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# Fracking Lancashire: The planning process, social harm and collective trauma ☆

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ABSTRACT

To date there have been very few studies that have sought to investigate the crimes, harms and human rights violations associated with the process of 'extreme energy', whereby energy extraction methods grow more 'unconventional' and intense over time as easier to extract resources are depleted. The fields of rural sociology and political science have produced important *perception* studies but few *social impact* studies. The field of 'green criminology', while well suited to examining the impacts of extreme energy given its focus on social and environmental 'harms', has produced just one citizen 'complaint' study to date. It is vital that more social and environmental impact studies become part of the local, national and international public policy debate. To this end, in the following paper we seek to move beyond perception studies to highlight the harms that can occur at the planning and approval stage. Indeed, while the UK is yet to see unconventional gas and oil extraction reach the production stage, as this article shows, local communities can suffer significant harms even at the *exploration stage* when national governments with neoliberal economic agendas are set on developing unconventional resources in the face of considerable opposition and a wealth of evidence of environmental and social harms. This paper takes a broad interdisciplinary approach, inspired by green criminological insights, that shows how a form of 'collective trauma' has been experienced at the exploration stage by communities in the North of England.



## 1. Research context: the process of extreme energy

Fossil fuels, the world's main source of energy, accounted for 81.6 per cent of global primary energy use in 2011 (IEA, 2013: 6). The depletion of conventional oil and gas reserves (IEA, 2013b: 3), however, is leading to increasing pressure to exploit more 'unconventional' sources. Klare (2010) coined the term 'extreme energy' to describe a range of new higher-risk 'unconventional' fuel extraction processes, such as oil/tar sands production, mountaintop removal and deep-water drilling, that are increasingly being used as more accessible supplies dwindle (Short, 2016: 52). Short et al. (2015) conceptualise 'extreme energy' as a *process* whereby energy extraction methods grow more intense over time, as easier to extract resources are depleted. This process is driven by unsustainable energy consumption and is important because extraction effort is strongly correlated with damage to both society and the environment (Short et al., 2015), the extent of which varies across different forms of 'extreme energy'. Alberta's 'tar sands' project, for example, is an acute case that combines high extraction effort and large-scale environmental and social impacts (Short, 2016: 159), which its supporters argue are mitigated by considerable economic gains across society. In an era of depleting resources, such opportunity/threat conundrums (Anderson and Theodori, 2009) make 'unconventional'/'extreme energy' developments particularly controversial. The focus of this article is no exception: the planning application process in the UK for exploration and potential production of shale gas, coal-bed methane (CBM), and syngas, known colloquially as 'fracking', and its potential social and environmental impacts, which this paper will analyse from the perspective of green criminology.

'Unconventional' hydrocarbon extraction, which utilises 'fracking' techniques involves greater extraction effort than conventional well drilling because the rock housing the oil and gas is impermeable rock (permeable rock allows for conventional drilling methods). Since these techniques only drain a small area with a

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single well, they require a greater number of wells to be drilled and have a greater surface area impact. Fracking for shale gas and CBM combines two relatively new techniques: 'horizontal drilling', which enables well bores to be steered sideways; and the high pressure injection of 'slick-water' – a term used for a combination of water, sand and chemicals, some of which are toxic to animals and humans such as isopropanol, formamide, glutaraldehyde, brominated biocides and ethoxylated 4-nonylphenol (Lloyd-Smith, 2013), in order to crack the rock to release the gas. Fracking is not small-scale, involving around 40,000 horsepower diesel pumps injecting fluid into the rock, the production of vast quantities of contaminated wastewater, the construction of miles of pipelines, a compressor station working continuously, and using up to 4000 heavy goods vehicles to 'frack' one well (Environment America, 2013). The fracking practices of directional drilling, high volume fracking fluid, slick water, multi-well pads and cluster drilling have been used in the past, but the practice of using them all together has only developed over the past seven years (Nikiforuk and Ingraffea, 2013). While first used in the United States (US), where over 45,000 shale gas wells and 55,000 CBM wells have been drilled in the last decade (and the industry is proposing a million more), Australia is also experiencing large-scale fracking. Fracking in the UK is still in the exploration stage, but the government has announced that approximately two-thirds of UK land will be available for fracking companies to license (Carrington, 2013). Following Evensen et al.'s (2014: 136) call to 'provide as much description as possible' when researching and writing in this area, in this paper's narrative, and in the data from our interviews, when the term 'fracking' is invoked it is usually in the broader more colloquial sense (Short et al., 2015), which covers the potential, or actualised, effects of *the entire* more-intensive unconventional extraction and production processes, including all of the required industrial elements from the use of large quantities of water, to compressor stations, high volumes of truck traffic and waste disposal. While Evensen et al. (2014) argue 'one word can't say it all', for potentially affected communities one word often does suffice simply because people's lived experience of unconventional oil and gas is aboveground, and hence they experience the impacts of the hydraulic fracturing technique's associated, and necessary, infrastructure (Short et al., 2015: 6–7).

In the countries where fracking is widely deployed it has been a controversial and divisive development. On the one hand, proponents assert that it reduces gas prices, creates employment opportunities and provides domestic 'energy security' (IHS, 2012: 6–9), and with shale gas fracking in particular, that methane when burned produces lower carbon emissions than coal; which, it is also suggested, makes it a potential transition or 'bridge fuel' (Krey et al., 2009) towards sustainable energy production and a 'green economy'. Detractors refute such contentions, frequently with contrary peer reviewed studies, while pointing to growing evidence of significant negative impacts on the environment and human health (McDermott-Levy et al., 2013; McKenzie et al., 2014), including from seismic activity (Paresh, 2014), contamination of water resources (Vengosh et al., 2014; Brown, 2014) and atmospheric pollution (Colborn et al., 2014; Moore et al., 2014), to the industrialisation of rural landscapes (Beach, 2013; Food and Water Watch, 2013), the cumulative effect of which has led to calls for the United Nations (UN) Human Rights Council (HRC) (HRC, 2011) to warn that fracking poses a threat to basic human rights, particularly rights to water and health.

This article contributes to social science perspectives on 'fracking' by identifying a form of 'collective trauma' (Perry, 2012) that is being experienced by a local community *at the exploration stage* in the UK via a broad interdisciplinary analysis. We draw on emerging social science literature, including key contributions from green criminology where the 'boundaries between crime and harm' are blurred (Opsal and Shelley, 2014), in order to examine citizens' experiences of the exploration stage in a key community in the UK with a specific focus on the planning approval process. Going further than much of the scholarship so far, we explore not just what local citizens 'think', but also the legal, political and bureaucratic contexts in which such perceptions are being formed and the attempts to 'manufacture the consent' (Herman and Chomsky, 1998) of local populations and the wider public.

## 2. 'Fracking' in the social scientific literature

Some green criminologists have examined *conventional* resource extraction and its associated social and ecological harms (Carrington et al., 2011; White, 2013) and rural and environmental sociologists as well as anthropologists have a long tradition examining the dynamics of resource exploitation on humans and their communities (Ballard and Banks, 2003; Jacquet, 2014; Kirsch, 2014; Willow and Wylie, 2014). Even so, social scientists have only very recently begun to analyse the social and political dimensions of the extreme energy *unconventional* technique of 'fracking', typically documenting the socio-political *discourses* of fracking in domestic contexts e.g. the social conflicts in discrete Australian communities (de Rijke, 2013a,b) and *perceptions of risk and opportunity* in US communities (Ladd, 2013; Anderson and Theodori, 2009; Schafft et al., 2014), favouring discourse (Cotton et al., 2014) and perception analysis over empirical *impact analysis* and concrete policy recommendations. Indeed, as Ladd (2013: 67) notes 'as "fracking wars" heat up... additional research is needed to understand the social, economic, and environmental concerns that are driving the controversy and their explicit linkages to disputes over energy production, water use, appropriate technology, and rural development'.

Echoing this call, de Rijke (2013c: 15) argues that 'the extraordinary expansion of the unconventional gas industry has... led to questions about social power and the rights of individuals and local communities, the role of multinational corporations in politics and rural service provision', and the 'close relationship between governments and powerful multinational corporations (which) brings to the fore questions about political influence and human rights' (de Rijke, 2013c: 17). To address these 'important conundrums', de Rijke, (ibid) advocated further academic research into fracking from multiple perspectives, including social impact assessments. To date, however, as Willow and Wiley observe (2014: 223) much of the social scientific inquiry has been 'informed by quantitative survey methods rather than qualitative ethnographic inquiry (e.g., Anderson and Theodori, 2009; Brasier et al., 2011; Jacquet, 2012), and in the UK we have seen a number of discourse analysis/perception studies (Bomberg, 2015; Cotton, 2013, 2015 and Cotton et al., 2014; Williams et al., 2017). Fewer studies have looked beyond 'perception' based analysis (Jacquet, 2014; Perry, 2012; Opsal and Shelley, 2014; Short et al., 2015) to explore such things as the way economic vulnerability impacts landowners' decisions to sign oil and gas leases (Malin, 2014), or the role played by wider social, political and economic structures such as neoliberal capitalism (Crook and Short, 2014; Short, 2016). Szolucha's ethnographic research and the subsequent report (Szolucha, 2016a,b) on the 'human dimension of shale gas developments' aimed to shed light not only on the very specific social impacts of shale gas activities in Lancashire, UK but also serves to illustrate a range of broader social issues related to shale gas extraction as well.

