

7 Fuels and humans, *bíos* and *zōē*

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Kathryn Yusoff (2013) writes of fossil fuels as ‘dead matter’ that ‘animates life in the engines of the Anthropocene’ (784). This ‘fossilized materiality’, she argues, is active within the ‘reproductive, creative, and technological possibilities’ of late capitalist subjectivity; active, too, in their expiration, and as such can be understood as a form of ‘geologic immanence’. But as Yusoff also notes, ‘Fossil fuels are life that comes back to us, as it were, to take up new life forms and make new geopolitical subjectivities’ (790). These different ways of qualifying fossils – as geological immanence, as the reanimating return of the dead, as the nonvitalist materiality of contemporary life – point to the complexity of the sense in which, in the Anthropocene, carbon *is* life. What kind of life might carbon be equated to? How might fossil life line up with the terms *bíos* and *zōē*, introduced most notably by Giorgio Agamben into the discussion of biopolitics? And then, how should fossil life be qualified in relation to the extinction and death brought about through climate change? As it turns out – perhaps counter to intuition – narrative literature (dead letters?) provides a significant way of beginning to respond to such questions.

Certainly, ‘before literature’, before language comes onto the scene to mark some forms of life as ‘good’, ‘worthy’ or enjoying rights as distinct from others that exist as ‘bare’, fossil fuels – fossilized sunshine – are ‘natural’, that is, they come from plant and animal life compressed underground in deep time. Such fuels have been on the planet much longer than humans, but there is no necessarily essential material difference between them, since humans too, given enough time and under the proper conditions, could turn into fuels. Given that in the broadest terms animals, plants and humans are all forms of life (leaving aside the ethical and philosophical issues associated with pinpointing the precise beginning or end of a *particular* life), fuels converge with the category of ‘life’ itself – and not just fossil fuels, but even some non-fossil fuels too, by proxy or by metaphor or metonymy. True, fossil fuels take millions of years to gestate, to change form. Yet isn’t change a key ingredient if not a definition of life itself?

Found on every continent, coal is ‘used up’ in being used. Yet it does not completely dematerialize. There is a by-product, a part of it that remains: carbon dioxide. This remainder is also ‘natural’, not something manufactured by man. Given enough time, deposits of carbon buried in earth would weather away, releasing carbon dioxide – invisible to the human eye – into the atmosphere. But this process

is so slow it exceeds human perception. Perhaps even our (literary) languages, evolving relatively slowly, are not up to the task of authentically engaging with the time of carbon. That such a lack might trigger mechanisms of compensation is a fascinating question potentially reaching far beyond discussions of the relative distance of reader from text or of the ‘death of the novel’ or the status of genres.

The project of the investigation of human life that is the (realist) novel comes to flourish in a period of industrialisation, during the early years of the acceleration of greenhouse gas emissions through the burning of coal (and then, of course, oil). The most instrumental sort of literary criticism, taking the novel to be an attempt of control or mastery, might recognize in language and/or form an awareness of coal’s dirtiness, its destructive and life-giving powers. Or the novel might be troubled by coal’s limited quantities and the aftereffects of shortages. But the history of science does not precisely run parallel to literary genres, and until very recently the novel is also precisely *not* aware of the cumulative and temporal effects of anthropogenic climate change. Given this, what does it mean to read a nineteenth-century novel (to read the end of Zola’s *Germinal*, say) in the time of climate change – and so to entertain the idea of coal not simply as a dirty and abject mass distinct from the human user, but rather in a more complex frame: coal as life, as an informing vital force, as substance brought up from the earth and consumed by humans, with an invisible by-product that causes massive alterations to the earth’s biogeochemistry?

Many important works have emerged in recent years on questions of life, the Anthropocene, geohumanity, transcorporeality and so on. The aim of the present chapter is to help think about some of these issues through literature. Why literature? Perhaps because literary narrative of the most rigorous sort offers an irreducible way to think about life and life forms. Literary language places the reader in a peculiar position with regard to the human subject and the surrounding/interpenetrating geological matter that cannot be achieved through other forms of representation, and especially not through normative descriptive prose or what we might call ‘science communication’.

