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Co-producing European knowledge and publics amidst controversy: The EU expert network on unconventional hydrocarbons

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Abstract

To date, social sciences have devoted little attention to the processes of expert knowledge production related to the exploitation of unconventional hydrocarbon resources. In this article, we examine an epistemic experiment led by the European Commission, the European Science and Technology Network on Unconventional Hydrocarbon Extraction, which was aimed at producing authoritative knowledge claims on shale energy development. By developing the idiom of 'co-production', the article provides a more fine-grained understanding of the processes through which competing knowledge claims, forms of epistemic authority, and new energy publics co-evolve in a situation of highly-politicized controversy. Drawing on our first-hand observations as participants representing the social sciences in the expert network, this article provides an in-depth ethnographic account of the struggles of the European Union authorities to manage and delimit the controversy. In this way, the analysis develops our understanding of the challenges in improving the deliberation of shale gas as a transnational energy policy issue.

Key words: knowledge controversy; epistemic experiment; expertise; unconventional hydrocarbons

1. Introduction

While the development of shale gas and oil resources has already assumed a significant, albeit contested role in transforming the energy sectors of the USA and Canada, their prospective exploitation in Europe remains subject to substantial and polarized disputes. There is currently no consensus regarding the size of potentially recoverable resources, the future role of shale energy in a lower carbon economy, and the environmental and health impacts associated with the technology of hydraulic fracturing (or 'fracking').[1] Such 'knowledge controversies' (e.g. Whatmore 2009) are exacerbated by lack of geological and environmental data related to the relatively early stage of exploratory drilling and environmental monitoring, as well as by difficulties with relying on the analogy of North American shale deposits. This further augments the difficulties of transferring existing technological expertise to a considerably different geo-economic context (Kuchler 2017; Kama 2019; Neville et al. 2017). In Europe, in particular, deficiency of reliable expert knowledge complicates relations between the nation–states and the European Union and makes it more difficult to decide who is entitled to speak for and regulate the nascent industry along with its associated risks in a situation of prolonged uncertainty (Lis 2018b; Kama 2019). Moreover, what makes the shale gas controversy extremely 'hot' (Callon 1998) is the fact that it has been played out by a number of different actors in the public sphere—in the European context by vibrant national and EU-level civil society organizations, local activists, Members of the European Parliament, geoscientists and other industry experts, as well as state and company representatives. As such, the shale gas controversy reflects a wider 'crisis of democracy' around the governance of contemporary extractive industries (Steger and Milicevic 2014).

In this article, we engage with the idiom of constitutive co-production (Jasanoff 2004) to examine a particular EU-led experiment in co-producing European expert knowledge and its public about unconventional hydrocarbons amidst heated scientific and political controversy. Launched by the European Commission and its Joint Research Centre in 2014, this experiment was initially designed through open organization and deliberate publicity of the process, which served the purpose of enabling expert knowledge to be produced in a collective manner, subsequently authorized as relevant and objective, and fed into governance processes at the European scale. The main outlet of this experiment was an expert platform, named poignantly as the European Science and Technology Network on Unconventional Hydrocarbon Extraction (later in the text: UH-Network). This network was initially claimed to be open to all actors interested in unconventional fossil fuels, with the aim that the resulting collaborative knowledge would not be attached to any particular political bodies. As our analysis of the network shows, in this way knowledge was expected to become transferable

across different contexts and usable through its objectivity, apolitical character, and 'Europeanness' (European Commission 2014).

By studying co-production of expertise and publics at different sites—official statements of the European Commission, a public campaign of the Brussels-based NGOs, interactions inside the network—we provide a more fine-grained understanding of the processes through which a European expertise on unconventional hydrocarbons is made possible or impossible through the engagement and disengagement of various actors. We argue that co-production of the Europeanness as a category organizing the produced knowledge emerged through two processes: (1) through boundary conflicts over what claims classify as technical or scientific and what claims count as political, and (2) by negotiating which particular claims have a universalizing meaning and may be relevant in the European context. In this way, the article also provides a better overview of the challenges to improving the deliberation of shale gas as a transnational energy policy issue within the EU arena.

To date, social sciences have devoted remarkably little attention to the co-production of expert knowledge and forms of public organization in relation to prospective shale gas and shale oil extraction (but see Lis 2018a; Kama 2019; Kuchler 2017). More critically, there is little analysis of the difficulties of creating and formulating knowledge that would resonate as relevant, useful, and authoritative for various actors, and as such would enable the governance of the prospective industry across different scales of public policy and politics. Existing social science literature addresses the question of knowledge primarily in relation to 'public perceptions' of fracking (e.g. Neville et al. 2017; Partridge et al. 2017; Thomas et al. 2017; Williams et al. 2015). A few scholars also explore the intersections between local knowledge and environmental regulations (Beebeejaun 2016), while others document how different modes of knowledge production underpin the securitization (Kuchler 2017) and riskification of shale gas as a governance issue in different European countries (Lis 2018b) or the processes through which the risks associated with exploration are socio-politically negotiated and regulated (Espig and de Rijke 2016; Fleming and Reins 2016; Patterson & McLean 2017).

However, the majority of research focuses on the framing of shale gas in media, including social media (Cotton 2014; Jaspal et al. 2014; Mazur 2016; Metze 2017; Ocelik & Osicka 2014; Stasik 2017; Upham et al. 2016; Wagner 2017), which represents an important, yet only one arena where knowledge claims are publically disseminated, contested, and thereby effect upon the perceptions and practices of involved actors. A notable exception is the analysis by Wagner (2015) in this journal on how non-knowledge functions in the media discourse on fracking. There is also a growing number of studies that examine changes in the regulation of shale energy development across different policy contexts (Fleming and Reins 2016; Neville et al. 2017; Reins 2017; Reins et al. 2019). Yet, despite highlighting the prevalence of the 'public deficit' view of knowledge production in policy framings (see, in particular, Lis and Stankiewicz 2017; Williams et al 2015), these accounts give little insight into how competing epistemic claims are debated, circulated, and authorized, so that they come to shape socio-political orders, which involve generation of new publics.