In a recent study, Short et al. (2015) showed that in addition to the growing evidence of large scale negative environmental impacts, preliminary research suggests that fracking is fast becoming a civil and political rights issue, which will lend itself to con-

ventional criminological analysis (see Gilmore et al., 2016) and 'green criminological insights (Opsal and Shelley, 2014). Indeed, the manner in which anti-fracking protests are being policed, and protestors prosecuted, in so-called 'pro-fracking' states like the UK (Pidd, 2014; Gilmore et al., 2016) and Poland (Dale-Harris and Ursulean, 2013) is raising serious concerns over the ability to exercise democratic rights to peaceful assembly and freedom of expression (Ahmed, 2014).

Research has found that in some communities facing the prospect of shale gas developments, local residents worry about gas company and police surveillance. The drilling sites in Lancashire have become securitised and residents report that they were filmed and photographed when they were approaching the gates to read information notices. There is also evidence, which may suggest that blacklisting processes as well as possible police collusion may have been at play. Cumulatively, this has created an atmosphere of secret surveillance, intimidation and distrust (Szolucha, 2016a,b).

Furthermore, some communities, such as those with lower incomes and employment opportunities, are also likely to find themselves in the midst of 'opportunity–threat' (Gramling and Freudenburg, 1992) conundrums and 'conflicts of rights' often associated with significant extractive industry developments. New employment opportunities, lucrative leasing deals and compensation payments may outweigh potential environmental and health risks for some individuals and communities, but not others. Wider economic benefits may also come at the expense of the property rights of many individuals; in the UK for example, the government has allocated financial incentives for local councils and a 1% share of the production revenues to local communities (DECC, 26 March 2014) whilst simultaneously working to remove the right of property owners to be notified of planned fracking activities under their land.

## 3. Methods

Szolucha's (2016) social impact research, on which we draw in this paper, was the product of more than 12 months of ethnographic and participatory research which involved living in close proximity to the actual and potential drilling sites in Lancashire. Szolucha participated in the meetings and events of the local planning authorities, Public Inquiry hearings, local grassroots anti-fracking groups and national regulatory agencies. Where direct participation was not possible, publicly available video recordings of the events were studied. The presentations by officials as well as local residents at the meetings of the Development Control Committee as well as during the Public Inquiry were transcribed and are treated as primary data. During participant observation, extensive field notes were taken within 24 h of all events and visual documentation was made at the public meetings and protests. Additionally, in-depth, semi-structured interviews were conducted with 28 individuals who were largely selected through snowball sampling.

Short's research for this paper involved participant observation, as an expert witness, at the two planning application hearings, and follow up semi-structured interviews with citizens involved in the local opposition campaign, alongside textual analysis of the planning application public documents and expert testimony. Short's interview questions were designed to elicit the principal objections to fracking to better understand concerns and to ascertain their level of satisfaction with the planning process and their representation at the local and national level. Respondents were requested to reflect on both positive and negative effects of their experiences with shale gas activities in their localities as well as with the gas company, their political representatives and the police. During the analysis it became clear that local citizens opposed to the planning applications shared many similar objections and experienced similar disillusionment with the planning process, including a strong perception of institutional bias towards the applicant and undue political influence from 'Westminster'.[1] Participant observation and interviews were used as the most effective and reliable method to gain access to the studied communities. They also helped to acquire first-hand information about the impacts of the prospect of shale gas developments in Lancashire. The data has been anonymised and all citations in this paper come from local residents.

In addition to the above data collection, we engaged in a close reading of the planning application public documents and expert testimony available on the Council's website in order to test the impartiality of the planning advice in the face of respondents' concerns over systemic bias in favour of the applicant. Following the interview excerpts and analysis, we blend insights from all data sources to form a participant observer witness narrative that reflects our own observations of the process alongside those of the interview respondents, both of which are supplemented by empirical evidence and textual analysis.

Before moving on to the findings it is worth making a few important methodological observations about knowledge production and power in this context. It is now standard practice for extractive industries and their supporting propagandist and 'Astroturf' (i.e. not truly 'green/environmentalists') groups to seek to dismiss or disparage research which highlights negative impacts on society or the environment, by labelling the authors as 'activists'. This practice misunderstands the nature of science as well as activism. Knowledge production is never completely detached (Segal, 2001) and 'activism' is never motivated solely by interest or ethical commitments and, therefore, lacking sufficient intellectual rigour and evidence, as these criticisms imply. There is a rich history and long tradition of participatory, engaged and critical research that is both scientifically rigorous and socially relevant (Bevington and Dixon, 2005; Croteau et al., 2005; Fals-Borda, 1991; Flacks, 2005; Hale and Calhoun, 2008; Low and Merry, 2010; McIntyre, 2008; Peters, 2005; Rahman, 1991; Speed, 2008). Rather than ignoring the inevitable power imbalances between the various social actors, this type of research takes them as a starting point and aims to go beyond mere reportage *on* social constituencies to research *for* and *with* such communities. If this was to be called activism, then certainly studies that do not challenge those entrenched power imbalances should also be labelled as activist "precisely because the university as currently constructed is *not* a neutral entity but instead is usually allied with parties that reinforce the status quo rather than promote progressive social change" (Croteau, 2005: 32). Forming conclusions on the basis of scholarship that is rigorous and evidence-based is not only an intrinsic part of our jobs as scientists but it is also expected of all research in order for the societies to keep up with understanding and responding effectively to the transformational changes that they are undergoing at every level.

## 4. The findings: key objections to fracking in Lancashire

From the interview data five main 'technical' objections to the planning application were evident. These were concerns over: (1) large quantities of truck traffic required to frack wells; (2) industrialisation of the landscape; (3) likelihood of water pollution if fracking were to go ahead; (4) air quality and localised pollution; (5) site noise, seismicity and the likelihood of localised earthquakes. These

[1] The interview questions have not been included here to ensure anonymity of individual respondents, as many of the questions contained explicit references to blogs or published works and would have required adaptation to ensure respondents could not be identified.

five main areas of concern were unsurprising as they are all well documented negative impacts of the fracking process (see Short et al., 2015) based on the experiences of communities in the United States and Australia of which the vast majority of anti-fracking groups in the UK are well aware. Of the 400+ groups in the UK at least half have regularly updated well-maintained websites where information is shared and disseminated. Moreover, the vast majority have Facebook pages that are used for a similar purpose. Much of the material cited on such pages is academic in nature, with the latest reports on environmental impacts shared within hours of release. From our experience over the last five year's researching this area, it seems safe to say that the anti-fracking movement in the UK is well-informed on the documented risks and negative impacts of fracking, and thus one would expect the local communities facing imminent exploration activities to cite the most well documented impacts as major causes of concern. This view was confirmed in the interviews.

A significant number of respondents displayed a strong sense of dissatisfaction with the planning process, citing serious concerns of perceived central government interference in local affairs and 'riding roughshod over local opposition' with changes to planning rules, perceived bias on the part of planning officers towards the applicant, lack of procedural fairness, such as negative treatment of expert testimony when invoked in opposition to the application, and a perception that the company was 'always given the last word' in the hearings. A number of these issues resonated with our experiences of the process and are discussed below.

In the following, we list the main objections to shale gas developments in Lancashire. Below is a selection of key extracts from interviews and participant observation – all anonymised due to the on-going nature of the legal challenges to shale gas developments in Lancashire. Collectively, they show a wide range of social impacts that residents in Lancashire experienced during the planning process – even before fracking begins. They also point to a number of areas which could become potential sources of collective and individual harm if shale gas developments go ahead. They concern residents causing increased levels of stress and anxiety in the community.

In Lancashire, there is a local need to record and address public concerns about the possible social impacts of fracking. Many residents thought that these impacts were inadequately assessed during public consultations with the company as well as the planning and appeal process. By outlining social and psychological stress factors as well as the public understanding of risk, we can gain a more detailed analysis that highlights not only the areas of possible future impacts but also the dynamics behind the collective trauma that is being experienced by the residents even before shale gas development commences.

### 4.1. Truck traffic

*'I'm a concerned resident living approximately half a mile away from the proposed site. I live on Carr Bridge Park, Westby-with-Plumptons which is a residential park of 169 park homes with approximately 300 people aged over 60, many with illness and disability. I moved there 8 years ago after retiring to an area where its most attractive qualities are its peace, quiet and tranquillity. I have heard the officer's report this morning and I believe that the visual impacts of and the noise from this proposed development will seriously affect this environment. I strongly disagree with the officer regarding traffic on the A583 Preston New Road. Increased traffic will be a serious problem. It will make it even more dangerous. Crossing the road outside Carr Bridge Park to get to and from the bus stop will become even more hazardous. I know that a lot of residents who say they will be trying to go for the bus and feel they'll become trapped in their own homes or will have to pay a lot of money for a taxi to get off the park. People matter and the idea that the residents of Westby with Plumptons, Little Plumpton and Great Plumpton can be treated as collateral damage is quite frankly unacceptable.'*

*'Nobody wants to see four thousand lorries coming down these roads carrying all sorts of fracking waste products. There are numerous accident black-spots as it is. Most of the issues in the US have come from road traffic accidents due to the high volume of traffic required. You can't regulate this away as the fracking process simply requires it.'*

*'My main objection has to be the inevitable increase in traffic on already busy roads, that at certain times of the day just can't cope as it is. Moreover, the pollution levels concern me too. Diesel is very toxic and these HGV will be chucking it out on a daily basis.'*

