The Comparative Politics of Fracking: Agenda-Setting, Networks and Framing in the US and Europe

ABSTRACT
The extraction of shale gas through hydraulic fracturing (or 'fracking') has become one of the most important but also most controversial methods of increasing energy supply this century. While the benefits and risks of fracking are similar in the US and Europe, the process has developed in sharply different ways. This paper seeks to explain the variable uptake of fracking in these two polities. Many structural reasons for this difference have been identified (including geology, technological expertise, market and regulatory structures) but this study focuses on political agency. Drawing on agenda setting and network literature, the paper constructs a framework that is mindful of structural conditions, but pays particular attention to the complex set of actors, interests and images shaping fracking developments. It identifies competing (pro- and anti-fracking) networks in the US and Europe, and explores the frames they use to further their agenda-setting aims. The paper finds that networks on both sides of the Atlantic include similar members and employ similar frames. But their ability to shape the fracking agenda varies, as does the resonance of their frames. The paper offers preliminary explanations for that variance, focusing particularly on the character of the network, their framing strategies, and how both are shaped by the structural conditions in which networks operate.

KEYWORDS: fracking; networks; protest; framing; agenda-setting

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Prepared for delivery at the 2013 annual meeting of the UK Political Science Association, 25-7 March 2013, Cardiff, UK

The exploitation of shale gas is one of the most significant innovations in global energy extraction this century. Trapped deep underground in shale rock beds, massive gas deposits have been identified in North America, Europe, China and Africa. According to International Energy Administration estimates, global shale gas supply could grow by more than 50 percent by 2035 (IEA 2011). Shale exploitation promises potentially huge benefits: plentiful and cheap supplies of natural gas, reduced dependence on foreign imports, local economic renovation, and the creation of thousands of jobs. But extraction of shale, especially through hydraulic fracturing or 'fracking', is controversial. Particular concerns include environmental degradation, especially of water sources; methane leakage, triggering of earthquakes, and adverse impact on landscapes, health and communities.

While the benefits and risks of fracking are broadly similar across the globe, the process has developed in dramatically different ways. A particularly stark comparison is that between the US and Europe. Both have ample shale beds, both are high consumption democracies thirsty for plentiful, stable, cheaper sources of energy. But in the US, shale extraction has proceeded at fever pitch. A decade ago shale gas was an insignificant source of energy: today it comprises over a third of America's total gas supply (Yergin 2012). In Europe shale reserves are also massive. France, the UK, the Netherlands, Poland, and Romania all feature significant shale gas basins. Yet the exploitation of shale gas in Europe has been slow, hesitant and ambivalent. While both the US and Europe feature much internal variation in the development of fracking,[1] greater differences in the politics of fracking exist between these two polities.

How might we explain divergence in the embrace of fracking by these two political systems? The explanation is in great part due to *structural* factors. These include geology (shale is more plentiful and easier to access in the US), geography (Europe is more densely populated), and technology (drilling innovations emerged and are more advanced in the US). Furthermore, McGowan (2012) and Stevens (2012) identify different regulatory structures - rules, directives, laws- affecting fracking, including tax credits and favourable legislation. Other writers have highlighted the role of economic structures – including the level of market liberalisation – as more or less conducive to the extraction of shale gas (Pearson *et al*, 2012).

However powerful these structural factors, they alone provide an incomplete picture of variation and its causes. States that are equally geologically rich do not follow the same patterns. States with access to similar technology or markets, or governed by similar laws, do not necessarily adopt similar policies or stances towards fracking. Moreover, these structural factors neglect the critical role of *agency*: what role do actors (political, economic, public) play in pushing forward or stymieing developments in this area? Structural conditions do not exist in isolation: how are they exploited or bypassed by different actors? What shapes these actors' 'success' in setting the fracking agenda?

This paper draws on a rich agenda-setting literature to build a framework that is mindful of structural factors, but allows us to probe wider political factors influencing fracking's development. It pays particular attention to agency, especially the complex set of actors,

interests and images shaping variable fracking developments in the US and Europe. Section I introduces a framework derived from agenda-setting studies. The framework focuses especially on two areas: networks of competing interests, and the policy framing they deploy. Sections II and III probe in detail how network building and framing have shaped fracking developments in the US and Europe. The final section sums up preliminary findings and suggests areas for further research.

