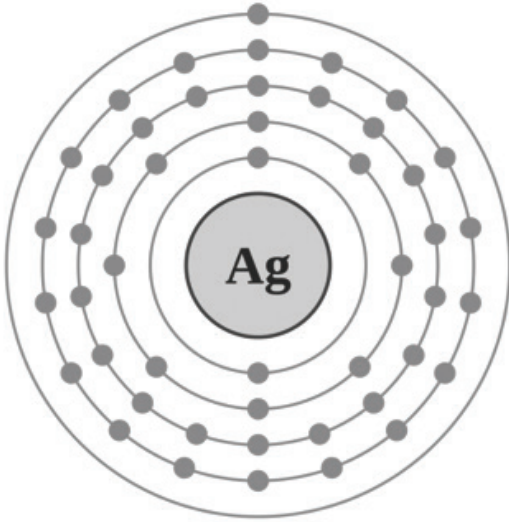


SILVER

Jane Rendell





*At each stop, the blood that dripped from the Marupi's (Bronzewing Pigeon) wounds soaked into the ground, forming the unusual geological landforms we see today.*



# Star-Crossed Beginnings (Twice)

## SILVER

A prospector, he was born on 7 October 1846 at Stuttgart, Duchy of Württemberg, where he was educated. A clerk in a chemical firm, he later trained as an edible-oil technologist with a large chemical manufacturing company in Hamburg, where he worked in the export department as he was fluent in English and French. He was delicate and the bitter winter of 1868 brought on a serious lung weakness, so he decided to leave Germany for a warmer climate.

He arrived in Melbourne in 1869 and, on advice from friends, moved to New South Wales. He worked on Walwa station, then wandered from place to place until engaged as a boundary rider on Mount Gipps station in the Barrier Ranges in the far west. After discoveries of silver at Silverton and Day Dream every station-hand in the area searched for indications of the metal.

When his duties led him to the 'hill', he often examined the outcrop. No geologist, he was observant and on 5 September 1883 pegged the first block on the 'Broken Hill', which he thought was a mountain of tin. The discovery of rich silver ore in 1885 led to the formation of the Broken Hill Proprietary Co. Within five years he had made a fortune.<sup>1</sup>

*An architectural design and writer, She was born on the 22 March 1967 in Al Mahktoum hospital, Dubai in the 'Middle East'. As a girl She lived in Sudan, Afghanistan and Ethiopia. Her movements followed the pattern of her father's work. Unlike many children in similar situations, She was not put into a boarding school at the age of 11, but came back to live in England with her mother and sister. She says 'came back'. The phrase implies that She was returning to somewhere She had already been. But She had never lived in England before. It was not her country of origin, but her father's.*

*Once the women were back at home, her father continued to traverse the drier areas of the globe. He was a hydrogeologist – a man who looks for water and brings it to the surface for people to wash and drink. He did this in lands that were not his own, that he was not raised in, that were strange to him and with people whose languages and customs were not kin, but that he had had to learn anew. Her father had skills that allowed him to locate water under a brittle crust, and so he used his knowledge to help. So why is She uneasy?*

*She swings back and forth, higher and higher, watching her dark shadow on the rough dry ground. As mid-day approaches, her shadow grows smaller, and then fades. Everything goes grey but it is not a shade She has seen before. It is not a dull grey, like the light on a day when clouds pass across the sun, but bright and dazzling, a grey that hurts her eyes. She looks up. The sun has disappeared.*

## SILVER

He was born in December 1956, grew up in Kirkintilloch, Scotland, and was educated at the University of St Andrews where he graduated with a first class bachelor's degree in Geology in 1977. He went on to study at the University of Bristol where he was awarded a PhD in Organic Chemistry in 1981.

He was a postdoctoral research fellow with the British Geological Survey. He was a Humboldt Fellow and worked at the Nuclear Research Centre in Julich, Germany. He published over 50 research papers as a scientist.

In 1983, he joined BP's research division. He worked his way to BP Finance, and then as head of capital markets. After 22 years at BP, he left as group vice president petrochemicals.

In April 2004, he joined Rio Tinto as chief executive of the industrial minerals division. In June 2007, he served as the chief executive officer, diamonds and minerals.

He became the chief executive of non ferrous in BHP Billiton in November 2007. He succeeded Marius Kloppers as the CEO of BHP Billiton on 10 May 2013.<sup>2</sup>



Where, *She* wonders, to begin this book, and how? The material qualities of a lost rock set boundaries for her writing. Working to the limits of a brief – this is certainly what *She* is used to as a trained architect, and also what *She* has argued for in the past as a theorist and critic: for a writing that responds to the qualities of the object or site it engages with – in form as well as content.<sup>3</sup> *She* has often referred to Primo Levi's *The Periodic Table* in her classes, a novel where the material qualities of the elements inform the arc of the narrative and personalities of characters.<sup>4</sup> Another inspiration for her has been the *OuLiPo* group, (*Ouvroir de Littérature Potentielle* or the *Potential Literature Workshop*, launched by Raymond Queneau and François Le Lionnais in 1960) whose writers sought to discover the potential of literature by acknowledging existing constraints and introducing self-imposed ones, for example in the works of Georges Perec and Italo Calvino.<sup>5</sup>

Silver offers her many kinds of constraint: it is a transition metal. This appeals, as *She* has written on transition before. In fact, *She* reflects, all her work has engaged in some way or another with transition. Silver has many other fascinating material qualities: its symbol, its atomic mass, its melting point, its linguistic root in the word 'shining', its 'face centred' crystal structure, and applications in photography, medicine, and coinage. But most attractive to her is its atomic number in the periodic table and the image of the five concentric shells with electrons circulating like moons around the sun that is a star.



# The Silver Age (in Eight Takes)

## SILVER

For years and years the land of the setting sun, as the Barrier Ranges country is termed in New South Wales, has been known to squatters, but only a country for raising cattle for the Adelaide and Melbourne markets, and producing wool for English auctions. Today it is the scene of many thriving growing townships, clustering where the roar of furnaces continues day and night, and miners are descending into and ascending out of the wealth-hiding bowels of the earth. It seems to be a disputed point as to who was the first to call attention to the mineral richness of the Barrier Ranges, which have in the infancy of their development made the haunts of cattle-duffers homes for honest toilers, and converted humble shepherds into influential silver kings.<sup>6</sup>

[...] Mr. Bowes Kelly, the Australian mining magnate, who is now being made so much of in London, is an Irishman, Mr. Kelly is physically the model of a colonial pioneer, tall, broadly built, strongly knit, and fair. His face carries the impression of more experiences than one would have thought could have been crowded into 47 years. Yet that is his age, it being just over 39 years since, as a boy of eight, he passed through London on his way from the West of Ireland, where he was born, to the pastoral expanses of Riverina, in New South Wales, where his father held the position of a police magistrate. After leaving school, Mr. Kelly adopted sheep-farming as his calling, and ultimately became manager of a station on the Darling belonging to those famous squatters, the Messrs. Chirnside. In 1881 he turned his attention to mining. After 30 years or so of real 'hard graft', in Australia Mr. Kelly went to London with his wife and family for a spell of rest and change. A representative of the British Australasian sought him out at the hotel in Northumberland-avenue, London, at which he is staying.<sup>7</sup>

In September, 1883, Mr Charles Rasp, of Melindie, then a boundary rider on Mount Gipps station, was mustering sheep near Broken Hill, on the peaks of the Barrier, and was struck by its suggestive formation. The southern portion of the hill, which runs north-east and south-west for between 1 and 2 miles, presents the appearance of a very jagged razor, so fine seems the edge, and so peculiar the indications. From the bluff which marks the southern boundary of Block 14 to a similar bluff overlooking Block 16 in the flat and the Junction mine on an eminence to the left, the hill is still rugged, though much less so than on the northern portion. Mr Rasp discussed with Mr George McCulloch, manager and part owner of the station, the promising look of the hill for prospecting, and it was decided to peg it out in the possibility of discovering a tin lode. Wilyuwilyu-yong, the aboriginal name for Broken Hill, was therefore applied for in the names of Messrs. George McCulloch, G. A. Lind, and George Urquhart, seven blocks, or a total of 2 miles being secured on the line of lode.<sup>8</sup>

