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Futures of Fracking and the Everyday: Hydrocarbon Infrastructures, Unruly Materialities and Conspiracies

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ABSTRACT

Drawing on ethnographic research in two locations facing the prospect of shale gas exploration in Poland and the UK, I analyse how the future can be simultaneously predetermined and undetermined. Local actors handle this complex experience by relating to fracking infrastructures, fixing the materialities of shale gas as well as cultivating an air of conspiracy around the intricacies of gas developments. I focus on the everyday to broaden the scope of recent scholarly writing on resource indeterminacy that explores how corporate strategies create the futures of resource extraction. The contradictory temporalities that these strategies generate have to be reconciled at the sites of extraction. I call for opening our theorisations up to how resource indeterminacy and assertions of predetermined futures are mediated in the everyday contexts of noncorporate actors. By considering these daily forms of engagement with resource exploration, we gain a more realistic perspective on the potentialities of extraction.

KEYWORDS Resource extraction; fracking; future; everyday; resource potential

Introduction

On the morning of 3 June 2013, a few men from a local building company arrive at an overgrown piece of land leased by Chevron in Żurawlów – a small village in Southeast Poland where prospecting for shale gas exploration is to take place. They have brought two line trimmers, three rolls of wire netting and a few wooden stakes. A slim man wearing dark blue overalls and a white helmet with the company logo is rehearsing the main health and safety rules with the rest of the team when the first tractors arrive and local farmers start to gather on the site. While the contracted workers are mowing the grass, cars and tractors keep arriving. Emil – the *sołtys* (village administrator) – asks the man in blue overalls to read a fragment from a piece of paper. The man reads slowly while members of the local farming community gather around him:

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- ‘The property may be used by the tenant for any and all uses which may be necessary or convenient to all operations consisting in prospecting for and producing oil and gas conducted by the tenant on the basis of appropriate permits granted by the relevant Polish authorities’.
- ‘Can you show us your exploration licence then? Your activities are connected to the production of shale gas’, says Emil, with unconcealed self-confidence and his arms akimbo.
- ‘What is? Constructing a fence?’ – asks Chevron man with an ironic grin.
- ‘Yes, it is’, everyone answers together ...
- ‘For now, we are only intending to construct a fence’.
- ‘For now!’ Everyone exclaims.
- ‘We want to see your valid licence’, Emil insists.
- ‘But are we extracting gas? We just want to construct a fence ...’
- ‘You can do anything you want, but it has to be connected to shale gas. Otherwise, you can’t do anything here’.
- ‘If we are leasing this land, we can do everything ... and what if we wanted to sow some wheat? We have a permission to fence off this land’.
- ‘Show me one field which is fenced off around here’, says a young farmer pointing to the vastness of the open agricultural space around them.

After a few minutes of this back and forth, Emil is still unrelenting:

- ‘You will build a fence if you show us a valid licence’.
- ‘The company will show you the licence when they come to drill’. Chevron man concedes.
- ‘And who is going to let us in then? We won’t be able to come within one kilometre of the site’, an elderly lady remarks.
- ‘This is what you are working towards. If you put up a fence, you will not let us in’.
- ‘I don’t know what’s going to happen in the future’, Chevron’s worker admits.
- ‘In the future, we will have no say over what happens here’, Emil observes.

Whilst the discussion continues, the police are called by another Chevron employee. One of the policemen tells a local woman:

- ‘It’s like if they were building a road. You don’t have to like it but they will build it’.
- ‘If they were drilling behind your barn, would you be for it?’ – an elderly lady interjects.
- ‘They can start even today ... Do you know that you are blocking their activities illegally?’ The policeman states: ‘This will go to court’.
- ‘Let it go to court then’.
- ‘In court, you will receive a penalty and what do you need it for? You will lose and they will drill anyway’, another policeman advises.

This article analyses elements of the everyday of shale gas developments in Poland and the United Kingdom to explore how time and future are mediated at the sites of resource exploration activities to reconcile the contradictory temporalities of extraction. The future, as captured in the exchanges between Chevron, the police and local villagers above, seems to be predetermined and out of reach of residents opposed to hydraulic fracturing. At the same time, the local resolve to stop fracking in Żurawłów – already evident in those early interactions – testifies to the inherently uncertain status of future extraction. Indeed, in both cases that I analyse in this article, shale gas exploration was resisted and stalled in spite of governmental support and top-level determination to facilitate the industry. In Poland, interest in shale gas exploration waned gradually from 2012 and in the UK, a temporary moratorium was introduced in 2019, after fracking caused a series of earthquakes. The delays and the fluctuating nature of shale gas exploration in Poland and the UK accord with the recent anthropological scholarship that has highlighted the indeterminacy integral to resource extraction (Richardson & Weszkalnys 2014; Kneas 2020; Weszkalnys 2015). However, as the exchange between Chevron and villagers in Żurawłów shows, resource development is often created and sustained as inevitable and predetermined. In this article, I want to draw attention to the understudied relation between these two senses of the future at the sites of potential extractive projects.

