet, fills the air, cloying at the back of the throat. In the background, the hiss and arcing of oxyacetylene torches is a constant accompaniment to the chink-chink-chink of metal on metal, the cacophony of hundreds of hand-held hammers meeting steel plate, again, again and again. Above this floats a higher melodic line. A Bengali chant. Emanating from the distance. Where 30 – 40 miniscule figures, a human snake bound together by winch-wire, move slowly, as one, staggering and floundering through the inter-tidal zone, chanting their way barefoot through a primeval glue of mud and oil. Their destination, a metallic block some 100 metres away. All that remains of the vessel that was beached in this place a few months previously. Soon, this block will be winched to the area of beach where I currently stand, surrounded by metal and broken wire; a white woman, photographing madly, melting, boiling, char-grilled, being cooked alive in an outdoor oven at what feels like 45 degrees C, the object of the gaze of a thousand pairs of eyes. Stretching for as far as the eye can see, the inter-tidal zone is full of container ships, stranded. Already, large block sections are being cut from one that has been recently beached. As I stand and watch the mesmerising arc of the torch, a huge metal block crashes to the mud below, the first cut of many incisions that will be made in her hull before her form finally yields, the metamorphosis completed. In front, interior exposed, another vessel is further advanced in its dissolution, already more abstract art than container ship. The ships keep coming. Some 14 of them are out there in the Bay of Bengal, waiting to be beached, just for this small stretch of beach. But, while the flow from the sea keeps this beach sculpture park supplied with exhibits, the fossils do not last long in this place. They cannot, for this place's motor is materials recovery. Like the fossils, we too do not hang around. Returning to the air-conditioned world of the 4WD, the

blast of cooler air on sweaty skin, air freshener expunging the heady smell of burning acrid metal, my body knows that materially as well as metaphorically it has returned from the Inferno.

Figure 5, 6 & 7 here

**‘This is a dirty business – we’re not making cookies’: reconfiguring ship breaking through material politics**

Back in the academic register. In this evocative phrase, articulated over dinner, a yard owner states what the ship breaking industry knows. This ‘dirty business’ is precisely what writing in literary narrative can convey, and in that conveying it shows what is lost in the academic register. The gap is confirmed by ironic utterances made in office settings around the world: ‘You’ve been to X...?’, and ‘Nice business isn’t it?’ Such talk is indicative of shared knowledge, shared secrets too, between researchers and stakeholders. It admits to the bonds of witnessing, of having been physically to the kinds of places that few ever venture to, or would probably want to venture to, the sorts of places that are repeatedly likened to ‘Hell on Earth’. Of having seen this work first-hand; of having smelt it, tasted it, coughed it; and of having learnt to navigate one’s way around these sites and on the industry’s metamorphosing objects. A more open question is having opened that gap what to do with it? My answers here are to track from what is admitted by literary narrative to challenge a politics of ship disposal based exclusively on discussion and debate. Here, two of the most pervasive representations are that ship disposal *is* ship recycling and a dichotomous understanding, which positions South Asia, and South Asian practices, as the Other to those of the rest of the world. In this section I take each of these representations in turn, restaging the tropes staged by businesses, policy makers, regulators and NGOs, before

arguing that a focus on corporeal performativity, or the iterative intra-activity of working with an object in the throes of its demolition, opens up the space to think differently about ship disposal, through a material politics.