Drawing on our first-hand observations as expert participants representing the social sciences in the UH-Network, our general motivation in this article is to explore how the experiment served to shape both the production of expert knowledge and its deliberation in the public sphere, and why it eventually failed on both fronts to deliver 'epistemic authority' (Zagzebski 2012) and meaningful public engagement (Fung 2015; Fung et al. 2007). In this way, our analysis contributes to a long-standing scholarly debate in STS and cognate disciplines, including in this journal, about the practices of public participation in mediating technoscientific controversies (e.g. Callon et al. 2009; Chilvers and Kearnes 2016; Einsiedel et al. 2011; Felt and Fochler 2010; Harmon et al. 2013).

Notably, the UH-Network was launched into an already complex and highly-charged situation, where it was admittedly difficult to articulate knowledge claims that would be perceived as 'neutral' or 'innocent', and thus be authorized by consulting a singular 'energy public' around the issue (cf. Chilvers and Longhurst 2016; Cotton and Devine-Wright 2012). Moreover, there was no shared understanding of the significance and meaning of shale-based hydrocarbons themselves as the object of debate; for example, whether they constitute a viable economic resource for energy security reasons, or rather an ecological and health hazard which is incompatible with EU environmental and climate policies? In other words, the 'resource ontologies' of unconventional hydrocarbons were still in the process of being negotiated and stabilized (Kama 2016; Richardson and Weszkalnys 2014). Even if shale energy may have in some contexts functioned as a 'boundary object' that allowed for communication and exchanges between different stakeholders (Metze 2017; cf. Star and Griesemer 1989), it was still difficult to create a space for mutual engagement.

By the time that the UH-Network was established fracking had already polarized public opinion on both sides of the Atlantic and across various groups of authority, including industry specialists, government officials, civil society groups, and even celebrities,[2] and made its way into the movie theatres.[3] Indeed, long before the launch of the UH-Network, key European environmental actors, including leading NGOs and green parties, had already declared that unconventionals ought to have no role in a low-carbon economy (i.e. FoE, Food and Water Europe, UK Green Party) and, in many cases, given their support to local communities affected by exploration (Lis and Stasik 2018; Dodge and Metze 2016; Short and Szolucha 2017; Whitton et al. 2017). Unlike some technoscientific controversies which enter public discourse timidly and initially impact only a narrow range of experts, as for example nano-technologies or geo-engineering (e.g. Anderson 2007; Bellamy and Lezaun 2017; Delgado et al. 2011; Macnaghten et al. 2005), the rapid expansion of shale energy development in North America entered public debates with a great impetus and powerfully-affected public imagination (Mazur 2016). Indeed, in many ways, shale energy development has raised equally strong affective responses as nuclear energy in the 1970s and 1980s (e.g. Bickerstaff et al. 2008; Callon et al. 2009) or genetically-modified organisms and other 'food scares' in the 1990s (e.g. Bingham 2008; Hinchliffe 2001; Whatmore 2009; Wynne et al. 2006).

Furthermore, we observe that in such a situation of prevailing scientific disputes and public discontent, it is difficult for policy-makers to propose meaningful categories of the *types of knowledge* that would be worthy of research and debate, and equally, would resonate with a wider range of actors concerned with Europe's energy futures. For example, would that be technical knowledge claims on the benefits of competing methods of fracking, or environmental knowledge claims on the possible impacts of the technology (Espig and de Rijke 2016; Kuchler 2017)? Or would it be more urgent to know the health impacts of the industry and how it influences the livelihoods of local communities (Szolucha 2016; Willow and Wylie 2014)? Furthermore, the case of the UH-Network also shows how the categories of knowledge proposed by different stakeholders themselves come to perform the public debate and the inter-relations of involved actors in different

ways. This turned out to be the main challenge for the Commission officials in their attempts to propose knowledge that would reflect the European experience with unconventional hydrocarbons to a purportedly singular European public for this issue, which could be consulted on a carefully delimited set of 'matters of concern' (see also Callon et al. 2009; Latour 2004, 2005; Marres 2005).

The following analysis provides an in-depth ethnographic account of the UH-Network by reporting on its history and initial progress made over the first year of its three years of intended activity, before it was prematurely closed down in early 2016 amidst escalating controversy. A mix of qualitative methods like text analysis, interviews, and ethnography allows us to get a more fine-grained picture of the actual discussions and interactions outside as well as inside the network, take notice of the turning points, and follow the emergence of relevant claims and interested actors, and its consequent shrinking. Led by our first-hand experiences as expert participants, the analysis is specifically informed by the following range of methods: (1) participant observations at three regular work group meetings of the UH-Network (February, June, November 2015) and its subsequent *Annual Conference* (February 2016); (2) additional observations made at three related public shale energy conferences in Brussels (*Shale Gas in a Low Carbon Europe—The Role of Research*, 23 February 2015; *Unconventional Hydrocarbons—The Polish Experience in the European Dimension*, 17 September 2015) and in Amsterdam (*Transatlantic Knowledge Sharing Conference on Unconventional Hydrocarbons*, 20–21 June 2017); (3) six semi-structured interviews conducted by the lead author with the network's Chairs and Steering Committee members representing the Commission, NGOs, and other participants; (4) various informal communications and email exchanges with the Chairs and fellow participants over the past four years. Between three authors, we have covered all publicly accessible events around the network, except for the initial launch event on 8 July 2014 in Brussels, which was however temporarily available in the form of online webcast,[4] and a smaller internal working meeting of the UH-Network in April 2015 which was not announced to all participants by the Network administration (von Estorff et al. 2016). These observations and interview data are complemented with analysis of associated policy reports and legal analysis of documents published prior to and during the network's lifetime.

The next section introduces the key conceptual ideas that inform our account of the case. This is followed by closer analysis of the history and legal status of the UH-Network. In the following two sections, we proceed to examine in more detail divergent attempts to negotiate the boundaries between the political and technical (and the potential Europeanness of particular claims), and thereby to delimit the controversy and its publics around the UH-Network, respectively, in public discourse (and media) by NGOs and in the network's internal process of knowledge production. We conclude with a discussion on the co-production of European epistemic authority and publics on unconventional fossil fuels to reflect on the challenges of organizing a meaningful and inclusive process of deliberation on shale energy development as a pan-European policy issue.