To be sure, Emile Zola was interested in geology and he wrote during a crucial, even a revolutionary period for reevaluating the age of the earth. His 1885 novel *Germinal* does much more than describe the process of mining. It is profoundly engaged with the earth and with carbon. The author visited the Anzin mines in Northern France during a strike in 1884 and immersed himself in the culture of coal.¹ His phenomenology of the mine is precise. It should be noted that this novel is not entirely autonomous – it was part of the planned twenty-volume ‘Rougon-Macquart series’ focused on questions of illness and heredity.² Zola believed firmly in the idea of milieu or ambiance (environment) as inextricable from the human.³ ‘One no longer studies man as simple curiosity...detached from ambient nature (*nature ambiante*),’ he wrote (Spitzer, 1968, 216). Thus, while in the novel those who dwell above ground and tend gardens, for instance, may enjoy relative health and economic independence, Zola also makes clear that the collier adapts to life below and makes of it his proper home. While Zola’s contemporary Jules Verne imagines the subsurface as a place of magical vitality (in *Les indes noires* of 1877 most notably) the author does not go there and engage with it. The subsurface

is simply another one of Verne's realms to be colonized by adventurous men of science – along with the deep sea, deserted islands or the skies, among others.⁴ Earlier, in the fantastical tale of the 'mines of Falun' (E.T.A. Hoffman's version was published in 1819), the subsurface sustains (maleficent) life as it also preserves the human cadaver from aging at the rate of his betrothed on the surface.

Zola is a literary author, of course. Modelled in part on the epic voyages below the surface of the earth (Dante in particular), *Germinal* ([1885] 2004) enjoyed an afterlife beyond its material borders. It is, above all, a novel about the struggle between labour and capital – embodied in the absentee directors, the petty bourgeois managers, and small business owners around the fictional town of Montsou (money mountain).⁵ Zola describes mining in free indirect discourse, through the eyes of the protagonist, Etienne. In this way, Etienne is the focus of the reader's attention, but not fully identified as the empathetic hero, and this has significant implications for the way language, the human and coal are made inextricable. It is imperative that we arrive on the scene with Etienne. The reader enters the world of the novel from outside, as a newcomer who has everything to learn. But even as we become acclimated with him to the world of the mine over the course of the novel, or as we learn about socialism, communism and anarchy with him, we are prevented by this flexible syntax from ever fully losing ourselves in his particular struggle to survive.

Soon after Etienne arrives he understands (so we understand) how the mines enter the bodies of the miners, who are also consumed by it. The mine entrance is a mouth; tunnels lead to its insatiable belly: 'The pit gulped down men in mouthfuls of twenty or thirty and so easily that it did not seem to notice them going down' (37). Underground the colliers tap on the rock face, loosening coal into tubs. After a seam is opened, they fill in the voids with timber, moving *another* natural substance – another fuel – from the surface down into the caverns.

Etienne meets Bonnemort, an old-timer who is now assigned to surface duty. Over the course of his years in the mine, Bonnemort has become a geological being. As he speaks flaming coals 'cast a gleam of blood-red light across across his pallid face' (11). He is prone to coughing fits. 'Is it Blood?' asks Etienne. Bonnemort replies 'It's coal...I've got enough coal inside this carcass of mine to keep me warm for the rest of my days. And it's five whole years since I was last down the mine. Seems I was storing it up without knowing. Ah well, it's a good preservative' (12).

Through the labour process – and let us recall that one of the central grievances in the novel is that the miners are paid only for coal taken from underground, not for the ancillary but necessary activities such as timbering – bodies are intertwined with the coal to a degree that they cannot be said to exist as separate entities. For instance:

Each man hacked into the shale bedrock, digging it out with his pick. Then he would make two vertical cuts in the coal, insert an iron wedge into the space above, and prise out a lump. The coal was soft, and the lump would break into pieces which then rolled down over his stomach and legs. Once these pieces had piled up against the boards put there to retain them, the hewers disappeared from view, immured in their narrow cleft (39).