Let me be bold: as work, ship disposal is *not* recycling. Instead, as the above encounters show, it is about the metamorphosis of object to materials. It is creative destruction, or demolition – a necessary precursor to, but not the same thing as or reducible to, recycling. This metamorphosis is no quiet decay, but rather a violent, often savage, translation; an intervention in form that seeks to terminate particular configurations and to realise materials from past materialisations such that they might become available for future use. It is this last point that allows the ship breaking industry to be connected to recycling. With > 95% of the business value and materials weight of a vessel being categorised as recovered as ferrous scrap, the industry can readily portray its work as about resource recovery, as closing materials loops, and therefore as emblematic of recycling. Extremely schematically, however, the work – wherever it is performed – involves techniques of cutting, separating and sorting, in relation to the materials and things that are to be recovered and those that are wastes. These practices - and an invocation of a gritty realism - lie behind the acknowledgement that ‘this is a dirty business’. Nevertheless, this begs the question of representation. Why portray an industry that is admitted as ‘a dirty business’ as ‘recycling’? The answer would seem to be that the trope of recycling is a means of rhetorically cleansing these activities, at the same time inserting them within the more acceptable discourse of sustainability that circulates within contemporary political language. To label ship breaking as ship recycling purifies the activities of breaking, cutting, separation and sorting. Emphasising recycling simultaneously distances the work from the physical and symbolic

registers of waste. At the same time, recycling domesticates, bringing a dirty business into the orbit of more familiar practices of separating and sorting domestic materials. Ship breaking, though, is most definitely not the same type of activity as washing out the tin cans at the sink – and whilst domestic recycling sites such as MRFs (materials recovery facilities) may be messy, in the sense of smell and materials, they are not the sorts of places to which the epithet ‘Hell on Earth’ is attached. As such, to invoke ‘recycling’ is to work with citational performativity. It performs the act of ‘greenwash’, working to legitimate the industry through masking its actual work, protecting the industry from too much scrutiny by translating it into the registers of sustainability and environmental stewardship. This sleight of hand also has to be understood as an ethical response to the current dichotomous configuration of ship disposal.

The dichotomy drawn between South Asia and elsewhere in the world is central to the political controversies that currently surround ship disposal. The dichotomy seems incontrovertible: labour intensive versus technology intensive; unprotected labour versus protected labour; uncontained versus contained; deregulated versus regulated. None of this is refutable, nor would I want to refute it. Indeed, it is precisely the conditions witnessed in South Asia which worked to establish ship breaking as a global matter of concern in the mid 1990s. Subsequent political interventions by states, supra national organisations and NGOs however have been framed exclusively through these polarities. Thus the development of ship breaking capacity in the EU, represented through the rhetoric of ship recycling, is a deliberate attempt to build a different, ‘greener’ breaking industry to the one that occurs on the beaches of South Asia. Meanwhile, the stated goal of the NGO Consortium actively campaigning in the field is to ban beaching. Dichotomous thinking has resulted in an

oppositional politics, pitting South Asia generally, and Bangladesh in particular, against other parts of the world, notably the EU. Yet it is possible to think differently.

An initial manoeuvre is to interrogate the dichotomy. If the dichotomy is to stand up, one might anticipate that reuse would be exclusively South Asian, as would the release of pollutants to the marine environment, whilst elsewhere in the world activity would be focused on ferrous and high value metals recovery and waste containment measures. As the container on the quayside in Northern Europe full of items for posting on eBay shows however, salvaging for resale and reuse is not just a South Asian practice. Moreover, whilst waste capture and containment is a feature of western breaking yards, as with nuclear waste, these activities are contained within permissible limits, not activities conducted at the limits of the possible (Bolter, 1996). Scratch the surface, and South Asia too is not homogenous, and there are a multiplicity of practices to be observed. There are differences between yards, notably with respect to worker protection, but also in relation to the containment of oily wastes. So, notwithstanding differing value regimes, different regulatory regimes and different socio-technical regimes, practices transcend space, challenging any simple dichotomy. This suggests that it may be possible to think across the boundaries, making connections, rather than drawing divisions, between those who work in this dirty business. The issue is how such connections might be drawn.

