

Tristes Entropique: steel, ships and time images for late modernity

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‘never forget: Decay is inherent in all composite things or compounded phenomena’
(Gautama Buddha’s last words)

‘Life, in [Bergson’s] philosophy, is a continuous stream, in which all divisions are artificial and unreal. Separate things, beginnings and endings, are mere convenient fictions: there is only smooth, unbroken transition. ... All our thinking consists of convenient fictions, imaginary congealings of the stream: reality flows on in spite of all our fictions’ (Bertrand Russell 1918, 22)

The masthead quotes exemplify a long history of thinking about materiality and temporality through flux and flow. The question then is how do we envision such incessant movement? How do our images capture flow? Bergson rejected the ‘cinematic illusion’ as a solution since the moving image was actually composed of stills. How can an image convey movement in itself not just across a series? Michel Serres derives this sort of materiality from the physics of Lucretius that sees the apparent stability of the world as an illusion caused by the turbidity of incessant flows. In this vision atoms initially fall like rain through a void, in a parallel laminar flow that then is disturbed, with a smallest of spins or swerves (the Clinamen of Epicurus) that produce forms (Bennett, 2001: 100) as the flow becomes turbulent, ‘leading to vortices in which the atoms combine to form a quasi-stable order’ forming a world out of the myriad combinations of atoms arising from chance encounters and remaining held by the regular movement of the flow, setting ‘aside the principles and habits of thinking in terms of

solids and treats atoms as the condition for a theory of flow' (Webb, 2006: 127). The world is constantly in flow, just some of it at a very slow rate, and full then of nonorganic life as De Landa (1992) argued. Such an approach highlights not things moving through empty space, but the world as becoming-things.

Jane Bennett (2010) takes just this approach to ask about the life of metal. Whereas steel has conventionally been scripted as the epitome of fixed, static and obdurate material, she wants to reinscribe a vibrancy within it to challenge what she from Gilbert Simondon calls the 'hylomorphic' model of mechanistic world reliant on external actors providing formative and innovative possibilities. Instead she uses Lucretian atomism to figure the latent topological tendencies, that do not merely resist or respond to external forces but endeavour to express themselves. Following Serres there is a 'conception of space in atomism is at once topological and radically material; an unusual combination that frees it to describe a series of non-metric relations between spatial, temporal, and discursive localities' (Webb, 2006: 126). The material things are not prior to discourse, not prior to agency, but are part of both. This is a vision of metal as 'both material and creative, rather than mechanical and equilibrium-maintaining', that draws on Deleuze and Guattari to see the potential of becoming.

The focus of this essay is though a negative becoming, or a sense of productivity that includes failure, disassembly and destruction. Following the acknowledgement of the crystalline internal irregularities of steel sees them leading to failures as well as strengths, where imperfections in crystalline structures produce both sharpness and brittleness (de Landa, 2008). Rust, breakdown and destruction are immanent propensities of, not exceptions to, the normal state. Indeed one might say that Bennett's history, though it celebrates the creative knowledge of metal workers and craftsmen who make things, is shorn of the

knowledge and labour of those who struggle to maintain things – those who fight the long defeat against wear and tear – although Bennett correctly suggests that apparent solidity is the result of the slowness of material process and the brevity of our observation. Here then we come to the link of the flow and event of things and the moment of visualization – how does that event in its brief happening and lingering image link to the slow happening of inorganic life? It may be worth connecting that slow happening to the notions of entropy – that matter heads towards increasing levels of disorganization – that is, it is things are generally unbecoming. Even the great steel sculptures of artists like Richard Serra speak to this unbecoming since whilst ‘often monumental in scale, ... [seem] for all their monumentality, to be just as much about rust’ (Maskit, 2007: 329). This directionality given to matter is perhaps most influentially worked through in the work of Robert Smithson.