2. Production of expert knowledge and its publics as a boundary-making process

By documenting the design and preliminary closure of the UH-Network, our study contributes, first, to recent debates on deliberative public engagement around novel technoscientific matters (e.g. Bellamy and Lezaun 2017; Burns and Medvecky 2016; Callon et al. 2009; Delgado et al. 2011; Hilbeck et al. 2015; Schäfer et al. 2018). Specifically, our focus is on the difficulties of producing authoritative knowledge claims amidst heightened public concerns over the transfer of fracking to Europe and conflicting expert assessments of the industry's prospects. Secondly, we adopt a relational perspective to study the constitutive co-production of the Europeanness of expertise on unconventional hydrocarbons and its publics. Here, we engage with the concept of co-production and its latest elaborations (Bellamy and Lezaun 2017; Chilvers and Kearnes 2016; Chilvers and Longhurst 2016; Jasanoff 2004; Waterton and Wynne 2004) in order to explore how authoritative knowledge claims are produced, stabilized, and circulated between multiple concerned actors, and how boundaries between the technical and the political are negotiated, along with the links between the particular and European facets of the controversy.

More broadly, we explore the theoretical problem of 'boundary making'—the contested process of delineating science from politics (Gieryn 1983)—in relation to the co-production of expertise and publics in technoscientific controversies. We argue that it is difficult to delimit the issues at stake and draw a clear boundary around the shale energy controversy because it overflows any neat framings—e.g. geoscientific, technological, political, or economic—and interferes in much wider political controversies (Barry 2012). Moreover, the process of delimiting the legitimate issues and tasks is not just highly contested, but may also produce a 'boundary between those who do, and those who do not, control a particular set of tasks' (Eyal 2013: 872). We therefore propose our case study as what could be considered as an 'extreme case' (cf. Flyvbjerg 2011) of a hyperpolarized, complex, and publically evolving controversy, which furthermore cannot be dissociated from other, much wider controversies over the government of Europe.

Another analytical lens through which we explore the studied case is the relation between the particulars and the universals (Choy 2011). Here, following Choy (2011), we argue for a need to examine how particulars and universals are always intertwined when expertise is produced and how actors sort them out, connect, and disconnect them when generating knowledge that they consider relevant for themselves. In this sense, we do not advocate for a better or worse, more or less adequate European story about the experience with unconventional hydrocarbons. We do not glorify local stories over geological expertise, or the other way round, but we examine how this knowledge production experiment engaged actors in making claims about their divergent experience with the shale industry to make them relevant for the European experience. As we document below, some 'particulars' became Europeanized while others were disconnected and disregarded in the work of the network. This in turn resulted in engaging and disengaging particular actors who were supposed to make up the public for the produced knowledge.

Furthermore, as detailed below, despite being initially framed as a policy experiment open to all interested parties and, as such, neutral and democratic in its constitution, the UH-Network was inevitably set up at the core of the EU governance system, being launched by several DGs of the European Commission and its in-house scientific authority, the Joint Research Centre. One could therefore argue that it was launched right at the heart of European political authority, in the spotlight of a myriad of actors involved in shaping the technological governance of the region (cf. Callon 2004). This inevitably influenced the management of the controversy much like the formation of publics. Here, the dynamics of the UH-Network bear striking similarities to the case of geo-engineering examined by Bellamy and Lezaun (2017), in the sense that EU policy-makers strived to engage with their object of deliberation *without* actually committing to

unconventional energy development as a realistic policy option. In our case, however, it proved challenging for policy-makers to maintain this position and 'unframe' shale energy from its controversial context, as the issue continued to be framed in conflicting and highly-politicized ways. It should also be noted that the objective of the UH-Network was somewhat different from the geoengineering case documented by Bellamy and Lezaun, as well as from other similar public engagement exercises designed around novel technoscientific developments (e.g. Chilvers 2008; Chilvers and Longhurst 2016).

In this case, the collection and stabilization of data proved to be especially crucial because the EU does not have the competence to regulate in areas which would affect the Member States' rights to choose between different energy sources, which is why the EU has so far chosen to govern fracking only through a non-binding Recommendation (Reins 2014). In other words, the key rationale behind establishing the UH-Network was collection of undisputable data that would appear to exist all by themselves as 'immutable and combinable mobile[s]' (Latour 1987: 227) and consequently become transferrable between various policy contexts and hence render the industry governable above member state jurisdictions, at the EU level. Thus, more generally, our case study speaks to one of the classic questions in STS, namely how knowledge claims are made and stabilized as 'facts' (Latour 1987); or more broadly, associated with 'expertise' which is entitled to inform particular policy dilemmas and thereby gain epistemic credibility and authority (Collins and Evans 2007; Eyal 2013; Kuus 2014; Owens 2015).

Finally, our focus on 'boundary-making' and relations between 'particulars' and 'universals' also resonates with the question of how to sort out controversies when the process of knowledge production itself is rendered relatable to other, much wider social disputes. Indeed, in our case, the shale energy controversy has become associated with a whole series of other matters of concerns and spaces of dissensus, or what Barry (2012) calls 'the political situation'. In such a situation, the network of expertise turns out to be particularly diverse and composed of so many antagonistic relations and politics that the challenge exceeds the problem of how to draw a boundary between facts and values, or what counts as a 'particular', and what as a 'universal'. Instead, it becomes critical to determine where the boundary of a given controversy can be set in relation to other ongoing controversies. In Barry's words, a political situation involves the question of the *limits* of a controversy in question, which should be regarded as integral to the identity of the controversy as such, because it conveys a potential to transform its meaning, intensity, and trajectories. As a result, the delimitation of the controversy's boundaries became central to the Commission's administrative efforts, but also vigorously contested by other actors, thereby opening up wider spaces and objects of politics. In the end, a very tight boundary was set around those actors who became entitled to control the task (cf. Eyal 2013) of making particular experience relevant for producing authoritative knowledge on European shale resources.

