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Yet more ‘fracking’ social science: An overview of unconventional hydrocarbon development globally

Darrick Evensen

Abstract

In this introduction to the special issue on ‘social aspects of unconventional hydrocarbon development globally’ I explain the unique contributions made by the 26 research articles contained herein. Following a discussion of why additional research on social aspects of unconventional hydrocarbon development is still useful and relevant, I concisely describe ten major themes that emerged across the range of articles presented in this issue: (1) substantial regional differences in public reactions, perceptions, and policy, (2) context dependence, (3) role of experience with prior extraction, (4) critiques of policy and regulation, (5) procedural justice deficits, (6) distributive justice issues, (7) engagement and response from industry and government, (8) characterisation of opposition and activism, (9) interaction between actors internationally, and (10) a need for a long-term view. I conclude with my thoughts on the most promising areas for future research, including longitudinal research, comparisons across less developed and more developed nations, investigations of relationships between actors from different countries, and further examination of energy justice specifically in relation to public representation in decision making processes.

1. Introduction

Within the last decade, well over 1,000 peer-reviewed academic articles, book chapters, and monographs have been published on social science in relation to unconventional hydrocarbon development. Despite being deeply enmeshed in this content area, I can no longer even hope to keep up with the proliferation of edited volumes and special issues, let alone the endless parade of research articles. After this volume of output, I have heard colleagues claim that the field has been flooded and saturated with research and that redundancy abounds.

Is there anything else left to say? Is more needed? These questions are rhetorical, as I would obviously have not taken on the project of guest editing a special issue on this topic if I thought everything worth being researched had already been addressed. Through this Introduction, and then in far greater detail through the articles in this special issue, I hope you will understand more about the diversity of research on social aspects of unconventional hydrocarbon development, the remaining gaps in this area on inquiry, and why this research focus remains interesting and valuable.

This special issue has an unparalleled global focus, bringing together articles that examine social aspects of unconventional hydrocarbon development (hereafter UHD) in nations spread across six continents. A series of articles, by leaders in the field, review the status of research in nations where we already know at least a decent amount about social aspects of UHD (i.e., United States, Canada, Australia, Netherlands, Poland, France, and United Kingdom). A second section of the issue includes emerging findings and analysis of social aspects of UHD in nations where little to nothing has entered the peer-reviewed literature to date (i.e., Mexico, Argentina, South Africa, Algeria, China, and New Zealand). The third section of the special issue includes cross-national and cross-regional comparisons of similarities and differences in social aspects of UHD.

I envisioned these three sections for the special issue to provide readers with the most comprehensive view possible, in a single collection of articles, of where we have come from and where we are going as an interdisciplinary mix of social scientists interested in the controversial issue of UHD. I specifically asked authors, especially those writing national reviews of research, to reflect critically on directions for future inquiry on social aspects of UHD. I hope readers of this special issue at minimum pause to consider their well-informed opinions and advice. It may be true that there are thousands of research outputs being produced and a non-negligible amount of redundancy, but that does not equate to everything of value being said. The established and emerging leaders in research on this topic whose articles appear herein identify numerous gaps and promising roads left untrod.

Below I synthesise the research of the 26 articles in this special issue (excluding the two book reviews, which are also worth reading to further understand current investigatory directions in this area). I laconically draw out ten key themes running across numerous articles to highlight the truly global nature of certain social aspects of UHD, and to evince potential foci for future research. First, however, I offer a brief set of reflections on why social aspects of UHD remain exciting and relevant as a research focus.

2. Why this research is interesting and valuable

Whilst some people claim that UHD and ‘fracking’ is a narrow context and a rather specific issue, I would respond that that a huge number of theoretical approaches and research perspectives can be brought to and further developed via research on social aspects of UHD. The controversial nature of UHD means that *a lot* of people are talking about this issue – in mass media, in legislative buildings, in town halls, in corporate boardrooms, in the pub, in the street, and at kitchen tables. The controversy and frequent discourse make some approaches particularly well suited to the topic, for example: social representations theory, sense of place, theories of identity, advocacy coalition framework, social movements theory,

energy justice (distributive, procedural, recognition justice), energy ethics, social licence to operate, mass media content analyses, discourse analysis, and legal and policy analyses.