The miners merge here with the mine itself. Their bodies are transforming into its body, and vice versa; the sense of any separate representational or ontological difference between the two disappears as they burrow into the soft carbon past. Labour for Marx involved the manipulation of inorganic nature: through labour, the appropriation of nature confirmed 'man as a conscious species-being, i.e. a being who treats the species as his own being or himself as a species-being' (1964, p. 127). But in the material labours described in Zola's syntax, this distinction between species-being and inorganic nature becomes more difficult to sustain. 'Ghostly shapes' move in the coal, 'and chance gleams of light picked out the curve of a hip, or a sinewy arm, or a wild-looking face blackened as though in readiness for a crime' (40). Fossilized materiality seems spectral here; its edges are soft, illuminated only intermittently and by chance. The miners become coal – affectively, perceptually, representationally – as the mine itself takes on the properties of a living organism, a mortal body vulnerable to attack.

Toward the end of the novel, when the revolutionary, Souveraine, goes underground to undermine quite literally the past work done, the existing works, the enduring structures of past labour, he is possessed:

He attacked the tubbing at random, striking where he could, with the brace, with his saw, suddenly determined to rip it open and bring everything crashing down on his head. And he did so with the ferocity of a man plunging a knife into the living flesh of a person he loathed. He would kill it in the end, this foul beast that was Le Voreux, with its ever-gaping maw that had devoured so much human fodder (463).

The mine, this vast man-made machinic apparatus of fuel and subjective life, of geological time and labour time, finally collapses in what we might call a geo-anthropogenic catastrophic event:

Le Voreux shook slightly, but it was stoutly built and held firm. But a second shock followed at once and a long shout came from the astonished crowd... From then on the earth never ceased to shake, and there was tremor after tremor each time the ground shifted beneath the surface, like the rumblings of an erupting volcano... In less than ten minutes the slate roof of the headgear fell in, the pit-head and the engine-house were split asunder, and a huge gap appeared in the wall. Then the noises stopped, the collapse halted, and once again there was a long silence... It was all over: the vile beast squatting in its hollow in the ground, gorged on human flesh, had drawn the last of its long, slow, gasping breaths. Le Voreux had now vanished in its entirety down into the abyss (480–2).

We do not witness the collapse of the mine through Etienne, who is buried below. Rather, this is an occasion for Zola, author, with a genuine interest in geology and a fascination with new ideas of geological time, to express a more globalizing vision of his Neptunist, catastrophist theory. Le Voreux's end, he explains, is 'a reminder of the ancient battles between earth and water when great floods turned the land inside out and buried mountains beneath the plains' (504).

Philip Walker argues convincingly that *Germinal* reflects a 'new faith' vision of a catastrophic geology described by a young Zola in an article of 1865: 'He wanted to believe that more nearly perfect lands and beings were already taking shape in the deep recesses of the earth and in mankind's dreams' (1982, p. 2). The catastrophies of the mine were linked to both great natural upheavals and class struggles. The shift in narrative perspective out to geology serves to counterpoint and distance our reading from our immersion in the immediate struggles of the miners, our too empathetic engagement in the melodrama of Etienne, Souvarine, Catherine and Chaval.