One option is to pursue a posthumanist politics grounded in corporeality, materiality and performativity. To do this I bring together Jane Bennett's notion of assemblage with Karen Barad's conceptualisation of performativity, thinking these through the preceding material encounters. Wherever it occurs in the world, ship breaking entails the conjuncture of vulnerable, fleshy, breathing human bodies, varyingly adorned and protected (through the

presence or absence of the material culture of health and safety) with metal, rust, furniture, fixtures and fittings, heavy metals, plastics, paint flakes, asbestos, oils, bilge and ballast water, and the technologies of demolition. Along with people (almost exclusively male), oxyacetylene torches, wire cables and winches are ubiquitous technologies within this assemblage. Heavy plant, shears and cranes are not. But, all around the world, the demolition assemblage works to reduce ships, the immutable mobile, to the immobile that becomes materially mutable. The demolition assemblage, then, works iteratively and intra-actively to reorder objects and materials, to recover materials and to deal with wastes, or neglect it. Whereas waste matters in certain parts of the world, adding new materials and technologies to the demolition assemblage – health and safety clothing, decontamination chambers, skips and containers, negative pressure cells, plastic wrap, scientific testing and monitoring of unknown materials – interfering in, making more complex and more time consuming the work of salvage (Gregson et al, 2010) - wastes are still present in these other sites. The only difference – admittedly a major one – is what is done with and to them. But what also needs foregrounding is that for the human body to enter this assemblage is for that body to be reordered by it. To enter these worlds, however temporarily and wherever they are in the world, is to become part of a world defined by working with an end-of-life object; to inhabit this world; to work on a structure in the throes of its dismemberment, to bring about its disappearance. To do this type of work involves working with jagged metal, metal on the move and metal entrails. Just moving on these structures requires navigating rungs and rungs of confined, precipitously steep ladders, as well as vast tanks and pools of liquids, slippery decks and tight hatchways. All this is dangerous stuff. Accidents are not just potential; they *will* happen in these sites because of the nature of this assemblage. Slips and falls are commonplace; so too is falling metal; wire cabling will suddenly snap and ricochet



under force; and, where there is hot cutting, paints will catch fire. Most of all, though, to work as part of this assemblage is to be part of its doing with matter. It is to be alive amidst the open process of mattering that is this intervention in form. It is to breathe its agential possibilities, its metal, dust, fumes and smoke; to work with rust; to live with Levi's 'taste like blood' and to know this corporeally, in the throat, skin and fabric. The demolition assemblage not only reorders objects and material, it reorders the human body through these encounters with materials. As such, the demolition assemblage is a boundary making intervention in the world, producing the activities of breaking and differences that matter for human life, as well as for objects and materials.

This suggests that one way to move beyond the oppositional politics of ship breaking is to spotlight the human within the demolition assemblage, to focus not on the conditions of labour, or containment, but on the corporeality of disposal work and its iterative inter-activity with matter. A focus on corporeality, embodiment and performativity, then, shows how ship disposal might be reconfigured as a material politics. It goes beyond the material politics of political techniques that hold together whilst holding apart to highlight a shared corporeal vulnerability that spans the long distance associations of globalisation. It insists that the proximate intimacies of human bodies and the vitality of inorganic materials demanded by disposal work wherever this occurs may have profound, and negative, consequences for human life. These consequences are not always in the here and now. They are also about legacies. They speak to a biopolitics of occupational health which goes well beyond the boundaries of present workplaces to figure a material politics of globalisation where the long distance associations are temporal; of 'now' and 'then' rather than 'here'

and 'there', but where 'then' is not a past but future-past, as yet but partially unmade, multiple and always potential.