As a bridge between academic theories and approaches on one hand, and policy relevance on the other hand, research on social aspects of UHD is directly relevant to inquiry into energy transitions. The never-ending claims from governments and industry about the need for additional gas development to reduce energy supply and security concerns, to increase affordability, and facilitate a shift to lower carbon sources puts UHD at the heart of debates about the so-called 'energy trilemma' that is central to a societally-, environmentally-, and economically-acceptable energy transition.

There are very real policy implications to UHD. Governments have come out powerfully in favour of and in opposition to development; a large number of small to multi-national companies have big money at stake; local to international non-governmental organisations have become extremely active, and members of the public have been voicing their positions and interests loud and clear. In some nations and regions, the policy battles have largely played out already (e.g., New York, Pennsylvania, and Texas in the USA; Nova Scotia, Alberta, and Quebec in Canada; Queensland and Victoria in Australia; France; the Netherlands). Nevertheless, in other geographies, governments are seeking to push forward and all evidence (see articles herein) point to no shortage of conflict ahead (e.g., South Africa, Algeria, Mexico, United Kingdom, China, and Argentina).

The ability to test and further develop numerous exciting academic theories and methodological approaches whilst also generating knowledge that can shape real world policy, politics, and justice makes research on social aspects of UHD still valuable and exciting today. Therefore, the question should not be (as some colleagues have put it to me) *whether* additional research is needed, but rather it should be *how* to use that research to advance the conversation on this topic. For insight on this front, I turn to the authors of this special issue.

3. How to approach reading the special issue

Before I discuss the ten key themes that I gleaned from the 26 articles, I offer a brief reflection on the authors' (and my) approach to their research and what this means for the reader. As academics, we are taught to be self-reflexive when it comes to our own positionality in relation to our research. This is particularly important for controversial topics like UHD. I made an effort to include a range of opinions and perspectives in this special issue. We have authors who seem to endorse and advocate for development, those who decry and oppose it, and everything in between. Some of this is reflected in the very

language used to describe the processes and impacts being investigated: fracking, gas development, gas mining, etc.

Irrespective of author positions, I feel the special issue draws together an immense wealth of knowledge and insight into social aspects of UHD across the globe. Coming from a particular background does *not* discredit the research; it simply means that the work should be read through that lens. The authors herein do not make an effort to hide their perspectives. I simply encourage readers to keep in mind that anyone deeply embedded in a research context will have some perspective on the topic, and to read the research in light of such perspectives.

I have repeatedly heard both academics and members of the public contend that one cannot have an understanding of UHD and not have a positive or negative view towards it. They are wrong. I think anyone with knowledge on this issue must have a perspective, but that perspective can certainly be more nuanced than needing to be positive or negative. After a decade researching this issue and having lived in three countries where extraction was possible and debated, my firm view is that *public perspectives on this topic must be heard and responded to in public policy*. (Hence why I chose to guest edit a special issue on this topic – to further understanding of public perceptions and the role of the public in the policy process.) I still do not, however, think that UHD is holistically bad or good, right or wrong.

Despite reading well over a thousand research articles on the geological, biological, chemical, health science, and social science research on UHD, the only consideration that really sways me one way or another on whether UHD is right or wrong across all its shapes and forms are my own religious convictions. Nevertheless, there is even nuance here (see, for example, the Church of England's [2016] position on UHD). I believe several other authors in this special issue also have nuanced views on UHD; they may not see it as entirely good or bad and might see some instances in which it could be good, others where it could be bad, and still others where it could be both. I encourage readers to take the research at face value and evaluate it based on the methods, theory, and lines of argumentation employed; shelve the easy *ad hominem* critiques.

4. Major emergent themes in the special issue

I cannot hope to cover all the important aspects of each of 26 articles in the next two thousand words, but I do highlight some key findings and observations that arose repeatedly across diverse articles with different approaches and spread across varied geographies. The ten key themes I offer are: (1) substantial regional differences in public reactions, perceptions, and policy, (2) context dependence, (3) role of experience with prior extraction, (4) critiques of policy and regulation, (5) procedural justice deficits, (6) distributive justice issues, (7)

engagement and response from industry and government, (8) characterisation of opposition and activism, (9) interaction between actors internationally, and (10) a need for a long-term view.