In communities facing the prospect of extraction, future can be simultaneously experienced as predetermined and undetermined. I am interested in how we might open up these representations to better understand the dependencies between the ways in which different visions of the future are mediated. This will help to recognise the alienating unity of predetermined and undetermined futures that arises when our theorisations of them focus overwhelmingly on the strategies of corporate actors and their logics. Recent literature has theorised ways in which extractive industries negotiate the inherently uncertain and indeterminate status of extractable resources (Richardson & Weszkalnys 2014; Kneas 2020; Weszkalnys 2015). Depending on its interests, the industry can sustain development as definitive or potential. I argue that we also need to consider other ways of thinking about the indeterminacy of hydrocarbon futures which take into account the noncorporate temporalities of daily routines, duties and ways of living. These everyday forms of engagement with resource exploration can have significant impacts on the outcomes of prospective extraction. Hence, in our scholarly analysis, noncorporate actors should also be considered as players in reconfiguring the potentialities of extraction.

I use the concept of the everyday to explain the tension between the contradictory potentialities of the future and how they are being negotiated and fixed on the ground. As various actors try to reconcile the clashing temporary rhythms, they engage in everyday mediations of the future through the ways in which they relate to fracking infrastructures, fix the unruly materialities of shale gas and create conspiracy theories. Their creative acts of everyday labouring with time (Bear 2014) reveal how both predetermined hydrocarbon futures and the indeterminacy at the heart of resource exploration can have alienating effects. I ask whether the indeterminacy of resource extraction can be redefined in relation to everyday

experiences of impacted communities rather than the technological and discursive framings of more powerful actors.

In this article, I draw on over four years (2015–2019) of ethnographic and documentary research in Lancashire and Żurawłów as well as over 100 formal interviews and informal conversations with key stakeholders (residents, farmers, business owners, police officers, protesters and local councillors) living and working in the vicinity of shale gas operations. Ethnographic research was based on participant observation in Lancashire and Żurawłów over multiple research visits that lasted between two weeks and seven months. I attended local events, court hearings, planning inquiries, information days and protest sites. These methods and sources provide an insight into how a particular configuration of power based on the appearance of a predetermined hydrocarbon future was created out of a contradictory and heterogeneous set of circumstances surrounding the development of an unconventional resource. The analysis reveals also how these processes spurred resistance and points to multiple temporalities that unsettled the narratives of control.

Shale gas Futures in Poland and the UK

The discursive and material constructions of the future that come about through economic activity are often analysed in terms of empty (Adam & Groves 2007), homogeneous (Benjamin 2009), owned (Szolucha 2018) and mythical ‘future time’ of the powerful (Castells 2013). This characterisation of time has been enabled by the workings of the mechanical clock and other forms of abstraction that divorce time from the social contexts in which they arise. Historically, this allowed time to be traded as an exchangeable commodity and signified the possession of (limited) agency. In other words, the abstracted time has been essential for defining the relations of power and generating profit for those whose activity aligns with the hegemonic visions of the future.

These constructions of the future are usually ones of ‘no other option’. The debates over the future of energy are often characterised by what Laura Nader (2010: 521) called the ‘inevitability syndrome’ – the inability of those who shape future energy choices to consider social macro-processes, non-linear modes of progress as well as options that would put them at risk of displacement. Energy industry has long advocated visions of the future where the states’ role was redefined towards maximisation of opportunities for companies (Zalik 2010). The deterritorialising dynamics of globalisation that are fundamental to the creation of the ‘corporate state’, have largely released corporations from state constraints (Kapferer 2005). They are also at the core of the fantasies of ‘frictionless profit’ and offshore modularity (Appel 2012) which proclaim development as relatively divorced from the characteristics of place, self-contained and enclaved from the intricacies of their social and cultural spatialities. In the scenario in which extraction is inevitable, powerful actors justify it on the basis of neoliberal values (Kirsch 2014), ignoring alternative or indigenous conceptions of energy (Westman 2013; Chapman 2013). The disentangling qualities of fossil fuels and other natural resources (Cross 2011; Szolucha 2019) can also be noted in how they have the

ability to reframe social problems as economic ones – problems of resources and timely development rather than structural issues with social origins (Ferry & Limbert 2008). A predetermined hydrocarbon future that emerges from this ‘politics of inevitability’ (Heynen & Robbins 2005) can be seen as a temporal booster that offers a shortcut to maintain or extend the power of extractive industries. It is a form of industry’s trickery with time in that it helps to enhance its present power and extend its hegemonic position into the future by owning the main energy choices that are going to be available. As Stuart Kirsch (2014) analyses in his work on the conflict over the Ok Tedi copper and gold mine in Papua New Guinea, extractive companies can use several strategies to manipulate time in order to make their operations possible, for example by delaying public recognition of the environmental impacts of extraction. When – like in the cases analysed in this article – we are dealing with the exploration of new unconventional resources, corporate and political actors accelerate and condense time to create the appearance that extraction is feasible. Instead of waiting for the potential of the resource to be determined in the future, it seems to be conditioned by the sheer power of a hydrocarbon discourse.

In the political discourses in Poland and the UK, shale gas has been turned into a variety of time horizons, which helped to create and maintain the construction of the hydrocarbon future as predetermined. The most important of those horizons concerns resource estimates that are often expressed in years of possible supply at a given level of consumption. In 2011, the US Energy Information Administration projected that Polish shale gas could satisfy the country’s demand for 300 years (Advanced Resources International, Inc. 2011). This gave rise to several other time horizons which marked the construction of a shale gas future. While visiting an exploratory drilling site in 2011, the Polish Prime Minister asserted:

With moderate optimism, shale gas exploitation will begin in 2014 and we will achieve gas security in 2035 ... Gas security will be based on our gas. Today, after many years, we can say that my generation will become independent with regard to gas and we will be able to set the terms [of energy trade]. (‘Tusk: Gaz z Łupków Już w 2014 Roku’ 2011)

Shale gas production in Poland was justified on the basis of a particular vision of the future based on energy security defined predominantly as resource independence from Russia. During the shale gas ‘fever’ in Poland, political and social imaginaries were animated by the double potential of shale gas that discursively transformed it from a natural resource to time and control over the future. The initial estimates were turned into years of supply but they also reimagined the future of Poland which depends on Russia to meet 70% of its demand for gas – the relation that is a source of much contempt. In the geopolitical imaginaries, the timescale of the projected domestic gas supply would have distributed power between Poland and Russia in a different way, reinforcing the nationalist sentiments of many groups within the Polish society.