3. The history and legal status of the UH-Network

One of the first indications of the need for developing an EU-wide expert knowledge base on shale energy development can be found in a resolution of the European Parliament from 2012.[5] The resolution calls for 'independent platforms' assembling both industry and science representatives who would be tasked to 'provide opinions and establish good practices related to clean shale gas extraction technologies'. The idea for a pan-European 'platform' or 'network' subsequently took shape in a sequence of policy documents, despite the fact that its envisaged objectives received mixed feedback from stakeholders during a meeting organized by the JRC in Madrid, 7–8 March 2013.[6] However, the decision to establish a more permanent expert body was nevertheless approved after this meeting although it took until July 2014 for the UH-Network to be publicly launched with its proper name and agenda.

The network was initially envisaged to be aimed at 'increasing our knowledge on unconventional hydrocarbon extraction technologies and practices also in order to further reduce potential health and environmental impacts and risks'.[7] This objective was formulated in a Commission Communication from January 2014, which accompanies the only regulatory tool directly addressing the shale energy question in the European Union, a non-binding Recommendation that outlines minimum principles for the exploration and production of hydrocarbons using high-volume hydraulic fracturing.[8] In the Communication, the future network was further promoted as a facilitator for 'open and transparent' information sharing with the public. More precisely, the Commission announced that it 'will establish a European Science and Technology Network on Unconventional Hydrocarbon Extraction, bringing together practitioners from industry, research, academia as well as civil society'.[9] As the document puts it, the primary objective of the network was to 'collect, analyse, and review results from exploration projects, as well as to assess the development of technologies used in unconventional gas and oil projects'.[10]

Following the official launch of the UH-Network in July 2014, this formulation was further expanded and adopted as the official mandate of the network. Specifically, the mandate describes the network's objectives as:

- structuring the dialogue among the stakeholders, fostering open information and knowledge sharing;
- presenting and discussing research activities and their results, as well as identifying gaps and R&D needs;
- examining knowledge gained from exploration and demonstration projects; and
- identifying and assessing emerging technologies including their economic, environment, and climate impacts.[11]

In effect, in its early stages, the network was designed as a unique epistemic experiment targeted at supplying 'evidence-based knowledge' for the Commission through 'fair and balanced exchange of ideas'.[12] Yet, crucially, it was not considered as a formal 'Expert Group', which would have been subject to specific transparency rules and registration.[13] As we discuss below, this had important ramifications for how the controversy unfolded and came to intersect with other spaces of dissensus. Furthermore, as the mandate indicates, the envisaged objectives of the network were to harmonize data and establish environmental baselines, which were to be achieved by sharing 'state-of-the-art' knowledge, best practices, and so on. It is important to note that the Commission was then not yet concerned with delimiting and purifying 'science' as uncontaminated by 'politics'. Quite the contrary, proposals for the network's role explicitly included both communication with policy-makers and public engagement issues.

At that point, the Brussels officials were open to engaging with the particular experience of various actors, not only companies or geologists but also local communities and NGOs. This is reflected in the decision of the Steering Group adopting the network's rules of procedure and management.[14] Specifically, Article 6 on membership of the UH-Network states that 'individuals and organisations from

industry, research, academia and civil society shall be eligible for membership'. Therefore, the initial idea of the Commission was, broadly speaking, to create an inclusive body for all concerned actors to come together and deliberate what kinds of knowledge are needed and subsequently produce the expertise relevant for Europe. In other words, this epistemic experiment was expected to co-produce both the story about the European experience with unconventional hydrocarbons and a European public for this story.

However, as we proceed to document below, the network became controversial before its work even started. Notably, environmental NGOs begun to accuse the Commission of a pro-industry bias and of mounting barriers for a wider participation of civil society in the process, such that the network had been 'taken over by industry groups which are using it as a platform to promote fracking'.[15] In response, the organizers of the network (chiefly comprised of various DG officials) attempted to publically draw a thick line separating the work of the UH-Network from any kind of shale energy-related policy initiatives afoot in Brussels. The JRC web page was swiftly amended to specify that 'it is not within the mandate of the Network to give advice to the Commission on shale gas policy';[16] a formulation that is not part of the official mandate. In order to consolidate and maintain the authority of the network, the Steering Committee subsequently cut off all links to institutions and problem areas which engage in policy issues, do advocacy work, or try to understand the politics around unconventional resources. This was also our personal experience as expert participants. When the lead author asked the members of the Steering Committee for an interview on the *politics* of knowledge production, she received an outright refusal justified with a statement that the work of the UH-Network is purely *technical*—that is, collection and collation of data—and that it is not involved in any political discussions or policy processes. This, along with other instances of insulating the epistemic experiment from politicization, provided less and less space for discussing issues that would rally particular stakeholders. In this way, the epistemic authority of the network became effectively delimited to a data-collecting machine which no longer provided an open 'hybrid forum' (Callon et al. 2009), which would have enabled the controversy to be, if not resolved, then at least productively deployed for open dialogue and collective learning.

4. Contestation and politicization of the UH-Network in public

Already at the *Shale Gas in a Low Carbon Europe* conference on 23 February 2015, a public event that preceded the first gathering of the UH-Network on the same day, e-NGO representatives intervened in the official agenda by delivering a statement against the industry and exhibiting a hand-made anti-fracking slogan (Fig. 1). Shortly thereafter, in mid-April 2015, Friends of the Earth Europe (FoEE) made a press release in which they announced their decision to 'walk out' of the network and called for the Commission to 'scrap' the experiment altogether. This arguably served as the first blow to the Commission's efforts to delimit and manage the controversy and its 'public', as one of the key policy entrepreneurs in Brussels refused to participate. Worse still, NGOs set out with a counter-campaign to identify the purported public that was consulted by the Commission. Notably, their media campaign was accompanied by a detailed 'fact-finding' report intended to prove the network's pro-industry bias. Prepared jointly by FoEE and Corporate Europe Observator (CEO), the '*Carte Blanche for Fracking*' report (FoEE and CEO 2015) serves to expose the links of a majority of participants to the shale gas industry; ostensibly over 70% of non-Commission participants, whereas fewer than 10% were counted as civil society representatives. However, in addition to the experts directly employed by companies, the report also lists two-thirds of academic participants as representing the industry due to having 'a clear financial stake in the expansion of fracking', in line with the wider portrayal of 'Frackademia' by civil society activists (see, e.g. Espig and de Rijke 2016). Furthermore, the report notes that the network's Chairs also 'either work for the fracking industry, are from a pro-fracking government or a fracking industry-friendly body'. In opposition to the Commission's official position that the UH-Network is not an 'Expert Group' tasked to give policy advice, the NGOs maintained that it is intentionally designed to bolster 'in-house shale gas lobby on European Commission energy strategy', with immediate implications for policy-making. More fundamentally, they objected to connecting shale gas development and lobby with the energy policy agenda of the European Union. They did not want to see any unconventional hydrocarbons in Europe and accused to Commission of shifting the onus of debate from the fundamental question of *if* shale energy development overall is justified to the more specific question of *how* fracking will be implemented.