4.1. Regional differences

Several authors offer explanations for why we see notable differences in public perceptions across regions within a nation. Lachapelle et al. (2018) explain that most research in Canada to date has been situated at a regional level, but they themselves offer a national level survey analysis of public perceptions across the nation, in part examining the influence of region of residence on perceptions. Jacquet et al. (2018) offer an in-depth review of UHD and associated regulation across the northeast USA (Pennsylvania, New York, Ohio, and West Virginia), showing how and why policies and public perceptions evolved. Whilst these two articles distinguish between responses to UHD based on state/province, Haggerty et al. (2018) focus not on governmental boundaries, but on what they term ‘geographies of impact’ to explain regional differences in the western USA; they distinguish between three types of areas: rural and remote, sub-urban, and sovereign nations (indigenous peoples). Poland mirrors the findings from the northeast and western USA in that Lis (2018) finds that the scale at which an issue is discussed and analysed matters substantially for the actors that emerge as relevant in discourse and the issues that are raised. Regional differences, thus, do not apply only to disparate geographical areas, but also to overlapping areas at different levels of aggregation.

In two within-nation comparison, Grubert (2018) and Larkin et al. (2018) highlight differences, respectively, across shale oil regions in the US in terms of experienced impacts and across provinces in Canada in terms of risk regulation. Two articles on Australia reveal the substantial regional differences (across states) in public views about the industry’s social licence, public response to perceived social licence (Luke et al. 2018) and industry and government reaction to public positions (Witt et al. 2018a). At the most macroscopic level, Cantoni et al. (2018) highlight differences between three European nations in the content and tone of discourse that emerged on UHD.

Australia and the United Kingdom (UK) exemplify the need for future research into regional differences despite the wealth of data that has been produced. In Australia, where regulation predominantly occurs at the state level, the vast majority of the substantial research into social aspects of UHD that exists today has focused almost entirely on two states: Queensland and New South Wales (Luke et al. 2018a); a similar point could likely be made about focus on certain states in the USA and provinces in Canada. In the UK, I reveal (Evensen 2018) that despite devolved governance to the countries of Scotland, Wales, and

Northern Ireland, research almost exclusively examines social aspects of UHD in England. Some areas may be over-researched whilst others remain unknown entities.

4.2. *Context dependence and experience with prior extraction*

One reason that multiple authors offered in at least partial explanation for regional differences was that public perceptions, public discourse, and public policy on UHD are all highly context dependent (Cantoni et al. 2018, Haggerty et al. 2018, Jacquet et al. 2018). Witt et al. (2018b) also cite social, political, regulatory, cultural, and economic context dependence to explain differences between reactions to UHD in Australia compared to the UK. Andreasson (2018) offers legislative and economic context and the unique assemblage of actors in the policy process in South Africa to reveal why that nation might be moving away from prospects for UHD.

Authors across the globe offer prior history with fossil fuel extraction as a particularly important aspect of local context that shapes both public and policy responses to (potential) future development (Cantoni et al. 2018, Jacquet et al. 2018, Luke et al. 2018a). In both France and New Zealand we see that prior fossil fuel extraction did not only shape views of UHD, but also that UHD in return shaped views of the prior development – in both cases, activism on UHD increased public opposition to a conventional fossil fuel industry that had long been present in the landscape at low levels (Chailleux et al. 2018, Widener et al. 2018).

Despite the high level of context dependency illustrated by various authors, some research, nevertheless, shows remarkable consistency in reactions to UHD across diverse areas, such as Luke et al.'s (2018b) findings about the ways in which members of the public respond to the label 'activist' in four nations on three continents. Another highly evident theme that runs through many articles herein and that transcends geographic, social, and political context is critiques of UHD policy, especially in relation to procedural justice.

4.3. *Critiques of policy, procedural, and distributive justice*

Perhaps the single most common theme across this special issue is inadequacy of policy on UHD. The literature that Metze (2018), Lis (2018), and I (Evensen 2018) synthesise in our reviews of research on UHD in the Netherlands, Poland, and the UK point to numerous academics repeatedly asserting that policy is inadequate to govern UHD effectively in these nations. In all three nations, concerns were notably related to increasingly centralised regulation that allowed for minimal meaningful involvement from the general public. When the public was included, the question asked was *how* regulation should proceed not *whether* it should do so. Aczel et al. (2018) make a similar point about deficiency of public involvement in policy in a comparison between regulation in the UK and France.