In contrast to the geopolitical and security considerations, the UK government has constructed the need for the domestic exploration of shale gas largely on the basis of its possible climate change and economic benefits. In the Written Ministerial Statement which set out the government’s position on the issue and sought to influence planning

decisions, the Secretaries of State for Energy and Climate Change as well as Communities and Local Government claimed that:

Having access to clean, safe and secure supplies of natural gas for years to come is a key requirement if the UK is to successfully transition in the longer term to a low-carbon economy. The Government remains fully committed to the development and deployment of renewable technologies for heat and electricity generation and to driving up energy efficiency, but we need gas – the cleanest of all fossil fuels – to support our climate change target by providing flexibility while we do that and help us to reduce the use of high-carbon coal. (Rudd 2015)

Whereas the shale gas project in Poland was discursively portrayed as part of the prophetic ‘end of time’ (Thornton 2007) future of national independence (a project which has been in the making for many centuries), in the UK, it may be conceived of as an element allowing to reproduce a fossil-based economy in the ‘not-yet’ future (Crapanzano 2007) of renewable energy. Despite these constructions of hydrocarbon futures, however, shale gas developments in Europe have not moved beyond the exploration phase and it remains uncertain whether they ever will. The future of fracking is, therefore, at the same time laden with the heaviest political and social imaginaries as well as purely abstract and undetermined.

Recent scholarship has turned to an in-depth analysis of the corporate and economic processes and mechanisms that deal with the inherent indeterminacy of natural resources. In her analysis of the spectre of petroleum exploration in São Tomé and Príncipe, Gisa Weszkalnys (2015), for example, examines the specific technical, legal and commercial practices that are aimed at creating and sustaining the oil’s potential in the face of delayed exploration. She uses a series of ‘gestures of resource potentiality’ – the contract, the exploration zone and the test well – to explore how they provide reassurance that is needed to attract investment, even without being able to guarantee a desired outcome. David Kneas (2020) analyses the practices of junior mining companies as they articulate and ‘place’ resource potential in as well as beyond the underground. His observations from industry conferences highlight how juniors engage localities and temporalities beyond the boundaries of their extractive projects to conjure up images of resource potential and maintain an ‘exploration upside’. The ability of the shale gas industry to make unconventional resources into economic assets has also been raised in the context of the necessarily speculative nature of these lower-grade fossil fuels (Kama 2020).

Taken together, these and other works ask us to call into question the discursive constructions of the shale gas futures in Poland and the UK. While they take extraction for granted and promote accounts of domestic abundance, these constructions of hydrocarbon futures also obscure the temporal volatility and rhythms of shale gas production whereby wells tend to start strong but deplete quickly (Hughes 2013). Cuadrilla (shale gas exploration company that operates in Lancashire), as a corporate form, is itself a wager on a hydrocarbon future. Unlike Chevron and other energy giants, it may be considered a ‘junior’ company, the aim of which may be to quickly amass an inventory of prospective reserves and sell them to larger corporations for future production (Wood 2016). Cuadrilla will probably not become a producer of

shale gas but the future is a means by which the company may prove its value and generate a profit. Proved shale gas potential would make a merger or similar liquidity event more likely. The predetermined shale gas futures also abstract domestic unconventional hydrocarbon development from the vagaries of the market – now highly dependent on speculation on resource futures and idiosyncrasies of regional markets rather than merely the principle of supply and demand. They also ignore the contradictions between the policies for renewable futures and the potentially over-leveraged energy corporations. Hence, they should be analysed as forms of anticipatory speech which is ‘simultaneously volatile, exceeding any formal practices of accounting or analysis, and demanding to be accounted for, analysed, or valued’ (Fortun 2001: 139).

Although this understanding of resource futures as undetermined frees our analysis from the pitfalls of the ‘inevitability syndrome’, it is still largely confined to corporate or economic logics. The powerful visions of hydrocarbon futures (which predetermine extraction) as well as some of our accounts of resource indeterminacy (that draw on economic reasoning of corporations and administrations) are therefore bonded in their reassertion of the same corporate logics. Both – hydrocarbon futures and the strategies that deal with the indeterminacy of extraction – are dependent on each other and are the main ways in which the industry mobilises time to generate profit. Resource potential relies on visions of hydrocarbon futures to assert its relevance and feasibility; the hydrocarbon futures, in turn, are contingent upon new discoveries that are made into potentially extractable resources. Yet, there is still little analysis of exactly how these complex dependencies are mediated and fixed in the context of unconventional forms of resource exploration.

Fracking is a useful object of analysis because it puts into question some of the self-containing and disentangled qualities of current resource extraction that we know of from deep-water drilling for oil, for example. Shale gas exploration in Europe is often localised in densely populated areas. It can encroach on affluent neighbourhoods severing the historical relation between extraction and economic deprivation (Willow 2014). It seems that shale gas exploration re-entangles corporations with local dynamics and reconfigures state and society in the process of creating and sustaining a new resource and an attendant hydrocarbon future. Hence, it provides an everyday interface through which corporate and noncorporate ways of understanding extraction can clash and coexist.