Though they do not make the connection to wider vocabularies of vitalist materialisms, Kathryn Yusoff and Jennifer Gabrys (2006: 447) have recently highlighted how for Smithson ‘the mobilization of matter involves its inevitable decay’ as well as how he emphasised that ‘solids are particles built up around flux.’ Robert Smithson argued that separate ‘things,’ ‘forms,’ ‘objects,’ ‘shapes,’ were ‘mere convenient fictions: there is only an uncertain disintegrating order that transcends the limits of rational separations’ (1996, 112). Much of his work was about ways of visualising temporality, transience and entropy, highlighted by the ‘entropic architecture or a de-architecturization’ in his ‘partly buried shed’ in Kent State University’s grounds, where he put 20- loads of soil on top of a wooden shed till it partially caved in, and now nearly forty years later what remains is a wooded hillock. He spoke evocatively of Rome as ‘like a big scrap heap of antiquities.’ Noting that ‘America doesn’t have that kind of historical background of debris,’ he then went to discover such debris in photographic projects like *Monuments of Passaic*. There the industrial effluent pipes of the

Jersey shore become a fountain monument, and the industrialised coast gets mapped as a kind of archaeological park of ruins ‘yet to be’, where industry is already set up as though in a picture of future failure – rendered visible and exposed (Smithson, 1996: 70-2).

If we acknowledge that ‘many operations of knowledge are already at work within the objects of the world’ (Serres and Hallward, 2003: 231), it may be we ask whether in representing the world there are not some forms and modes that partake more readily of this perspective on materiality in motion. One might look at the attentive material semiosis in the floral sculptures of Anya Gallaccio, whose transformation by nature emphasises unruly emergence and decay, where nature overwhelms human material as abject and abandoned materials breach symbolic orders, or whose ice sculptures show the inevitable transience of form (Rugg, 2000; 2007). Another art work in tandem with nature might be Jenifer Wightman’s *Winogradsky Rothko*. This combines the work of soil scientist Winogradsky in using a colour sensitive nutrient column to observe bacteria with the large abstract colour formats of a Rothko painting. The result is a large ‘picture’ behind glass that is actually a nutrient field colonized by waves of bacteria, each proliferating until they exhaust a section and then are in turn colonized by the next wave, spreading waves of colour over the piece. In this way,

‘living organisms manufacturing the pigment are simultaneously the subject and substance of ‘painterly’ objectification – both object and medium, both a work of art itself and a working of autopoiesis... What it is in its becoming is what it means’ (Wightman, 2008: 312).

In relation to the unwelcome vibrancy of metals, consider Mel Chin’s (1989) *Revival Field* of alpine pennycress, planted to draw toxins out of a waste dump in passive remediation (Miles, 2002: 86). *Revival Field* can be seen as an attempt to displace both the agency of the sculptor

and the usual notion of humans transforming nature, instead to suggest that humans and plants might recreate nature mutually from the detritus of industry.

Photography seems to mechanically stand apart as a reproduction of, not participant in, these vitalities. Yet photography plays upon time and allows the play of time to become apparent. Walter Benjamin (1978) pointed to the way photography can allow us to visualize the very small or apprehend the very fast through motion capture. What then if we turn that gaze on the flows of materials and ask how might we visualize the very large and very slow? If we look too at the preservative function of photography, whereby ‘violently stopping the flow of time, [photographs] introduced a *memento mori* into visual experience’ (Jay, 1993: 135), or at what Sontag (1977: 69) famously called its special aptitude for the injuries of time, then we might expect photography to be adept at highlighting temporalities of emergence but especially those of unbecoming. This association of photography with decay, dissipation and death is very much the common move in high art criticism – often heavily influenced by Barthe’s melancholy work of mourning prompted by a misremembered picture of a lost time (Olin, 2002). However, that linkage is not inevitable. The frozen moments of time in John Pfahl’s *The Very Rich Hours of a Compost Pile* speak to decay, for sure, but also rebirth (Pauli, 2003a: 24) invoking a sense of cyclical time and natural vitality. The work of Jem Southam (2000) offers an entropic sense of dissipation and disorganization in his studies of the unpredictable falls of rocks and their erosion. But his repeated revisiting of sites also plays on cyclical time, from dew ponds that fill and empty with the weather, changing from pond to hollow and back, to the flow of tides. His series offers no predetermined direction for a world always becoming, where the flow of time also has eddies, surges, and pools. As Millar (2000) argues, the series of pictures adds up to more than instants, but invokes the

flow of time in an open series of smoothed timespaces. The focus though is upon the instability behind apparent permanence:

‘From the dramatic as well and minor disturbances he describes at the sites, each with its own emphasis and structure, Southam unveils a land that is unstable and unpredictable, constantly moving through different states and at varying speeds. These entropic processes are the underlying ‘subject’ of his pictures... For Southam the earth’s instability and degenerative processes suggest other forms of upheaval and uncertainty, both social and personal, and again both dramatic and more insistent’ (Chandler, 2000)

We are then concerned with thinking about the creation of ‘time images’ that see objects as temporary stabilisations of things and relations, as coming in to being and as coming apart. The flows and connections of their material semiosis – linking discursive, imaginative and material registers – leads me to think about process of disassembly, destruction and wasting.

FIGURE 1 ROUND HERE

To provide a focus then I will take two very different renderings of the same wasting – and the life of steel. The wasting in question is the breaking or, as the industry likes to call it, recycling, of old ships on Bangladesh’s beaches. On these beaches, low paid workers with few tools break up around a third of all the ships scrapped on the planet – and another half are broken up in the same way elsewhere in South Asia. A site of truly epic labour and destruction:

‘At low tide, this vast mud flat at the northern corner of the Bay of Bengal – part of the Ganges/Padma Delta, the world’s largest river delta – presents an almost apocalyptic scene. Here, on a 25-kilometre stretch of beach near the town of

Sitakunda [north of Chittagong], oil tankers, passenger liners and fishing boats dot the dark, oil-slicked terrain like beached leviathans, the monolithic steel forms turning coastal idyll into industrial wasteland as they lie ready to be broken up' (Bell, 2008)

What might we make of such disassembly, where one form of matter ends and yet the steel recycles into new afterlives? For this is not just the end of the line for ships, but the site that supplies up to 80 per cent of all the steel used in manufacturing new products in Bangladesh. In the rest of this essay I want to ask how this landscape of forms disassembling into steel is figured in photographic practice. How does photography reveal, indeed revel, in the transience it finds in this obdurate material through the grammar of the still image? This I do for a site where the discarded means of global commodity flows are broken apart, where the wastes of global consumerism are processed far from the usual attention of the world.

'These places look inhuman for their scale and for their poisons and hazards, but they are the landscapes on which most humans now depend. It may be industrial civilization is predicated on blindness and alienation, on not knowing ... [what makes] your pleasant first world urban/suburban existence impossible, for that knowledge might at least make that existence a little less pleasant' (Solnit, 2007: 135)

Photography of many kinds has led the way in making Chittagong's foreshore a site where the detritus of global consumerism becomes visible. Thus imagery from the beach was chosen for the 2010 National Geographic Photography Contest Wallpaper and the Association of American Geographers 2011 picture prize winner (Figure 1). This scenery is paradoxically striking and hidden. 'It is one of the strangest, most striking and frightening industrial sites in the world. It is large enough to be seen from space, but remains an open secret which few American people have even heard of, let alone seen' (National Labor Committee, 2009, 6; see figure 2). That they are visible from space is evidenced on