I. FRAMEWORK

Research on genda-setting is broadly concerned with how issues or problems come to the attention of public and policymakers. How are specific ideas formulated and presented to policymakers and the general public, and with what effect? Of particular interest for this paper are models focusing on actors or agents of attempted change. One of the best known is Kingdon's (1996) work on policy entrepreneurs – individuals who seize the moment of favourable policy environment and push for policy change. Baumgarter and Jones' (1993) work on agenda change demonstrates that because political institutions tend to favour inertia (especially in the US), major mobilization of actors is necessary if established patterns are to be overcome. Sabatier and Jenkins-Smith (1999) focus on the agenda-setting role of advocacy coalitions - collection of actors from a variety of institutions who share a set of policy beliefs.

This paper combines insights from the above models but with some refinements. It begins by widening Kingdon's focus on *individual* entrepreneurs to collectivities or groups. Ackrill (2011) for instance, demonstrates how entrepreneurship is a behaviour shared amongst several individuals. We can take this point further to ascribe entrepreneurial action not to an individual but to a *network* of actors seeking to mobilize ideas. While network analysis is usually used to explain policymaking or implementation, the focus in this paper is on networks' agenda-setting potential - the ability to galvanize actors to shift agenda in a particular direction. **Agenda setting networks** are thus collections of actors from interest groups, government institutions, experts and civil society who work together to advocate policy positions and shape the public and policy agenda. Network literature (Marsh and Rhodes 1992; Peterson 2009) underlines the exchange amongst members of key resources such as information, money, access or legitimacy. Interest groups need to influence policy; experts want access and influence; government actors need the expertise, support, legitimacy of particular groups or actors. Like Kingdon's policy entrepreneurs, these agenda-setting networks nurture preferred policy ideas and solutions, and attempt to increase policymakers' receptivity to them.

Agenda setting networks resemble Sabatier's advocacy coalitions in certain respects. Like Sabatier's coalitions, they draw together actors with a stake in particular issue; they seek to 'to manipulate government institutions and to change people's behaviour' (Sabatier and Jenkins Smith 1999:154). But Sabatier's advocacy coalitions are both overtly political and held together by shared beliefs and norms. The networks identified here are different: they include actors who do not necessarily share common beliefs (on, say, the desirability of energy efficiency, the role of government, the severity of climate change or its causes), and they are not seeking to realise a particular belief system. They are instead

held together by a specific agenda-setting goal, and the exchange of resources needed to shape that agenda.

Agenda-setting networks exists on both sides of an issue or debate. Whereas for Kingdon entrepreneurs are primarily individual(s) pushing *for* a policy development, networks might also protest a development, seek to halt or even reverse policy decisions. These I call protest networks – actors who draw particular attention to the dangers or risks of a particular type of action, and mobilize for its regulation or outright cessation.

Both types of mobilization networks (pro and protest) seek to shape the government and public policy agenda by advocating particular positions, and convincing the public and policymakers of their merit (Kingdon 1996). But they also compete, sometimes fiercely. While both seek to increase receptivity to a particular idea, those ideas differ. How those ideas are framed and presented is crucial to their success. A second focus in the literature is thus the question of how networks strategically frame an issue to increase its salience to public and policymakers. Baumgartner and Jones (1993), who are interested in explaining both policy stability and agenda change, focus heavily on how issues are defined. When a policy changes, 'it generally does so in an environment of changing issue definition and heightened attentiveness by the media and broader publics' (Jones 1994: 185). They refer to 'policy images' as a mixture of empirical information and emotive appeals (True, *et al* 1999: 101), and note how disagreement over policy often manifests itself in battles over competing images. True, *et al* (1999) note that such an image is most often connected to core political value such as economic growth or security, and communicated simply and directly to the public. Other writers refer not to policy images but 'frames'.[2] In agenda setting literature, framing refers to defining, selecting and emphasizing particular aspects of an issue according to an overarching set of underlying assumptions (Daviter, 2008; Miller, 2000: 211; Pralle and Boscarino 2011). Rochefort and Cobb (1994), for example show how frames convey arguments about the nature of the issue (its severity, incidence, novelty, proximity) as well as its responsibility (government, individual, market). Finally, frames identify problems in a particular way but also hint at how such problems may be solved.