Throughout *Germinal*, the distinction between human and animal is also constantly blurred. In part this is due to the particular conditions of labour in the mine, but it is also a broader condition of labour and life itself. A group of men going down to the pit is called a 'meat load' (28). The miners storm past the Hennebeaus (family of the salaried manager of the mine), who fail to pick out any individual faces: 'It was indeed true that anger and starvation had combined, after the past two months of suffering, and this wild stampede from pit to pit, to turn the placid features of the Montsou miners into the ravenous jaws of wild beasts' (352). Etienne fears violence (in part because of his inherited disease), but Souvarine remarks, 'Oh, blood. What does that matter? It's good for the soil' (244). We could mention numerous other moments in the novel when Zola undoes any easy distinction between human, animal and land itself: blood, semen, tears and bodies sink into the ground, immediately fusing with and melting into the earth as carbonised vital fluids, fuel for the life-world of Montsou. Zola achieves this fluidity not through metaphors or other figures of assimilation, but in a prose that is itself fully suffused with the geo-biomorphic, in its syntactic ambiances and mobile transformations of narrative perspective.

In Zola's language, coal and human/animal flesh meld to create a cyborg hybrid, a figure that is at once *zōē* (the simple fact of living common to all living beings – in Agamben's influential definition) and also *bíos* (a form of way of life proper to an individual or group). One cannot live without the other – they are literally geo-biodependent. Coal cannot be used without using it up (it is not a renewable source of energy); the miners cannot live without work, without using up their lives.

The miners are not only producers of coal. They also consume it directly, albeit in controlled circumstances. 'Every month the Company gave each family eight hectolitres of *escaillage*, a type of hard coal collected off the roadway floors. It was difficult to light but, having damped down the fire the night before, the girl had only to rake it in the morning and add a few carefully chosen pieces of softer coal. Then she placed a kettle on the grate and crouched in front of the kitchen dresser' (22). The miners' homes are filled with the smell and dirt of coal. They are immersed in it at all times, whereas the bourgeois enjoy a central heating system, and when they do have coal burning, it is contained 'cheerfully' (76) behind a grate in a kitchen that smells of freshly baking brioches.

Like his model Zola, Upton Sinclair spent time in the mines: in the case of Sinclair, in the Rocky Mountains where he witnessed labour disputes before composing his 1917 *King Coal*. Like Etienne, Sinclair's protagonist Hal is an outside

observer, an intellectual who comes to immerse himself in the mine. And like Etienne, Hal surveys the surface of the landscape and contemplates geological time before his journey down:

As one walked through this village, the first impression was of desolation. The mountains towered, barren and lonely, scarred with the wounds of geologic ages. In these canyons the sun set early in the afternoon, the snow came early in the fall; everywhere Nature's hand seemed against man, and man had succumbed to her power. Inside the camps one felt a still more cruel desolation – that of sordidness and animalism. There were a few pitiful attempts at vegetable-gardens, but the cinders and smoke killed everything, and the prevailing colour was of grime' ([1917] 1921, p. 21).

The miners here are living in the past, in a dehumanised condition of fossilized materiality.

Sinclair, in the third person – focused on, but not entirely fused with Hal – reports of miners as 'a separate race of creatures, subterranean, gnomes...stunted creatures of the dark' (22). The figure of the dwarf has a long and complex history in relation to mining. In some mythologies, the dwarf was assumed to have his home underground where he guarded treasures.⁶ Sinclair references this tradition in a modern context. Life in the mines appears chthonic, diminished, and less-than-human: 'After Hal had squatted for a while and watched them at their tasks, he understood why they walked with head and shoulders bent over and arms hanging down, so that, seeing them coming out of the shaft in the gloaming, one thought of a file of baboons' (22). And here too, coal fuses with the human. As in *Germinal* the mine disaster is 'a thing of human flesh and blood' and miners lay on their backs, trying to catch drops of water from the ceiling to keep alive. Sinclair seems less interested than Zola in imagining subterranean life as Bergsonian or Deleuzian. In a book aptly titled *Germinal Life*, Keith Ansell-Pearson writes that Deleuze was interested in the complex relation of organismic and inorganic life, and in the indeterminacy of 'life' itself that is suggested by these complexities: for Deleuze, 'life is informed by the ability of its forms and expressions to hold chemical energy in a potential state and which serve as little explosives that need only a spark to set free the energy stored within them' (1999, p. 34). In comparison with the metaphysical and phenomenological horizons of this fossilised vitalism, *King Coal* is instead focused much more directly on manifest issues around actual politics. And yet in both novels, the biopolitical life form that develops is presented as a collective being, just as mining is a collective form of labour. No individual body can exist as such in the mine.