### 4.2. Industrialisation

*'We moved here to get away from an urban environment. The last thing I want to see now is an industrialised landscape.'*

*'Have you seen that Google earth tour of Texas doing the rounds on Facebook? The guy says, 'people complain of environmental issues, personally I don't see much of an environment left' (referring to the clustering of fracking pads), I don't want that here. It's still beautiful in places!'*

*'Our parish has only got 500 people in it but we're part of a wider community cause we're in rural Fylde and all those villages, are gonna be impacted so it's not just our community. It's all other communities as well. It's not just NIMBYies or scaremongers [as] we're called. We're all just ordinary human beings that live in a lovely place, know what the impacts of fracking are gonna be, don't agree with what those impacts are gonna be despite community benefits, jobs, which we don't believe half the figures. Community benefit - we don't want it, we don't need it. We just want to live here like we're now. We're here because we chose to be here and they are trying to thrust this upon us. It's not something that's suitable in a rural community. We're talking about industrialisation.'*

### 4.3. Water pollution

*After the hearing, a few people gather around a local 4th generation diary farmer as he struggles a bit to unfold his huge map which is an articulate picture of all waterways in one area of the Fylde. 'Here, you see. This is my map' - he says and smooths a wrinkled piece of paper. 'They don't have a map like this. It shows all the pits and waterways. There is also a very complicated drainage system that is unknown to us and mostly underground. This is a flood plane. When the high tide comes, the land sucks the water in like a big sponge and then it gives the water back. It works like a beating heart' The farmer imitates the human heart by rhythmically opening and closing the palm of his hand. (In his presentation at the Public Inquiry, he spoke about the drainage system of the Lytham Moss and how the contamination of a local brook could spread all over the Lytham area.)*

*'Water is the big one for me. Whether its methane contamination or fracking fluid contamination due to that lovely industry euphemism for a bad cement job 'zonal isolation failure'.*

*'We [local residents] were approached by two men asking if we knew of anybody in the area who had a water well. 'We have a water well.' 'Can we test your water?' 'Yes, no problem as long as I can have a copy [of the results].' 'No, you can't have a copy' they told me. 'Why?' 'Because you're not a customer of Cuadrilla.' 'Don't*

*take a sample of my water [then].' After about 20 min of heated conversation with his boss on the phone he said 'yes, you can have a copy'. 'Thinking about it, I only use the water from this well to water my garden in the summer when it's hot but I am concerned about my fishing lakes. It's an income for the family, it's got thousands and thousands of stock in there. I'd like you to check the water in my fishing lakes' which they said they would do but it never happened. We contacted Cuadrilla many times but no response whatsoever.'*

### 4.4. Air quality

*'The biggest threat to our existence is the proposal to drill and frack in our locality including under our homes. This application, if allowed to proceed, will without doubt destroy our business, way of life along with 4 full-time jobs and our home. Why? Because our environment will become too contaminated to carry on. Our nursery caters mainly for home owners, families who usually visit with their children as part of a day out. And there is no way they will continue to visit us in an area where ill health and painful life-shortening diseases would be triggered. The serious health effects associated with fracking are well-documented and you have been personally informed of these by the medical professionals... You should have (shows a piece of paper) a simple illustration which demonstrates just how vulnerable my family, neighbouring residents and business will be to the toxic contaminants which will be released into the environment both knowingly and accidentally. The drill at the frack site is approximately 800 m away on high ground in front of the properties on [name of a place] and with high ground behind us, you will see we are in a valley. This means that all leakages, spillages and overflows of toxic fluids will inevitably flow downhill in the groundwater onto and under our properties as well as what will migrate along up the existing and frack-induced geological faults. And it is not just toxic liquids we live in fear of; fumes released into the air with methane gas during flaring will contain radioactive particles and toxic materials, all of which are triggers for ill health and painful, lifeshortening diseases such as respiratory diseases, cancer and birth abnormalities. Any person downwind will have no choice but to breathe these toxic substances in. And when there is no wind, at times of high atmospheric pressure, these fumes will drift downhill and form a toxic smog over, around and in our homes.'*

*'I don't want to be able to taste the air when I go outside. Neither do I want to start having nosebleeds which the industry will say had nothing to do with them. I've seen so many documentaries from the US where this has happened to people. Despite our government's rhetoric there are no regulations in place to stop this. I will continue to fight this application with everything I have.'*

### 4.5. Noise

*'Suffice to say that I did not get used to the illumination at night nor the noise, nor the vibrations [from the exploratory site at Singleton]'*

*'Machines rumbling all day and night, you actually get used to it, it was like a hum. At first it sounds like a deafening hum but then you adjust... What we did notice [at a camp near Cuadrilla's site in Balcombe, Sussex], I could hear a bird. Why am I so surprised? This is the first time I heard a bird. All of the sudden, I could hear the noises I couldn't hear. I couldn't hear wind going through the trees, couldn't hear birds, [other] noises and then I could and we realised that they switched it off. We haven't noticed that it had gone off, we just noticed the sounds that we couldn't hear before. So nice and quiet.'*

*'I'm opposed to the applications for a number of reasons but perhaps what concerns me most is the potential for our peaceful countryside to be disrupted with drilling noise, thousands of loud HGV vehicle movements and general site activity. The place just won't be the same.'*

### 4.6. Seismicity

*'How can we trust a company who have already messed up their only frack job to date? We had a nationwide moratorium on fracking because of the earthquake they caused. What has changed to make them think we want them now? I know people whose houses were damaged because of Caudrilla's Preese Hall-1 debacle.'*

*'The– incident (two earthquakes caused by Cuadrilla's activities in Preese Hall)... created some tremors. Whilst they may have caused little damage to people's properties but bigger impact is that it went wrong and that has an effect on people's psyche. There are people around PNR who had a nervous breakdown.'*

*'It's not the earthquake's themselves that worry me because they are relatively minor, it's what they can do to the well casing. If the well casing is breached due to seismic activity then that's our aquifers polluted, end of. That is not a risk worth taking.'*

As is evident from these quotes, the residents' environmental and planning concerns are intertwined with a particular understanding of the regulatory system as incapable of addressing the issues raised by fracking. Their understanding of risk is further exacerbated by their subordinate position and implicit powerlessness, which are expressed as the feelings of being treated as 'collateral damage'. It is also clear that they do not trust the government's and company's figures regarding the benefits of fracking. Nor are they convinced by the argument that localised shale gas developments are justified on the grounds of enhancing national energy security and providing for national energy needs. The company's activities are negatively evaluated and the residents wish to be left alone to lead their lives undisturbed from the shale gas industry. The interview and observation data also imply that in addition to the anticipated environmental impacts, residents' understanding of risk and experience of collective trauma is strongly affected by the social processes accompanying their struggle against fracking (Szolucha, 2016a,b).

This brings us to the second section of the data which focussed on the planning process itself, including interview data and supplemented by our own participant observation as expert witnesses and researchers and a close reading of the application documentation.

## 5. The Planning Hearings: government influence, bias and corporate lobbying

An analysis of the planning and appeal proceedings and how they were understood by local residents is crucial for comprehending how a mere prospect of fracking in Lancashire has given rise to symptoms of collective trauma. It is clear from the interview data, participant observation and numerous conversations that significant individual harm and a palpable community collective trauma were experienced from the planning process itself, the various stages of objections and bureaucratic hoops through which concerned citizens have to jump; the feelings of powerlessness in the face of corporate lobbying; the perception that whatever happened locally 'Westminster' would likely intervene via the ulti-

mate authority to approve fracking applications vested in the Secretary of State for Communities (Vaughan, 2015) if councils take longer than 16 weeks to decide; and the inherent bias in favour of the applicant exhibited by the planning officer.

### 5.1. Central government influence

*'I'm very concerned about what some of the Councillor's have said. You know, those comments about being fed up with pressure from Westminster. I'm sure we will never get the full details but they are clearly very cross.'*

*'I [local parish councillor] felt like somebody had the brakes on and they were resisting putting too much detail. It was almost as if everybody knew that we were wasting our time because the government wants it.'*

*'I think the thing that I have found the hardest to swallow is that the Localism Act of 2011 said that it would devolve power back to the communities because they are best able to shape and form their communities and that's absolutely right. And the [former] Secretary of State, Mr Clark, who will make the decision on our inquiry is the chap who has written the introduction and that's his statement. So I find it at odds that I'm now in the position whereby having said that we would devolve all power back to the local communities, because they didn't get the result that they wanted in relation to shale gas, they're clawing the power back to central government. What I found interesting last week is obviously with the move to make Manchester self-determining and giving them power to make their social care policies, I was sitting thinking: Manchester is 46 miles down the road. How can you have one policy there where you recognise and Mr Osborne was there waxing lyrical about, you know, 'it's really important that local communities grasp this' and reverse it in the next breath. It doesn't make sense to me.'*

*'Development Control Committee were under enormous amount of pressure to approve these applications. Legal advice lied quite starkly about the potential costs we [county councillors] might have if we got it wrong. At the end, they'd also say that by the way, all this legal advice in not material planning consideration so what was it all that about, you know what I mean? That and Osborne's letter [to his colleagues to encourage them to fast-track fracking and respond to a few 'asks' from Cuadrilla] had a group dynamic effect on the Development Control Committee. I'm not saying that it made them decide not to approve but there was a great deal of indignation about the sort of pressures that were put on them. [It was] inappropriate and actually backfired on them.'*