## **Conclusions**

This paper has forwarded a reading of the activities of ship breaking and ship disposal as these occur in ship breaking yards across the world. Bringing together Donald Mackenzie's arguments for a corporeal, physical and technical sense of materiality within performative economies with the work of Jane Bennett and Karen Barad, it argues that performativity in economies is more than citational, and that it is about iterative intra-activity, or doing with matter. This type of performativity is readily apparent in demolition and disposal activities, of which ship breaking is an exemplar case. The interventions in form that I narrate in the paper terminate past materialisations. The demolition assemblage works to transform the immutable mobile to a mutable materiality, recovering materials and stabilising them for future use whilst casting other materials as wastes. At the same time, this reading of the performative insists on the importance of corporeality. The paper argues that corporeality is always present in ship breaking work, wherever this occurs. The fumes and smoke, as well as animated materials, that are realised through ship breaking as an intervention in the world conjoin and co-mingle with human bodies as agential possibilities in an open process of mattering. Literally and metaphorically they exemplify Levi's 'taste like blood', figuring disposal work through an invocation of human death as well as object death. The question this raises is an ethical one: at what costs are these object-material metamorphoses, the second chance of the past in materials, being achieved?

Ship breaking is represented as ship recycling; as emblematic of progress towards a more sustainable global economy; and as a green industry. But what should not be neglected is

the backward look of progress, or Benjamin's angel of history. In these yards we stand before the wreckage. As ships become mutable, the pile of debris grows. The burden of history therefore, of global trade, a global economy and, in a different form, of military state power, is materialised in the debris of these end-of-life ships and it is carried by those who work in the disposal activities that figure in this paper. Positioned in demolition assemblages that simultaneously break up past materialisations and give this a potential future, often in the name of sustainability, recycling and resource recovery, the reading forwarded here emphasises that these men continue to taste blood, in Europe, South Asia and the US – indeed, in any location where the work takes place. This reading of ship breaking is not just a means to critique an oppositional politics of ship breaking grounded in debate and discussion. It reconfigures the politics of ship disposal through material politics. It emphasises corporeality and doing with matter. This material politics keeps the politics alive in end-of-life objects and inorganic materials. It is both a critical reminder and an ethical insistence that design futures that extend to include end-of-life are not just about objects, or even material conservation and recovery, but also about working out ways by which human life might conjoin, safely and responsibly, in acts of demolition wherever this occurs in the world.

Finally, I return to the two registers that figure in the paper. These are not an either/or but rather an 'and'. They are relational. Working in literary narrative works firstly to expose the conventionality of academic enactments of the world. But it shows that these academic enactments too are performative. Secondly, it exposes what is lost in such performances. In academic articulations of material politics, what is lost is the mess, as Law and Mol (2008) acknowledge. Literary narrative can write that mess, in ways that the literal trackings of the

academic register, however messy, cannot. This is important in terms of the material politics that is enacted by academic interventions. Literal trackings can sketch messy associations; they can be multiple; but they would struggle to keep in the assaulting of bodies that is integral to the practices of ship disposal, as this is felt in and by bodies. The most the literal might say is perhaps that there is a proximate intimacy of bodies, metals, rust, smoke ... But so much gets lost in that conjuncture of words on a page. And this is important to the development of a material politics. For what literary narrative's inclusion does, it seems to me, is two things: to enable that which cannot be said to be said and to suggest another place to intervene, or another site of politics. It suggests another way in which the material politics of globalisation plays out, not through practices as political techniques that restate boundaries but through practices as techniques that might contest those boundaries. In such a way, the clash of registers staged by the paper opens up a space for a progressive, and not just analytical, material politics of globalisation.

## **Acknowledgements**

This research was funded by the Economic and Social Research Council under The Waste of the World programme (RES000230007). My thanks to Mike Crang, Jessica Dubow and Dan Swanton for their comments on earlier drafts; to two anonymous referees for constructive and thoughtful comments which helped improve the paper immeasurably; and to Mike Pryke for editorial oversight. The usual disclaimers apply.

## **References**

Bailey, P. (2000) 'Is there a decent way to break up ships?' ILO Discussion Paper. Available at: <http://www.ilo.org/public/english/dialogue/sector/papers/shipbreak/> - last accessed October 2009.

Barad, K. (2007) *Meeting the Universe Halfway: quantum physics and the entanglement of matter and meaning*, Duke University Press, Durham.

Barry, A. (2002) 'The anti-political economy', *Economy and Society*, vol. 31, 268 – 84.