Around the same time, FoEE and Corporate Europe Observatory jointly filed a complaint to the European Ombudsman, where they requested an investigation of potential maladministration, again citing various conflicts of interest in the setup of the UH-Network.[17] Their main argument was that the network should be treated as an official Expert Group of the Commission, subject to public registration and scrutiny, and they requested it should be suspended unless these requirements can be met. Our analysis of the EU legal acts shows that if the UH-Network would have been constituted as an Expert Group, it would have indeed become subject to the horizontal rules on the creation and operation of Commission's advisory groups,[18] which set out specific provisions on their setup and transparency. Whereas in this case, expert participants were invited to register their interest in the network on the JRC web page, the procedure for advisory groups is that they are selected through a public call for applications (with the exception of public authorities). According to the Rules on Expert Groups (Articles 7 and 8), participants need to be registered in the Transparency Register, including both (1) individuals appointed to represent a common interest or policy orientation shared across stakeholders and (2) any organizations directly representing the stakeholders. However, no such entry in the Transparency Register was required for membership in the UH-Network, even though most members fell within either of these categories. In addition, the UH-Network was not

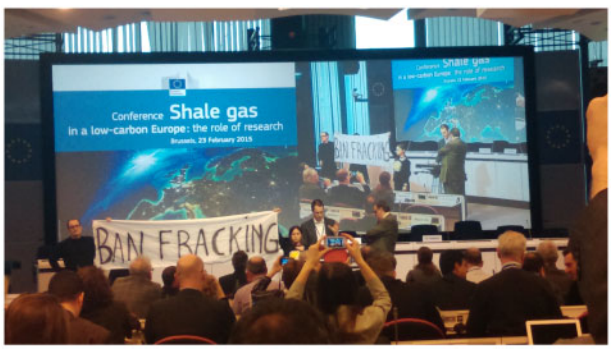

Figure 1. NGOs' anti-fracking statement at the *Shale Gas in a Low Carbon Europe* conference in Brussels on 23 February 2015. Photo by Kärg Kama.

subject to involvement of the European Parliament. In contrast, in case of registered Expert Groups, the Parliament must be involved via provisions set out in a Framework Agreement with the Commission.[19] Notwithstanding the lack of official status of the UH-Network, it can therefore be argued that it still needed to follow the rules for advisory groups as 'other similar entity' that is equally subject to the rules (see Article 1 of the Rules on Expert Groups).

Additionally, the NGOs argued that for the network to deliver its mandate, its stated objective of 'fair and balanced exchange of ideas' would imply 'a substantial and meaningful participation of civil society and citizens' (FoEE and CEO 2015). Yet, NGO participants claimed they were clearly disadvantaged, albeit being formally invited to join, despite the fact that the JRC had offered to use *Horizon2020* funds to reimburse the travel costs for two civil society representatives per meeting.[20] The case by the Ombudsman subsequently opened on 18 August 2015 alleged that the UH-Network is in breach of Articles 8 and 9 on impartiality, independence, and objectivity of the European Code of Good Administrative Behaviour by having failed to be recognized as an Expert Group, failed to respond to complaints about its unbalanced composition and, finally, wrongly appointed industry representatives as chairpersons.[21]

Through these interventions, the epistemic authority of the UH-Network was abruptly challenged. The NGOs questioned the setup of public participation, denigrated the authority of experts as representing merely industry interests and, in doing so, implicitly also disputed the types of knowledge produced as serving pro-industry policies. In consequence, however, the public controversy around the network came to be played out around narrower procedural issues concerning its composition, objectivity, and legitimacy. As noted, the *Carte Blanche* report, media campaign and subsequent investigation by the Ombudsman focused solely on the question of whether the network should have qualified as an Expert Group. In this way, the controversies at stake became effectively reduced to the problem of 'input legitimacy'—that is, the fair representation of citizen concerns in the policy-making process—rather than the actual design, effectiveness, and potential outputs of the policy in question (Scharpf 1999; Schmidt 2013). The UH-Network thus became rehearsed as a case of wider political controversies related to the transparency and legitimacy of advisory expertise in Brussels (see, e.g. Levidow and Carr 2007; Radaelli 2011; Owens 2015). Intriguingly, however, the actual content of disputes and politics of expertise in the UH-Network were carefully disguised from the public view (despite the fact that other e-NGOs such as Food and Water Europe continued to actively contribute to these disputes). Much like the EU officials behind organizing the network, e-NGOs seemed to imply that there exists a well-established and coherent set of publics awaiting consultation. Thus, effectively advocating what is termed a 'residual realist' imagination of 'public participation' (Chilvers and Kearnes 2016), NGOs likewise failed to recognize a unique opportunity to facilitate more innovative ways of public engagement with the scientific controversies in question.

Being thus framed as an instance of *conspiracy* rather than controversy (cf. Whatmore 2009), the evolving political situation around the UH-Network came to be concerned with wider questions of civil society participation in Europe's government, and much less so with the technoscientific controversies specific to fracking. Meanwhile, the publicity campaign remained curiously silent about the dynamics of expert knowledge production *inherent* in the network, including the Commission's growing attempts to delimit both legitimate subjects and participants of the controversy, which we now proceed to address in the next section.