[...] In 1881 Mr. Kelly relinquished the management of the Messrs. Chirnside's run, which, by-the-bye, was situated only 120 miles from the future Barrier Silver Field, no very long distance, as distances are reckoned, in the 'bush.' Having plenty of energy at command, Mr. Bowes Kelly, when the great silver discoveries were made in 1882-3, was not unnaturally attracted by the marvellous wealth so suddenly unfolded in the vicinity of his old location. It was not, however, till 1884 that Mr. Kelly first visited the field which was to prove such a source of prosperity to New South Wales, of 'boom' to Melbourne, and of salvation to South Australia. After careful inquiry he decided to buy into the Broken Hill Syndicate, which represented the embryo stage of the great silver-producing concern which was to blossom out into the world-famous Broken Hill Proprietary Company, Limited, and which, since the date of its incorporation on August 13, 1885, has paid £9,216,000 in dividends, and at the present moment possesses the largest reduction works in the world, besides giving employment, directly and indirectly, to some 20,000 people. On acquiring an interest in the syndicate, Mr. Kelly was appointed a director, and was also a provisional director in the flotation of the Broken Hill Proprietary Company, which originally started with a capital of 16,000 shares of £20 each, of which 2000 were disposed of to the public, and 14,000 went to the vendors.<sup>9</sup>

The Township of Willyama is laid out in wide streets at right angles to the four compass points, as in Adelaide. The main mile thoroughfare, Argent-street, is therefore not quite parallel with Broken Hill, which flanks it a few hundred yards to the south. Standing in the balcony of Elliott's Hotel, which is halfway down Argent-street, the visitor faces the mine. Right opposite is Block 13, on which is the old smelting plant, with its slagheap running down the slope of the hill. To the right and lower down the slope are the Company's offices, and higher up still, looking to the right or in a southerly direction, are the shaft of Block 12, and a little lower the new smelting plant is being erected. Beyond this and below Block 11 is the diamond drill of the Underlay Company, as to the work of which very little is generally known. From Block 10 the hill descends to a point which seems to be in a straight line with the railway. The point conceals from view the road to the Broken Hill Central mine, where the Broken Hill lode has been found to be of rich character.<sup>10</sup>



[...] 'Might I ask you,' said the interviewer, 'how you came to be associated with the Mount Lyell Company?'

'My good fortune came about in this way, In 1889 very encouraging reports came from the Zeehan district of Tasmania of the discovery of high grade galena carrying very rich silver. A friend of mine, Mr. William Orr, induced me to visit the north-west coast, and we became interested together in various prospecting 'shows' in the locality which has since been the scene of so much speculation. We subsequently visited it twice a year until about the middle of 1891, when we were offered an interest in what was then known as the Mount Lyell Gold Mining Company, for it is a strange fact that what was to become one of the greatest copper mines in the world has been worked as a gold proposition by a company registered locally and managed from Launceston. Mr. Orr and I decided to look carefully into the business; and in September 1891, we thoroughly inspected the property, and had samples of the various classes of ore which had been exposed taken. These samples we submitted to Mr. Schlapp, the eminent metallurgist, who was then officially connected with the Broken Hill Proprietary Company, who at once perceived their value and encouraged us to go on with the 'deal,' in which, as a matter of fact, he participated. To make a long story short, Mr. Orr, Mr. Schlapp, and I purchased the interest under offer to us on our own terms.'<sup>11</sup>

Rasp's Shaft was not only the first sunk, but the one which gave the public an idea of the wealth of the mine, for even the proprietors had some doubt as to its value until they struck the rich ore at the 212-foot level about two years ago. The shaft is also on Block 13, sunk 278 feet. The most important level, however, is the 212-foot, extending north and south. The latter is connected with McCulloch's Shaft. In this drive rich ore has been obtained, consisting of carbonate of lead and iron ore, which carries a high percentage of silver. Stoping has been proceeded with in the level. Three winzes have been sunk to a depth of about 60 feet, and in one extraordinarily rich ore was got, some of which was assayed up to 1,500 oz. per ton. Here again are found some pretty effects – chlorides of silver in masses like coral or filigree work, and lead crystals pure and white, contrasting with the earthy gossan intermixing with it and the chlorides, while some ironstone stuff has the lustre and rainbow tints of shot silk.<sup>12</sup>

*In 1892 a company with a capital of £150,000 was formed in Melbourne to exploit the property, which comprised an area of 372 acres. About the middle of 1893 Dr. Peters, junior, one of the most eminent experts in America, reported on it, and, whilst very cautious in his statements, predicted a splendid success, provided a large reduction plant was erected, and cheap means of transit secured for the resultant product. The board decided to set promptly on the policy recommended by Dr. Peters, and obtained estimates for the projected plant, and for a railway to Macquarie Harbour. These works necessitated a large increase of capital. The company was consequently reconstructed in 1893, and as the result of this and subsequent financial operations, the authorized capital now stands at £900,000, in 300,000 shares of £3 each, which are saleable on the market at over £9. Just prior to the reconstruction of the company a very fortunate and phenomenal development took place in the discovery of an entirely new body of rich ore. This gave a great fillip to the public confidence in the company, a net profit of about £110,080 being secured from this single find. In 1896 the directors endeavoured to negotiate the sale of a block of 150,000 shares which had been placed at their disposal, to enable them to provide fresh working capital when circumstances required. Their difficulty was that they were forced to ask par, whilst all the time the shares in the company were quoted at a discount in the market.<sup>13</sup>*

There is something so thoroughly human about mining that, though one for perfectly intelligible reasons may never have had, as in my case, a single sixpence in mining stock, he cannot, while subject to common sympathy and humour, fail to be interested in the pursuit, whether seen in the stages of patient prospecting, laborious delving, or market bulling and bearing. When, however, it is responsible for a profound agitation, throughout the chief Exchanges of Australia, when it is seen absorbing a vast share of the capital of the colonies, when it is the source of a new and large trade of our own colony, and it takes besides tangible expression in populous towns, where otherwise the rabbit would reign supreme in its work of devastation, that interest grows in enthusiasm. Such is the case with mining on the Barrier. An enquiry into its progress and prospects must have a concern, then, for many besides those whose unconscious cerebrations are constantly revolving upon such cabalistic words as 'Brokens', 'Pups', 'Centrals', and 'Souths'.<sup>14</sup>

[...] 'Turning to another subject. What about the extension of the railway system in Tasmania, on which the future of Mount Lyell largely depends?'

'Yes, the development of the railway system will of course greatly benefit the district in which our property is situated. Nothing is grown round Lyell, Strahan, or Zeehan, and the Emu Bay extensions will be of benefit to the whole country – to the working classes in particular, and to the people generally. We are extending the Mount Lyell Railway from Teepookana to Strahan, a distance of eight miles, to within a mile of the Government Station at Strahan. Eventually the lines will be connected. These extensions will give connection right away to Emu Bay, which junctions at Leslie with the private railway known as the Mount Dundas and Zeehan. The Emu Bay railway, which is practically completed to Roseberry, will tap a lot of mineral country and render communication easy with Melbourne, whose enterprising capitalists have hitherto supplied Tasmanian mining with the sinews of war. I am a director of the Emu Bay Railway Company, which has agreed to purchase the Mount Dundas and Zeehan railway, of which I am also director, for the modest sum of £22,500.'<sup>15</sup>

Fickle fashion which mighty man sneers at in weak women dominates in the unlikely sphere of the miner, no less in the circle of the sharejobber. Going no further than the Barrier for examples, observers will record how at one time men would look at nothing but bright galena. Next the rage was in horn silver, and then came the day of the tomahawk slug, a iron stone crystal. What is the fashion now? Chlorides, and perhaps a big lode. It does not matter what other qualities it has so long as it is a big lode and the surface stones are saturated with lead and traces of silver. There are fashions, too, in the share market. Different metals and different fields have their day. Now is the time of silver and the opportunity of the Barrier. It has passed into a proverb amongst dealers that every stock has its turn. To-day there will be a run on this and to-morrow on that scrip. How it is nobody knows. 'It is the fashion.'<sup>16</sup>

*'I was aware of that, and I see that the Emu Bay Company are issuing £200,000 of 5 per cent debentures on the London market for the purposes of their undertaking.'*