Basel Action Network (2002) *Exporting Harm: the high tech trashing of Asia* BAN. Seattle.

Basel Action Network (2005) *The Digital Dump: exporting re-use and abuse to Africa* BAN, Seattle .

Basel Convention (2002) 'Technical guidelines for the environmentally sound management of the full and partial dismantling of ships'. Available at:

<http://www.basel.int/pub/techguide/dismships/dismsh2003.pdf> - last accessed October 2009.

Bennett, J. (2001) *The Enchantment of Modern Life: attachments, crossings and ethics*, Princeton University Press, Princeton.

Bennett, J. (2004) 'The force of things: steps towards an ecology of matter', *Political Theory*, vol. 32, 347 – 72.

Bennett, J. (2007) 'Edible matter', *New Left Review*, vol. 45, 133 – 45.

Bolter H (1996) *Inside Sellafield: taking the lid off the world's nuclear dustbin*, Quartet Books, London.

Butler, J. (1993) *Bodies that Matter*, Routledge, London.

Byles, J. (2005) *Rubble: unearthing the history of demolition*, Three Rivers Press, New York.

Callon, M. (Ed.) (1998) *The Laws of the Markets*, Blackwell, Oxford.

Commission of the European Communities (2007) Green Paper. On Safer Ship Dismantling. Available at: <http://www.ec.europa.eu/environment/waste/ships> - last accessed October 2009.

Crang, M. (2010) 'The death of great ships: photography, politics and waste in the global imaginary', *Environment and Planning A* vol. 42, 1084 – 1102.

DEFRA (2007) *UK Ship Recycling Strategy 2007*. Available at: <http://www.defra.gov.uk/environment/waste/strategy/ship.htm> - last accessed July 2009.

DeSilvey, C. (2007) 'Salvage memory: constellating material histories on a hardscrabble homestead', *Cultural Geographies*, vol. 14, 401 – 24.

- Edensor, T. (2005) *Industrial Ruins: space, aesthetics and modernity*, Berg, Oxford.
- FIDH (International Federation for Human Rights), YPSA, NGO Platform (2008) *Childbreaking Yards: child labour in the ship recycling industry in Bangladesh*. Available at: <http://www.shipbreakingplatform.com> – last accessed October 2009.
- Graham, S. & Thrift, N. (2007) 'Out of order: understanding repair and maintenance', *Theory Culture and Society*, vol. 24, 1 – 25.
- Greenpeace/FIDH/YPSA (2005) *End-of-life Ships: the human costs of breaking ships*. Available at: <http://www.greenpeace.org/raw/content/international/press/reports/end-of-life-the-human-cost-of>, pdf – last accessed October 2009.
- Gregson, N. (2009) 'Material, literary narrative and cultural economy: Primo Levi and the industrial short story' *Journal of Cultural Economy* vol. 2, 285 - 300.
- Gregson, N., Watkins, H. & Calestani, M. (2010) 'Inextinguishable fibres: demolition and the vital materialisms of asbestos', *Environment and Planning A* vol. 42, 1065 - 83.
- Hawkins, G. (2006) *The Ethics of Waste: how we relate to rubbish*, Rowman and Littlefield, Oxford.
- Hertz, R. (1960) *Death and the Right Hand*, Free Press, New York.
- Hetherington, K. (2004) 'Secondhandedness: consumption, disposal and absent presence', *Environment and Planning D: Society and Space*, vol. 22, 157 – 73.
- Hillier, J. (2009) 'Assemblages of justice: the 'Ghost ships' of Graythorp', *International Journal of Urban and Regional Research*, vol. 33, 640 – 61.
- International Labour Organisation (2004) *Safety and Health in Shipbreaking: guidelines for Asian countries and Turkey*. Available at: <http://www.ilo.org/public/english/protection/safework/sectors/shipbrk/index.htm> - last accessed October 2009.
- Ingold, T. (2007) 'Materials against materiality', *Archaeological Dialogues*, vol. 14, 1 – 16.
- International Metalworkers Federation (2007) *Status of Shipbreaking Workers in India – a survey*, IMF, Geneva – Available at: <http://www.imfmetal.org/files/06042810465779.pdf> - last accessed October 2009.
- Latour, B. (2005) 'From Realpolitik to Dingpolitik, or how to make things public', in *Making Things Public: atmospheres of democracy*, eds. B. Latour and P. Weiber, MIT Press, Cambridge, pp. 14 – 41.