In nations where we know less about social aspects of UHD to date, we also see policy critiques arise. Both articles examining the situation in Mexico identify a national regulatory system that is not yet adequate to govern UHD (Ibarzábal 2018, Ontiveros et al. 2018). Ontiveros et al. (2018) specifically point to the public having no meaningful role in governance. Public input has been reduced in Mexico due to a recent legislative shift to promote extraction and incentivise foreign development, which interestingly is a very similar legislative shift to what Algeria is contemplating currently (Azubuike et al. 2018). One critique of Algeria's current policy could be that it does not adequately encourage external investment, which is needed to attract companies with the relevant technologies to some less developed nations (Azubuike et al. 2018). Nevertheless, if the Algerian policy changes to increase investment, it will almost certainly reduce further public input in decision making (see also Andreasson [2018] on this point in relation to South Africa).

Beyond the critiques associated with minimal opportunity for members of the public to shape policy on UHD in the UK, the Netherlands, Poland, and Mexico, the importance of such procedural justice for conditioning support for UHD was discussed in additional nations: Australia (Luke et al. 2018a, Witt et al. 2018b), Canada (Larkin et al. 2018), and China (Aczel and Makuch 2018). Perhaps the only counter-example in this special issue – an instance in which regulation is trending towards more public representation in governance (as opposed to less) – is South Africa, where Atkinson (2018) observes that a change in the government agency responsible for UHD has increased local authority. This was only possible, however, due to strong organised opposition that brought a court case against the prior regulatory regime.

Concerns about distribution of risks and benefits are one reason that emphasis has been put on increasing local voice in decision making. Reviews of research in the southern and western USA (Haggerty et al. 2018, Theodori 2018), the comparison between the UK and Australia (Witt et al. 2018b), and research from Mexico (Ontiveros et al. 2018) and Argentina (Costie et al. 2018) all point to notable disparities in who benefits from and who is negatively impacted by UHD. Perceptions of lacking procedural and distributive justice are one of the key motivators of activism on UHD.

4.4. *Opposition and activism*

Several articles in the special issue characterise activism within different national contexts. Despite the aforementioned success of some environmentally motivated activism in South Africa (Atkinson 2018), there are other indications that at least certain activist organisations there could be hampered in scaling up due to the composition of the social movement by white, middle class residents with conservation attitudes that are sometimes linked to

apartheid policies (Finkeldey 2018). The relevance of social identity to the ways in which activism manifests itself, and the opportunities for activism to be successful, is also discussed cross-nationally by Luke et al. (2018b). In Europe, North America, and Australia, people opposing UHD often did not want to identify as ‘activists’ which constrained their options for how to react to unwanted development pressures.

Examples of successful activism (opposition movements that achieved their goals) are provided from France and New Zealand. Chailleux et al. (2018) detail how a range of factors across micro, meso, and macro scales combined to mould a discourse and political context receptive to the ban on UHD introduced in France in 2011. In New Zealand, which came to the debate on UHD later than several other areas globally, a major contributing factor to the force and fervency of the oppositional movement was information gathering from lessons learnt in other nations (Widener 2018). The globalisation of knowledge on UHD supplied arguments and fortified the activists’ resolve. Although opposition to UHD is still incipient in Argentina, Costie et al.’s (2018) analysis of coalition formation there suggests that there might be strong potential for effective formation of an oppositional coalition; nevertheless, the uneven power distribution in that nation raises questions about the effectiveness even of a tight network.

4.5. *Engagement from industry and government*

In light of intense opposition and activism worldwide on UHD, repeated calls have been made for industry and government to engage with the public to address concerns. Some of these calls are for the basest forms of information provision to change attitudes, in line with the ‘information deficit’ model, but others seek more advanced and nuanced approaches. Thomas et al. (2018) review multiple such forms of engagement in the USA and Canada, revealing that most are limited in scope, and like in the Netherlands (Metze 2018), are not focused on *if* UHD will occur, but upon *how*. They also reveal that little engagement occurs early in the development process, a deficiency additionally highlighted by Larkin et al. (2018) in their examination of risk regulation in Canada. Witt et al. (2018a) offer further insight on problems with engagement and suggestions for roads forward, from the perspective of industry and government practitioners in Australia who have dealt with UHD regulation. Theodori (2018) reflects that despite the impressive amount of scholarship on UHD in the southern USA, one topic in need of supplementary insight is interactions between the public and industry actors.