something like Google Earth where you can see the ships, in various states of dismemberment, lying scattered across the beach. As you track up and down the beach there are ships lying at different points, some suddenly foreshortened with bows cut off, some surrounded by chunks hewn from them, still others have ceased to be recognizably ships becoming just undefined chunks of material, still others have ceased to be a singular object and are scattered into fragments. Finally as you stare at the sand there are the imprints of other keels, now long since turned into steel and rerolled into new forms. The ghostly markings of ships past. And given the datedness of the images, for all their technological and representational appeal as visual facts, they depict that which is no longer there: ships that have long since become steel and been recycled into new forms. And yet the photographic gaze seems still captivated by the death and destruction of the ships. *Der Spiegel's* photo-essay on Chittagong's beaches speaks of 'Cemeteries of Steel' rather than cradles of rebirth where the lives of new products start. If the foreshore is a place where global material flows become visible it is also a place that has fascinated photographers, with the Panos photojournalism collective noting that 'many of the best known names in photojournalism have photographed the ship-breaking yards in Chittagong.' It is thus a site where the different registers through which materiality is pictured can become visible. The focus on temporalities of decline and materiality are common yet distinct if we follow two of the most celebrated photographers to have looked at this site – Sebastiao Salgado and Edward Burtynsky.

FIGURE 2 ROUND HERE

Tropics out of time

Perhaps the first photographer to depict the breaking beaches of Chittagong was Sebastiao Salgado, whose work also fronts one of the exposés of labour conditions on cover of *Atlantic* magazine and forms a section in his collection *Workers: an Archaeology of the Industrial Age* (2005) that documents the current state of manual labour around the globe. His work evinces a preoccupation with enabling workers to become visible but also to return the gaze, sometimes literally, of the consumers. His account of the ship breaking beaches of Bangladesh stresses the agency and action of the workers who:

run these ships onto the beach at high speed; then they attack them from all sides, blow torches cut through its steelskin, giant hammers break up its iron and wood structure... Everything from that giant animal lying on the beach has its use. Iron and steel will be melted down and given new roles as utensils. The entire ship will be turned into what it once carried: machines, knives and forks, hoes, shovels, screws, things, bits, pieces... The huge bronze propellers will provide the most elegant of items – bracelets earrings, necklaces, and rings which will one day adorn the bodies of working women, as well as pots from which men will pour tea (Salgado, 2005: 14)

Steel ship becomes dying animal. It is disassembled into hand sized objects. The description carries the faint whiff of exoticism, where workers in the global south seem always to throng, and the objects which the ship becomes make sure to mention tea and bracelets but not the rather more modern reinforcing rods in ferro-concrete houses which will be the fate of 90 per cent of the ship's steel (Figure 3). Neither the artisanal reworking of materials, nor the home furnishings that are produced, though, capture the lingering gaze of the photographer. The rebirth and recycling of steel do not fit the narrative arc of these pictures. Salgado reworks twentieth century progressive-era photography narratives about the accomplishments of labour building vast edifices. Salgado takes the modernist style and inverts its narrative. So

where modernism developed an industrial sublime that ‘used to glorify leviathan industry and occasionally its workers, it is here turned to elegy’ and we have ‘masked workers, and fragile figures pressed up against gigantic machinery; ... all recast by Salgado in a period of decline’ (Stallabrass, 1997: 149). In part his pictures are an assertion of these worlds of manual toil in an age that often claims to be post-industrial; they are images out of time that echo the worst labour conditions that many in the west have consigned to history. He offers a lingering ‘farewell to a world of manual labor that is slowly disappearing’ from the consciousness of the west yet persists out of sight, and concentrates on the antiquated heroism of physical toil (Ziser and Sze, 2009: 397). Indeed especially in the ship breaking pictures the sense of decline is manifest in ‘dramatic images of strenuous labour, of mighty hammer blows struck and great weights borne, not to make some grand vessel, but to take one apart’ (Stallabrass, 1997: 150) (Figure 3).

FIGURE 3 ROUND HERE

The fragility of human life appears in poignantly small touches in Salgado’s pictures— where workers toil across the devastated beach to bring a cable out to winch in part of a ship, their exposure to the materiality of the ships and the shore is emphasized by the diminutive umbrella the supervisor uses as the sole protection from the sun. Stallabrass argues here we have an invocation of religious imagery where:

‘part of the point about the pictures of workers before fire, or fumes or giant machinery [is that] these involuntary neophytes are sacrificed to the numerous deities—commodities and corporations—of the capitalist cosmos. In this sense, to present workers as battling against forces beyond their control is to tell an uncomfortable truth. While humanity may be one, the gods, like those of the ancient

world, are many and warring, and reckless in the use of their human charges' page 152.