*'The lack of response from our MP, the lack of response form the leader of Fylde Borough Council, it's a conservative-led council. The leaked letters I have seen from government ministers to George Osborne…, the document from DEFRA [about local economy impacts of fracking] that nobody could get to see properly and all these things and there is this underhand feeling that the decision is going to come down to one man and the government really want it. It's frightening. It's nothing democratic.'*

### 5.2. Corporate influence and lobbying

*'The politicians, planning bureaucrats and company are far too cosy for me. You can see them chatting away jolly like, when we are tearing our hair out. I've even seen the company lawyer in the ear of the planning officer on more than one occasion. It just not on. What happened to local democracy?'*

*'How are we supposed to get a fair hearing when the head of this company is a lead non-executive Director in the cabinet office? It should be called what it is – corruption'.*

*'It is literally almost like a war sort of a footing because it's a force, it's this company that's so well in the government and it's so unbelievable really that they could have such a strong influence on the government through the old boy network and all the millionaires… They have such a corrupted effect on the government when you see people like Amber Rudd and other people from the Department of Energy and Climate Change who should be there, who should be about climate change, but they are ignoring their job titles and just act as puppets for Cameron and Osborne.'*

### 5.3. Planning process bias

*'I'm sick of the company always getting the last word. The Councillor's heads are left filled with their lies. Why cant the residents go last, even just once.'*

*'The treatment of our expert witnesses was shameful. They were good enough to give up their time to help us and they get disparaged by a supposedly impartial official.'*

*'Perigo seems to display an enormous bias toward Cuadrilla for some reason. We can't prove that he may have some involvement with Cuadrilla. However, in the planning meetings in January, he was acting like a salesman for the shale gas industry. I didn't think that that was appropriate. I didn't think that it was his job to say that it was a wonderful opportunity for Lancashire. And his report was also quite questionable, especially because he said that it would be no visual impact or minimal because temporary development although he said that a temporary development could be something that's there for up to 8 years. Whereas Cuadrilla themselves said there would be significant visual impact.'*

## 6. Exploration stage harms: collective trauma

From our work with the communities resisting the applications in Lancashire it seems that sociologist Erikson's (1976) work on *collective trauma* is an appropriate description of the collective harms experienced. Collective trauma, according to Erikson, is 'a blow to the basic tissues of social life that damages the bonds attaching people together and impairs the prevailing sense of communality'; it 'works its way slowly and even insidiously into the awareness of those who suffer from it,' and while 'it does not have the quality of suddenness normally associated with trauma, but it is a form of shock all the same' (Erikson, 1976:154). From the data collected in interviews, participant observation and numerous conversations, and the subsequent analysis it became clear that many particular narratives and descriptions that emerged can be equated to the experience of collective trauma Erikson describes. These descriptions included, a sense of powerlessness and feelings of depression, a sense of loss, fear, betrayal, guilt, anger, and an emotional rollercoaster ride of highs and lows as the planning process ebbed and flowed through various stages and the appeal process. As one respondent stated:

*'It's been really, really hard here. We have had 17 months of intense pressure as a Community as a result of this fracking application. Many of my team are now under the Doctor for anxiety stress, sleep issues and it's having such a detrimental effect on our quality of life. We had 3 weeks of peace and then Cuadrilla immediately launched an appeal so we haven't had time to breathe. No one can take a holiday or break as a result. It's never ending and so destructive.*

*I definitely feel our human rights are being affected. I haven't taken a break now in all this time due to this industry and am working 50 h a week unpaid when I am not in good health. I have now been told by my Doctor to stop this (in January) as it is having such an impact on my health. However, I have had to carry on so am working against medical advice, but what else can I do? If this goes through our lives will be much much worse.'*

While another interviewee reflected on the stress of the company launching an appeal against the rejection:

*'Its disgraceful. We have followed due democratic process and I have had to convince our Parish Council (who initially were pro it) then Fylde Borough Council (Conservative Council) and finally Lancashire County Council. In between liaising with DECC, objecting to the permitting with the Environment Agency, petitioning the Director of Public Health who was appointed by Lancs Council and fundraising and doing awareness raising presentations in between. Its exhausting and debilitating, but we can't let the cowboys win. I am currently trying to raise £45,000 for the appeal that Cuadrilla has launched as I will need to pay legal and expert testimony on landscape, noise, visual intrusion and Legal costs all over again.'*

As might have been expected, following the appeal and given that these two applications are functioning as national test cases in terms of local opposition, company's appetite for the particular sites and the central government's close ties with this particular fracking company, the Secretary of State intervened and approved one of the contentious applications. He also announced that he was "minded" to give planning permission to the other site in Lancashire but was reopening the inquiry before his final decision. Local residents responded by launching a legal challenge to the government's decisions. The popular (mis)understanding might have been that the Secretary intervened via powers recently conferred by the new national planning directives because the council was perceived to be taking too long. However, the guidelines are somewhat contradictory since the LCC have actually already decided – they rejected the applications. It was the company that were drawing it out further by an appeal (Szolucha, 2016a,b, October 3). Many local people feel of course that the directive is not about 'approving' within 16 weeks but rather about ensuring that councils make the 'right' decisions.

The themes highlighted above: undue corporate influence nationally and locally, disillusionment with the political process and the charges of collusion and bias, resonated strongly with our experiences of the process but also with the research to date on the close relationships between fracking corporations, their interested supporters and politicians; points we will return to in the analysis below. However, it must be noted that as the planning process in Lancashire unfolded, many of the local democratic representatives also started to feel manipulated and they began to notice the power imbalances between the gas company and the local government. Reportedly, as a result of that, one county councillor changed his opinion and voted against Cuadrilla's applications. Nevertheless, the country councillors interviewed for this research asserted that they aimed to be fair to both sides. Even so, another aspect of the planning bias is its focus on 'material considerations' such landscape, noise, traffic etc. By excluding the considerations of health and social impacts of shale gas, authorities may alter the planning balance in favour of development (Szolucha, 2015).

## 7. Application and Planning Officer report analysis

While the 'rejection' outcomes of the Lancashire hearings rightly pleased many in the anti-fracking movement, the process up to that point was deeply concerning on a number of levels, which do not bode well for local citizens who wish to resist future fracking applications. Specifically, there were key areas where the fracking company was clearly favoured at the expense of the views of, and evidence presented, by the local objectors and their expert witnesses. Moreover, the deciding Councillors were effectively threatened with legal action if they refused the application. They were told that to refuse the application would be tantamount to breaking the law, as it would be an 'unsustainable' decision lacking evidence, and would expose them to high appeal costs at a time when councils are badly affected by austerity. We will deal with each of these points in turn.

### 7.1. The Planning Officer Report

The Lancashire County Council Planning Officer's (hereafter PO) report published by LCC on 15 June 2015, which is meant to provide an unbiased appraisal to assist the Development Control Committee (DCC) reach a decision was, at best, fundamentally flawed and inadequately researched, and, at worst, biased and disrespectful. Development Control Committees give considerable weight to PO reports, especially when much of an application concerns material that is both highly technical and hotly debated. Thus, the PO bears a huge responsibility to evaluate the application, via a reasoned summary of the best available evidence, in an impartial and responsible manner. Unfortunately, in this case the PO reports fell so woefully short of such standards that they raise the obvious suspicion of undue political and/or industry pressure and influence.

Starting with one of fracking's most notorious issues – the health impacts on local populations – the PO's report stated:

*'Many representations received by the County Council refer to research conducted in North America and overseas that indicate shale gas extraction is linked to adverse health impacts. While much research exists, and is growing in volume each year, it is difficult to gain an objective view of the veracity of the research. Anti-fracking campaigners frequently point to studies that indicate increased health risks (e.g. elevated risks of cancer or birth defects) as a result of shale gas activity in North America. Conversely, pro-fracking campaigners point to numerous methodological flaws in the research.' (Public Reports Pack p. 53)*

This is a quite astonishing summary from a public official meant to be serving the public interest in an impartial manner, and is suggestive of a pro-fracking bias in the way it deals with weighing evidence. It is a relatively easy task to review the evidence and rank in terms of scientific value, academic rigour and independence. When negative public health impact studies are disseminated it is routine tactical propaganda for industry and their supporters to dismiss the findings on the grounds of questionable 'methodology', as if it is they that have gathered the data and possess the requisite research training. Such challenges, unlike their targets for attack, are not peer reviewed, but industry know that mud sticks and reports such as this PO's are evidence of that fact. It is a tried and tested rhetorical device which sociologist Stanley Cohen (2001: 112) labelled a form of 'denial' which he called the 'counteroffensive':

'In today's political culture, accounts are negotiated through spectacle, simulation and stage management. Governments have to contend with victims, social movements and pressure groups that have been empowered by humanitarian organisations that are visible and telegenic. Moreover, these sources of denunciation have access to powerful communication methods – electronic mail, Internet, fax, video – not easily subjected to state power. In this market place of accounts, governments

defend themselves by pre-emptive attack and 'shooting the messenger'... if allegations look undeniable, evade them by discrediting the source.'

The suggestion of bias increases on further examination of the PO's report. It curiously lauds the approach taken by Public Health England in its June 2014 report on fracking health impact data, citing its reliance on 'peer reviewed literature', (raising the question – is this the same evidence which the PO previously argued was hard to verify?) and uses this backing to attempt to dismiss in one fell swoop the findings of other peer reviewed research which concerned what local citizens had been highlighting to the DCC in the hearings and written submissions.