*'Yes, that will enable them to complete and to equip their extension from Rosebery to Leslie Junction, of which they have a lease for 99 years, at a rental of £10,000 per annum.'*

*'I see the Company are proposing to buy the Mount Bischoff line right out, and with that view to issue £200,000 of debentures to rank parri-passu with the issue of the same amount, just advertised.'*

*'Yes, that is the case, and I think it a prudential move, as at the same annual charge, instead of mere tenants they will become owners of the freehold, with full security to offer for the additional £200,000 they propose to borrow.'*<sup>17</sup>

Broken Hill is not only important as the visible sign of a new era in silver-mining in Australia, but is interesting in that it indicates a change which is certainly taking place in the tone of Australians. The profitable working of a silver mine is bringing about something more than an addition to the material wealth of the colonies generally, and particularly to that of South Australia, it having an effect more profound than the conversation of blacksmiths, carpenters, miners, and labourers into sharebrokers, jobbers, land agents, and business men, and of transforming knockabout hands and parsons into silver kings; it is unquestionably altering the character of the people. One cannot be in Broken Hill long without perceiving how the race for riches quickens the mental powers.<sup>18</sup>



*'Turning back to the Mount Lyell district, will not the deepening of the Macquarie Harbour give you greatly-increased facilities?'*

*'The Government have voted £60,000 for the purpose of giving Macquarie Harbour a start, and tenders for the first part have been accepted. Of course the suggested improvements will greatly improve the shipping facilities.'*

*'Has not the copper boom benefited Mount Lyell?'*

*'Yes, beyond measure. We have now eleven furnaces completed, nine are in blast, and the balance will be put in blast as soon as we get the aerial tramway, which has just been completed, in full work. The whole plant will treat 1000 tons a day. One furnace is generally laid up for repairs. Strongly built as they are, furnaces are after all very delicate things. One thousand tons a day would mean a return of £20,000 a week.'*

*'That again would mean over £1,000,000 sterling a year?'*

*'Quite so; that is the gross return.'*

*'And what would be the working expenses?'*

*'Say about 50 per cent.'*<sup>19</sup>

The thirst for information of any kind, scientific and commercial which will serve the end in view is no less marvellous than the development in all classes educated and uneducated, of the faculty for assimilating knowledge, and applying it to personal advantage. Whether in the great temptation that exists to cross the borders of genuine enterprise to share-gambling there is a great danger to undermine the moral nature so as to completely out-balance the value of the increased mental activity is a question that shall be decided by others; but the fact that a change is going on as described is one which cannot be denied by the observant student of human nature, not only in the growing town of Broken Hill, but in the established cities of Australia. Looking at the extraordinary progress of this continent, and the fact that the development of its resources is still in a state of infancy, is it straining the probabilities of the case to say that in the not very distant future the world will add to the phrase of 'the cute American' another – 'the cuter Australian?' <sup>20</sup>

*'And you have confidence in the future of Tasmania from a mineral point of view?'*

*'Yes; up to the present two-thirds of Tasmania are positively unknown. I have been a great advocate for opening up the country beyond Hobart, and I intend to give this matter attention. I gave £500 towards the cost of making a track to Port Davey, one of the finest harbours in the Southern Hemisphere, and this track is already finished.'*

*'When do you think of returning?'*

*'Oh, that is quite uncertain; I may be here for 12 months.'*<sup>21</sup>



# A Two-Sided Tale (Eighteen Times)

January 2013

The report *Point of No Return* published by Greenpeace with research from the environmental consultancy Ecofys has expressed serious concerns about a boost in mining, oil and gas extraction by major multinational companies, including Adaro Energy, BHP Billiton, Gazprom, Peabody Energy, Vale and others. The report claims that the projected activities of these companies could lead to a 20 percent increase in CO<sub>2</sub> levels as well as an increase of 5 to 6 degrees in global temperature by 2020. The report also argues that the environmental impacts of such changes could lead to impacts on food supplies and a series of social upheavals. Areas of particular concern include coal mining northwestern USA, Indonesia, China and Australia's Gunnedah, Surat and Galilee basins; tar sand exploration and oil pipelines by Enbridge and others in Canada; Arctic drilling by Gazprom and others in Russia; and deep-sea drilling off the Brazilian coast by Petrobras, BP, Shell, Total, and Statoil.<sup>22</sup>

January 2013

*The fear that woke my stomach reaches her head. Wide-awake in a still-dark bedroom she realizes that when morning comes she will have to outline the research she has conducted for UCL's risk register. Tasked to 'own' the risk of research expansion, she has focused on UCL's reputation as global research leader, and its academic reputation based on independence and integrity. She will suggest that one of the risks associated with research expansion, comes from accepting financial gifts from corporations, particularly where there are disparities between the practices of those corporations and UCL's value published in its core principles and procedures. She is focusing in particular on UCL's decision to accept funding from the charitable arm of BHP Billiton – one of the world's largest mining corporations – in June 2011 to set up an Institute of Sustainable Resources at UCL and position this inside the Bartlett in September 2012.<sup>23</sup> If she follows the Brundtland Report of 1987, which states that sustainable development must be 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs,'<sup>24</sup> then the mining of fossil fuels is unsustainable on two counts – first fossil fuels are a finite resource, and second, as published climate science evidences, the limit of the ecosystem to absorb CO<sub>2</sub> has already been dangerously surpassed.*

January 2013

The IndustriALL Global Union has denounced the threats and other intimidation tactics allegedly used against Sintracarbon union leaders and their families during their negotiations for a new bargaining agreement with Carbones del Cerrejon. Sintracarbon has said it will go on strike if no agreement is reached, but so far Cerrejon has allegedly refused to meet union demands for a three per cent wage increase and better working and living conditions. IndustriALL has written to Colombia's president to express concern about repeated acts of violence against union members. Cerrejon is owned by BHP Billiton, Anglo American and Xstrata-Glencore.<sup>25</sup>



January 2013

*She will argue that UCL is taking a risk with its reputation for independent research into sustainability, allowing BHP Billiton to buy legitimacy for the continued mining of fossil fuels and to potentially influence not only policy on sustainability, but also the definition of this contested term. She has judged the risk of potential damage to reputation to be significant enough to warrant purchasing a copy of a report by RepRisk on BHP Billiton.<sup>26</sup> This report is a collection of media articles, which provide evidence of how far BHP Billiton, and so any company associated with them, is exposed to reputational risk. Along with other companies in the mining sector, BHP Billiton is here categorised at the maximum risk level on environmental principles, and exceeds other companies in reaching the highest level of risk in the areas of anti-corruption, labour and human rights.<sup>27</sup>*

February 2013

The Government of Peru's apparent effort to welcome copper producing companies such as Xstrata, BHP Billiton, Candente Copper and Chinacllo has generated negative response from indigenous communities and caused more than 200 concession related conflicts in Peru. Riots in Cajamarca relating to Newmont Mining's Minas Conga project have raised concerns amongst the National Mining Society and human rights activists, who reported as many as 16 dispute related deaths since September 2011. Water use and water supply damage concerns have been a major cause for resistance. Southern Copper's Tia Maria Mine was blocked in 2011 due to agriculture and water depletion and soil contamination. Chinalco is also facing resistance from residents near the Toromocho Cooper Mine who are requesting USD 300 million in compensations for relocation and the destruction of their village.<sup>28</sup>

February 2013

*Since government funding to cover teaching costs has been all but removed in the UK, increasing efforts are being made to attract a new income stream – corporate sponsorship. But with so much talk of business links and enterprise, there has been very little institutional acknowledgement of the shifts in culture occurring in universities as a result of the reduction of state funding and the introduction of loans for UK students at BA level. Yet she is reminded that UCL is not a public university, but a chartered corporation.<sup>29</sup> But if not public, UCL is still proud of its radical tradition, the fact that unlike Oxford and Cambridge it was not founded as a religious entity, and that it was the first British university to accept women students on the same basis as men and award degrees to women. In fact, quite recently, being radical has become key to the UCL brand: a briefing from the communications team suggests that she should speak in a radical and open voice.*

March 2013

The Zenu indigenous community in Colombia claims that they have neither benefitted from

BHP Billiton's Cerro Matoso Ferronickel Mine nor have been fully informed about the mining operations. The mine has allegedly caused deforestation, dried up water sources and has contaminated the water with zinc and nickel. Carro Matoso has admitted that nickel is suspected of causing cancer and there has been an increase in this type of disease in the local population. In 2011, there were reportedly 14 miscarriages out of a total of 36 pregnancies.

