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Less is more: Spectres of scarcity and the politics of resource access in the upstream oil sector

Gavin Bridge [a,*], Andrew Wood [b]

[a] School of Environment and Development, University of Manchester, Manchester M13 9PL, UK
[b] Department of Geography, University of Kentucky, Lexington, KY 40506, USA

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ABSTRACT

Our objective in this paper is to understand the significance of the peak oil claim for the large, publicly-traded oil companies to whom the tasks of finding oil, extracting it and delivering it to market have been allocated. On the face of it, peak oil would appear to offer the ultimate solution to a problem that has plagued the international oil industry for the last one hundred years: how to organise scarcity in the face of prodigious abundance. We examine how publicly-traded oil firms ('Big Oil') are engaging with the discourse and science of peak oil, and find that peak oil positions firms like Exxon, BP and Shell in a number of different and quite complex ways: as a beneficiary (of a higher price regime), but also as a victim (of shrinking reserves) and a suspect (for under-investing in exploration or exploiting reserves too rapidly). We find a surprising lack of consensus among Big Oil about the significance of peak oil's core claim for an imminent, permanent decline in the production of conventional grades of crude, and we conclude that peak oil is not regarded as strategic priority for oil producers (the contrast here with climate change is instructive). To understand why this is the case we turn from the physical science-based account of peak oil to political economy, and examine the contradictory character of Big Oil's current position. We show how the strong financial returns to Big Oil in the last few years mask a precarious structural position when it comes to reserves access and reserves replacement. Critically the origins of this squeeze originate primarily above-ground: in the ownership of reserves, the politics of resource access and the changing structure of the international oil industry, and not below-ground in geological limits. Accordingly, we reject the simple assumption that increasing geological scarcity explains/justifies high returns, and argue that the relative marginalisation of peak oil within Big Oil's strategic concerns reflects the way it misdiagnoses the cause of oil companies' woes when it comes to finding and replacing reserves. We conclude that peak oil's claim of physically-induced scarcity obfuscates rather than illuminates when it comes to understanding the opportunities for – and constraints on – accumulation in the upstream oil sector.

1. Introduction

In March 1998 Scientific American published an article by two petroleum geologists titled 'The End of Cheap Oil'. The article's authors, Campbell and Laherrère, claimed a supply crunch was looming that would not be "so temporary" as the supply shortages experienced during the 1970s.[1] They based their claim on a detailed re-assessment of oil reserve data indicating approximately half the earth's total recoverable oil reserves had been extracted and consumed. Campbell and Laherrère concluded that long-run, year-on-year increases in annual oil output would soon come to an end, with global oil production declining after 2010. The usual tricks and turns for evading scarcity would not work this time: "it is important to realize," they noted, "that spending more money on oil exploration will not change this situation... There is only so much crude oil in the world, and the industry has found 90 percent of it" (p. 81). These claims suggest a sea-change in the historic relationship between oil availability, price and the upstream oil sector. In Campbell and Laherrère's analysis, the old rules – under which economic stimuli drive more oil into production – are now suspended because the exploration frontier is all but closed.

On the face of it, then, the claims advanced by peak oil advocates would seem to be of great significance for the oil industry. And all the more so for the industry's upstream sector, whose exploration and production activities have served as a critical mechanism through which supply has kept pace with sharply rising oil demand during the twentieth century. In this article we seek to understand what peak oil means for the upstream oil sector, and evaluate and explain corporate responses to those proclaiming 'the end of cheap oil'. The method we adopt is to (1) deconstruct the discourse of scarcity at the heart of 'peak oil' by examining the diverse and

* Corresponding author.
E-mail address: gavin.bridge@manchester.ac.uk (G. Bridge).

[1] Campbell and Laherrère's article drew on their 1995 Petroconsultants Report 'The World's Supply of Oil 1930–2050'.

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inconsistent ways in which it has been engaged by leading publicly-traded oil firms; (2) to contrast peak oil's account of oil scarcity arising from physical limits with political-economic analyses of natural resource scarcity that emphasise scarcity's relational character and the socio-political origins of oil's availability; and (3) to consider how the production of scarcity is a central problematic for capital accumulation in the upstream oil sector. Overall we show how peak oil's claims about physical limits obfuscate rather than illuminate when it comes to understanding the structural challenges currently facing publicly-traded firms in the upstream oil sector.

The argument put forward by Campbell and Laherrère is self-consciously unorthodox: they position their assessment of an imminent constraint on supply as different from and contrary to the view of the oil industry, observing how their conclusion directly "contradicts the picture one gets from oil industry reports" (p. 78). At the heart of their claim are caution and scepticism about reported figures for reserves and reserve growth: calculating such figures is inherently an "inexact science" that rests on estimates of probability, and figures for aggregate reserves around the world are based on overly heroic assumptions about probability of large reserves and "dangerously misleading" estimates of reserve growth. Campbell and Laherrère spoke from inside the tent, as experienced geologists who had built their careers working inside major oil companies (Campbell for Texaco and Amoco, Laherrère for Total) and as independent oil consultants. The apostasy of their position disrupts the standard storylines of environmental politics, where arguments about physical constraints on the availability of oil (and other resources) conventionally come from the academic and environmental communities rather than industrial practitioners (Meadows et al., 1972).[2] It has been difficult, therefore, for media analyses of peak oil to pigeon-hole the claims that advocates of peak oil make about resource constraints.

