COMMENTARY

What the frack?

Combustible water and other late capitalist novelties

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There is a reason why oil gets the lion's share of attention when it comes to the global game of petrocarbon extraction. Through the multiple products into which oil is refined, most important of which are gasoline and diesel, oil is the blood that animates the body of capitalism. It is a substance necessary for economies to keep operating and profits accruing, which is why access to it fuels so many geopolitical struggles around the globe. The atrocities committed by major oil companies almost everywhere they have set foot – of which spills such as BP's recent debacle in the Gulf of Mexico are but the tip of the iceberg – draw public attention to the consequences of living in oil societies, and so too to the full scale of our dependence on the substance. And whether or not we believe tales of peak oil, as oil gets harder to access and in shorter supply and so more expensive, the extent to which oil and capitalism are tied together cannot help but make us sit up and pay attention. Economist Jeff Rubin has recently argued that the unprecedentedly high price of oil over the past decade is the primary reason why economies around the world have found it difficult to recover from the 2008 crash.[1] While the current price of around US$90 per barrel is well below its recent peak of $147 in July 2008, it is still exponentially higher than the average $2 per barrel at which oil was priced during capital's massive expansionary phase from the 1920s to the 1970s – a virtually free form of energy with an extraordinarily high ratio of energy returned on energy invested.

If natural gas is also making the news today, it is due only in part to its expanding use in fleet vehicles (replacing petrol or diesel) or in the generation of electricity (replacing coal-fired or nuclear power plants). Despite the ever-expanding market for liquefied natural gas (LNG), 'the world's fastest growing energy source', the price of natural gas remains too low to excite many investors.[2] One of the reasons for the reduced cost of gas is the recent global expansion of natural gas supply, which is due almost entirely to the discovery of a new source: the decaying organic material that makes up the compressed rock of black shale. With this discovery, the world is now awash in shale gas. The US Energy Information Administration estimates that the USA has 2,632 trillion cubic feet of recoverable natural gas, enough to address domestic demand for 100 years at current rates of use. In the UK, the discovery of a gas field in north-west England by Cuadrilla Resources promises enough gas to meet demand for 64 years.[3] Even if profits are not as high at present as producers might want, consumption of natural gas is expanding rapidly (29 per cent over the past decade) and the growing capacity for LNG means the possibility of servicing export markets such as China and Japan, which needs more of the fuel than ever in its current post-nuclear phase. As an easy allegory for the disaster of runaway consumption or the tendency

of human beings to gleefully destroy the environments that support them, natural gas certainly cannot compete with oil. But as it begins to occupy an ever-greater segment of the overall market for energy, the race for shale gas is resulting in ecological and political problems that should cause all of us to pay as much attention to gas as we are starting to pay towards oil.

Poison

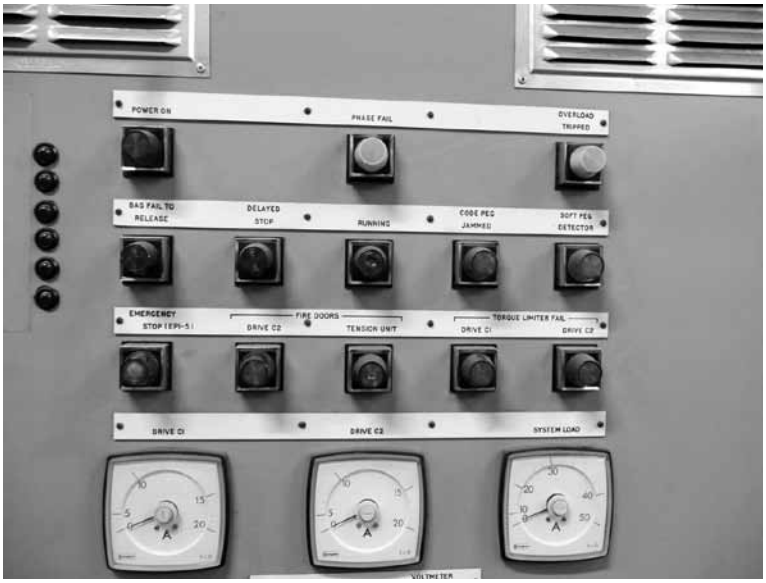
Shale gas can be found in pockets all over the world, including Argentina, Australia, Canada, China, Mexico and South Africa. The extraction of natural gas from shale has generated headlines in almost every one of these countries as a result of the process used to gain access to it: hydrological fracturing, which is more commonly referred to as 'fracking'. A process developed in late 1940s but only used widely in the last decade, fracking involves the injection of a mix of water, sand and chemicals into the bore created to access the gas with enough force and pressure to split the shale rock, and so make the gas recoverable. The success of fracking as a means by which to access natural gas deposits that were formerly thought to be inaccessible is connected with the concurrent development of horizontal (as opposed to conventional, vertical) drilling, a process now carried out in the field with relative ease. Horizontal drilling aided by fracking opened up the natural gas fields of the Barnett Shale in northern Texas a decade ago. Since then, oil and gas companies, small and large, have raced to gain access to the gas trapped in the Bowland Basin in the UK and the Marcellus Shale in the north-eastern USA, as well as many other places around the globe. Besides the profits promised by control over all these new gas deposits, industry and government have been quick to champion the other benefits produced by shale gas and fracking. For countries such as the USA and the UK, there is the opportunity to reduce dependence on foreign sources of petrocarbons and potentially to compete again as a major energy exporter. Then there are also the supposed benefits to the environment of putting more natural gas into the energy mix: lower emissions of carbon dioxide and nitrogen oxide than produced by either petrol or diesel. The fact that natural gas is cheaper than using either of these fuels can't help but put smiles on everyone's faces. Or so industry and government might want us to believe.