In short, political actors frame problems to increase or decrease attention to them, mobilize actors or de-moblise them, and direct policymakers towards solutions. Whose definition or frame takes hold is important because it shapes how an issue is handled (Pralle 2009). Competing networks feature different dominant frames and employ them differently. This study constructs an overview of competing fracking frames by examining systematically a series of statements, policies, news alerts and websites of key network members.[3]

The framework applied below draws together the different approaches outlined above. It identifies and analyses the composition of competing networks, their behaviour as policy advocates or protesters, and the 'glue' (shared aims and exchange of resources) that holds them together. It then explains how they seek to frame the fracking debate and move issues up or down the policy agenda given the structural conditions in which they operate. By comparing these networks and the frames they deploy we can identify non-structural

factors shaping the variable embrace of fracking in the US and Europe. More generally the comparison will help us better understand how actors interact with structural factors shaping their agenda-setting opportunities.

II. FRACKING IN THE US

Exploitation of shale gas through fracking is not new, but it has experienced an astonishing revival in the US, with yields jumping from less than 1 percent in the late 1990s, to 20 percent of domestic gas production by 2010 (EIA 2012). The increase in gas production is so great that liquefied natural gas (LNG) import terminals in the US are being re-vamped to export the gas. Several structural factors provide a conducive environment for such development: technological advances in locating and extracting deposits, a highly developed domestic gas industry, deregulation of gas markets, supportive federal regulatory and legal environment, including certain exemptions from regulations (see McGowan 2012). But we still need to know which actors exploited or thwarted such structural conditions, and how. Below we identify the competing networks that emerged to shape the agenda in ways favourable to pro- fracking legislation and action, or mobilized against such developments.[4]

A. US Pro-Fracking Network: Members

Some of the most active members of the pro-fracking network represent various ***energy and associated industries***. Obvious proponents are the oil and gas companies who have the largest economic stake in fracking operations and are professionally well represented by organisations such as the American Petroleum Institute (API). Also implicated in the network are associated service companies, especially those providing supporting infrastructure, including transmission pipelines, gas processing or storage capacity (Le Renard 2012: 8). These economic actors often join together in coalitions linked to different shale basins. One of the largest is the Marcellus Shale Coalition (MSC)[5] which represents dozens of large oil and gas firms but also many associated drilling, haulage, transport and chemical industries These economic interests bring enormous resources, not just financial, but also expertise and informational. The latter resource is underlined by the MSC's core aim: 'to provide in-depth information to policymakers, regulators, media and other public stakeholders' on the positive impacts of 'responsible natural gas production' (MSC 2013) .

Government actors Federal but especially state governments can benefit mightily from shale development. Policymakers can boast a record of job creation for their state, district or locality, and benefit from generous windfall taxes or royalties from businesses. We thus find many US fracking champions particularly active at state level. In exchange, the gas industry benefits from range of state tax credits and R&D subsides that help to make policy economically more lucrative, and keep fracking high on the governments' policy agenda. At state level policymakers can respond to industry's desire for favourable state legislation or favourable implementation of federal rules (Broder 2012). As an example, Rabe and Borick's (2013) study of Pennsylvania underlines the role of

'entrepreneurial' governor Tom Corbett who has championed shale gas, and minimized governmental interference. Similarly, Davis' (2012) study of fracking in Colorado uncovers the tight relationship between industry representatives (oil and gas firms, but also associated services) and state legislators who agree on the need to promote energy business gains while downplaying safety or environmental concerns. The US network features a less prominent role for local or community representatives. Indeed, Rabe and Borick's (2013) study outlines the near exclusion of local government from early policymaking, despite these officials' concerns about local effects.