The Zenu have lodged a complaint with the Corporation of the Valleys of Sinu and San Jorge and the Ministry of Environment.<sup>30</sup>

March 2013

*Before dawn, almost every night now, She is jolted awake, surprised and disorientated for a second or two; and then She remembers, and the panic rears up through her. Will fighting this battle, pitting herself against her institution, lose her her job? Has UCL done its homework, She wonders, and even if it has, will the right governance structures and due diligence procedures really be able to protect the independence of academic research? UCL has argued that it must engage with businesses in order to change them. But She still can't quite grasp the stated logic, that, on the one hand, when the giver of the gift – in this case the charitable arm of BHP Billiton – should not influence the research conducted by the receiver or benefit from the act of giving, but on the other hand, the receiver of the gift – in this case UCL – should be able to influence the behaviour of the giver.*

April 2013

Green members of South Australia's (SA) parliament have challenged BHP Billiton to spend more to protect the environment in its proposed Olympic Dam expansion project. The final terms of the AUD 30 billion project are still being negotiated between the company and the SA government, but BHP Billiton reportedly keeps citing cost as an issue in a number of decisions that concern the community, such as lining only four percent of the highly toxic tailings dam, using fossil fuels in the expansion project's power plants, and increasing their take of ancient water from the Great Artesian Basin.

The Green MPs urge the company to use its expected AUD 21 billion profits to safeguard the SA environment.<sup>31</sup>

April 2013

*Did she really record him in his own office on her mobile phone? Was that wise? She asked him for permission, explaining that it was so she could remember exactly what he had said without having to take notes, and that the information would not go public. He agreed. She was very friendly about it. So was he. So maybe it is all fine ... But trying to find these documents has turned her into a researcher of her own institution. Did it set up a note of mistrust, having the phone there on the desk, between them? What if a colleague who had come to talk to her, on a complex and tricky issue, had asked to record her? Would she be fine about it?*

May 2013

HSBC has been criticized by the World Development Movement for allegedly bankrolling climate change through its financing of 'dirty' fossil fuel projects across the world. For example, HSBC has, together with Barclays, Lloyds, and RBS, supported the Cerrejon Coal Mine by providing GBP 3.1 billion to the companies behind the project, namely Anglo American, Xstrata, and BHP Billiton. Allegedly, the project has destroyed entire villages populated by indigenous and Afro-Colombian communities, failed to bring jobs, damaged rivers and habitats, and caused respiratory problems to people and workers. Moreover, the mine has allegedly exploited cheap labor, and pro-union workers were either intimidated, dismissed, or killed, as in the case of a Sintracarbon leader in 2008. HSBC, together with RBS, has been similarly criticized for financing tar sands exploration by Total and Madagascar Oil, which will reportedly disrupt the water supply and damage the lands of over 120,000 people living within the Bemolanga Oil Field, among other severe impacts. Also, deposits near the Tsingy de Bemaraha nature reserve, a UNESCO World Heritage Site, are reportedly being explored.<sup>32</sup>



May 2013

*She is so angry she can barely breathe. She has been expected to back decisions that have been made without consulting her. She always knew the Vice Dean role came with responsibility, but she never really understood the implications and potential contradictions of holding such a title until now. It is hard not to wonder if she was excluded from the decision-making process because she is female. But perhaps not, as along with the five men who signed the partnership between UCL and BHP Billiton, there was also a woman.*

June 2013

Australian Federal Police (AFP) has launched an investigation against BHP Billiton over alleged bribery in Cambodia, China and Western Australia. US authorities have investigated the same since 2009 and referred it to the AFP and the Australian Securities and Investments Commission in 2010. The probe alleges that Australian nationals working for the company bribed government officials in relation to its projects, including a bauxite mine in Cambodia and a hospitality program for the 2008 Beijing Olympics. It is reported that the Australian police initially rejected an inquiry for unknown reasons but decided to reopen what has been dubbed one of the country's highest-profile corruption cases.<sup>33</sup>

*June 2013.*

*As Vice Dean of Research, and having been tasked in January 2013 to 'own' the risk of research expansion, She suggested the need for the following three documents:*

- 1. The Environmental, Social and Governance (ESG) due diligence procedures to be undertaken when deciding whether to accept the funds.*
- 2. The Structures and procedures in place to protect academic independence and integrity.*
- 3. The performance indicators to monitor how this corporation has been changed by its engagement with UCL.*

*[...]*

July 2013

Australia's Environment Minister has announced they need more time to evaluate expansion plans for the Abbot Point Coal Terminal. Commercial fishermen are objecting to the planned dredging of three million cubic meters of the Great Barrier reef and dumping it back into marine waters, which they believe will threaten fish populations in the sea. The fishing industry has also criticized the port operator, North Queensland Bulk Ports, over the lack of consultation during the research stage of the plans. Adani owns the port but it is managed by Abbot Point Bulk Coal, a subsidiary of Xstrata. BHP Billiton and GVK Hancock are also allegedly involved with the project.<sup>34</sup>

July 2013

*The deed is done.*

*On 1 July 2013 she formally 'stepped down' from her role as Vice Dean of Research for the Bartlett Faculty of the Built Environment, UCL. She did so with a spoken explanation and accompanying written report which she circulated at a meeting of the Research Advisory Group (RAG) of which she was then chair.*

*But what does her act of 'stepping down' mean?*

*She thinks it means that she has withdrawn her consent and refused to collaborate.*

*She believes it is the 'right' thing to have done, but she remains unsure if it has been the most effective way to influence the situation.*

July 2013

A report by the Centre for European Policy Studies (CEPS) and the European Capital Markets Institute (ECMI) has accused BHP Billiton, Vale and Rio Tinto of taking advantage of their dominant position in the global freight industry to control the price of iron. CEPS and ECMI have called for this sector to be open to greater competition to counter the 'oligopolistic' behavior of these companies. Furthermore, CEPS and ECMI have also accused Goldman Sachs and JPMorgan of deliberately trying to increase the price of aluminum through the purchase of a number of aluminum warehouses in the United States. This, the think tanks argue, ultimately leads to higher prices for consumers.<sup>35</sup>

July 2013

Following her formal act of 'stepping-down', she meets various senior managers at UCL who wish to discuss her decision. To her surprise they all show support for the work she has been doing on reputational risk and express an interest in involving her in developing UCL's ethical procedures and structures. In an act of what she now sees as 'stepping up', she puts forward several proposals for action. She will, she writes:

1. Prepare a report, based on the BHP Billiton donation, on existing due diligence procedures and performance indicators in place at UCL, for accepting and monitoring funding from corporations for research.
2. Help develop UCL's ethical procedures for accepting and monitoring funding from corporations for research.
3. Initiate a research project on the role of 'influence' in the corporate funding of university research – based on specific UCL case studies, e.g. the BHP Billiton donation.
4. Draft a proposal for divestment from fossil fuels – looking at both those corporations/companies in which UCL invests its funds, and those corporations/companies from which UCL accepts gifts, donations, sponsorships, etc.
5. Host a public debate on the funding of universities by fossil fuel corporations, to involve a range of speakers with diverse views on the topic.
6. Write an academic article on competing narratives in the contested arena of sustainable communities.

December 2013

Volkswagen has been criticized for sourcing coltan, copper and other resources from mines with poor human rights records. Critics have alleged that 20 percent of coltan mined worldwide comes from illegal mines in Congo and other Central African countries, where children are hired and human rights, social and environmental standards violated. In Peru, copper mining has been linked to human rights abuses, displacements and environmental damage, as well, and critics have alleged that mining giants BHP Billiton, Rio Tinto, Glencore Xstrata and Vale have prevented smaller companies with fair mining conditions to establish themselves. NGOs have demanded for companies to penalize suppliers who do not adhere to internal and international standards, and for the German government to ensure human rights standards are addressed in a commodity agreement that is currently being discussed with the Peruvian government.