*'Much of the research cited in representations to the County Council was reviewed by PHE... (who) highlight significant methodological flaws in the research that has been cited to the County Council.'*

To be genuinely impartial and rigorous the PO should read, at least some of, the academic material cited in submissions at source rather than rely on another Public body's reading of it; or at least balance PHE's spin by considering a number of widely disseminated, publically available critiques of PHE's own report, for example Adam Law's (2014) article in the *British Medical Journal* or that of renowned environmental consultant, and fracking expert, Mobbs (2014a,b). Mobbs' critique described PHE's report as negligent in its failure to adequately convey the inherent risks of fracking as a method of energy extraction. With regards to the report's conclusion that, 'a low risk to public health from direct releases of chemicals and radioactive material is shale gas extraction is properly operated and regulated' (Kibble et al., 2013, p. 33), Mobbs (2014a,b) stated that 'there is no rational way in which this conclusion could be drawn from the evidence they reviewed'. Such judgement indicates the extent to which governmental bodies are failing to adequately inform the population of the dangers of fracking, and violating the right to access information on environmental matters. The PO report continues:

*'Moreover, one study frequently cited by objectors (McKenzie, 2014) has been publically criticised by the Chief Medical Officer and Executive Director of the Colorado Department of Public Health and Environment in the USA as follows "we disagree with many of the specific associations with the occurrence of birth defects noted within the study. Therefore, a reader of the study could easily be misled to become overly concerned.'*

The suggestion here is that the public should believe the pronouncements of foreign officials over peer reviewed academic research. Going beyond a simple selective reading, the PO report systematically downplayed, and sought to marginalise, the evidence presented by expert witnesses. Seemingly in order to protect the definitive status afforded by the PO's report to PHE's summary, the report took aim at the far more rigorous, empirically sound, Medact (Medical Charity - 'Health professionals for a safer, fairer and better world') (2015) study.

The methodology for this attack was, once again, that identified by Stanley Cohen (2001: 112) as the 'denialist' 'counteroffensive'. It is a two fold, mutually reinforcing, methodology – attack the methods, attack the authors: 1) the PO argued that the Medact authors did not conduct their own original epidemiological research – which of course neither did PHE, but that wasn't deemed injurious to their report in the PO's eyes 2) the PO sought to undermine and question the professional expertise and integrity of two clearly identifiable (although, tellingly, no names were mentioned) expert witnesses, Mike Hill and Dr. Frank Rugman:

"*The Medact report has not produced new epidemiological research but has reviewed published literature and has requested short papers from relevant experts in particular subject areas. It has also interviewed academics and experts. Unfortunately, one of the contributors (contributing to three of the report's six chapters – chapters 2, 4 and 5) has led a high profile campaign in the Fylde related to shale gas. Another contributor to the report (chapter 3) has previously expressed firm views on shale gas and has objected to this application. This has led to questions from some quarters about the report's objectivity. In light of these uncertainties it is not clear how much weight the County Council should attach to the report.*"

As one interviewee put it, as 'a statement in a report by an 'impartial' public official this is truly astonishing in its bias and lack of respect'. Indeed, the statement seems predicated on a wilful ignorance of a researcher's usual goal: when conducting research it is hoped that the data will in fact allow one to hold '*firm views*' based on analysis of the data produced when concluding. Such a result makes it possible to give advice on the best course of action, to have a policy impact and such like. A valid question would be: do the 'firm views' flow from the evidence considered? Having read the Medact report, and the copious source evidence it considers, the conclusions most certainly do flow from the evidence considered.

When public authorities and local governments are constrained by a neoliberal politics of 'austerity', forced on them by a central government and backed up dutifully by a mass media that is owned and controlled by those who benefit from such a system (Herman and Chomsky, 1988, Edwards and Cromwell, 2006); it seems that holding 'firm views' and speaking out is only permissible when the 'right things' are said– i.e. firm statements that are supportive of unsustainable development and deregulation (to 'free up business' and get 'growth moving'), the neoliberal orthodoxy. It is also reasonable to ask why an alleged "'*high profile campaign*" by the first contributing expert mentioned (Mr. Hill) should "'*unfortunately*" reduce the weight given to his evidence? If an expert felt compelled to speak out in the public interest based on his knowledge and expertise then that is his right and arguably his moral duty.

In order to find the source of the "'*questions from some quarters*" a Freedom of Information request was made by one expert witness who was 'appalled' by the PO's approach. Whatever the outcome, such statements should not appear in an objective and balanced planning report and only serve to further undermine the public's confidence in the impartiality of public authorities. Furthermore, in a section, counter-factually, entitled 'Minimal environmental risks' the detailed, meticulously researched and closely argued 30,000 word submission of Emeritus Professor David Smythe is reduced to the status of mere anecdotal 'comments' and described thus:

"'*Comments that the geology of Lancashire is not suitable for fracking have been provided by a professor who retired 18 years ago and is now living in France running a B&B. Evidence in the US and UK is to the contrary.* "'

This is no passive, benign summary but intentionally disparaging and erroneous rhetoric. To say that such commentary has no place in a supposedly impartial planning report is of course a serious understatement. In a subsequent submission to the LCC, objecting to this personal attack Professor Smythe wrote:

*'I am clearly identifiable. It is a calculated denigration of an expert witness. I took early retirement from the Chair of Geophysics at the University of Glasgow some 16 years ago, and spent around a decade from 2001 onwards consulting for a variety of oil companies. Projects lasted from a few weeks to a couple of years, involving studies of onshore and offshore India, Western Australia, offshore Madagascar, southern England (both onshore and offshore), and*

*the UK-Irish margin of the NE Atlantic (during this period my wife, not I, ran a B&B for about three years). I have requested information from LCC under FOI legislation to discover the origin of the statement quoted above, as I have been unable to find it elsewhere in the published application documents*'

So the PO report dismissed the health impact data and analysis along with the serious concerns associated with the specific geology of the area. But what of the 10 regulatory breaches and environmental damage (from the earthquake and well casing damage) caused by the applicant on their prior sites? It is reasonable to assume that such should be considered relevant to the application in the public interest. Even so, the PO concluded that:

*'Some of the objections maintain that planning permission should not be granted in view of the alleged poor track record of the applicant when carrying out operations at other sites within its control. With regard to the applicant's previous operations and compliance with planning permissions a planning permission goes with the land rather than with the applicant and it is right to assume that the applicant would comply with conditions attached to any planning permission.'*

Concerns have also been raised by local residents about the way in which the PO reviewed and presented the number of petitions and letters that were sent to the Lancashire County Council from members of the public. This is how a resident explained the situation at a meeting of the DCC:

*'A question mark was placed on the veracity of the number of objectors by intimating that templates had been used, suggesting doubts as to their knowledge of what they were objecting to, also doubts to their actual identity and to understanding of the subject. By inference the validity of objectors due to their geographical proximity to the site was also cast in doubt. All well and good. If this is the criteria also, then in the interest of balance and fairness, it should be done so in an evenhanded manner, including those speaking in support of the application. When the alleged spokesperson from the Chamber of Commerce claimed to represent some 450 businesses in the area, no evidence was proffered, nor requested. We have direct authentic evidence to refute that particular assertion... In addition, Frack Free Lancashire has personally approached some 296 businesses who have signed a petition to the effect that they are certainly against fracking in Lancashire...'*

So the PO simply assumes the applicant will start behaving. This situation is a classic example of a key difference between the realm of criminal justice, where a criminal's 'antecedents' are often deemed highly relevant to an evaluation of likely reoffending potential, and environmental (in)justice where they are frequently deemed irrelevant. This is one of the main reasons why 'green' criminology is so important to the criminology canon – it can highlight moral inconsistencies and harms that otherwise go under 'the radar of wider public concern.

A further example of pro-applicant bias can be seen in the PO report's consideration of the 'global warming potential' (GWP) of the Lancashire 'fracking' applications. In the absence of a meaningful decarbonising national strategy, despite the UK's legal obligations under the Climate Change Act 2008, it is vitally important that planning authorities seek to protect the public and pay particular attention to the projected greenhouse gas emissions of each planning application. Planning decisions must take account of the need to reduce GHG emissions but without reductions elsewhere these fracking applications would necessarily increase emissions. While, the PO report states that GWP figures play an important part in estimating the carbon footprint of the project, including its greenhouse gas emissions', it concluded that likely emissions from the application were 'acceptable'. Furthermore, the report goes on to suggest that the company's evaluation of its application's GWP potential, being instrumentally based on figures from grossly out of date IPCC reports (e.g. 2nd report: 1995) was 'not unreasonable'. This is an absurd position to take unless the primary desire is to assist the applicant in downplaying the likely impact of its proposed development, as opposed to protecting the public with a policy recommendation based on the *latest evidence*. It is wholly unreasonable to base the GWP of methane on the 2nd IPCC report rather than the most recent 2013 5th assessment. Moreover, as climate scientists acknowledge, the IPCC reports themselves are the product of political watering down of the latest science. To ignore the latest 5th IPCC report figures in favour of the 2nd report is more than unreasonable, it is grossly inadequate. If we are to protect the public interest, with evidence based policy, of course using out of date reports is unreasonable.