There is a considerable body of research that explores the formal settings in which such interaction can take place during public inquiries and planning committee meetings (see for example: Bradshaw & Waite 2017; Lis & Stasik 2017; Short & Szolucha 2019). Some analyses consider the potential of such public forums to co-create knowledge about shale gas and influence its future. This perspective is useful for understanding the variety of arguments mobilised by actors who make rivalling claims about the future of fracking. However, these high-level and high-stake discussions rarely take place outside of the debating floors of parliaments and inquiries. Instead, like in the opening exchange – less powerful actors on the ground relate to fracking (or its potential) that is part of their everyday lives. They use what is readily available to them –

ridicule, power of numbers and in the last resort, their bodies and tractors to stave off the spectre of fracking. Unlike these everyday devices, the dynamics of planning contests for public sentiment utilise frames that unify and link disparate positions and thus, may represent a simplified and too ordered an image of how people can relate to and engage with shale gas development on the ground. Hence, in this article, I draw on the concept of the everyday to temporarily shift scholarly attention away from industry conferences, promotion floors and parliamentary and planning inquires to the more day-to-day settings.

The everyday of shale gas exploration describes the processes through which those who live, work and protest in the vicinity of fracking developments relate to infrastructures, fix the unruly materialities and create conspiracy theories as part of their daily lives to manage the contradictory temporalities of resource extraction. I draw on Lefebvre's classic notion of the everyday as a realm that is not entirely separate from high politics and hence, still influenced by the dominant representations of hydrocarbon futures. However, the everyday can be simultaneously a domain of alienation and a kernel of resistance. The lived experience in the everyday, according to Lefebvre, is a critique of politics that is unable to offer adequate conditions for human life. Hence, alienation and hope, submission and dissent intermingle in the everyday: 'everyday life is defined by contradictions: illusion and truth, power and helplessness, the intersection of the sector man controls and the sector he does not control' (Lefebvre 1991: 21). This messiness and ambiguity is central to the everyday as it is to all creative acts: 'ambiguity is ... perhaps an essential category. It never exhausts its reality; from the ambiguity of consciousnesses and situations spring forth actions, events, results, without warning' (Lefebvre 1991: 18). In this article, I analyse how local actors mediate time in ways that do not rely on the very forms of expertise and authority that they may want to challenge; instead, I am interested in how they reconcile the contradictory potentialities of fracking as part of their daily experience and routine. I draw on fieldwork in two European countries that differ in terms of their geopolitical locations, economic dependence on hydrocarbons and national energy mixes. The cases analysed here are different in their particularities but both demonstrate the sometimes hidden and unrecognised ways in which everyday dynamics at the sites of extraction and grassroots opposition shape the potentialities of resources.

The Affective Power of Shale Gas Infrastructures

I was standing on a busy country road in the autumn rain with a handful of protesters. Another vehicle was let in by police operation units from all over the country and a few security guards employed by the gas company Cuadrilla. The sight might leave many with a sense that nothing was going to stop shale gas development on this site. In 2017, the daily reality of drilling activities at the exploratory site at Preston New Road (PNR) in Lancashire (See [Figure 1](#)) unfolded in a largely routinised fashion: the casing pipes went in and containers with drilling mud went out. The signage on tankers changed from 'water only' and 'non-hazardous product' to 'low hazard' and other symbols.



Figure 1. Daily protest at the shale gas site on Preston New Road, Lancashire. Photo by the author.

There were a few protesters on the other side of the road from the entrance to the pad. A blue line marked the injunction area where anti-fracking residents should not stand. A few of them would venture to the other side when a vehicle was entering or leaving the site to wave a placard in front of the driver's windscreen, or to slow a lorry down by walking in front of it until the police persuaded, pushed or dragged them out of the way. Yet, even shortly before the government announced a moratorium on fracking, locals still spoke passionately about their experiences with fighting gas extraction:

I got started in this just like other people ... I wasn't an environmentalist; I wasn't an activist. I was just an ordinary person who was gonna be impacted by fracking. Oh God, it was going to be terrible for me and my house and my community. But within a few weeks, I realised that it's not just about one community, it's about much, much more than that. It's about all the communities and it's about protecting our planet for the sake of our future generations ... my eyes were opened ... I realised I've got to fight it with every breath in my body.

Despite the spectre of inevitable extraction at PNR, there were dozens of local anti-fracking protesters present at the site every day for over 1000 days. As the local resident above said, they were getting in front of lorries and getting arrested, putting their bodies on the line for the sake of a better future.