December 2013

*Conducted under Chatham House Rules, and involving senior managers, academics, administrative staff, and students at UCL, she hosts Rich Seams or Dark Pools? Fossil Fuel Funding and University Research, a seminar where eight speakers address what is at stake when fossil fuel companies fund university research on sustainability. The title of the event refers to a tension between fossil fuel funding understood both as a 'rich seam', an opportunity or resource to be exploited, but also as a 'dark pool', adopting a term used to describe a source of unregulated financial exchange in the corporate world.<sup>36</sup>*

July 2014

Trade union SINTRAME has denounced Gecolsa and its subcontractor Dimantec for having a hostile stance towards trade unions. Criticism against the two companies comes in the context of a general strike by 3,000 workers in the mining sector. Workers from the following mines are also said to be taking part in the strikes: Cerrejon, La Jagua, El Descanso, Pribbenow, Calenturitas, Cerromatoso. These mines are reportedly owned by BHP Billiton, Drummond and Glencore Xstrata. Striking workers have accused Gecolsa of circumventing labor laws by hiring Dimantec as a contractor. Dimantec workers are said to be subject to poorer working conditions than Gecolsa workers, despite performing the same work. The companies have also been accused of refusing to take part in negotiations with trade unions, of cutting water and electricity from the accommodations of striking workers, and of giving higher salaries to workers who don't join a trade union. Previously, Colombia's Ministry of Labor handed out a COP 1.8 billion fine to Gecolsa and Dimantec over illegal outsourcing, the largest fine of its kind in Colombia's history.<sup>37</sup>

July 2014

*She begins to find others who are fascinated in a range of ethical issues, some with quite different perspectives to her own, but who also wish to look at the UCL's governance structures guiding ethical issues, and at how ethics is configured through different practices and disciplines – pedagogical and professional – in built environment research. To pursue such interests, she puts together a research proposal for a year-long project, and applies – successfully – for some internal funding from the Bartlett Small Grants Scheme. As well as involving a participant from each part of the Bartlett, and advisors from across UCL, the project will employ researchers to map those areas of UCL, which engage specifically in ethics, involving discourse analysis, literature reviews, ethnographic interviews, and seminars, ending in June 2015 with a two-day international conference, Practising Ethics, where speakers from academia and industry, including architects, artists, environmental scientists, fiction writers, and urban planners, will offer their ethical viewpoints through panel sessions and round tables.<sup>38</sup>*

March 2015

Petrobras and Brazil's National Agency of Petroleum have been criticized for extracting oil and gas from Brazil's Whales Park Pre-Salt Project in Campos Bay in the Brazilian state of Espírito Santo. Pre-salt extraction is allegedly carried out at depths of 7,000 meters, but the additional network of rigs, rail, road and port complexes are reportedly threatening the survival of both local and indigenous communities along the whole coast of Espírito Santo, recognized as an area of rich biodiversity. Fishermen report that industrial activity is disorientating migratory fish and turtles, and harming corals and the seafloor. Local communities claim they have not been informed about the different projects. Various oil and gas related projects have been criticized, including the South-North Capixaba Gas Pipeline, the Barra do Riacho Liquid Gas Terminal, the UFN4 unit, and the Jurong Aracruz Shipyard. Other industrial projects criticized in Espírito Santo include the Samarco Mining Complex, operated by BHP Billiton and Vale SA, and the pulp processing activities of Fibria, and Degussa. Consultancy companies, including Bourscheid Engenharia have been criticized for submitting misleading environmental impact studies.<sup>39</sup>

March 2015

*She organizes, with colleagues from the Bartlett, the Medical Faculty, Laws and the Institute of Global Health, a debate in UCL on Divestment. She argues that UCL has three ethical reasons to divest from fossil fuels: first, that investment in fossil fuel companies is inconsistent with many of UCL's strategies; second, that UCL's own researchers have just produced a paper, which argues that certain percentages of fossil fuel reserves need to stay in the ground;<sup>40</sup> and third, that since universities educate the young they have a special responsibility to their future. She also points to new economic arguments for divestment, for example, that if international agreements on climate change are met then investors, by supporting fossil fuel companies, will risk their financial assets becoming worthless. Such investments are creating a 'carbon bubble' worth trillions of dollars based on assets that could prove to be unusable, with coal now being viewed as a 'stranded asset.'<sup>41</sup> She notes that, as Brett Scott has recently argued, the two approaches to divestment – ethical and economic – converge in three areas: firstly, in the campaign to broaden the notion of fiduciary duty; secondly, in the quest to redefine the time horizon in which investments should be assessed; and thirdly, in the battle to incorporate non-monetary returns and losses into investment assessments.<sup>42</sup> At the end of the discussion a vote is taken – the wish to divest from fossil fuels is almost unanimous.<sup>43</sup>*

September 2015

BHP Billiton is being criticized for defending the coal industry in light of the upcoming UN climate change conference in December 2015.

Allegedly, the company, along with industry groups such as the Minerals Council of Australia and New South Wales Minerals Council, are attempting to undermine renewable energy efforts and crack down on anti-coal activism while strengthening coal lobbying strategies. The company's 2007 climate change policy has also been criticized for loopholes, while the company is accused of contradicting earlier statements that supposedly support climate change reduction. [...] BHP Billiton is pushing for Carbon Capture Storage projects such as SaskPower's Boundary Dam project in Canada, which is reportedly not much better than a coal plant in terms of carbon emissions. The World Coal Association, of which BHP is a member, and companies such as Peabody Energy, are also promoting higher-efficiency coal plants as a response to climate change. Apparently, BHP Billiton has coal reserves amounting to over 16 billion tonnes through coal projects like New Mexico Coal in the US, the Cerrejon coal project in Colombia, the Mt. Arthur mine in NSW, the IndoMet Coal project in Indonesia, and metallurgical coal projects in Queensland, which will produce 44 billion tonnes of carbon dioxide if burnt.<sup>44</sup>

September 2015

*Over the same time period that she is deliberating what it means for UCL to accept a financial gift from a fossil fuel company, UCL starts to engage with the Research Concordat for Integrity,<sup>45</sup> and review its own research ethics procedures. In tandem with UCL's work in this area, and with the Dean of the Bartlett's approval, she decides that the research project on ethics she is leading needs to transform itself into a working group and to establish a new approach for engaging with ethical issues in the Bartlett through research, but also teaching and enterprise. Starting with the Bartlett Faculty's four key principles of autonomy, integrity, sustainability and equity, she is keen to set in motion an approach where these principles are used to guide the ethical stance taken in research, whether through partnering with corporations, interviewing subjects or conducting participatory action research. Her aim is to set up a Bartlett Ethics Forum, and to place ethics as a key aspect of pedagogy from the education of first year architects onwards, while also offering training to staff and guidance to students on how to deliberate ethical dilemmas in their work as built environment professionals, with the hope of following up and developing the work done by the Edge Commission.<sup>46</sup>*

October 2015

In their *Safeguarding Outstanding Natural Value* report, WWF-UK and partner organizations have warned of the threats posed by extractive industries to approximately 70 of the 229 Natural World Heritage Sites (WHS), which support many of the world's most critically endangered species. Environmental damage caused by extractive activities can include reduced biodiversity, habitat loss and fragmentation, introduction of invasive species and pollution. Extractive operations also create indirect impacts such as increased deforestation, agricultural expansion, artisanal mining, illegal hunting, soil erosion and water pollution. For instance, a dam failure at the Los Frailes mine in 1998 caused an estimated 4–5 million cubic meters of toxic mining waste to spill into the nearby Guadiamar River and reach the boundary of the Doñana National Park. The report lists a number of companies including African Rainbow Minerals, Anglo American, Antofagasta, Freeport-McMoRan, Sumitomo Metal Mining and others, who have made 'no go' commitments, or a pledge that the company will not explore for or extract resources from or create impacts on natural WHS. Investors are then urged to monitor extractive companies for compliance with their commitments and avoid those that threaten WHS.<sup>47</sup>