But there are problems with fracking that belie the positive image of a new world of natural gas – a world in which gas (again, according to official narratives) will become a dominant source of energy, allowing us to bridge the gap between the end of oil and whatever comes next without having to change much, if anything, about the way we live our lives and conduct business. There is a primary set of categories used to define natural resources, terms whose quotidian employment has stripped away some of the power of their blunt assertion as to where we now stand in relation to energy. The website of the Canadian Association of Petroleum Producers, an industry group that has been especially forceful in defending the actions of oil and gas companies in Canada, defines theses clearly and without ambiguity:

> Natural gas comes from both 'conventional' (easier to produce) and 'unconventional' (more difficult to produce) geological formations. The key difference between 'conventional' and 'unconventional' natural gas is the manner, ease and cost associated with extracting the resource.[4]

More and more, we are becoming reliant on unconventional forms of energy. Shale gas is one such form, and not only because of the unusual processes required to access it, but also because of the costs involved – costs above and beyond the mere dollar figures of setting up and manning a drill site. Fracking requires enormous amounts of *water* – between 5 and 11 million litres for each well drilled (to give some reference point, an Olympic-sized swimming pool contains 2.5 million litres of water). There are now close to half a million active gas wells in the USA alone that have been created through the use of fracking. Much of the water that goes down into the wells comes back up, but a great deal of it also disappears underground. As a result, the chemicals that are put into the mix to help shatter the shale rock pollute both the water that returns and that which does not.

The image most commonly associated with fracking is a shocking one: water from taps being set alight by a match. In the 2010 documentary *Gasland*, director Josh Fox travels to the western USA to gain insight into the consequences of fracking in order to help him decide whether he should accept an offer to lease his family's land on the Marcellus Shale in Pennsylvania to a natural gas company. What he finds startles him: reports of contaminated water and of chronic health problems that lessees connect to the start of gas exploration on their land or on nearby properties. The image of tap water being set on fire, which Fox witnesses in Weld County, Colorado, also shows up in another recent documentary – Cameron Esler and Tadzio Richard's *Burning Water* (2010) – which probes the outcome of EnCana's use of fracking to extract coal bed methane in southern Alberta. As in the US documentary, those living in and around the extraction sites report all manner of health problems after EnCana set to work, including skin burns from their showers, where they previously had experienced no problems from their water supplies. Water can do many things, including break rock apart. What it should never do is catch fire; when and if it does, it a certain sign that something is happening that should not be.



There are numerous ways in which fracking might produce water that burns. The gas released from shale might get mixed into the water aquifers through which companies have to drill to reach the resource, either through cracks in the rock or via poorly sealed drill holes. Even more worrisome than the gas itself are the chemicals mixed into the fracking fluid, which include toxins and known carcinogens. Fracking fluid will almost certainly include methanol; other common substances include ethylene glycol (a substance found in antifreeze) and isopropyl alcohol (a solvent used in a wide range of industrial liquids, including cleaning solutions). Of the 750 chemicals that made up various mixes of fracking fluids, a report by the Minority Staff of the US House of Representatives found that twenty-nine of these were known carcinogens (including benzene and lead) regulated under the Safe Drinking Water Act (SDWA) and the Clean Air Act.[5] As this was a minority report, no legal action followed. At present, under the terms of the 2005 Energy Policy Act engineered by then vice president Dick Cheney, the solutions used in fracking remain exempt from the SDWA. (The fact that Halliburton, the company that Cheney once led as CEO, is one of the planet's major

well services companies and a major supplier of fracking fluids, almost need not be mentioned.)