Landowners in the US have a significant resource to exchange: the lease of their land and local support. Under US law mineral rights normally belong to land owners rather than the state. The majority of wells drilled are on private land. Consent is easier to obtain if landowners feel they will benefit personally, and often generously, for operations on their land. The economic incentive to allow exploration and extraction is so powerful that most landowners approached have accepted. For some landowners, funds from the lease and royalties comprise their main income.[6] They can become participants of the pro-fracking network by acting as advocates for the policy generally, or at least not advocating its restraint. These landowners are a key network member missing from Europe.

Finally ***energy experts*** act not just as providers of information, but agenda-shapers in their own right. They bring to the network expertise but also in some cases much sought after credibility. Some are accused of acting merely as fronts for industry bodies (Greenpeace 2013). But less controversial experts are also involved such as energy institute fellows, editorial writers, or academics.[7] These members' promotion of fracking is qualified but still robust. Shale is viewed, on balance, as the most reasonable way out of the energy crisis, or promoted as a 'transition' or bridge fuel: cleaner than coal and therefore a step towards a more sustainable energy future (Jaffee 2013).

This agenda setting network is broad and diverse but still cohesive. Members do not necessarily share core beliefs about the environment, energy use or climate. But they are bound together by a shared policy goal and core message: set the agenda to create a supportive conducive environment for fracking development on all levels.

B. US Pro-Fracking Network: Frames

In their study of nuclear power, Baumgartner and Jones (1993) contrasted the policy image of economic progress and technical expertise versus the image of danger and environmental degradation. Fracking images (or frames) are often remarkably similar.

The most dominant pro-fracking frame is one of ***economic growth*** brought about by cheap, secure energy supply. In the US economic benefits are often pitched at individuals: lower energy prices, more jobs, and promise of continued economic opportunity. Expressing this frame well is the trade body American Petroleum Institute (API), whose spokesman Erik Milito (2013) promises the

> creation of hundreds of thousands of new jobs…billions of additional dollars in revenues for government, lower household energy bills, cost advantage to American manufacturing, and a strong American position in …global energy markets.

This frame also depicts regulation as a threat to economic growth. Representing major firms, the US Business Roundtable's report on the future of energy urged the Environmental Protection Agency (the federal regulatory body) to base its regulations 'on sound science' and 'take into consideration the net cumulative impact these regulations have on energy costs, economic growth and job creation' (Business Rountable 2013).

Closely intertwined with economic growth is a frame encompassing secure energy supply, and the resulting ***energy security***, if not independence, for the US. This goal is long standing but gained particular resonance in wake of growing uncertainties driven by the Arab spring uprisings and an unpredictable Iran. In this context 'shale gas represents manna from heaven' (Stevens 2012: 7) and a way to reduce the 'petro-power' of conventional gas producers from unstable sources in Middle East, Russia and Venezuela. According to its website, the influential Marcellus Shale Coalition exists to 'address issues regarding the production of clean, job-creating *American* natural gas… (MSC 2013) (emphasis added). Or, as put by the API representative: 'Our energy policy choice is clear: we can produce more energy here or import it from abroad'. Moreover, shale can strengthen America's emergence as a 'global energy superpower' and offers America a 'once in a life time opportunity to become an energy leader'(Milito 2013).

The ***technological prowess*** frame includes several elements. First it touts US technological expertise in shale exploitation by demonstrating how producers have dramatically increased the efficiency and productivity of drilling operations, as well as improving well flow management (Stevens 2012: 4). The Business Roundtable (2013) attributes the nation's 'astonishingly' improved energy outlook to the:

> development of technologies to unlock vast new domestic oil and natural gas resources and the application of innovative technologies to economically extract and deliver these resources to market.

Moreover, the technological frame underlines spillover benefits to other technologies and sectors: 'the technology used to create the shale gas revolution could also be very effectively applied to increasing production of other sources' (Milito 2013).