October 2015

*In Practising Ethics: Positionality, Spatiality and Subjectivity in Dialogue* a conference *The organizers for PhD students doing practice-led research*, some of the more general ethical principles drawn from medicine that universities use as guiding principles for working with human subjects, such as 'informed consent', 'confidentiality', and 'benefit not harm' are explored. Drawing on their own experiences as students, supervisors, practitioners and researchers, speakers from geography, psychoanalysis, ethnography/anthropology, political science, architectural design and the visual/performing arts offer a nuanced understanding of the possible spatial, cultural and political settings involved in conversing and engaging with others and draw out questions around the positions taken up when speaking and listening. They examine how these actions of communication are informed by the psychic structures of subject-object relations, and the dynamics of power and knowledge around speech and sight, that vary according to practice and discipline.<sup>48</sup>

October 2015

A new analysis by Friends of the Earth Scotland has revealed that the GBP multi-million pension fund for members of the Scottish Parliament invests in companies behind weapons, fossil fuel, and tobacco, despite the threats they pose to communities' health and the environment. The biggest portion of the pension fund, which amounts to GBP 2.1 million, reportedly went to Rio Tinto, Alcoa, Snam Rete Gas, Total, and 11 other coal, oil and gas companies known for their carbon dioxide emissions that contribute to climate change. Another beneficiary, BHP Billiton, has been accused of negatively impacting communities in Colombia. In 2015, the fund reportedly gave USD 587,000 to arms makers. Ultra Electronics and Meggit, which have been accused of profiting from wars, reportedly help manufacture drones used for lethal strikes, while Rolls Royce reportedly makes reactors for nuclear submarines armed with nuclear missiles. The Campaign Against the Arms Trade has called on the parliament to stop its unethical investments in such destructive industries.<sup>49</sup>

October 2015

*UCL is still accepting funds from BHP Billiton, but she co-hosts – with a Bartlett colleague and their public engagement partner, the London Mining Network (LMN) – the first meeting of a new informal research network of UCL researchers and practitioners exploring the ecological, political, psychological, and social impacts of mining on communities. Their speakers, invited to London by the LMN and the Colombian Solidarity Campaign, come to attend the BHP Billiton AGM, and to talk about their first hand experiences of human rights issues connected with the construction and expansion of the Cerrejon opencast coal mine in the province of La Guajira in the far north of Colombia, joint-owned by Anglo American, BHP Billiton and Glencore.<sup>50</sup> She bears witness to the evidence of Samuel Arregoces, who is on the committee of FECONADEMIGUA, the Federation of Communities of African Descent Affected by Mining in La Guajira. Samuel is from the village of Tabaco, where a community of small-scale farmers of African descent was brutally evicted in 2001 to make way for expansion of the Cerrejon mine. The construction of the mine has led to the forced removal of a number of rural communities, the violation of indigenous cultural values and sacred sites, and the loss of livelihood among small-scale farmers. She hears Danilo Urrea, of Friends of the Earth Colombia, Co-ordinator of CENSAT (The National Center of Health, Environment and Work), who has been accompanying communities affected by the Cerrejon mine and investigating its social and environmental impacts, speak of his experiences.*

November 2015

Reportedly, the ruptures of Samarco's Santarem and Fundao tailing dams in the Brazilian municipality of Mariana on November 5, 2015, spilled a mixture of ore residues and mud equivalent to 25,000 Olympic pools, with serious social and environmental impacts. Following the ruptures, the Minas Gerais State Secretary of Environment suspended the operating license of Samarco, a joint venture between BHP Billiton and Vale, while the International Articulation of Those Affected by Vale staged a protest claiming that BHP failed to take adequate measures to minimize the impacts. Reportedly, the Mariana incident is the latest in a list of controversial BHP projects: three explosions at BHP's coal mines in Australia occurred in 1979, 1986, and 1994 respectively, killing tens of people; again in Australia, BHP's Olympic Dam has been opposed due to the large amount of radioactive waste produced and the high water consumption; in 1999, BHP admitted it had dumped millions of tons of waste from the Ok Tedi Mine in Papua New Guinea into the Ok Tedi and Fly rivers for over a decade, affecting 120 communities and 50,000 people; BHP's Escondida Mine in Chile has been accused of spilling copper waste; and, BHP's IndoMet project in Indonesia has been opposed for environmental and social issues.<sup>51</sup>

November 2015.

*She flies to Australia, to the Tasmanian College of the Arts in Hobart to take up a temporary position as a 'Thinker in Residence'. While she is there, she starts to write the piece she promised UCL in July 2013 on competing narratives and the contestations around sustainability, in response to an invitation by the Journal of Visual Culture. Sitting at her desk in the artists' studios on the roof top of the College of the Arts she starts to read around issues of critique and governance, drawn to the work of Judith Butler and Michel Foucault. She takes a break and meets her long-time friend and colleague Steve Loo for a coffee. It is he who alerts her to the BHP Billiton related disaster in Brazil.*

*When her time in Hobart comes to an end, she heads off to Broken Hill and Olympic Dam, to continue her research into BHP's history. To get into the desert she takes a short flight, as she doesn't have enough time for the train ride. All this is against the advice of her partner, artist David Cross, who gave up flying in 2004, because he didn't want to contribute to its devastating environmental impact. She knows he is right – it is hypocritical to critique companies who extract oil while she continues to fly.*

February 2016

Brazilian police have requested for the arrest of Samarco's chief executive and six others after having been charged with homicide linked to the collapse of the miner's dam in November 2015.

They have also been accused of endangering public health after the collapse of the dam [Note of RepRisk Analyst: refers to the Fundao Tailings dam, which is part of the Germano mine], which spewed mining waste and polluted drinking water. Reports claim that the incident, which was considered by the government to be Brazil's worst environmental disaster, led to the death of 17 people, buried communities, and displaced a total of 725 people. The incident has also resulted in several legal cases including a USD 5.1 billion lawsuit by Brazil's attorney general, state and federal prosecutor lawsuits demanding compensation to damages, as well as plea to freeze BRL 500 million of Samarco's assets to guarantee town repairs. Samarco is a joint venture between Vale and BHP Billiton.<sup>52</sup>

*February 2016*

*On 10 February 2016 she takes the motion: 'That UCL should commit to divesting from the fossil fuel industry and to shifting those funds to ethical investments in renewable energy in 5 years' to UCL's Academic Board. The motion passes with 50 votes 'for' and 18 votes 'against'. This is minuted along with the comment that this sentiment 'be raised through Council to the Ethical Investments Review Committee', of which she is a member.*

March 2016

Samarco Mineracao has appealed a BRL 112 million fine imposed by Brazil's Secretariat of the Environment and Sustainable Development in the state of Minas Gerais (Semad) in November 2015 for the environmental disaster that resulted from the rupture of the company's Fundao Tailings Dam. According to the agency, an inspection of the dam on August 7, 2015, detected deficiencies in the project's embankment and equipment as well as some erosion at the site. [...] Separately, the Semad has jointly fined Samarco and Servico Autonomo de Agua e Esgoto with BRL 75 million for using chemicals in water treatment and discharging waste into the Rio Doce river. Moreover, Samarco reportedly has outstanding fines with the Brazilian Institute of Environment and Renewable Natural Resources totaling BRL 250 million. Vale and BHP Billiton, Samarco's owners, have both faced investor lawsuits in the US in connection with Samarco's environmental scandal in Brazil. While US investors filed a claim against Vale in the District Court in New York, BHP allegedly faces a new class-action lawsuit by the Jackson County Employees' Retirement System in Michigan. According to the suit, BHP made false and misleading statements about the precarious safety situation of Samarco's facilities in the Brazilian state of Minas Gerais.<sup>53</sup>



March 2016

*She has to call a security guard to find the room. It is empty of the committee when she arrives. But the secretary is already there pouring himself a coffee, and making finishing touches to the paper work. Tucked away at the top of a strange doglegged staircase, the Provost's Dining Room is just large enough to hold a table for an intimate dinner, for 6 or at stretch maybe 10. On 14 March 2016 it is the location of what she discovers is likely to be the last meeting of the Ethical Investments Review Committee (EIRC). As part of the Governance Effectiveness Review being conducted by UCL Council, it seems likely now that the EIRC will be closed down.*



In Silver City  
(Eighteen Scenes)

## SILVER



‘Thank you, Jac. Good morning and welcome to the Annual General Meeting. I would also like to acknowledge the Nyoongar People and their elders past and present.