5. Negotiation of boundaries and connections in the internal work of the UH-Network

At a time when the public controversy over the setup of the UH-Network unfolded, attempts to supply and authorize factual, evidence-based knowledge on fracking continued in an ever-diminishing circle of participants, including ourselves. In this section, we explore how the Commission's officials renegotiated the relevance of the issues at stake by establishing a boundary between the technical and the political and by making and un-making connections between particular claims uttered by participants and the universal, 'European' knowledge claims. These struggles were centered on a Europe-wide database, which was deployed to systematize the information supplied by participants on exploratory drilling results, environmental monitoring and emerging technologies of fracking, subsequently becoming the intended end-product of the network. Our focus is mostly on discussions that took place during the network's work group meetings in June and November 2015. The June meeting took place shortly after NGOs had filed their complaint to the Ombudsman, as a result of which the Commission made an urgent declaration that the network serves merely the purpose of technical data collection, without assuming any advisory role to policy-makers. The tasks of the work groups were consequently restricted to reaching consensus on the design of the database. As we document below, however, this discussion continued to be dominated by questions and suggestions coming from particular contexts: from local communities, national geological surveys, or oil and gas companies. These issues needed to be sorted out, included or excluded to fit the Commission's idea about the European and apolitical character of knowledge on unconventional hydrocarbons.

As we joined the meeting of the UH-Network on 10 June 2015, the debate started off with an unexpected statement on behalf of the Steering Committee and Commission's representatives that the network plays a strictly 'non-advisory' and 'non-political' role. The network's Chairperson immediately announced that the network's purpose was data collection and collation only, the final outlet of which would be a database filled in with measurable, quantifiable data. From then on, the discussion focused on negotiating which information should or should not be included in the database. In other words, which particulars were meaningful for the European experience and technical enough in their character so that they would not imply any political involvement of the network. Following this introduction, a keynote speaker from the Commission urged the participants to commit themselves to the task of delivering some concrete pieces of information, which were argued to be crucial for the success of the whole enterprise. During the Working Group 1 meeting that followed, the Chairperson of the network further explained that available exploration and monitoring data would be inserted into a joint 'matrix', so the chief purpose of the meeting was to provide an opportunity to agree on the design of this matrix. Both speakers thus attempted to delimit the controversy by re-framing it as an issue of mere data collection and, in this way, 'unframing' it as a political issue altogether in order not to indicate whether the Commission is either for or against shale energy development.

In the course of the discussion, however, it turned out that some parameters were very difficult to stabilize as merely 'technical data', and instead opened up new terrains for conflict that overflowed the official frame proposed by the Steering Committee. A good example here concerns the health impacts of fracking. After around 40 min of rather emotionally flat discussion concerning parameters of wells and fracking technologies, a participant who introduced themselves

as an independent expert from the UK raised a point that they would actually like to discuss health and safety issues. They noted that the UH-Network had so far conflated environmental impacts with health and safety, but these should be treated separately and that the network should review the existing regulations on these issues. This claim was met with the Chairperson's quick response that matters of regulation were beyond the network's mandate. Not only would discussions around regulation be 'political', but health issues were considered too contextualized and complex to be operationalized, measured, and universalized as one of the impacts of fracking in Europe. As another expert present in the room pointed out, he was not able to imagine how the link between health impacts and the industry could be established. He kept on pondering whether one would ever be able to say that an X number of fracking operations increases the probability of cancer diseases by Y percent. He thought this was an impossible task. The Chairperson decided to rule out any further discussion on health on the basis of it being too complex and with clear political implications that went beyond the network's mandate.

However, the controversy over the purpose and boundaries of the network did not end at that point. Notably, another participant representing the anti-fracking movement in the UK confronted the Chairperson's approach to focusing 'merely on the data in hand'. Furthermore, they lamented that local communities were treated as 'guinea pigs' forced to take part in an experiment carried out by industry. They referred to these experiments as '*your* experiments', implying that they did not share the experience of fracking with companies. These were two particular types of experience which created a divide between 'us communities' and 'you' or 'them' the companies. By then, the Commission's initial intention of creating a common ground for an open and balanced exchange had outright failed. Much like the international NGO spokespersons earlier, local community representatives urged the UH-Network to take a moral stance on the use of hydraulic fracturing *overall*. They demanded that their particular experience became relevant for discussing a general place for unconventional hydrocarbons in Europe. Eventually, however, the Chairperson abruptly closed down the discussion on the desirability of fracking in Europe, similarly to health and safety issues, by declaring that the matrix was apparently already agreed upon by everyone. This clearly set a precedent for subsequent framing of the debate and for the exclusion of other 'social issues'.

On a different occasion, representatives of UK local communities pointed out that fracking operators in England had hidden some accidents from the public eye. By using this example, they argued that data collection carried out by companies is not transparent and companies' monitoring practices are below acceptable standards. They also claimed that on-site monitoring was basically self-monitoring conducted by companies alone, which cannot be trusted, nor did they have much confidence in state agencies who were supposed to supervise these companies. In other words, they did not trust the particular accounts of companies and their relations with public authorities. In response, a UK government official immediately assured that state agencies were indeed aware of the various accidents and they were doing a proper job monitoring industry activities. The network chairpersons gave support to the UK officials and thus showed trust in the data provided by the government agencies and companies operating there. This alienated the community representatives even more. Indeed, the June 2015 meeting was the last workshop that these participants attended. When the lead author later asked in an interview whether they intended to come back, they dismissed the possibility by saying there was nothing interesting for them to be gained from the network (Interview, London, September 2015). The potential of re-shaping relations between some communities, industries, and experts initially offered by the participatory formula of the UH-Network was wasted in the discussion over health impacts and monitoring practices, by disengaging them without any deeper reflection. The 'public' for the epistemic experiment was therefore narrowed down substantially (cf. Chilvers and Kearnes 2016; Cotton and Devine-Wright 2012).

At the same time, the task of data collection itself, supposedly a simple and purely technical one, also proved to be controversial and prone to conflicting judgements. As Jane Holder (2006) has shown with her analysis of the Environmental Impact Assessment, data collection is never a purely technical endeavour but always constrained by the political and legal dynamics of a given context. Data collection was coordinated by the Joint Research Centre and, as a public authority, JRC had fairly easy access to data available in various national public institutions. These were not considered by the network organizers as political or burdened with an ambiguity—they had already been 'technicized' through the work of various governmental agencies and their experts. JRC experts thus considered public data sources as generally reliable and trustworthy, though some additional work of commensuration of the measurement units had to be done in order to place them in the same database. An interesting process of universalizing particular expertise coming from Poland happened at the November meeting. Seven impact assessment reports published by the Polish Geological Institute (PGI) were reviewed by the JRC experts during the working group meetings. The PGI carried out a unique research project by measuring the impacts of fracking on water, soil, and air in seven different locations in Poland. After a thorough review and a round of Q&As, the Chairpersons decided to include data coming from the Polish reports into the final database. The universalizing power of the EU-level peer review made the particular experience from only seven locations in one Member State relevant for the European story about unconventional hydrocarbons.