These narratives of the fusing of coal and human anticipate in powerful ways recent fables of bioengineering. Liao, Sandberg and Roache (2012) suggest that in confronting climate change, biomedical alterations to humans might be less risky than geo-engineering schemes and would work in tandem with behaviour modification and marketing strategies. They mention, among others, pharmacologically induced meat intolerance (to reduce the carbon hoofprint); height reduction (using growth hormones), cognitive enhancements (leading to lower

birth rates), and pharmacological stimulation of altruism (leading, perhaps to sharing, sacrifice and practices of conservation). To be clear, the authors explain that they are not actually advocating such practices, only attempting to put into perspective the ethical questions that have arisen (or not) around proposed geo-engineering as a solution to climate change. Their proposal raises significant questions about ‘creative evolution’ and interventions on the genetic structure of individuals; they put to the question the nature of the human species – of ‘conscious species-being’ – linking subjectivity back to the slow geological processes of the fossil record.

Some carbon dioxide removal (CDR) schemes are already underway, but without carbon pricing they are likely to remain limited. That other broad category of geoengineering – solar radiation management – remains very controversial. Resistance to human engineering seems likely to be more powerful, offering a higher threshold to techno-utopian projects. One need only think of the writings of Habermas and Dworkin against biotechnology and genetic programming to get a sense of the profound embeddedness of a notion of the human as stable and autonomous. ‘For Habermas,’ Timothy Campbell writes in his exemplary introduction to Roberto Esposito’s *Bíos*, ‘symmetrical relations among the members of a group are homologous to the foundation of a moral and ethical community’ (2008, p. xxxviii). In this sense, genetic manipulation is not only one among other problems of technoscience. For the modified humans it also ‘jeopardizes how others will see them (as privileged, as escaping somehow from the natural development of characteristics that occur in interactions with others). These social foundations of society will be irreparably damaged when some members are allowed to intervene genetically in the development of others’ (xxiv). Moreover, Campbell argues that, in his critique of biotechnology, Dworkin tends to conflate *bíos* and *zōē* as he calls for the ethics of the individual and personal values. Esposito (whom Campbell is introducing), converging with Jane Bennett’s vitalism, deconstructs any notion of an absolutely normative system or baseline and argues instead for a difference among life forms: ‘norm of life that doesn’t subject life to the transcendence of a norm, but makes the norm the immanent impulse of life’ (xxxix). For all that a critique of any sort of external intervention on the genes of a living subject may be warranted, what we learn from reading Zola and Sinclair is that coal miners, those who fuse with fossils fuels in producing them, are *already* altered. Mining literature presents different life forms, describing vital circuits of degeologisation and regeologisation. It presents a sense of life as already becoming fossilised, amidst geological irruptions of the past into the present.

Writing on the temporalities of the Anthropocene, Srinivas Aravamudan suggests that:

the human is by no means the only subject or object. Endings are also mutations. The end of a singular species would still not be the end of all genres. There will be a post-ontological future of unnameable others, still new swarms that, once conceived, could fill many Chinese encyclopaedias. The Anthropocene sublime will yield its place both to the terrible and the beautiful. What began

as catachronism, the burdensome experience of ‘living in the end times,’ could morph into the birth of many brave new worlds populated by those that come after the subject. Those who come after will treat us as their version of Nature from which they will spell out their difference and articulate their critique (2013, p. 25).

Ian Baucom has similarly noted that, in the age of climate change we must begin to ‘expand our sense of the ontological plurality of the human...we must now also recognize the post-natural actors, agents and actants of cyclones, heatwaves, and melting ice’ (2014, p. 139). What if we were to agree that climate change has or will have so radically altered conditions, so sped up geological time, that we can no longer speak of a stable and unchanging human form? What if we already think of ourselves as becoming these others, those who will have come after? And how might that task be anticipated in the carbon narratives of writers like Zola and Sinclair?