The fear of serious and perhaps irresolvable water pollution has led some governments, including France, the Czech Republic, and in the USA the state of Vermont, to ban fracking. One of the first acts of the province of Quebec's new Parti Québécois government (elected in September 2012) was to impose a moratorium on the exploration for and extraction of shale gas. The Utica Shale structure, which stretches between Montreal and Quebec City, could host as many as 18,000 wells and hold as much as 163,000 billion cubic feet of gas. Even so, Martine Ouellet, the province's new Natural Resource Minister, has said that she 'cannot see the day when the extraction of natural gas by the fracking method can be done in a safe way'.[6] The anxieties in Quebec extend from the possibility of water pollution in a densely populated area dependent on the same aquifers that would be used for fracking, to fears over the possibilities that fracking might lead to earthquakes of the kind produced near Blackpool, in the UK, in spring 2011. (Quebec experienced a small earthquake on 11 October 2012, the most recent of several such minor quakes.)

In general, however, fracking is backed by governments around the world, despite the potential dangers to the environment and to individuals living near or in conjunction with natural gas wells. Yet there are numerous examples of problems with the current system of regulation and inspection. In his extensive examination of the wave of drilling that has taken place in Pennsylvania since 2006, journalist Tom Wilber points out that the Pennsylvania Department of Environmental Protection (DEP) inspectors have identified 'a pattern of operators routinely disregarding regulations'. In the first six months of 2010, 'DEP staff made 1,700 inspections of Marcellus Shale sites and found more than 530 violations.'[7] However, inspectors have more often than not avoided or minimized such investigations and the findings they might bring. They rely heavily on industry reports, which when closely examined are found to contain errors or to be incomplete.

What is being played out in Pennsylvania is being repeated elsewhere. Neoliberal policies rear their head once again in a chain of connections that draws ever tighter with each passing year. Too few inspectors with too few resources devoted to the inspection of well sites accords with the desire of the politicians' buddies in the oil and gas industry, who want to get on with profit-making and sidestep responsibility for any social and ecological crises they might generate along the way.

Though it is the name of an industrial process, fracking should also be taken as an index of the political crises with which we now have to contend. Coming at a time when the West is preoccupied with thoughts of sustainability and the organic, the impact of fracking on water supplies cannot help but make the locals restless and angry. Oil and gas might well constitute the second nature of capitalism, but when it comes to water, we are today more likely to agree with Thales: that water is a fundamental substance that gives being to the world as such. This tension portends political possibilities; maybe something in the water, put there by unconventional resources, might prompt an unconventional politics, too. But what might such a politics look like?

Primed to protest?

In *Carbon Democracy: Political Power in the Age of Oil*, Timothy Mitchell offers a narrative of the petrocarbon era that is alert to the material significance of dominant sources of energy in shaping social and political capacity and possibility, from the form taken by local struggles over oil to the changing shape of geopolitical conflict. Though the focus of his book is on oil, one of the most powerful insights generated by Mitchell about petro-politics arises from his analysis of struggles over coal. The most significant social transformation produced by coal was that in industrialized countries the vast

majority of people became dependent on energy produced by others. The production of coal at specific sites across northern Europe that then had to be channelled to other sites along narrow corridors (railways), with specialized groups of workers operating in large numbers at both ends, generated in turn the material conditions for a form of political agency that could be asserted through the disruption of energy flow.

'The rise of mass democracy is often attributed to the emergence of new forms of political consciousness', writes Mitchell. 'What was missing was not consciousness, not a repertoire of demands, but an effective way of forcing the powerful to listen to those demands.'[8] The ability of workers to disrupt energy flow effectively and immediately through mass strikes or sabotage gave their political demands special force and led to major gains for workers between the 1880s and the interwar decades, while also supporting the development of workers' consciousness of their social circumstances. For Mitchell, the switch to oil from coal as the primary energy source for the global north from the 1920s onward was a major factor in impeding the demands of labour and constituted the basis for a form of governmentality that effectively managed the struggle for democracy. The production of oil requires fewer workers than coal in relation to the amount of energy produced; labourers remain above ground in the sight of managers; and from the 1920s '60 to 80 percent of world oil production was exported',[9] which made it difficult to affect supply via strikes. Mitchell is blunt in his assessment: the politics that emerged alongside coal was defeated by the rise of fossil-fuel networks that made mass action more difficult and changed the conditions within which class struggle took place.