Following another intense day of meetings in November 2015, the annual report of the UH-Network was prepared singlehandedly by the JRC staff in cooperation with the network's Chairpersons. Even though the report lists all the parameters that the participants had proposed to include in the matrix, the result of data collection was very poor. Most data originated from public domains in Poland, UK, Spain, Germany, and Denmark (JRC 2015). The majority of the environmental data came from the seven environmental impact studies conducted by the PGI. Likewise, data on existing technologies for hydraulic fracturing was very scarce and also mostly originated from Poland, even though other Member States, such as Germany and the UK, also have some experience with fracking. Finally, in February 2015, the work of the UH-Network suddenly came to abrupt end. A few days before the network's first Annual Conference was due to take place in Brussels, the JRC contacted all participants and announced that their service is no longer needed following the release of the annual report. 'The Commission has decided that [. . .] the running of the current Working Groups should end and no new Working Group meetings will be convoked', wrote the JRC in an email, adding that the Commission will 'continue this work' alone and 'share its findings publicly'. This was later confirmed by a Commission representative, who opened the conference in Brussels by laconically thanking all participants for their contributions and declaring that all necessary knowledge has indeed already been gained and the network's mandate fulfilled, with the consequence that its work will now be 'paused' or 'put on hold' following the publication of a single report. As said, this report was

written solely by the JRC experts. Even though the report lists all the parameters that the participants had proposed to include in the matrix of the data base, the collected data were very limited.

6. Epilogue and conclusions

'The Network is dead', a leading EU official promptly replied when the authors recently enquired about the future plans for the epistemic experiment. This conversation took place at a follow-up event in Amsterdam, in June 2017, which was now carefully framed as a 'scientific conference' for facilitating 'Trans-Atlantic knowledge exchange' on shale energy development. Indeed, the conference organizers were keen to detach this event from the earlier gatherings, despite the fact that it convened many of the same expert participants and also introduced the main outlet of their original tasks; a pan-European database with GIS-based well data. In addition to familiar faces, the audience now also gathered new industry experts, academics, and government officials from both sides of the Atlantic (including, interestingly, an entire panel on 'social aspects' of fracking which had been dismissed earlier). Yet, the name of the UH-Network was never even mentioned in public by the organizers, following the Commission's abrupt decision to put its work 'on hold' a year earlier. What seemed to be the purpose of this conference was to consolidate a new base of 'expertise' *and* a new 'public' for the controversy, now rehearsed as a purely scientific one.

A curious silence thus endured over the fate of the earlier epistemic experiment despite the fact that the Ombudsman investigation had eventually concluded on 16 March 2017 that the UH-Network did *not* actually provide the Commission with any 'assessments or policy advice'. Indeed, the Ombudsman had affirmed that the network only served as 'information gathering' and hence did not need to be structured as an Expert Group. In retrospect, there was no evidence of maladministration found, although the Ombudsman did advise that if the network is ever to be reactivated, it should be restructured for reasons of transparency and independence. By then, however, the controversy had already moved on, so that even the Ombudsman's decision reflects the subsequent decision of the Commission to deploy its 'own in-house research services' to carry out further research on the topic.[22]

As we have argued in this article, the limited lifetime of the UH-Network, with its many twists and turns, can be understood as a dynamic experiment not only in gaining expert authority through 'open information and knowledge sharing', but also in producing a European story about unconventional hydrocarbons and its public. The ambition of the Commission was to better understand the European experience, so in this regard the outlet of the network's work could have become an important document telling what had so far happened with the new industry in Europe. Potentially, the authority of the Commission could have added much importance to this story by acknowledging the political weight of the issue for various actors. Also, as initially the Commission had started off with a broad definition of the types of knowledge required—environmental, technological, social—the conclusions of the network could have potentially gathered a wide audience, a public composed of diverse actors. The Commission's approach to involve a wide range of stakeholders, including industry experts, research institutions, and civil society representatives, was thus intended to result in a broad-based consensus about the corpus of knowledge to be utilized for democratic, transnational governance of unconventional hydrocarbon development. The initial approach of the Commission can therefore be considered inclusionary, aimed at opening boundaries rather than sealing and making them tighter.

Contra to the Commission's proposition, however, part of the civil society participants publicly reframed the UH-Network as serving merely the interest of a narrow group of actors, namely the hydrocarbon industry. The boundary-making process was thus set off instantly. Some NGO actors wanted to distance themselves from the Commission's experiment and declined to be part of its politics of knowledge production. They refused to make what was purportedly a particular experience of industry relevant for European energy politics. They distanced themselves from that experience and wanted it to be erased from the EU-level discussions rather than inscribed into a database and a report authorized by the Commission. After a series of accusations and a highly-publicized naming-and-shaming campaign led by these NGOs, the network's agenda begun to look as co-producing pro-industry knowledge claims for pro-industry publics. This jeopardized the Commission's intentions because it placed the fundamental rationale of 'transparent and open dialogue' into doubt and, worse still, challenged it on democratic grounds. In response, the Commission instructed the Steering Committee to urgently 'unframe' the controversy from its political context by re-crafting the network's agenda as a strictly technoscientific exercise of data collection and collation. With this move, the initial openness for different types of particular claims and contextualized politics around unconventional hydrocarbons was abandoned.