Law, J. (1986) 'On the Methods of Long Distance Control: vessels, navigation and the Portuguese route to India'. In *Power, Action and Belief: a new sociology of knowledge*, ed. J. Law, Routledge and Kegan Paul, London, pp. 234 – 263.

Law, J. (2002) *Aircraft Stories: decentering the object in technoscience*, Duke University Press, Durham.

Law, J. (2004) *After Method: mess in social science research*, Routledge, London.

Law, J. (2006) 'Disaster in agriculture, or foot and mouth mobilities', *Environment and Planning A* vol. 38, 227 – 39.

Law, J. and Mol, A. (2008) 'Globalisation in practice: on the politics of boiling pigswill', *Geoforum* vol. 39, 133 - 43

Levi, P. (1987 edition) *If This Is A Man*, Abacus, London.

Mackenzie, D. (2006) *An Engine not a Camera: how financial models shape markets*, MIT Press, Cambridge.

Mackenzie, D. (2009) *Material Markets: how economic agents are constructed*, Oxford University Press, Oxford.

Mackenzie, D., Muniesa, F. & Siu, L. (Eds)(2007) *Do Economists Make Markets? On the performativity of economics*, Princeton University Press, Princeton.

Mikelis, N. (2007) 'A statistical overview of ship recycling'. Paper presented at the International Symposium on Maritime Safety, Security and Environmental Protection, Athens September 2007. Available at:  
[http://imo.org/infosource/mainframe.asp?topic\\_id=406](http://imo.org/infosource/mainframe.asp?topic_id=406) – last accessed October 2009.

Pickering, A. (1995) *The mangle of practice: time, agency and science*, Chicago University Press, Chicago.

Pickering, A. (2005) 'Decentering Sociology: synthetic dyes and social theory', *Perspectives on Science*, vol. 13, 352 – 405.

Rahman, A. & Tabarak Ullah, A. (1999) 'Shipbreaking: a background paper'. Available at:  
<http://www.ilo.org/public/english/dialogue/sector/shipbreak/> - last accessed October 2009.

Soderman, B. & Carter, R. (2008) 'The Auto Salvage: a space of second chances', *Space and Culture*, vol.11, 20 – 38.

Srinivasa Reddy, M., Basha, S., Sravan Kumar, V., Joshi, H. & Ghosh, P. (2003) 'Quantification and classification of ship scrapping waste at Alang-Sosiya, India', *Maritime Pollution Bureau*, vol. 46, 1609 – 1614.

Young People Social Action (2005) *Workers in shipbreaking industries: a baseline survey of Chittagong*, YPSA, Chittagong.

Wynne, B. (1996) 'May the sheep safely graze? A reflexive view of the expert-lay knowledge divide', in *Risk, Environment and Modernity: towards a new ecology*, eds. S Lash, B Szerszynski and B Wynne, Sage, London pp 44 - 83.



## List of Figures

Figure 1: *Clemenceau*: February 2009

Figure 2: Northern Europe: February 2009

Figure 3: Northern Europe: February 2009

Figure 4: Northern Europe: February 2009

Figure 5: Bangladesh: January 2009

Figure 6: Bangladesh: January 2009

Figure 7: Bangladesh: January 2009

All figures are © The Waste of the World.



Figure 1



Figure 2



Figure 3





Figure 4



Figure 5



Figure 6





Figure 7