Even in advance of fracking and the growth of LNG as a resource, natural gas networks exist across the planet on a scale that would startle the citizens of most countries. The USA already has more than half a million kilometres of gas pipelines, the U.K about 15,000 kilometres, and there are plans for massive infrastructure expansion around the world. Like oil, it is difficult to imagine ways in which the flow of gas could be impeded as a result of mass action mimicking strikes. Protests over new drill sites and media stories about the potential damage of gas infrastructure to the environment currently generate relatively little public concern – certainly too little to impede government action. Unlike oil, however, the direct connection that fracking draws between profits, power and water opens up the possibility for an unlikely, if potentially powerful, site of political intervention.

The right to water has been championed by numerous international organizations, including the UN Development Programme, the UNHCR, and numerous NGOs devoted to human rights and the environment. While it has been seen primarily as an issue for developing countries, the practice of fracking has made it clear that the right to water has become an important issue for developed countries as well. Those countries intent on employing fracking for the purposes of national energy security and to generate profits for oil and gas companies are (without exception) already signatories to conventions and resolutions asserting the right to water as a fundamental human right.[10] With few exceptions, usually in relation to environmental crises, wars over oil or high prices at the pumps, it has been difficult to date to generate public interest in petro-politics in a sustained and ongoing fashion, despite the clear and direct connection that has existed between power, politics and profit throughout the entire history of the industry (from the machinations of John D. Rockefeller and Standard Oil to the chicanery of BP over the BTC pipeline). The focus on water and the dangers that oil – and now, even more directly, gas obtained by fracking – poses to the very stuff of life might well generate more significant political outcomes for those concerned with the lived realities and social, political and environmental consequences of our petro-societies. Through a whole host of cultural shifts, we relate to ourselves increasingly in the mode of managed, biopolitical care: the contemporary subject, continuously regulating and monitoring bodily intakes and exchanges is a subject primed, however ambiguously, for

a politics of health. What separates the worker of today from that of 1920 is precisely this shift from a regime of quantitative expansion (wage increases) to a regime of the qualitative (properties pertaining to the style and experience of life itself). As the actions taken by Platform London in exposing oil industry sponsorship of the fine arts shows, indirect action is perhaps more powerful than direct attacks on the very stuff of life – which is, alas, still all too frequently understood not to be water, but oil and gas.

This is not to suggest that we give up on even more radical politics in relation to petro-societies. As I've argued elsewhere, the political (and, indeed, conceptual) problems posed by oil and gas is that these substances, far from being mere externalities – the form of energy we use, easily substitutable by alternative forms of energy – have fundamentally shaped the material and social infrastructures *and* cultural and political imaginaries we inhabit.[11] Even if we were to shift the dominant source of our energy into something other than gas or oil, we would be doing so in a contemporary world that has taken the physical and mental form that it has due to the energy produced by petroleum. For those on the Left, how to generate a critique of the energy used by contemporary society in a manner that will produce a clear idea of where we will go from here remains a challenge that requires ongoing analyses of the epistemology and ontology of those fuels that play a huge role in defining who and what we are in the twenty-first century.

Notes

1. Jeff Rubin, *The End of Growth*, Random House Canada, Toronto, 2012.
2. Dave Cooper, 'LNG a Global Game', *Edmonton Journal*, 6 October 2012, p. D1. In October 2012 the price of gas was US$3.21 per million British thermal units (MMBtu), 20 per cent below the average price of $4.0/MMBtu for the two decades 1990–2012, and far below the December 2005 all-time high of $15.40.
3. 'U.K. Gets Big Shale Find: Discovery by Cuadrilla Resources May Rival Vast, New U.S. Gas Properties', *Wall Street Journal*, 22 September 2011, http://online.wsj.com/article/SB10001424053111904563904576584904139100880.html.
4. Canadian Association of Petroleum Producers, www.capp.ca/canadaIndustry/naturalGas/Conventional-Unconventional/Pages/default.aspx.
5. See 'Chemicals Used in Hydraulic Fracturing,' an April 2011 report released by the Committee on Energy and Commerce of the US House of Representatives, http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic%20Fracturing%20Report%204.18.11.pdf.
6. Sophie Cousineau, Bertrand Marotte and Rhéal Séguin, 'Quebec Gas in Peril as PQ Signals Ban', *Globe and Mail*, 21 September 2012, B1, B4.
7. Wilber, *Under the Surface: Fracking, Fortunes, and the Fate of the Marcellus Shale*, Cornell University Press, Ithaca NY, 2012, p. 126.
8. Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil*, Verso, London and New York, 2011, p. 21.
9. Ibid., p. 37.
10. See, for example, the resolution adopted by the UN Human Rights Council in September 2010: UN General Assembly A/HRC/15/L.14, 24 September 2010.
11. Imre Szeman, 'System Failure: Oil, Futurity and the Anticipation of Disaster', *South Atlantic Quarterly*, vol. 106, no. 4, 2007, pp. 805–23.