Could Zola have imagined an *other*, like us, but not us, changed not precisely by revolution or reform but by geology itself? A great deal depends on how we read the end of the novel. To be sure, as Etienne moves on, on the surface of the earth revolution is still to come:

Over to the right he could see Montsou in the distance disappearing down into the valley. Opposite him were the ruins of Le Voreux, the cursed chasm where three drainage-pumps were now working nonstop...while to the north, from the tall blast-furnaces and the batteries of coke-ovens, smoke was rising into the pure morning air ([1885] 2004, p. 531).

As he walks on, miners continue to work in the subsurface, which is not a place of death, but a womb generating life in all of its diverse forms:

And far beneath his feet the stubborn tap-tap of the picks continued...The risen April sun now shone from the sky in all its glory, warming the parturient earth. Life was springing from her fertile bosom, with buds bursting into verdant leaf and the fields a-quiver with the thirst of new grass. Seeds were swelling and stretching, cracking the plain open in their quest for warmth and light...New men were starting into life, a black army of vengeance slowly germinating in the furrows, growing for the harvests of the century to come; and soon this germination would tear the earth apart (532).

Most critics, starting in Zola’s time, believed he was expressing hope in this passage for the coming of a new Messianic time. Coal is dirty, black, difficult to extract. But someday, *Germinal* seems to suggest, the men who do the labour will be fairly compensated, perhaps even on a par with the capitalists who claim exemption from physical danger because of the financial risk they have made with their investments. Perhaps coal would be exhausted – this view was starting to be widely diffused in the period. Perhaps it would be replaced with another (clean) fuel available in the commons, outside of the structure of capitalism, outside of labour.

For Zola, coal is a form of life. For us, it is also one that we have displaced, from the subsurface to the atmosphere, through using and using it up, in a relatively

brief period of human history, with consequences that are catastrophic for many life forms, including, potentially, our own. Zola's syntax tracks fossilized strata of carbon life that take on a transformed meaning in the Anthropocene present. While Sinclair's protagonist also leaves the mine with aspirations to fight capitalism, *King Coal* is a novel in which language remains on the surface, as political speech, rather than germinal life. Zola indicates other, more urgent, links, his language offering a more capacious political ecology for imagining climate change. As Etienne departs and the struggle continues – on the surface, for Zola, where plants face upwards toward the sun while also rooted in the soil, where coal also gestates – there, on the surface of language, life is ever evolving.

These plants could, some time long in the future, become coal. But Zola did not know this, or rather, not as we do now. That is a crucial difference: reading coal's life-cycle in our time – when geological time has been made human – the linguistic springing of life from the bosom of the Earth is also the dead hand of the past and present on the future.

Notes

- 1 Zola also drew on other strikes from the region. He set the novel earlier, in the 1860s. In part this allows him to point to some positive changes that did in fact take place in the intervening period, including the 1871 Paris Commune. By 1874 a law had been passed that made it illegal to employ women or children under twelve in the mining pit. Trade unions were made legal in 1884. Still, the technologies of coal mining that he described did not change materially in the period between his visit and the novel's publication and indeed they are much older.
- 2 The bibliography on Zola's 'Rougon-Macquart series' is vast. Etienne is the son of a laundry woman from *L'assomoir* (1877), and the brother of the title character of *Nana* (1880) and of Jacques Lantier in the 1890 novel *La Bête humaine*.
- 3 For a longer discussion of these terms, see Pinkus (2012).
- 4 Zola disdained what he perceived as the rather unliterary (commercial) qualities of Verne's prose.
- 5 This rendering perhaps underplays the smallness of the sou. One might think of 'penny-pinching mountain' [ed.].
- 6 See Pinkus (2008) for a more detailed discussion and bibliography on this topic.

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