Their determination to observe and interfere with fracking activities was inextricably linked to the affective value (Larkin 2013) that shale gas infrastructure had for many residents living in the vicinity of the pad. Henry (name changed) was a local business owner who was opposed to fracking. He ran his business and lived in the vicinity of the fracking pad. During one of our casual conversations in front of the

gates to the site, I asked him about the impact from the drilling. He said that the sound of the drilling rig at night was ‘oppressive, horrible and hurting’. His description testifies to the social meaning of noise rather than merely its technical understanding measured by volume levels. The shale gas infrastructure and everything that it produced in terms of noise, light, dust or emissions had a symbolic and affective meaning in addition to its materialities and their effects. The changes to the landscape that the infrastructure necessitated confronted people with more than a new visual image, because these were also political processes and social representations (Hirsch & O’Hanlon 1995). For the anti-fracking residents in Lancashire, the very presence of the drilling rig was a reminder of their ongoing struggle to oppose fracking in their locality. In conversations, they often said that they had exhausted all democratic possibilities to make their voices heard and they felt that the development was being forced upon them. ‘The government is riding roughshod over us’ was the phrase they often used to describe the Secretary of State’s decision to override the local county council and allow shale gas exploration in the area. In local imaginaries, the shale gas site functioned as a show of the state’s determination to facilitate the industry and was reconfiguring the communities’ relation with politics, democracy and their elected representatives. Henry was quite open about the ways in which fracking has transformed his worldview: ‘I’ve been naïve’ – he told me another time – ‘I’ve had no reason to disbelieve things over the years as I’d been told ... [Fracking has] destroyed my faith in democracy, destroyed my faith in the ethical nature of the government ... , how people all of the sudden can be of such little importance. And that goes against all the things I was brought up to believe in and it also ... has taken my faith in the police away’.

For Henry, everything that enforced the state’s will, ensured the swift functioning of shale gas infrastructure and helped to build it, was perceived as a display of raw force for the benefit of state and corporate interests. The coercive power of a predetermined hydrocarbon future was being enforced through the overpowering police presence that was largely seen as safeguarding the inevitability of extraction, hollowing out the communities’ trust in law enforcement. The perception of the officers’ relentless attitude (Jackson *et al.* 2019) corresponded to the unabated progress of the shale gas development. During my many visits at the gates to PNR, I witnessed how residents observed and meticulously documented the operation of the fracking infrastructures, how they animised them, giving them ridiculing nicknames in ways that seemed to help them externalise their frustration with what they felt was a material embodiment of their relative powerlessness and a lack of democracy. This social and affective understanding of infrastructure helps to explain why local protesters have attempted to postpone the build and disturbed the anticipatory rhythm of shale gas extraction by engaging in various forms of civil disobedience.

These attempts to mediate a hydrocarbon future by using creative forms of direct action were a regular occurrence at PNR. Their implicit aim was to demonstrate the community’s opposition to gas extraction and to try and interfere with the rhythms of the infrastructural operation of the fracking pad (Szolucha 2018). In other words, through these creative acts of disruption people acted as if the fracking development

at PNR could be halted. At one point, they even seemed to be partially successful as the company complained that their operations had been delayed by the protesters. Fracking was still considered inevitable, however, and the government's support only solidified with time (Nyberg *et al.* 2020). At PNR, residents had to mediate the undeterred progress of shale gas exploration with the dynamics and time requirements of an oppositional campaign that relied on the implicit presumption that fracking could be stopped. These mediations were part and parcel of their everyday ways of reckoning with time.

During one of our first conversations in Henry's office, I pointed to a large piece of paper with a child's writing, taped to his door. It said: 'STOP Fracking Down't frac with my futcher!!' I noticed that fracking was spelled correctly. 'This nonsense to do with fracking has taken a number of hours that you would otherwise spend with your family' – Henry told me to explain. It was his 8-year-old's picture.

This was done 18 months ago so she is quite older now so this would be set up neat, it would be spelled correctly, so this is something that can never be repeated. This can never be repeated. It's like a photograph in time. You could never ever write and set out the same thing again because everything would be so neat and it would be spelled correctly ... but that's her from her little heart.

Like other anti- and pro-fracking residents that I have spoken with in Lancashire, Henry spent a lot of his time participating in the local campaign. He used his personal, business and family time to read, write and protest against the 'inevitable' future of fracking. Opposition to extractive projects can be seen as an act of mediation of a pre-determined hydrocarbon future. It is also a way in which people construct their political agency (Lazar 2014) and pursue civic control (Ringel 2014). However, Henry's evocation that this time can never be regained suggests that he perceived his everyday mediations as necessary, yet costly. The infrastructural operation of the fracking pad continued outside of his business' windows. The poster on Henry's door represented a residue of his family time – 'a photograph in time' – a remainder of the moments that were 'slipping away', seemingly being annulled by the unabated exploration and quietly assimilated into the captivating visions of shale gas abundance. This sense of lost time suggests deeply alienating effects of fighting against a hydrocarbon future.

Unlike Cuadrilla in Lancashire, in Poland, Chevron was physically obstructed from carrying out its activities at the site in Żurawłów for about 400 days, during which the local farmers and their families occupied the entrance to the piece of land that the energy corporation was leasing. Hence, no fracking infrastructure was ever erected and the residents did not experience any of its impacts. However, security guards employed by Chevron maintained their presence throughout this time – even during frosty winter months. For over a year, the security personnel held the space and created a temporal wedge (Nielsen 2014) to be used in the future if Chevron decided to proceed with the development. Even though the residents prevented the company from fencing off their land, a little security hut, a power generator and an automatic lamp represented Chevron's intention to return at some indefinite point in the future.

In the meantime, many operational deadlines were extended by agreement between the Polish Ministry of Environment and Chevron, perpetuating the anticipatory rhythm of resource extraction whereby the development could be postponed but not avoided. Even when the company abruptly ended its presence and left Żurawłów in the early hours of one summer morning in 2014, the affective dynamic which created the shale gas future as inevitable – even if not immediate – was prevalent in the rumours that a Polish gas company (partially owned by the state) was going to continue shale gas exploration in the area. Three years later, in 2017, when those scenarios did not materialise and I spoke to the family who leased their land to Chevron, they were still reluctant to consider the possibility that the company had left definitively and shale gas development was not going to take place on their land. The anticipatory rhythm of shale gas development boosted by the apparent power of the most potent players created an expectation that was difficult to give up.