Publication in Scientific American, however, effectively migrated arguments about peak oil and the 'end of cheap energy' from a specialist literature on oil supply modelling – located, as Hemmingsen (2010) points out, in the borderlands between geology and economics (see, for example, Ivanhoe, 1995; Hatfield, 1997) – into popular consciousness and, in so doing, helped introduce a new public narrative and imaginary of oil scarcity. This narrative is significant not because it sustains a popular literature on eco-catastrophe (which it does), but because in the last few years it has started to actively shape national policy formulation as part of concerns about energy security and climate change (Helm, 2007; Mernier, 2007). In the United States, for example, the Hirsch Report (2005, p. 4) to the US Department of Energy concluded that "the peaking of world oil production presents the US and the world with an unprecedented risk management problem... (in which) liquid fuel prices and price volatility will increase dramatically, and, without timely mitigation, the economic, social, and political costs will be unprecedented."

Elsewhere, the Australian state of Queensland established an Oil Vulnerability TaskForce in 2005 and subsequently acted on its recommendation to establish a Queensland Oil Vulnerability Mitigation Strategy and Action Plan; South Australia convened a Select Committee investigation into the Impact of Peak Oil in 2008 which recommended a range of transportation planning and efficiency measures; in the UK, the Industry TaskForce on Peak Oil and Energy Security established in 2008 has called on the UK Government's newly created Department of Energy and Climate Change to treat peak oil as a higher security threat than terrorism and a more imminent threat than climate change; and the International Energy Agency's *World Energy Outlook* (2008, p. 37) stated with an unprecedented conviction that the "current energy trends are patently unsustainable – socially, environmentally, economically... the era of cheap oil is over". The conceptual model behind peak oil has also generated a shadow literature on 'peaking' in other commodities: there is now, for example, detailed quantitative research on peak gas (Laherrère, 2004) and peak minerals (Mudd, 2007), while Heinberg (2007) has taken things to their logical conclusion, arguing that "Peak Everything" necessitates a transition from the Age of Excess to the Age of Modesty. Although the popularisation of peak oil has been dismissed as a "catastrophist cult" (Smil, 2006), such out-of-hand rejection ignores its importance as a discourse shaping political possibilities. It also overlooks how the concept of a physically-induced peak marks a significant shift in how constraints on oil availability are conceived. Arguments about peak oil explicitly replace a political understanding of the limits to oil availability – centred, for example, on the different interests and intent of oil exporting and oil consuming states, or the 'obsolescing bargain' between oil firms and resource-holding states (Vernon, 1971) – with a physical, geologically-based explanation of the constraints on oil supply.

2. Debating scarcity: physical constraint or prevention of abundance?

In this section we examine the content of the peak oil claim and consider how it re-frames long-standing concerns about oil's scarcity and abundance. Peak oil is a rhetorical shorthand for a specific set of claims about socio-natural relations. As with other discursive couplets, such as 'population pressure,' 'carrying capacity' or 'global warming,' peak oil's popularisation carries with it a risk that the specificity of its claims becomes lost. At the extreme, it becomes possible for widely divergent phenomena – high commodity prices, volatile oil markets, proposals for Arctic drilling, subsidies for agricultural producers, appeals for re-localisation of production and exchange relations – to be linked uncritically to peak oil and for the phrase itself to become a rhetorically potent yet surprisingly empty signifier: the proverbial hollow drum.

2.1. The nature of the peak oil claim

Peak oil is a proposition about the relationship between the rate at which conventional crude oil is currently taken from the ground and the rate at which it can be extracted in the future, for a given geographical area.[3] Although peaking can be predicted, it may only be proven with hindsight. Peaking refers to physical rather than economic measures – i.e. the volume of conventional oil extracted from geological formations and brought into the economy, rather than its cost or price. Applied to the globe, the peak oil proposition consists of three distinct but sequential claims.[4] The first – and core – claim

[2] In this regard Campbell and Laherrère are positioned similarly to Marion King Hubbert who developed the theory of peak oil while working for Shell in the 1950s; and to Deffeyes (2001) who, like Campbell and Laherrère, is a one-time oil-company geologist (working for Shell before taking up an academic career) and who has played a leading role in popularising peak oil. We thank a reviewer for this observation.

[3] Crude oil describes a broad category of liquids of varying densities, from so-called light crudes to heavy tars. Conventional oil – also known as light oil – has a low viscosity and flows easily: in technical terms, it has an API gravity of at least 22° and a viscosity less than 100 centipoise. For reference, water, blood and honey – all at 21 °C – have centipoises of 1, 10 and 2000, respectively (Meyer and Attanasi, 2003; Wisegeek, 2008). Conventional oil can also be obtained by applying heat and/or pressure to other fossil fuels such as tar sands and coal.

[4] The relative cohesion and uniformity of the peak oil argument reflects the way its narratives and models have been developed through a common institution, the Association for the Study of Peak Oil (ASPO) and its network of national organisations. ASPO has organised annual conferences since 2002 and many of the peak oil advocates referred to in this article are affiliated with ASPO. For example, Campbell is ASPO's founder and Honorary Chairman; Aleklett is ASPO President; Hirsch (lead author of the 2005 Report) is a member of the ASPO-USA Advisory Board; Simmons (whose book, Twilight in the Desert, highlighted declining yields in Saudi Arabian oil fields) is Chairman of the ASPO-USA Advisory Board; and Laherrère is a Member of ASPO-France.