The human figures are oppressed and outscaled by the huge materials – in visions where we see not progress or technological triumph, but capitalism as disaster.

Entropic ruins

(FIGURE 4 ROUND HERE)

Edward Burtynsky's work on industrially altered landscapes for the last thirty years offers a richer sense of the material recomposition of wastes. Over that period his corpus of work extols the material counterpoint of urban and industrialization, looking at mines and quarries as the negative image of cities and factories. His work focuses upon the sources and destinations of the material flows of an increasingly globalised industrialisation. In this sense he works with what he calls the residual landscape of the consequences of capitalism. His recent work has been gradually picking out different points in the global circulation of commodities, such that he offers 'a chronicle of rarely seen points in the biography of everyday things and work environments... [p]resented as a kind of material culture of globalization' (Campbell, 2008: 40). He maintains a studied ambiguity, aesthetic and ideological, about the epic scale and grandeur of industry and sites of extraction as an industrial sublime. He focuses upon the materials, not the labour, so in his shipbreaking pictures the workers 'seem almost allegorical, ant like men fragmenting the colossi that are the only relief in that vast, flat expanse' (Solnit, 2007: 138). The composition has a democratic distribution of light and space (Burtynsky, 2003: 52 ; Baker, 2003), that moves it away from an anthropocentric perspective. The pictures often disorient senses of scale and dislocate any human focal point – as subject or viewer. These pictures foreground material

transformation as a necessary and ongoing part of our world, and thus retain an attachment to the sensuality of the world (Solnit, 2007: 139).

Burtynsky thus creates ‘a space of witnessing that is not coincident with a particular form of [political] agency’ (Zehle, 2008: 113). While documenting the unseen world may be political (Solnit 2007: 137) the mode of witnessing is rather different here. The pictures focus less upon indexical truth claims (that this happened there), but become iconic symbols (for the process at large).

‘To me, what is interesting as an artist, or mediator, is to reconnect to the sources of our lifestyle, to find a way to capture the immensity of scale and activity there, but not in what most think of as a purely “documentary” fashion [about a specific example but rather choosing one] that somehow has a special quality that allows me as a photographer to transform into something that goes well beyond the thing itself.’ (Burtynsky cited in Campbell, 2008: 42)

The material referent’s hold on the pictures is weakened in order to enhance the aesthetic quality (Cammaer, 2009: 122). Burtynsky uses form to connect with the larger and abstract, both quantitatively and conceptually. This is partly done by reproducing the pictures at large scale. So his work is marked out by use of large format cameras and large format pictures with static and formally composed subjects. This affects his photographic practice and vision, as he uses a:

8x10 large-format "bellows" camera... Burtynsky has to use a tripod to stabilize the camera; a black focusing cloth is also necessary (to darken the image reflected on the camera's exposed ground glass plate while the practitioner adjusts focus). The

symbolic logic of this artistic practice -- the artist stooped beneath the black shroud, finger poised on the cable release button, faithful to an old-fashioned mode of photography -- suggests a defiance of the reckless forward momentum of industrialization. (Bozak, 2008/2009: 71)