Whereas local villagers in Żurawłów could resist this powerful construction, the same was impossible in Lancashire where the fracking infrastructure was already in place. In Poland, farmers used a variety of tactics to undermine the potential of fracking by sabotaging the yearly and daily work rhythms of those who supported shale gas development. During harvest, farmers refused to service and lend their machinery to the family that leased their land to Chevron. They also tried to sabotage the working of the power generator that security guards at the site used for producing electricity. The protesting villagers were redirecting their food deliveries and at one point, they overtook the management of their portable toilet by agreeing an alternative schedule with the toilet servicing company. These were forms of everyday resistance ‘that covers its tracks’, as James C. Scott (1985) put it. They could be easily rationalised and excused or had no known authors. Hence, they were too petty to register with more powerful players, yet a considerable nuisance in the day-to-day of those who found themselves on the receiving end. Kneas (2018) analyses similar ‘small resistances’ as social play that signifies the partial formation of identities in relation to an uncertain status of extraction.

Regardless of whether we are dealing with a fully developed well pad as in Lancashire or merely a security hut as in Żurawłów, both cases confirm that infrastructures play a vital role in asserting resource potentiality, boosting the inevitability of a hydrocarbon future. Whereas less developed infrastructures may present more opportunities for those on the ground to interfere with their everyday rhythms, these creative acts of mediating time can be intentionally hidden to avoid trouble. If they are not, like in the case of high-visibility anti-fracking campaigns in Poland and the UK, corporate actors are still unlikely to recognise protest as a factor determining the future of exploration.

Fixing the Unruly Materialities of Shale Gas Exploration

Far from the exclusive domain of discourses and high politics, a predetermined hydrocarbon future depends on everyday modes of social, material and individual time; it is sustained through ordinary actions of diverse actors who manage the contradictory and anticipatory rhythms generated by shale gas developments (Szolucha 2018). In

Poland, hopes for a shale gas future and resource independence from Russia had to be sustained in the face of contradictory social and material rhythms generated by challenging geological conditions and delays in the development. A working gas flare was deployed for this purpose. Some of my informants were uncertain about how much of the gas flared during the Prime Minister's visit to the site in Lubocino in 2011 was actually flowing from deep shale strata. Nevertheless, the images of Donald Tusk in front of a working flare fed the media hype and the national mythology about shale gas. Gas workers participated in the 'fixing' of the unmanageable obstinacy of the subsurface, which was to ensure that it did not clash with the PM's political message. In the inflated visions of a new hydrocarbon future, animated by the needs of an electoral campaign, Poland not only avoided the harshest consequences of the recent economic crisis but could also fulfil its post-transformation promise of transitioning to a truly independent country thanks to market forces; it might be released from the bounds of the socialist bloc and a history of subjugation and struggle.

The story from Lubocino shows that exploratory shale gas infrastructure is anticipatory and promissory in that it aims to project a specific future (and reimagine the state) by managing the complex and unpredictable materialities of shale gas development – such as the possibility of low gas flow but also an interruption in the supply chain and a range of other unexpected circumstances. In Lancashire, despite Cuadrilla's assurances about economic benefits to local businesses, some subcontractors pulled out of contracts for Cuadrilla when they realised what industry they were servicing. One of them explained his decision:

As many of you involved with L & M Transport know we have been drawn into a situation this week that is out with our control.

We unknowingly took on to deliver a load to the northwest of England which turned out to be supplies for the fracking industry company Cuadrilla. Since early Tuesday we have had protestors restricting our access to the delivery point and have had a "surfer" on the roof of our truck.

This load was undertaken through a 3rd party and If we had know this delivery was for the company Cuadrilla and to be used in the questionable fracking industry we quite simply would not have become involved. (Hayhurst 2017)

There remained a few companies that continued to supply Cuadrilla during the construction phase in 2017, although some chose to use third-party vehicles to avoid 'pop-up protests' in front of their premises. Some suppliers covered their company logos on vehicles arriving at the site. Others seemed to acquire new kit to service the pad after local residents complained about the (leaking) state of their existing equipment. These everyday strategies aimed to sustain the rhythms of construction. They prioritised attending to its materialities even if this required some repair work and extra measures to circumvent the challenges posed by daily protests and to reassert the industry's claim to control over the future.

These fixes could only go some way toward containing the inherently unruly nature of materialities of shale gas projects. On the ground, the reassertions of inevitable extraction were prone to breakdown due to even minor obstacles. The field that

Chevron leased in Żurawłów, for example, could only be accessed from the road that the villagers blocked. This presented a recurring problem for the security guards on the site because their power generator required frequent servicing and refuelling that could not be undertaken because of the lack of access. On one occasion, the company tried to bring another generator on site using a different access route but the workers' vehicle got stuck in thawed mud. Local farmers refused to pull them out and ridiculed their actions. After the workers left, farmers and their families used their everyday experience and hand tools to deepen an adjacent ditch, effectively cutting off potential access through this alternative route to the fracking site as well. When, alarmed by the company, road officials arrived, they thanked the farmers for their public effort in maintaining the ditch and congratulated for the work well done. The maintenance of ditches has been part of the everyday activity of many farmers in Poland. Unlike some of Cuadrilla's subcontractors, the farmers in Żurawłów fixed an operational and material problem of a fracking company in a way that obstructed rather than advanced a shale gas project. The reason why they deepened that particular ditch at that particular time was of course to obstruct Chevron's subcontractors from bringing equipment onto the potential fracking site. However, they avoided the consequences of an unauthorised intervention because they were persuasive in arguing that their action was just an everyday attempt to fix an unordered ditch that was causing problems with drainage.