In Silver City (Eighteen Scenes)

*When she finally gets there the sun is low in the sky, so low that the rays are almost horizontal. She can still feel them now, and remember the transforming effect that kind of light, those kinds of reflections, could have on her. The heat, the rough ground underfoot, the scuttle of tails, and the shimmering dust: they all remind her of something way back.*





Like Jac, I want to begin by reflecting on the terrible incident at the Samarco iron ore operation in Minas Gerais in Brazil nearly a fortnight ago. Everyone at BHP Billiton has been overwhelmed with sadness and concern for the community there. I travelled to the region last week and what I witnessed on site and around the community was truly heart-breaking.

In Silver City (Eighteen Scenes)

*Her life had been changed, at least her life as an academic, from a well-behaved and polite, if not rather critical, member of the team, someone who spoke out, but in the end found a way of toeing the line, into a person capable of behaving somewhat more recklessly. It was hard to pinpoint exactly what had catalyzed the change in her. Perhaps the infuriating quality of saying one thing, while doing quite another, had focused her anger. Such behavior, she kept muttering to herself, was pathological.*





I want to reiterate that we are 100 per cent committed to doing everything we can to support Samarco in the response effort and the community to recover and rebuild. We are deeply sorry to everyone who has and will suffer from this terrible tragedy. They have my absolute determination that we will fully play our part in helping Samarco reconstruct homes, community and spirit.





*Coming into its orbit had meant drawing a different line, one, which involved a certain refusal, and a decision not to comply. But she still had really no idea what it was that she had come into contact with, what had changed her in this way. What it was, or where it had come from? Or why indeed, it had come her way?*

## SILVER

We are in this for the long term and will continue to work with Vale and the people of Samarco to make sure there is a strong future for the region. As Jac noted, as an immediate step and together with Vale and several local authorities we have pledged to support Samarco in an Emergency Fund for rebuilding works.



In Silver City (Eighteen Scenes)



*But what exactly was she seeking evidence of? Some site of origin perhaps? Yet what could the profile of a rock or a glimmer in the dust tell her of how it had all begun, and more importantly why the need to look at beginnings? Why judge the efforts of these men – according to those men back then?*

## SILVER

We want this Fund to assist affected families and communities as quickly as possible. A dedicated team has been created within BHP Billiton to support Samarco as they respond to the ongoing human, environmental and operational effects of this tragic event. We are determined to bring together all of the necessary skill, experience and expertise this ongoing effort will require and we will learn the lessons to improve all our operations.





*And so here she was – finally – left cheek still hot in the setting sun, squinting to match the hulks of abandoned mining machinery, to the healing tears in the ground, to the lines of the urban grid stretching away to the horizon – Oxide, Chloride, Sulphide, Bromide – trying to find the exact spot where it had been born.*

BHP Billiton is also on the ground with independent experts who specialise in emergency response and disaster relief to help advise Samarco on the humanitarian response and downstream impacts. The information gathered by this team is shared to inform the crisis response led by Samarco and the authorities. I pay tribute to all my colleagues in BHP Billiton, Samarco, Vale and the people and first responders of Minas Gerais and Brazil. Their response in the last fortnight has been truly outstanding and they have shown an unconquerable spirit.





*She was on a road, of a kind, a surface of hot dry rocks that took a sharp turn at the bend, in its rise away from one side of the town and towards the other. It was hard to be sure if it was here or there – how does one choose between one rock and another? Between a rock and a hard place.*

## SILVER

I would also like to thank people here in Australia and in the UK for their messages of support. My family and I are enormously grateful. Thank you from the bottom of my heart.







*For all the grandeur and well-meaningness of the monument, it had been designed and constructed rather heavy-handedly. She thought, of corten steel. And it had been left to become so desolate. Abandoned. The café looked as if it had never been open, and through the dust that had gathered across a window she could see a few remaining souvenirs spread out thinly on their plastic racks.*



At every stage we will continue to be guided by our Charter Values. Our Charter enshrines the values of Sustainability, Integrity, Respect, Performance, Simplicity and Accountability. It defines who we are and what we stand for as an organisation.

In Silver City (Eighteen Scenes)

*Before her stretched the names of hundreds of dead miners,  
carefully etched into the thick glass, garlanded with white  
roses. She caught sight of her own eyes in the reflection,  
layered over the words:*

*Vaughn, Master John*

*29.07.1886*

*14*

*B.H.P. Mine*

*Fell Down Ore Heap*



## SILVER

Our first Charter Value of Sustainability is our commitment to Health and Safety. So the tragedy in Brazil goes to the very heart of who we are as a Company.’<sup>54</sup>





*After all the months of intense anger, the sleepless nights, the fretting over due diligence, the pages and pages of ESG reports, something in her frown was shifting. Perhaps it was the light, its particular angle and softness at this time of the evening. With sun caressing the back of her head she found she had feeling in her heart.*



Une Crise De Foie  
(Just the Once)

‘Just for a moment, Andrew Mackenzie’s hold on his welling emotions cracked.

BHP Billiton’s chief executive had introduced himself to the 2015 annual general meeting with an expression of a very personal heartbreak.

He had witnessed the catastrophic damage caused to the region around Bento Rodrigues by the collapse of Samarco’s Fundao tailings dam.

And, as he thanked the Australian community for the quality of support offered to company and man, Mackenzie paused and wept.

Mackenzie has never carried a more tragic burden than that thrust on his executive shoulders two weeks ago when Samarco’s Fundao dam collapsed releasing a deadly flood of mud. Eleven are dead, eight people are still unaccounted for and 600 are homeless.

Mining can be a mortal business. BHP has killed too many over the past 18 months. Five employees died at work over the last financial year. Each was an intimate, individual tragedy. Now the company must assess why Samarco’s tailings dam collapsed.



Mackenzie must oversee the mitigation of the damage BHP's joint venture has caused. And he has to come to terms with the deaths of at least 11 more people. His legacy has been scarred.

Mackenzie's abrupt, brief but very obvious release of emotion serves to illuminate how this human toll weighs heavy on those paid to accept responsibility for machines like BHP.

Mackenzie's chairman, Jac Nasser, introduced Mackenzie with a promise that BHP "will find out what went wrong" at Samarco and that it will make full, public release of the future conclusions of an independent, external investigation into the collapse.'<sup>55</sup>

*On the 20th November 2015 while making my way to Broken Hill, the place where BHP was founded due to the discovery of a mineral lode containing silver, I purchased a copy of the Australian Financial Review. On the front page was a photograph of Andrew McKenzie, BHP Billiton's CEO, holding his hand over his heart.*

*On seeing the image a colleague noticed that McKenzie's hand was resting on the right hand side of his torso, covering not his heart, but his liver, the bodily organ that processes toxicity.*



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- <sup>2</sup> [https://en.wikipedia.org/wiki/Andrew\\_Mackenzie\\_\(businessman\)](https://en.wikipedia.org/wiki/Andrew_Mackenzie_(businessman)) (accessed 29 July 2016).
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- <sup>4</sup> Primo Levi, *The Periodic Table* [1975] (London: Penguin Books, 2000).
- <sup>5</sup> See for example, Italo Calvino, *The Castle of Crossed Destinies* [1973] (London: Vintage Classics, 1998) and Georges Perec, *Life: A User's Manual* [1978] (London: Collins Harvell, 1992).
- <sup>6</sup> *The Barrier Silver Field and Tin Fields in 1888; being a series of letters written by a special correspondent of The South Australian Register, Adelaide Observer, and Evening Journal, and reprinted from those papers* (Adelaide: W. K. Thomas & Co., 1888), No. IX, p. 24.
- <sup>7</sup> 'Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell', *Freeman's Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>8</sup> 'The Broken Hill Proprietary Company', *The Barrier Silver Field*, No. IX, pp. 24–5.
- <sup>9</sup> 'Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell', *Freeman's Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>10</sup> 'The Broken Hill Proprietary Company (continued)', *The Barrier Silver Field*, No. X, p. 26.
- <sup>11</sup> 'Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell', *Freeman's Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>12</sup> 'Underground Works: Rasp's Shaft', *The Barrier Silver Field*, No. X, p. 28.
- <sup>13</sup> 'Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell', *Freeman's Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>14</sup> 'Broken Hill', *The Barrier Silver Field*, No. I, p. 5.
- <sup>15</sup> 'Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell', *Freeman's Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>16</sup> 'Mining Fashions', *The Barrier Silver Field*, No. XIV, p. 37.