In sum, the PO's report on which the DCC is meant to place much weight was not just deeply flawed but demonstrably biased in a favour of the applicant. The question is why? We can only guess at the motivations behind writing a report in this manner because the Officer declined a request for an interview (Szolucha, 2016a,b). He also refused residents' requests for a meeting while, as the same time, meeting regularly with Cuadrilla. Amongst the objectors to the application there were serious concerns about possible industry influence or political pressure. From the interview data it is clear that the PO's report caused considerable stress and worry to those most likely to suffer a direct impact if the applications were to go ahead. As one respondent put it,

*'this has been a horrendous year and a half relentless stress and worry. Then to read the planning officer's report was like the final kick in the teeth. It was so biased it was unbelievable. It even attacked our highly respected expert witnesses. It was a disgrace and an affront to democracy.'*

### 7.2. Legal pressures

Aside from the problematic PO' report, over the course of the two hearings the politics of fracking was plain to see: from the abundance of pro-fracking corporate rhetoric to the anti-fracking protests outside. What was more opaque, however, was the political spectacle that gave rise to the quite extraordinary scenes of disarray, confusion and contestation in the Council chamber.

The Roseacre Wood application was fairly straightforwardly rejected on the grounds of adverse traffic impact, but the New Road application was quite different. Following a motion to reject that application proposed by Councillor Paul Hayhurst, the DCC hearing was interrupted, apparently so that members could obtain 'legal advice' behind closed doors. On resumption of the meeting the Committee members were clearly agitated and concerned by what they had heard. Councillor Paul Hayhurst later revealed that council legal officers had put intense pressure on the committee to approve the application: "we were told we must vote for the application. If we didn't we would be breaking the law and we would be deemed irresponsible members. If it went to appeal and we lost, costs would be awarded against the authority." Hayhurst then insisted the DCC publish the verbal legal advice so that the public could see that Councillors were effectively being forced into approving the application.

The meeting was then adjourned until the following Monday 29th June. But it wasn't until 10am the next day when the legal advice, written by David Manley QC, was finally published on the council's website, and worse still it was toned down and expressly stated that rejecting the application *would not break the law*. In response Cllr Hayhurst said, "I am absolutely appalled... This is not in the sort of vein that we were advised yesterday." The legal 'advice' that members were given verbally and in private may have

dissuaded some of the committee from refusing the application on the spot, and hence forced the delay and could also have forced an approval if it were not for Cllr Hayhurst's integrity.

Meanwhile another Councillor (Green) suggested additional legal advice might be needed, which gave the residents groups an incentive to get alternative legal advice before the adjourned meeting took place on the Monday. However, in correspondence with stakeholders LCC officials suggested no new information would be allowed to be circulated at the Monday hearing. Even so, local resident's groups obtained independent alternative legal advice by late Friday afternoon and then sent hard copies to all Councillors to arrive Saturday morning. Friends of the Earth also sought independent legal advice and, following pressure from the resident's groups, eventually LCC officials relented and said that such new legal advice could be circulated at the Monday hearing.

Both sets of new legal advice assured Councillors they were within their rights to reject the application if they felt there was sufficient evidence to do so – they were not bound by the advice of the Planning Officer or Council's QC. It was a monumental effort by concerned local citizens, the national anti-fracking movement and interested NGOs, which ultimately provided the beleaguered DCC with the confidence and evidence to reject the application in spite of the PO's report, LCC's legal 'advice' and the attempts to control the flow of information to the DCC with arbitrary submission cut-off dates and the like. As it subsequently turned out, Cuadrilla's application for a full award of costs for the plans to drill at PNR was refused by the planning inspector as well as the secretary of state on the grounds that the council's decision was not 'unreasonable behaviour'. However, according to the secretary and the inspector, the award of costs against LCC was still warranted in the case of Cuadrilla's application regarding monitoring stations around PNR. These decisions clearly show the logical discrepancies that stem from the practice of compartmentalising shale gas development.

### 7.3. 'Going all out for shale': political pressures

A few DCC members, at various points in the proceedings, requested to delay the decision until a now notorious DEFRA report into the rural economy impacts has been fully published. The 'Shale Gas Rural Economy Impacts' report was published in a heavily redacted form in March 2014, with the redactions generating considerable and understandable criticism. Just after the LCC decisions on July 1st 2015, the full, un-redacted, report was finally published and consequently we now know that Andrea Leadsom, then energy minister, requested to hold off on the publication of the report until after the Lancashire decision (Carrington, 2016). Despite the report being yet another selective 'literature review' it is of course interesting, if unsurprising, to see what parts the Government didn't want the public or local planning authorities to see.

The report's redacted sections highlight likely negative impacts, which are balanced against the perceived positive benefits. For example, it suggests that losses for businesses which rely on a 'tranquil environment' (read non-industrialised) of tourists avoiding the area due to fracking operations may be off-set by increased hospitality to new workers; the extent to which such tourism loss can indeed be 'offset' is not even estimated. The implication in the report, however, is that increased 'hospitality' to 'new' workers will be relatively minimal while tourism loss could be considerable depending on the nature of the site location.

When it comes to traffic, of particular concern in the Roseacre Wood application, the redacted sections of the DEFRA report conclude that congestion impacts will be 'negative but localised'. But just how local? The report makes it very clear that impacts will be over a relatively wide area (up to a 5-mile radius) around each site, with as many as 36,735 vehicle movements per site over an average production period. Far from insignificant. The same conclusion is reached regarding house price impact: 'negative but localised'. 'House prices in close proximity to the drilling operations are likely to fall. However, rents may increase due to additional demand from site workers and supply chain.' Again the negative 'off-set' potential here is vague to say the least and potentially higher rent for workers is not going to assuage the concerns of local homeowners and their potential to fall into negative equity. It's obvious why this section was redacted, but contrary to government propaganda it's also obvious that house prices would fall near fracking operations due to the inherent impacts the industry will bring.

When it came to discussing specific environmental impacts the report author reached another unremarkable, but for industry and government, unpalatable conclusion (p 15): *there is a risk that even if contaminated surface water does not directly impact drinking water supplies, it can affect human health indirectly through consumption of contaminated wildlife, livestock, or agricultural products and that leakage of waste fluids from the drilling and fracking processes has resulted in environmental damage.'* Redactions such as this are clearly an attempt to 'manage' the public debate, or 'manufacture consent' (Herman and Chomsky, 1998) and are based on the government's desire to 'go all out for shale', regardless of local opposition. This manufacturing of consent has been aided to date by government press officers colluding with members of the UK Onshore Oil and Gas peak body (UKOOG) to agree 'lines to take' in vital press conferences (Short et al., 2015). As Paul Mobbs (2015) writes:

> *'in scientific debate, all issues should be open to objective examination. In practice, however, the conditions defining the terms of that examination often skew that process. People holding senior academic positions are also used to influence these discussions – even when they have their own vested interest in promoting an issue…This skewing of evidence can be exacerbated by the need of governments, or their public relations advisers, to 'accentuate the positive' behind their case. For example, the deliberate use of 'scientists' to provide a more positive view of unconventional gas and oil production was revealed in emails released by the Department for Energy and Climate Change (DECC) under the Freedom of Information Act. In a discussion with DECC, a Centrica employee stated – 'Our polling shows that academics are the most trusted sources of information to the public so we are looking at ways to work with the academic community to present the scientific facts around shale.'*

Yet to successfully manufacture consent on a national scale will require considerable effort and resources directed at the creation of a 'political spectacle' (Edelman, 1998) that does more than reassure the public about the safety of fracking by focussing more on such obvious social goods as 'jobs', 'home grown energy security' and 'the economic well-being of the UK' so as to successfully depict local opposition as fanatical NiMBYism working against the obvious 'national interest'. But as Chomsky (1999: 96) warns, 'the terms, United States, Australia, Britain, and so on, are now conventionally used to refer to the structures of power within such countries: the 'national interest' is the interest of these groups, which correlates only weakly with the interests of the general population.'

Recent evidence from the US likens the precarious nature of the US 'fracking boom' (Perkins, 2015) to that of a government supported 'Ponzi scheme' (Mobbs, 2014c). But why would the UK government seek to back such an industry if it were not financially viable on its own? Even with a Ponzi scheme, some people stand to make a lot of money and if those same people are well con-

nected with the decision makers in government who back the endeavour with promises of expedited planning approval, lax regulation, tax breaks and the socialisation of costs then the logic becomes a little clearer. For example, for much of the public fracking debate so far the government was deciding energy policy with the assistance and advice of the 'lead non-executive director' at the Cabinet Office, Lord Browne, who just so happened to be the Chairman of shale gas company Caudrilla Resources – the applicant in the case discussed in this article. If this situation arose in a developing country, it would likely be described as corruption. Further light has been shed on what de Rijke (2013c) warned of in the Australian shale gas context, the problematic 'close relationship between governments and powerful multinational corporations' via illuminating 'freedom of information' requests by Greenpeace UK (Carrington, 2014a,b). The requests yielded hundreds of emails between DECC and the industry which demonstrated serious collusion on how best to manipulate the public and 'manage' perceptions in order to 'fast track' fracking development (Carrington, 2014b). DECC representatives even offered the industry the help of their tax-payer funded press officer to 'assist with appropriate lines to take' – to ensure the consistency of rhetoric (Carrington, 2014a,b). Environmental consultant and extreme energy expert, Paul Mobbs (2013), has highlighted numerous political-industry connections that are deserving of public attention and which raise fears of 'malfeasance' in public office. He further contends that: 'politicians might call for a 'balanced debate on shale', but arguably it is they who are peddling a manufactured rhetoric (see Cameron, 2013). This is because the political process has been hijacked by lobbyists paid by the industry, whose manipulative tendrils reach right inside the Government' (Mobbs, 2015).