Fixing the unruly materialities of shale gas projects can enlist various actors from engineers working on a gas flare and workers in the fracking supply chain to local farmers opposed to shale gas exploration. Their actions or, like in the case of some subcontractors, a refusal to act depend on everyday devices, experience and work schedules to mediate between the contradictory rhythms of unconventional gas projects. In some cases, the devices at their disposal make it possible for a gas flare to foster the visions of a hydrocarbon future; sometimes a company's tight schedule and popular pressure suffice to force a subcontractor to withdraw from servicing a fracking corporation; in other cases, fixing an operational problem using everyday tools and rationales may actually hinder further development. In messy and sometimes ambiguous ways, these creative acts mediate between the clashing temporalities of inevitability and indeterminacy of extraction. They represent everyday modes of time that people engage to foster or undermine a hydrocarbon future, shaping resource potentialities in ways which are beyond the corporate capacity to command time.

Creating Shale gas Conspiracies

In Poland, the projected appearance of confidence in the shale gas project that was created by the joint effort of politicians, media, gas companies and some scientists was, in reality, based on many uncertainties and unknowns. As one politician conceded to me in 2017: 'It's a pity that when the shale gas project was aborted in Poland, nobody really came out to say why'. The owned future of shale gas suddenly ceased to be, but many people made sense of this outcome by telling conspiracy theories that involved Russia.

When anti-fracking protests began in Eastern Poland, a large banner was displayed over a main road in one of the parishes marked for shale gas prospecting. It read: *Putinolodzy poszli won*. Using a russicism (*poszli won*), the banner was rudely telling the anti-frackers (i.e. ‘Putinologists’) to go away. The head of the same parish wrote on the official parish website:

Russian spies, who are plenty in our country, are secretly collaborating with ecological organisations and leading a disinformation campaign which aims to prevent the exploration of alternative energy sources such as shale gas to maintain [Russia’s] monopoly over the supply of oil and gas to Western Europe.

Far from a tool of social empowerment of the subaltern (West & Sanders 2003), this conspiracy theory seemed to be prevalent across the social strata. At one meeting of academics researching shale gas, for instance, I was approached by a young geophysicist who seemed interested in my work in Poland. ‘Where do you think all the money for those beautiful, professional, 3-D anti-fracking banners came from?’ She asked me rhetorically and I hastened to pre-empt her answer by pointing out that one of the core anti-fracking residents in Żurawłów led an advertising agency and a printing house in a nearby town of Zamość. Such a mundane everyday fact, however, could not overcome the suspicions channelled to the country’s historical nemesis. She was not the only scientist that I have spoken with who sought to connect local resistance to shale gas with Russia’s geopolitical ambitions. Indeed, this conspiracy theory was even touted by NATO’s Secretary General.

Although anthropologists have usually focused on conspiracies as a tool of the relatively powerless to make sense of opaque forces and complex relations, conspiracy theories about Russia’s collaboration with anti-frackers served particular corporate and political interests of fracking advocates across the social spectrum. The ‘use value’ (Pelkmans & Machold 2011) that the conspiracies offered helped to discredit the opponents of shale gas and sustain the potential of exploration. When the stories of plentiful hydrocarbon futures were not being materialised due to the inherently uncertain and unruly nature of shale gas technologies and geological conditions, the accusations of Russia’s interference provided a ready explanation that shifted the blame for the indeterminacy of the subsurface onto social and political processes. The conspiracy theories gave coherence to the exaggerated claims of resource abundance that would otherwise be in jeopardy. They provided a tool for those who supported fracking to mediate between the contradictory rhythms of shale gas exploration – at once inherently uncertain and already predetermined.

The conspiracies shaped the everyday of anti-fracking residents who were blocking Chevron’s activities. Partly in response to the accusations of Russia’s interference, they proudly displayed symbols of Polishness such as the Polish flag and pictures of John Paul II on the blockade and during protests. In media interviews, they used a patriotic rhetoric and portrayed Chevron as the agents of foreign powers.

In addition to the Russian conspiracy, there were many other narratives about the ‘true’ causes and intentions driving the actions of the opposition to shale gas. In addition to the undue influence of foreign powers, the industry also espoused

stories about undefined lobbies: ‘very small but very very influential groups of people’ who spread ‘ridiculous scaremongering ... essentially polluting the well of public good work’ (Hayhurst 2015). In the face of local opposition, the exploration companies often recognised residents’ right to peaceful protest but condemned the more radical actions as instigated by ‘professional’ activists from outside the area, regardless of the actual residency of the protesters.

On the other hand, there was a very strong sense among those who opposed shale gas (sometimes reinforced by leaked government documents) that the state and gas corporations colluded to guarantee the highest possible profits for the industry even if this overrode the democratic decision of local authorities. When subsequent exploratory wells failed to produce gas, they gave rise to stories about the ‘true’ purpose of drilling. In Lancashire, Cuadrilla drilled and quickly abandoned a few shale gas wells (mostly for what seemed to be technical reasons). This made some local residents suspicious that the company might be interested in providing long-term storage for nuclear waste in the abandoned boreholes, which was perceived as potentially much more profitable than shale gas extraction. These stories could be seen as ways of dealing with uncertainty and the complexity of shale gas assemblages. They also reflect the dynamics of the perceived transformation of the state and corporate power which rely on secrecy, intelligence, centralisation, competition and self-preservation.