Indeed his recent exhibition of field proofs – polaroid scoping shots, blown up large scale, but in black and white marked with the creases and tears of their use – serves both to restate the presence of the photographer, and the materiality of the practice, whilst simultaneously making the pictures appear more anachronistic. The pictures call to mind ‘the expeditionary images of ancient monuments in exotic lands taken by nineteenth century photographers’ (Baker, 2003: 51). In his Chittagong #8, as Diehl (2006: 121) suggests, ‘the massive odd-shaped sculptural elements in this play of light and shadow suggest the ruins of an ancient metropolis unknown to Westerners.’ The temporality we might look to is that of the ruin. In this his pictures evoke a lost order, perhaps echoing Thomas Cole’s famous conclusion of his five-part *The Course of Empire* (1836), which charts a cycle of rise and fall from ‘savage state’ to a ‘pastoral’ to the pinnacle of urban civilization and then to ‘destruction’ and finally ‘desolation’, full of the ruins that symbolise ‘a culture on the cusp of disappearance at the hands of natural and man-made forces’ (Ziser and Sze, 2009: 395). Burtynkys himself has said he is interested in the ‘ruins of our society’ as both melancholy and monumental (Zehle, 2008: 111). Notably then we do not get ‘destruction’ as process despite the echoes of visions of industrial hell from paintings such as Philip James de Loutherbourg’s *Coalbrookdale by Night* (1801) that are referents in other photographers’ work which also play on the flames and smoke of cutting.

The sublime is evoked as much as the melancholy through the scale of the images -- not only by speaking to global space and large scale pictures but also by freezing and yet revealing

time. In terms of content some have argued that ‘Burtynsky’s photographs are of time sublime – an empty now and a terrifying prospect’ (Giblett, 2009: 785-6). Burtynsky has an elegiac sense so that his:

“Shipbreaking” photographs, like all his works, appear to us as images of the end of time. The abandoned mines and quarries, the piles of discarded tires, the endless fields of oil derricks, the huge monoliths of retired tankers show how our attempts at industrial “progress” often leave a residue of destruction. Nevertheless there is something uncannily beautiful and breath taking in the very expansiveness of these images – it is as if the vastness of their perspective somehow opens onto the longer view of things.’ (Pauli, 2003b: 33)

And then we must add the moment of audiencing for these picture. Burtynsky produces pictures with a painterly effect that slows viewing from the snapshot to contemplation (Burtynsky, 2003: 48).

Materialisms, metal and waste

On the beaches of Chittagong, then, we find photographic approaches that in part play upon the documentary function of exposing the distant and hidden. They contain a revelatory charge even if the open beach is large enough to be seen from space. The different modes of accessing the lives of the beach speak to different visualisations. Our remote sensing of the site is rather too remote and too denuded of senses to convey the material conditions.

Accessing the site up close, as the pictures used here do, requires negotiating the walls and security fences in order to show the actions and activities rather than the traces left visible from space. Both Salgado and Burtynsky offer pictures that speak to grand changes and processes in political economy and ecology. The pictures of the Chittagong foreshore also

address different registers of materiality. In this sense then the scale of Burtynsky's work offers literally a big picture:

'These big pictures are attempts to map *the* big picture, to render visible those zones where power moves and possibilities are both generated and shut down... It is one thing to read about the scale of contemporary factories and to learn from reportage of sheer numbers about the volume of money sloshing around the world on a daily basis. It is another thing entirely to see it rendered visible – a visibility which is not documentary in an immediate and unproblematic sense, but which generates knowledge of a kind that only an image can manage to do.... The power of contemporary photography derives not just from the first-order operations of visualisation, but from its unique aesthetic and political motility – its ability to both use and refuse older aesthetic categories and determinations in conjunction with the mechanics of the photo apparatus and the digital flow of networks to provide conceptual maps we would not otherwise have.' (Szeman and Whiteman, 2009: 554)

Both offer pictures that speak to time lost and places depleted. Salgado depicts work whose persistence is the dirty secret of globalisation. But for the materials, the steel: in his urgency to have workers return our gaze, ends up telling a story of material culture around the ships – they are things bestowed biographies through human agency (Bennett 2010). Burtynsky's images instead attend to the actual material decomposition of the ships on the beaches of Chittagong, and the very substance of the wastes.