## 8. Conclusion

To conclude, it was evident from the interview and observation data, and can be seen from these excerpts, that evidence from the USA and Australia is having a strong effect on local residents. It is galvanising resistance and allowing people to organise opposition around certain key harms that have been experienced elsewhere. During the interviews it was striking how well informed the respondents were. In making their objections most respondents were aware of recent academic studies and were able to cite their findings. Being able to inform the planning process with evidence-based objections undoubtedly contributed to the successful result – notwithstanding the Secretary of State's intervention in favour of the applicant. Even so, the whole process took a considerable toll on the local population. It was apparent from the research that a form of 'collective trauma' was experienced by the affected communities. This is an under researched phenomenon and we suggest more studies are conducted into the social impacts of, not just sites of extreme energy production, but also areas subject to industry exploration applications. This data should then feed into all public policy discussions around unconventional gas and oil developments.

The need for such studies in the UK is even more critical now than in the past. At the time of writing (early 2017), Cuadrilla have moved in and started work to prepare the PNR site despite pending legal challenges launched by local residents. After the Secretary of State's decision to override local democracy and approve the applications in Lancashire the residents have engaged in direct action by "slow-walking" the trucks bringing building materials to the site. This has the effect of slowing down the works but also means that the residents as well as the police are present at the site every day, witnessing and reporting potential planning breaches, so far to no effect. This situation will have significant and long-lasting impacts on the local community, contributing to the collective trauma already experienced by the residents living in the vicinity of potential fracking sites in Lancashire.

The political and legal pressures brought to bear on the LCC Development Control Committee highlighted by this research could be a taster of a new normal if the highly controversial EU/US negotiated (neoliberal par excellence) Transatlantic Trade and Investment Partnership (TTIP) is resurrected, no doubt through a rebranding, repackaging process, or a post-'Brexit' US-UK version drawn up. Indeed, it is deeply concerning that neoliberal austerity ravaged councils, such as LCC, will be under immense pressure to permit fracking operations, despite the considerable risks of environmental and social harms, because under recent government guidelines if they reject an application and lose an appeal they will have to pay costs. On the other hand, if other councils, backed by committed and organised anti-fracking constituents, continue to object it may be that the prospects for a fledgling unconventional hydrocarbon extraction industry in the UK are bleak (Browne, 2017).

## References


Ahmed, N., 2014. Are you opposed to fracking? Then you might just be a terrorist. The Guardian, 21 January 2014 Available at <http://www.theguardian.com/environment/earth-insight/2014/jan/21/fracking-activism-protest-terrorist-oil-corporate-spies>.

Anderson, B.J., Theodori, G.L., 2009. Local Leaders' perceptions of energy development in the barnett shale. Southern Rural Sociol. 24 (1), 113–129.

Ballard, C., Banks, G., 2003. Resource wars: the anthropology of mining. Ann. Rev. Anthropol. 32 (1), 287–313.

Beach, D., 2013. How the Fracking Boom Impacts Rural Ohio, EcoWatch: Transforming Green, September 16th Available at <http://ecowatch.com/2013/09/16/fracking-boom-impacting-rural-ohio/>.

Bevington, D., Dixon, C., 2005. Movement-relevant theory: rethinking social movement scholarship and activism. Soc. Move. Stud. 4 (3), 185–208. http://dx.doi.org/10.1080/14742830500329838.

Bomberg, E., 2015. Shale we drill? Discourse dynamics in UK fracking debates. J. Environ. Planning Policy Manage., 1–17

Brasier, K.J., Filteau, M.R., McLaughlin, D.K., Jaquet, J., Stedman, R.C., Kelsey, T.W., Goetz, S.J., 2011. Residents' perceptions of community and environmental impacts from development of natural gas in the Marcellus Shale: a comparison of Pennsylvania and New York Cases. J. Rural Soc. Sci. 26 (1), 32–61.

Brown, V.J., 2014. Radionuclides in fracking wastewater: managing a toxic blend. Environ. Health Perspect. 122 (2), A50–A55.

Browne, P., 2017. Last stand for Europe's shale revolution. Politico, 20th February, <http://www.politico.eu/article/british-shale-hopes-encounter-persistent-protesters/>.

Cameron, D., 2013. We cannot afford to miss out on shale gas. The Telegraph, 11th August. <http://www.telegraph.co.uk/news/politics/10236664/We-cannot-afford-to-miss-out-on-shale-gas.html>.

Carrington, D., 2013. Fracking companies entitled to licences on more than 60% of British land. The Guardian, Tuesday 17 December 2013 Available at <http://www.theguardian.com/environment/2013/dec/17/fracking-huge-impact-uk-shale-gas-industry-revealed>.

Carrington, D., 2014a. Owen Paterson held urgent meeting for fracking boss, documents show. The Guardian, Friday 21 March. <http://www.theguardian.com/environment/2014/mar/21/owen-paterson-urgent-meeting-fracking-cuadrilla-lord-browne>.

Carrington, D., 2014b. Emails reveal UK helped shale gas industry manage fracking opposition. The Guardian, 17th January. <http://www.theguardian.com/environment/2014/jan/17/emails-uk-shale-gas-fracking-opposition>.

Carrington, D., 2016, November 25. Government accused of 'dirty tricks' over controversial fracking report. The Guardian. Retrieved from <https://www.theguardian.com/environment/2016/nov/25/government-accused-of-dirty-tricks-over-controversial-fracking-report?CMP=Share_iOSApp_Other>.

Carrington, K., Hogg, R., McIntosh, A., 2011. The resource boom's underbelly: criminological impacts of mining development. Aust. N. Z. J. Criminol. 44 (3), 335–354.

Chomsky, N., 1999: 96. Profit over People: Neoliberalism and the Global Order. New York: Seven Stories Press.

Cohen, S., 2001. States of Denial: Knowing about Atrocities and Suffering. Polity Press, Oxford.

Colborn, T., Schultz, K., Herrick, L., Kwiatkowski, C., 2014. An exploratory study of air quality near natural gas operations. Human Ecol. Risk Assess. 20 (1), 86–105.

Cotton, M. et al., 2014. Shale gas policy in the United Kingdom: an argumentative discourse analysis. Energy Policy. http://dx.doi.org/10.1016/j.enpol.2014.05.031i.

Cotton, M., 2015. Stakeholder perspectives on shale gas fracking: a Q-method study of environmental discourses. Environ. Plan. 47 (9).

Crook, M., Short, D., 2014. Marx, Lemkin and the genocide-ecocide nexus. Int. J. Hum. Rights 18 (3), 298–319. http://dx.doi.org/10.1080/13642987.2014.914703 (special issue).