Following Choy (2011), it is interesting to observe how different particulars were linked and scaled up while others were excluded, and how the network organizers from Brussels played a key role in this. While data from state institutions or research institutes and companies (even if scarce) were scaled up and linked in the database through the work of the JRC experts, data submitted by NGOs or claims made by local communities were subject to strict scrutiny or excluded as too political and too particular to value-loaded contexts. This shows that the work of fact making or data production is not simply carried out on pre-existing categories. Data collection is seldom about collecting and ordering pre-existing and bounded pieces of information. Rather, data collection is about finding ways to make various particulars relevant for a more universal scale—here the European scale. Both the connection and disconnection are constructed by actors endowed with authority to sort out facts, who in this case were the Commission and JRC officials. The co-produced effect of data making in this case was a certain public, which was effectively narrowed down to technical experts, company representatives, and a few social science academics.

Therefore, we contend that constitutive co-production as an analytical lens allows us to explore both the cases of successful and failed attempts at public deliberation in knowledge-making experiments. And while the legacies of a controversy and culture of public consultation matter in this respect (Einsiedel et al. 2011), the case of the UH-Network shows that its success and failure also pertain to ongoing and indeterminate struggles in deploying, managing, and disputing both the legitimate 'experts' and 'publics' of the experiment. First, while the Commission had intended, perhaps naively, to compensate for its lack of regulatory mandate in governing unconventional hydrocarbons by making the JRC a centre of expertise who single-handedly consolidates and circulates available knowledge in the field, this proved impossible because the concerned actors did not possess a shared understanding of both the types of knowledge required and the experts entitled to speak for this knowledge. Secondly, not just Commission officials but many other involved actors, including strikingly also key NGO policy

entrepreneurs in Brussels, assumed the existence of well-established stakeholder groups who just need to be appropriately consulted, thus effectively promoting the 'residual realist' understanding of public participation (see Chilvers and Kearnes 2016). To some extent this reflected the existing political situation around fracking, as some participating actors already had particular 'attachments' (Marres 2007) to the shale energy issue, and some even had first-hand experience as members of local communities or advisory bodies engaged with particular exploration projects. However, their divergent perspectives on fracking expertise could hardly be contained within neatly-defined, pre-existing partisan groups, as some matters of concern resonated across diverse actors who subsequently begun to resist Commission's attempts to 'unframe' the experiment.

Our analysis therefore concurs with the argument that the democratic potential of such controversies to facilitate collective learning is 'neither automatic nor guaranteed' (Whatmore and Landström 2011), but depends among other things on finding a degree of consensus over the boundaries of the controversy. However, if these boundaries are established in a top-down manner by a narrow group of elite actors, as it happened in the case of the UH-Network, then this risks losing potential participants and subsequently undermines the effectiveness, relevance, and authority of the knowledge produced. Deliberation can thus be understood as an art of establishing relations of mutual interest and engagement between actors and their particular experience, and agreeing on the scope and space for debate. Indeed, this recalls Latour's (2004) idea that deliberation is about creating a universe—or rather temporarily- and locally-stabilized universes in plural. The crucial challenge is how to broaden these universes rather than delimit them to a small group of 'expertise' where any attempt to extend the boundary—or to bring in new matters of concern, new politics, new language, new controversies—will be countered by those who guard the boundary.

Notes

1. Fracking is a shorter name of the technology for the exploitation of unconventional hydrocarbons. The technical name is high volume hydraulic fracturing and it involves inserting large volumes of water with fracking fluids into the subsoil formations under high pressure.
2. See, for example, Ecowatch, 'Sir Paul McCartney Leads Celebrity Call for Fracking Ban in the UK', <https://www.ecowatch.com/sir-paul-mccartney-leads-celebrity-call-for-fracking-ban-in-the-uk-1881917691.html> accessed 13 July 2017.
3. For example, movies such as Gasland, Promised Land, Drill Baby Drill, or FrackNation were deployed to influence the public image of shale gas extraction as either an environmental disaster or an economic panacea (Espig and de Rijke 2016; Mazur 2016).
4. <https://webcast.ec.europa.eu/3cc697419ea18cc98d525999665cb94a> [no longer publicly accessible].
5. Resolution of 21 November 2012 on industrial, energy, and other aspects of shale gas and oil <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2012-0444&language=EN>
6. *JRC Workshop Proceedings: Safe and Efficient Shale Gas Exploration and Production* https://ec.europa.eu/jrc/sites/default/files/ld-na-25990-en-n.pdf
7. Commission Communication on the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing in the EU, Brussels, 17.3.2014, COM (2014) 23, at 10.
8. Commission Recommendation 2014/70/EU of 22 January 2014 on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing, OJ L 39, 8.2.2014, pp. 72–78.
9. Commission Communication, note 7 above, at 10.
10. Ibid.
11. https://ec.europa.eu/jrc/sites/jrcsh/files/Mandate_and_ROP_attached_to_note_to_JS.PDF
12. Ibid.
13. The rules for Commission Expert Groups are established in Commission decision C(2016)3301 establishing horizontal rules. This Decision should be read together with Commission Communication C(2016)3300. See also further below.
14. <https://ec.europa.eu/jrc/sites/jrcsh/files/Mandate_and_ROP_attached_to_note_to_JS.PDF> Annex II.
15. *The Guardian* Green groups accuse EU shale gas panel of fracking lobby takeover,15 April 2015 https://www.theguardian.com/environment/2015/apr/15/green-groups-accuse-eu-shale-gas-panel-of-fracking-lobby-takeover
16. <https://ec.europa.eu/jrc/en/uh-network>
17. A copy of the complaint is available at: <https://corporateeurope.org/print/2100>
18. Rules on Expert Groups, C(2016) 3301, Brussels, 30.5.2016.
19. Framework Agreement on relations between the European Parliament and the European Commission, OJ L 304, 20.11.2010, pp. 47–62.
20. Here, it is important to note that representatives of the national administration were also excluded from participating in this network.
21. Case: 1100/2015/NF 'Alleged failure of the European Commission to treat the European Science and Technology Network on Unconventional Hydrocarbon Extraction as an expert group and to ensure its balanced composition' opened on 18 August 2015; available at <http://www.ombudsman.europa.eu/cases/caseopened.faces/en/60649/html.bookmark>
22. Decision in case 1100/2015/NF concerning the European Commission's Network on Unconventional Hydrocarbon Extraction, available at <https://www.ombudsman.europa.eu/nl/cases/decision.faces/en/77069/html.bookmark#_ftn1> accessed 13 July 2017.

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