FIGURE 5 ROUND HERE

These pictures all offer a way of apprehending – or more specifically apprehending through images – something of the awesome and awful power of capitalist globalisation. It is intriguing that they seem by offering a frozen moment to open out the material times, spaces and consequences of global capitalism. The capacities and audiencing of these pictures enables them to speak in synch with a particular set of transformations. For Salgado it is the passage, persistence and witnessing of manual labour, for Burtynsky it is the dynamic transformation of materials. In the first, it is a hylomorphic world where material is animated by humanity, in the latter humanity is displaced. The question is how far? Although the steel lives – in its metallic structures and crystalline properties – the ships do not simply become ruins as happenstance wrecks on the beach. The labour and work of destruction is massive – and also directly connected with the messy material afterlives of the steel. The steel is hacked from the hulls, to be dragged across mudflats by people all too exposed to the materiality of the steel and its coatings, and then rerolled in manual mills where it is reborn as reinforcing rods – and yes then its microscopic crystalline life is once more in play as the ductile qualities of ship steel are most amenable to that simplest, and cheapest, form of metal refabrication.

For Salgado, and many other more photojournalistic approaches to the site, the materiality that matters is the impact of ships and their breaking upon human subjects. The dangerous, damaging labour in tropical heat is a register of embodied materiality that is salutary and important to capture. Yet still the mode of practice and form of vision seem somehow atavistic and out of place – like the static tableaux of colonial typologies. In part, this is a deliberate restaging that speaks the persistence of that imaginary and those patterns of power. In part though there also seems elegiac melancholy for lives lost and things destroyed. The charge is of toxic exotique, of the vibrant and verdant become death. Indeed a tropology of toxicity is set against the imagined otherness of the tropical locale. To engage the material

life of steel offers a different charge. Here the register remains one of entropy and dissipation, not one of rebirth. Yet the breaking of ships is founded on the capacity of steel for almost endless recycling, refashioning and reuse. Still photography though figures the nonorganic life of steel in elegiac mode. It is as though it too had looked upon the changing world and with Claude Levi-Strauss (1961: 397) concluded that the history of humanity is one of ‘cheerfully dismantl[ing] million upon million of structures and reduc[ing] their elements to a state in which they can no longer be reintegrated’ and through destruction flattening difference – be it humans and/or materials – until global change requires less a discipline of anthropology than entropology to study it.

References

- Baker K 2003 Form versus Portent: Edward Burtynsky's Engandgered Landscapes in Pauli L ed *Manufactured Landscapes: The Photographs of Edward Burtynsky*, Yale University Press, New Haven, CT 40-45
- Benjamin W 1978 A Small History of Photography *One Way Street & other writings*, Verso, London 240-257
- Bennett J 2001 *The Enchantment of Modern Life: Attachments, Crossings and Ethics* Princeton University Press Princeton, NJ
- Bennett J 2010 *Vibrant Matter: A Political Ecology of Things* Duke University Press Durham, NC
- Bozak N 2008/2009 Manufactured Landscapes *Film Quarterly* **62** 68-71
- Burtynsky E 2003 *Manufactured landscapes* Yale University Press New Haven, CT
- Cammaer G 2009 Edward Burtynsky's *Manufactured Landscapes*: The Ethics and Aesthetics of Creating Moving Still Images and Stilling Moving Images of Ecological Disasters *Environmental Communication: A Journal of Nature and Culture* **3** 121 - 130
- Campbell C 2008 Residual Landscapes and the Everyday: An Interview With Edward Burtynsky *Space and Culture* **11** 39-50
- Chandler D 2000 Drift and Fall in Southam J ed *The Shape of Time: Rockfalls, Rivermouths, Ponds*, Photoworks, London np
- de Landa M 1992 Nonorganic Life in Crary J and Kwinter S eds *Zone 6: Incorporations*, Urzone, New York 129-167
- de Landa M 2008 Matter Matters *Domus*
- Diehl C 2006 The Toxic Sublime *Art Am* **94** 118-123