Croteau, D., 2005. Which side are you on? The Tension between movement scholarship and activism. Rhyming Hope and History: Activists, Academics, and Social Movement Scholarship, 24. University of Minnesota Press, Minneapolis, pp. 20–40.
Croteau, D., Hoynes, W., Ryan, C., 2005. Introduction: Integrating Social Movement Theory and Practice. Rhyming Hope and History: Activists, Academics, and Social Movement Scholarship, 24. University of Minnesota Press, Minneapolis, pp. xi–xviii.
Dale-Harris, L., Ursulean, V., 2013. Police remove protesters from Chevron's fracking site in Romania. The Guardian, Thursday 5 December 2013 Available at <http://www.theguardian.com/environment/2013/dec/05/protesters-chevron-shale-gas-fracking-romania>.
de Rijke, K., 2013a. Coal seam sas and social impact assessment: An anthropological contribution to current debates and practices. J. Econ. Soc. Policy 15 (3), 3.
de Rijke, K., 2013b. The agri-gas fields of Australia: Black soil, food, and unconventional gas. Cult., Agr., Food Environ. 35 (1), 41–53.
de Rijke, K., 2013c. Hydraulically fractured: Unconventional gas and anthropology. Anthropol. Today 29 (2), 13–17.
Edelman, M., 1998. Constructing the Political Spectacle. University of Chicago Press, Chicago, IL.
Environment America, 2013. Fracking by the Numbers. Environment America Research & Policy Center, December Available at <http://www.environmentamerica.org/sites/environment/files/reports/EA_FrackingNumbers_scrn.pdf>.
Erikson, K., 1976. Everything in Its Path: Destruction of Community in the Buffalo Creek Flood. Simon & Schuster Inc, New York.
Evensen, D., Jacquet, J.B., Clarke, C.E., Stedman, R.C., 2014. What's the fracking problem? One word can't say it all. Extract. Ind. Soc. 1, 130–136.
Fals-Borda, O., 1991. Some Basic Ingredients. In: Fals-Borda, O., Rahman, M.A. (Eds.), Action and Knowledge: Breaking the Monopoly with Participatory Action Research. The Apex Press, New York, pp. 3–12.
Flacks, R., 2005. The Question of Relevance in Social Movement Studies. Rhyming Hope and History: Activists, Academics, and Social Movement Scholarship, 24. University of Minnesota Press, Minneapolis, pp. 3–19.
Food and Water Watch, 2013. Fracking Infrastructure is Carving Up Pennsylvania. Food and Water Watch: Fact Sheet, December 2013. Available at <http://documents.foodandwaterwatch.org/doc/fracking_infrastructure_pennsylvania.pdf>.
Gilmore, J., Jackson, W., Monk, H., 2016. Keep moving: report of on the policing of the Barton moss protection camp Available at <https://curbyork.files.wordpress.com/2016/02/bm_final_170216_email.pdf>.
Gramling, R., Freudenburg, W., 1992. Opportunity-threat, development, and adaptation: toward a comprehensive framework for social impact assessment. Rural Sociol. 57 (2), 216–234.
Herman, E., Chomsky, N., 1998. Manufacturing Consent: The Political Economy of the Mass Media. Verso.
Human Rights Council, 2011. Eighteenth session, Agenda 3 written statement: UNANIMA Hydraulic fracturing for natural gas: A new threat to human rights, A/HRC/18/NGO/91 Available at <http://www.earthworksaction.org/files/publications/EHRA_Human-rights-fracking-FINAL.pdf>.
International Energy Agency, 2013. Key World Energy Statistics, 2013. Available at <http://www.iea.org/publications/freepublications/publication/KeyWorld2013.pdf>.
International Energy agency, 2013b. World Energy Outlook, 2013 Factsheet Available at <http://www.worldenergyoutlook.org/media/weowebsite/factsheets/WEO2013_Factsheets.pdf>.
Jacquet, J.B., 2012. Landowner attitudes toward natural gas and wind farm development in northern Pennsylvania. Energy Policy 50, 677–688.
Jacquet, J.B., 2014. Review of risks to communities from shale energy development. Environ. Sci. Technol. 48 (15), 8321–8333.
Kirsch, S., 2014. Mining Capitalism: The Relationship between Corporations and Their Critics. University of California Press, Oakland, California.
Klare, M., 2009. The Era of Extreme Energy: Life after the Age of Oil. The Huffington Post Available at <http://www.huffingtonpost.com/michael-t-klare/the-era-of-xtreme-energy_b_295304.html>.
Krey et al., 2009. Gas hydrates: entrance to a methane age or climate threat? Environ. Res. Lett. 4, 034007. Available at <http://iopscience.iop.org/1748-9326/4/3/034007/pdf/1748-9326_4_3_034007.pdf>.
Ladd, A.E., 2013. Stakeholder perceptions of socio-environmental impacts from unconventional natural gas development and hydraulic fracturing in the Haynesville Shale. J. Rural Soc. Sci. 28 (2), 56–89.
Law, A., 2014. Public Health England's draft report on shale gas extraction: Mistaking best practices for actual practices. Adam Law et al., Br. Med. J., vol. 348, 17th April 2014, <http://www.bmj.com/content/348/bmj.g2728>.
Lloyd-Smith, M., 2013. Licence to Drill? Is Australia's Present Britain's Future? National Toxics Network Inc.. School of Advanced Study Public Event available at <http://www.sas.ac.uk/sites/default/files/files/events/london%20uni%20talk%20Impacts%20of%20UG.pdf>.
Low, S.M., Merry, S.E., 2010. Engaged anthropology: diversity and dilemmas: an introduction to supplement 2. Curr. Anthropol. 51 (S2), S203–S226. http://dx.doi.org/10.1086/652925.
Malin, S., 2014. There's no real choice but to sign: neoliberalization and normalization of hydraulic fracturing on Pennsylvania farmland. J. Environ. Stud. Sci. 4 (1), 17–27. http://dx.doi.org/10.1007/s13412-013-0115-2.
McIntyre, A., 2008. Participatory Action Research. Sage Publications, London.
McDermott-Levy, R., Kaktins, N., Sattler, B., 2013. Fracking, the environment, and health: new energy practices may threaten public health. Am. J. Nurs. 113 (6), 45–51.
McKenzie, L.M., Guo, R., Witter, R.Z., Savitz, D.A., Newman, L.S., Adgate, J.L., 2014. Birth outcomes and maternal residential proximity to natural gas development in rural Colorado. Environ. Health Perspect. 122 (4), 412–417.
Medact, 2015. Health & Fracking: The Impacts and Opportunity Costs Available at <http://www.medact.org/climate-ecology/fracking/>.
Mobbs, P., 2013. Economically & politically fracked: 'Behind every picture lies a story' – statistical reality versus PR-hype within the political project of unconventional gas in Britain. Extreme Energy Initiative, Working Papers Series. <http://extremeenergy.org/2013/07/25/economically-and-politically-fracked-behind-every-picture-lies-a-story-statistical-reality-versus-pr-hype-within-the-political-project-of-unconventional-gas-in-britain/>.
Mobbs, P., 2014a. Shale Gas and Public Health – The Whitewash Exposed. The Ecologist, 6th May.
Mobbs, P., 2014b. A critical review of Public Health England's report – Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction – draft for comment at <http://www.fraw.org.uk/mei/archive/phe_shale_gas_and_health_report-critical_analysis.pdf>.
Mobbs, P., 2014c. With sub-$60 oil, fracking and tar sands losses threaten the whole financial system. The Ecologist, 17th December. <http://www.theecologist.org/News/news_analysis/2679765/with_sub60_oil_fracking_and_tar_sands_losses_threaten_the_whole_financial_system.html>.
Mobbs, P., 2015. Fracking policy and the pollution of British democracy. The Ecologist, 20th January. <http://www.theecologist.org/News/news_analysis/2721027/frackingnbsppolicy_and_the_pollution_of_british_democracy.html>.
Moore, C.W., Zielinska, B., Petron, G., Jackson, R.B., 2014. Air impacts of increased natural gas acquisition, processing, and use: A CRITICAL Review. Environ. Sci. Technol. http://dx.doi.org/10.1021/es4053472.
Nikiforuk and Ingraffea, 2013. Shale Gas: Myth and Realities, The Tyee Available at <http://thetyee.ca/News/2013/01/07/Shale-Gas-Realities>.
Opsal, T., O'Connor Shelley, T., 2014. Energy crime, harm, and problematic state response in Colorado: a case of the fox guarding the hen house? Crit. Criminol. 22 (4), 561–577. http://dx.doi.org/10.1007/s10612-014-9255-2.
Paresh, D., 2014. Ohio finds link between fracking and sudden burst of earthquakes. Los Angeles Times, April 12th. Available at <http://www.latimes.com/nation/nationnow/la-na-nn-ohio-finds-link-fracking-earthquakes-20140411,0,570007.story#ixzz30C04ddBj>.
Perkins, J., 2015. Biggest weekly oil rig decline since 1987. The Shale Energy Insider, 2nd February. <http://www.shaleenergyinsider.com/2015/02/02/biggest-weekly-oil-rig-decline-since-1987/>.
Perry, S., 2012. Development, land use, and collective Trauma: the marcellus shale gas boom in rural Pennsylvania. Cult., Agricult., Food Environ. 34 (1), 81–92.
Peters, C., 2005. Knowing What's Wrong Is Not Enough: Creating Strategy and Vision. Rhyming Hope and History: Activists, Academics, and Social Movement Scholarship, 24. University of Minnesota Press, Minneapolis, pp. 41–56.
Pidd, H., 2014. Police accused of brutality as fracking protester is left "battered and bruised". The Guardian, Tuesday 21 January 2014 Available at <http://www.theguardian.com/uk-news/2014/jan/21/police-accused-brutality-anti-fracking-protester>.
Rahman, M.A., 1991. The Theoretical Standpoint of PAR. In: Fals-Borda, O., Rahman, M.A. (Eds.), Action and Knowledge: Breaking the Monopoly with Participatory Action Research. The Apex Press, New York, pp. 13–23.
Short, D., 2016. Redefining Genocide: Settler Colonialism. Social Death and Ecocide, Zed Books, London.
Schafft, K. et al., 2014. Local impacts of unconventional gas development within Pennsylvania's Marcellus Shale Region: Gauging Boomtown development through the perspectives of educational administrators. Soc. Natur. Resour: An Int. J. 27 (4), 389–404.
Short, D., Elliot, J., Norder, K., Lloyd-Davies, E., Morley, J., 2015. Extreme energy, 'fracking' and human rights: a new field for human rights impact assessments? Int. J. Human Rights 19 (6), 697–736. http://dx.doi.org/10.1080/13642987.2015.1019219.
Szolucha, A., 2015. Fracturing Democracy? State, Fracking and Local Power in Lancashire Available at <https://www.opendemocracy.net/ourkingdom/anna-szolucha/fracturing-democracy-state-fracking-and-local-power-in-lancashire>. July 23.
Szolucha, A., 2016a. The Human Dimension of Shale Gas Developments in Lancashire, UK: Towards a Social Impact Assessment. Available at <http://repowerdemocracy.net/report>.
Szolucha, A., 2016b, October 3. Fracking and the Price of Democracy. Available at <http://repowerdemocracy.net/blog/2016/9/30/fracking-and-the-price-of-democracy>.
Vengosh, A., Jackson, R.B., Warner, N., Darrah, T.H., Kondash, A., 2014. A critical review of the risks to water resources from unconventional shale gas development and hydraulic fracturing in the United States. Environ. Sci. Technol. http://dx.doi.org/10.1021/es405118y.
White, R., 2013. Resource extraction leaves something behind: environmental justice and mining. Int. J. Crime Justice 2 (1), 50–64.
Williams, L. et al., 2017. Framing fracking: exploring public perceptions of hydraulic fracturing in the United Kingdom. Publ. Understand. Sci. 26 (1), 89–104.
Willow, A.J., Wylie, S., 2014. Politics, ecology, and the new anthropology of energy: exploring the emerging frontiers of hydraulic fracturing. J. Polit. Ecol. 21, 222–236.

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