The majority of conspiracies created in the context of shale gas exploration espoused supposedly revelatory knowledge about the ‘true’ motives of those who oppose fracking. As Pelkmans & Machold (2011) point out in their analysis of conspiracy theorising, suspicion is often warranted when powerful actors use conspiracies to scapegoat a targeted group. In the case of shale gas potential, conspiracy theories can be understood as productive mystifications situated in the historical modes of estrangement (Boyer 2006). As it is inherently complex to locate and confirm resource potential, its ‘production’ is mystified in stories and imaginaries that naturalise long-standing and context-specific power relations. Thus, conspiracies can be tangible symptoms of alienation that, nevertheless, help various actors reconcile the contradictory potentialities of fracking.

Conclusions

The notion of time harbours an inherent and historical tension between time as a realm of fate and an abstract force in capitalism guided by the invincible rules of the market on the one hand, and time as an arena of individual agency and intervention on the other (Adam 2010). Similarly, a hydrocarbon future is not an objective statement of fact but a probability based on a resource that is still largely unfathomed, developed through a process which is prone to breakdown and mediated by the rhythms of popular disobedience, uncertainties of geological models and fluctuations of financial markets. At the sites of extraction, the power of the shale gas future is much more volatile than the images propagated by the state and industry would imply. This indeterminacy of resource extraction, however, is still far from a liberating prospect if

we focus only on the corporate logics of creating resource potential. Both the 'gestures' of resource potentiality as well as assertions of a hydrocarbon future are largely aimed at attracting investment and perpetuating the speculative dynamics of extraction. As the literature on resource indeterminacy rightly suggests, these versions of the future represent temporalities that foreground particular corporate values and power relations. Hence, they are often central to people's experiences of inequality (Bear 2016; Munn 1992; Rutz 1992). In this article, I tried to explore the possibility of rethinking the contradictory temporalities of resource extraction, moving beyond the focus on corporate strategies to control time. I wanted to reclaim the role of the everyday as a point of entry into understanding the processes of domination and struggle that are fought using quotidian modes of social and individual time. This analysis highlights the complex dependencies between the visions of predetermined hydrocarbon futures and the uncertain status of resource potential. Various actors mediate them in the everyday in the ways in which they relate to fracking infrastructures, fix the unruly materialities of shale gas projects and cultivate an air of conspiracy. These mediations sustain resource potential and the appearance of abstract and owned capitalist futures. They are also points where these representations break down. However, as everyday strategies of working with time, they lack recognition, actively aim to 'cover their tracks' or seem to be irretrievably assimilated into the demands of a grassroots campaign. Although they do help in constructing political agency, the process makes substantial demands on individual, business and family time, which may represent another externality of resource extraction. This 'lost' time is not accounted for in any extraction plans, yet it produces tangible individual and structural impacts.

The feelings of alienation that come through in the accounts of my research participants speak to the aporetic nature of their situation – on the one hand, caught up in the narratives of predetermined shale gas futures and on the other, suspended in uncertain anticipation of the resource's potential. Both of these temporalities are bounded by corporate strategies aimed at attracting investment. Hence, it is important to realise that by defining resource indeterminacy according to economic logics, we may overdetermine the concept and foreclose the possibility of noncorporate understandings shaping the future of resource exploration. To redress the alienation experienced by those who bear the burden of extraction, a more open theorisation of resource indeterminacy and potentiality will need to move beyond focus on corporate thinking and limited arrangements for public engagement which rely on forms of expertise and authority recognised by powerful actors. The focus on everyday routines, duties and ways of living could help open up the considerations of resource potential to its daily entanglements – the ways in which its uncertain status nevertheless impacts on the lives of locals in complex and significant ways. Otherwise, our formulations of resource potentiality will perpetuate the speculative as well as the alienating and externalising dynamics of full-fledged extraction.

The everyday may also be a useful index for exploring how resource potential transforms society. Shale gas generates social and political rhythms which create expectations and contradictions that actively reimagine state and society, entangling and

reconfiguring them through the making of a hydrocarbon future. The process points to a possible new moment in the longer transformation of relations between state and energy corporations (Rogers 2014). The narratives of climate change and unconvictionality of shale gas (rather than scarcity as in the past) converge as a new strategy of ‘accumulation from time’ (Bear 2017) that reproduces and benefits from an appearance of stable hydrocarbon futures. A hydrocarbon future and a resource potential are neither simply a result of market forces nor an outcome of the work of the most powerful interests. Instead, for them to have any bearing on the present, they have to be sustained by particular kinds of subjects and identities in the everyday (Roseberry 1994). This, however, is fraught with instabilities. The contradictory local rhythms that resource exploration generates are brought in line with the potency of hydrocarbon futures or further sabotaged through the hidden work of many diverse actors. The localised fixing of these contradictory rhythms does not merely mask and facilitate a specific economic and industrial impetus; a hydrocarbon future is not simply abstract time that subverts and orientates all other time reckonings. Rather, it also reimagines state and society that are reconfigured through the economic imperative of extraction. Individual and collective time and resources of residents, local business owners, fracking supply chain and protesters are called upon and entangled in the fixing of what may appear to be a technical problem but is actually a result of the contradiction inherent in the rhythms of hydrocarbon futures that fail to account for noncorporate ways of understanding resources.

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