- Giblett R 2009 Terrifying prospects and resources of hope: Minescapes, timescapes and the aesthetics of the future *Continuum: Journal of Media & Cultural Studies* **23** 781 - 789
- Jay M 1993 *With Downcast Eyes: The denigration of vision in twentieth century French thought* California University Press Berkeley, CA
- Lévi-Strauss C 1961 *Tristes tropiques* Russell J trans Criterion Books New York
- Maskit J 2007 'Line of Wreckage': Towards a Postindustrial Environmental Aesthetics *Ethics, Place & Environment* **10** 323 - 337
- Miles M 2002 Seeing through place: local approaches to global problems in Rugg J and Hinchliffe D eds *Recoveries and Reclamations*, Intellect Books, London 77-90
- Millar J 2000 A Gaze Equal to Space in Southam J ed *The Shape of Time: Rockfalls, Rivermouths, Ponds*, Photoworks, London np
- National Labor Committee 2009 *Where Ships and Workers Go to Die: Shipbreaking in Bangladesh and the Failure of Global Institutions to Protect Workers' Rights*, National Labor Committee
- Olin M 2002 Touching Photographs: Roland Barthes's "Mistaken" Identification *Representations* 99-118
- Pauli L (ed) 2003a *Manufactured Landscapes: The Photographs of Edward Burtynsky*, Yale University Press, New Haven CT
- Pauli L 2003b Seeing the Big Picture in Pauli L ed *Manufactured Landscapes: The Photographs of Edward Burtynsky*, Yale University Press, New Haven, CT 10-33
- Rugg J 2000 Regeneration or Reparation: Death, Loss and Absence in Anya Gallacio's *Intensities & Surfaces* and *Forest Floor* in Bennett S and Butler J eds *Locality, Regeneration and Divers(c)ities: Advances in Art and Urban Futures*, Volume 1 Intellect Books, London 41-50

- Rugg J 2007 Fear and Flowers in Anya Gallaccio's Forest Floor, Keep off the Grass, Glaschu and Repens in Becket F and Gifford T eds *Culture, Creativity and Environment: New Environmentalist Criticism*, Volume 5 Rodopi, Amsterdam 55-74
- Russell B 1918 *Mysticism and Logic and Other Essays* George Allen & Unwin London
- Salgado S 2005 *Workers: An Archaeology of the Industrial Age* Aperture New York
- Serres M and Hallward P 2003 The science of relations *Angelaki: Journal of Theoretical Humanities* **8** 227-238
- Smithson R 1996 *The Collected Writings* University of California Press Berkely
- Solnit R 2007 *Storming the Gates of Paradise: Landscapes for Politics* University of California Press Berkeley, CA
- Sontag S 1977 *On Photography* Penguin London
- Southam J 2000 *The Shape of Time: Rockfalls, Rivermouths, Ponds* Photoworks London
- Stallabrass J 1997 Sebastião Salgado and Fine Art Photojournalism *NLR* **223** 131-161
- Szeman I and Whiteman M 2009 The Big Picture: On the Politics of Contemporary Photography *Third Text* **23** 551 - 556
- Webb D 2006 Michel Serres on Lucretius *Angelaki* **11** 125-136
- Wightman J 2008 Winogradsky Rothko: Bacterial Ecosystem as Pastoral Landscape *Journal of Visual Culture* **7** 309-334
- Yusoff K and Gabrys J 2006 Time lapses: Robert Smithson' mobile landscapes *Cultural Geographies* **13** 444-450
- Zehle S 2008 Dispatches from the Depletion Zone: Edward Burtynsky and the Documentary Sublime *Media International Australia* **127** 109-115
- Ziser M and Sze J 2009 Climate Change, Environmental Aesthetics, and Global Environmental Justice *Cultural Studies Discourse* **29** 384-410

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Figure 1



Caption: Absent Witness

Figure 2



Caption: Hidden worlds of wasting large enough to be seen from space

Figure 3



Caption: The afterlives of steel: ships cable becomes reinforcing rod for buildings

Figure 4



The labour of reduction

FIGURE 5



Caption: A parade of ships becoming steel

Figure 6



Caption: Toxic Tropics: Tropes of Exotic Toxicity