4.6. *Interaction between actors internationally*

The foregoing themes elucidate a wealth of interesting research that is occurring on UHD across a wide range of countries. Indeed, inquiry into social aspects of UHD is clearly a

global phenomenon. Nevertheless, little inquiry in this special issue looks at interactions *between* actors who are located in different nation states. Research from Mexico (Ontiveros et al. 2018), Algeria (Azubuike et al. 2018), and South Africa (Andreasson 2018) speaks briefly to the role that transnational corporations and foreign investment could play in UHD. New Zealanders' reliance on knowledge of UHD that was generated in other nations is an additional example (Widener 2018). There may be many good reasons that little is known about international interactions (e.g., see context specificity theme above). Nevertheless, I believe this is a gap in current research and one that will become increasingly important as less developed countries work increasingly with transnational corporations and model their regulations off of examples from nations in which commercial development has occurred to date (e.g., USA, Australia, and Canada).

4.7. *Need for a long-term view*

All four articles in this special issue reporting on public perceptions of UHD in the United States mention the need for a long-term perspective on the impacts of and reactions to development. Jacquet et al. (2018), Haggerty et al. (2018), and Theodori (2018) all point to the value of longitudinal research that would be able to chronicle the cumulative and changing effects of development over time and the attendant evolution of public perceptions, discourse, and reactions as the lived experience with extraction and regulation progress. Grubert (2018) points to the need to reflect on the extent to which research participants are taking a long or short-term view of the development they are experiencing.

It is not surprising that this focus on the long-term view is present in the US-based articles. Development has been occurring in that nation for nearly two decades. As discussed above, there are many regional differences, but many locations are now experiencing and responding to booms and mini-busts. We are still a decent distance from the exhaustion of the unconventional gas and oil fields, however, meaning that important stages in the cycle of resources extraction are yet to be experienced.

A nation need not be as far along with development as the USA, however, to benefit from longitudinal research. I recommend such inquiry in the case of the UK (Evensen 2018), where we are at a critical juncture of starting commercial-scale UHD for the first time. Understanding the change in public perceptions and reactions, and the response of policy to development and public discourse during such periods, could be useful in appreciating nuances of how various actors in the policy process deal with and shape development. I believe we are at such critical junctures in a number of other countries discussed in this special issue (e.g., Argentina, South Africa, Mexico, and Algeria).

5. **Moving research forward**

If we are not to foreswear all further inquiry in relation to social aspects of UHD, we need an informed opinion on the most fruitful and demanding areas of research moving forward. Many of the authors in this special issue give their thoughts on particular necessities within their own national contexts (e.g., large gaps in understanding of indigenous people's reactions to UHD in the western USA and Australia, or understanding of emerging activism in Argentina, Algeria, and South Africa).

Beyond the nationally specific, the themes above point to the value of additional exploration of energy justice, procedural justice, and distributive justice in relation to UHD. An area of particular value across many countries seems to be the intersection of public beliefs about justice in relation to UHD regulation, and the implications of any disconnect between public views on what is normatively required and what has been provided for in regulation.

I fully endorse the value of longitudinal research, but I will not pretend to be oblivious to the financial constraints of such work or the fact that it simply requires notable passage of time before analysis can be undertaken. I would also very much like to see the positive trend towards more international research not only offering international comparisons, which are beginning to surface both in this special issue and edited volumes. I think we also need analyses of how actors within separate nations interact with each other on this issue.

The section on international interactions above gives us some clues to the types of relationships that could be explored. For example, what is the influence of North American transnational corporations operating in Central and Latin America? The international political economy of UHD seems underdeveloped but highly relevant based on our articles from Mexico, Argentina, Algeria, and South Africa. How do activism and opposition movements not only learn from each other, but also collaborate across national borders? How are organisations united across situations in which context specificity abounds?

Although research on the relationships between actors cross-nationally is a key exciting and promising area for future research, one cannot be naïve to the challenges of research in some geographies. For example, consider assassinations of journalists and activists in Mexico (Ontiveros et al. 2018), terrorist attacks on gas production infrastructure in Algeria (Azubuike et al. 2018), and institutionalised censorship in China that takes to a different level critiques of governance lacking democracy (Aczel and Makuch 2018). These are not research challenges that many North American or European researchers would be prepared to contend with, and they raise legitimate ethical questions about involvement of local populations in our research.

Despite research challenges and research gaps remaining, good social scientists around the world are pushing inquiry further and generating findings with societal and policy relevance. This special issue is yet one more step forward in expanding our knowledge of a global phenomenon. I thank all of the authors for everything they have taught me throughout my time guest editing this issue. May we keep the conversation going.

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