- <sup>17</sup> ‘Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell’, *Freeman’s Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>18</sup> ‘The Cuter Australian’, *The Barrier Silver Field*, No. 1, p. 7.
- <sup>19</sup> ‘Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell’, *Freeman’s Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>20</sup> ‘The Cuter Australian’, *The Barrier Silver Field*, No. 1, p. 7.
- <sup>21</sup> ‘Mr Bowes Kelly. An Australian Mining King. His Big Interest in Broken Hill and Mount Lyell’, *Freeman’s Journal*, Sydney (Sat 26 August 1899), p. 24.
- <sup>22</sup> <http://www.greenpeace.org/international/en/publications/Campaign-reports/Climate-Reports/Point-of-No-Return/?accept=6ea9feed3a8bff7ea151e35224a360f4>. Taken from the RepRisk Company Report, BHP Billiton Group (BHP Billiton), Thursday 21 April 2016.
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- <sup>27</sup> RepRisk Company Report, *BHP Billiton PLC (also listed as BHP Billiton Ltd)*, Tuesday 28 May 2013.
- <sup>28</sup> Published in the *Financial Times* on 06.02.2013 (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>29</sup> Andrew McGettigan points out that: ‘The traditional understanding of a university is of an independent community of scholars pursuing knowledge and advancing learning. Unlike their counterparts in some European countries, UK HEIs are not state institutions, their academics are not civil servants... They are legally independent corporate institutions with a charitable status...’. He identifies six general categories, including universities like UCL founded prior to 1992, which are chartered corporations, in receipt of a Royal Charter. See

- Andrew McGettigan, *The Great University Gamble: Money, Markets, and the Future of Higher Education*, (London: Pluto Press, 2013), pp. 126–8.
- <sup>30</sup> <http://www.elespectador.com/noticias/economia/articulo-409715-cerro-matoso-n%0Aos-esta-matando%0A>. Published in *Espectador*, EI (online) on 11.03.2013 (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>31</sup> <http://news.ninemsn.com.au/national/8289014/greens-fault-bhps-olympic-dam-s%0Aafeguards%0A> (accessed 29 July 2016). Published in *The Australian Associated Press*, on 25.04.2013 (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>32</sup> <http://www.wdm.org.uk/energy-justice/champagne-bar-highlights-hsbc-bankrolling-climate-change> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>33</sup> <http://www.smh.com.au/business/afp-failed-to-probe-bhp-bribery-claims-20130616-2ochj.html> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>34</sup> <http://www.abc.net.au/news/2013-07-09/nrn-abbot-point/4806438> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>35</sup> <http://www.smh.com.au/business/rio-bhp-face-supply-chain-threat-20130728-2qsni.html> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>36</sup> <http://www.ucl.ac.uk/urbanlab/events/richseamsdarkpools> (accessed 4 November 2015). See also <http://roadtoparis.info/2015/02/11/mining-money-sustainability-research-ucl-bhp-billiton/> and <http://energydesk.greenpeace.org/2015/10/23/data-top-universities-take-134m-from-fossil-fuel-giants-despite-divestment-drive/> (accessed 29 July 2016).
- <sup>37</sup> <http://sinaltrainal.org/index.php/noticias/sindicales/3974-dia-clave-en-la-SINTRAME> is Sindicato Nacional de Trabajadores de la Industria Metalúrgica. (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.

- <sup>38</sup> See <https://www.bartlett.ucl.ac.uk/bartlett-ethics-built-environment> (accessed 4 November 2015). And for the conference <https://www.bartlett.ucl.ac.uk/architecture/events/practicing-ethics-in-built-environment-research> (accessed 4 November 2015). For reviews see <http://www.architectsjournal.co.uk/culture/what-are-architects-responsible-for/8685996>. article and <http://www.architectsjournal.co.uk/news/riba-and-arb-ethical-codes-attacked/8685535>.article and <http://www.architectsjournal.co.uk/news/porritt-architects-are-failing-to-tackle-climate-change/8685609>.article (29 July 2016).
- <sup>39</sup> <http://apublica.org/2015/03/na-mira-do-pre-sal/> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>40</sup> [http://www.nature.com/articles/nature14016.epdf?referrer\\_access\\_token=yCPWpi99S9edti44\\_](http://www.nature.com/articles/nature14016.epdf?referrer_access_token=yCPWpi99S9edti44_)
- <sup>41</sup> In October 2014, Mark Carney, Governor of the Bank of England, told a World Bank seminar that the ‘vast majority of reserves are unburnable’. See for example, <http://www.theguardian.com/environment/2014/oct/13/mark-carney-fossil-fuel-reserves-burned-carbon-bubble> (accessed 29 July 2016).
- <sup>42</sup> <http://www.theguardian.com/sustainable-business/2015/mar/11/social-acceptability-morality-of-fossil-fuel-investment> (accessed 29 July 2016).
- <sup>43</sup> <https://www.bartlett.ucl.ac.uk/events/divest-fossil-fuels> (accessed 29 July 2016).
- <sup>44</sup> <http://endcoal.org/2015/09/bhp-billitons-mission-to-save-the-coal-industry/> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- <sup>45</sup> <http://www.universitiesuk.ac.uk/highereducation/Documents/2012/TheConcordatToSupportResearchIntegrity.pdf> (accessed 4 November 2015). See also <http://www.ucl.ac.uk/research/integrity> (accessed 29 July 2016).
- <sup>46</sup> See [http://www.edgedebate.com/wp-content/uploads/2015/05/150415\\_collaborationforchange\\_book.pdf](http://www.edgedebate.com/wp-content/uploads/2015/05/150415_collaborationforchange_book.pdf) (accessed 29 July 2016).
- <sup>47</sup> [http://www.wwf.org.uk/news\\_feed.cfm?newsid=7684](http://www.wwf.org.uk/news_feed.cfm?newsid=7684) (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.

- 48 <https://www.bartlett.ucl.ac.uk/architecture/events/practising-ethics-positionally-spatiality-dialogue> (accessed 29 July 2016).
- 49 [http://www.heraldsotland.com/news/13894435.Revealed\\_\\_\\_MSPs\\_\\_\\_pension\\_fund\\_invests\\_\\_\\_3m\\_in\\_weapons\\_\\_\\_tobacco\\_and\\_dirty\\_fuel/](http://www.heraldsotland.com/news/13894435.Revealed___MSPs___pension_fund_invests___3m_in_weapons___tobacco_and_dirty_fuel/) (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- 50 See <http://londonminingnetwork.org/author/richard-solly/> (accessed 29 July 2016).
- 51 [http://www.bbc.com/portuguese/noticias/2015/11/151111\\_mariana\\_desastre\\_bhp\\_jc\\_cc.shtml](http://www.bbc.com/portuguese/noticias/2015/11/151111_mariana_desastre_bhp_jc_cc.shtml) (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- 52 <https://next.ft.com/content/502c4af2-da89-11e5-9ba8-3abc1e7247e4> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- 53 <https://next.ft.com/content/502c4af2-da89-11e5-9ba8-3abc1e7247e4> (accessed 29 July 2016). Taken from the RepRisk Company Report, *BHP Billiton Group (BHP Billiton)*, Thursday 21 April 2016.
- 54 Speech by BHP Billiton's CEO Andrew McKenzie, at the The Annual General Meeting of BHP Billiton Limited, 10.00am (Perth time), Thursday, 19 November 2015 at the Perth Convention and Exhibition Centre, Perth, Western Australia. See [http://www.bhpbilliton.com/~media/bhp/documents/investors/shareholderinfo/2015/151119\\_bhpbillitonltd2015agmspeeches.pdf?la=en](http://www.bhpbilliton.com/~media/bhp/documents/investors/shareholderinfo/2015/151119_bhpbillitonltd2015agmspeeches.pdf?la=en) (accessed 29 July 2016).
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# COLOPHON

*Silver* is one of forty mineral recompositions commissioned by A Published Event for *Loſt Roċks* (2017–21).

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