Finally the pro-fracking network also includes a ***reassurance frame*** designed to quell concerns of fracking. It highlights especially the 'exaggerated fears' of opponents or perceived risks. Similar to the policy images or frames used by the pro-nuclear lobby (Baumgartner and Jones 1993) the pro fracking network tries to underplay and assuage fears using a range of arguments. Stevens (2012: 3) notes how industry regularly dismiss concerns of fracking with the argument 'we have been doing this for years and we know what we are doing'. The API spokesman, for instance, notes that fracturing 'has been used for over 60 years.…What's more, the possibility of problems emerging is made less likely given the state-of-the-art-technology used today' (Milito 2013). In any case existing regulation is sufficient. Current policy is:

> heavily regulated and closely monitored by state and federal governments….We can pursue a rational, fact-based national energy policy, or we can let misinformation and extreme ideologies guide our energy future' (Milito 2013).

In sum, this network attempts to shape a pro-fracking agenda by emphasising the economic and security benefits of fracking, and downplaying its perceived risks. It is made up of a variety of actors exchanging support and expertise; they are bound together by a shared goal, but also a shared narrative.

C. US Protest Network: Members

Opposition to fracking began to emerge in 2010 as environmental and health concerns about the effects of fracking mounted in the US. A disparate network formed around these shared concerns as the debate over fracking became increasingly 'popularized and vicious' (Stevens 2012).

Most network activity emerged from ***local citizen groups*** who highlighted the adverse local impact of fracking, especially related to issues of water use and quality. Fracking involves pumping a mixture of water, chemicals, and sand deep underground to fracture rocks and release deposits of gas. It uses a huge amount of water, most of which remains below ground. But it also spews out 'flow back' or 'slick water' containing the original chemicals used in fracking, as well as additional toxic chemicals including chromium and radium. Local opponents to fracking highlighted the significant environmental dangers and risks, including the triggering of earthquakes, the risk that methane (a potent greenhouse gas) could escape into atmosphere and, most importantly, concerns about the contamination of local ground and water supplies. Some community groups also protested about impact on neighbourhoods, including noise pollution, debris and the disruption of landscape.

Local concerns have to a certain extent been taken up by larger national ***environmental NGOs*** which form a further node in the protest network. For example, NGO Food and Water Watch have launched 'Americans against Fracking' campaign (AAF 2012), and the 'Stop the Frack Attack' coalition includes dozens of local groups, as well as a handful of established national organisations such Sierra Club, Friends of the Earth (FoE) and the National Resource Defense Council (NRDC). In summer 2012, the coalition organised the first national protest against fracking in Washington DC. The large national environmental organisations can offer grassroots groups a national forum, lobbying and organisational workshops and skills. They in turn need the stories and local support of citizen groups. But the extent of involvement of national groups in fracking is less than in Europe (see below) and most protest is still locally grounded. While many US environmental groups are actively opposed to fracking, they have not yet prioritised the issue.[8] Nor can they match the resources of established extraction firms and, in any event, are wary to dismiss completely a process that promises to bring down gas prices and create jobs, often in deprived communities.[9]

Compared to government involvement and investment in the pro-fracking network described above, the US protest network features fewer ***government champions***. Very

few governors or high profile state officials are part of this network. In some state legislatures (such as Maryland) representatives have worked with groups to introduce anti-fracking legislation, but most proponents face a tough time convincing state representatives to oppose actively a practice generating direct revenues for the state. At the federal level congressional opponents are sparse. For instance, although a fracking Act which would address current exemptions was introduced to Congress in 2009, it languished there for several years before being re-introduced in 2011. It has not yet been passed.

***Celebrities and the media* :** A distinctive node of the US protest network are media and entertainment celebrities who offer brief but visible bursts of activity. Local campaigns thus tend to be promoted less by legislative sponsors and more by film or media celebrities. The best known example is Josh Fox's 2010 controversial documentary *Gaslands* which depicted the damage fracturing had on a local community. The film 'turned the obscure anti-fracking movement into a populist, celebrity-and-Occupy-endorsed cause' (Weigel 2013). In 2012 Mat Damon's drama *Promised Land* again highlighted dangers of fracking, albeit in gentler form.[10] Yoko Ono and son Sean Lennon launched 'Artists against Fracking' in their efforts to convince New York governor Andrew Cuomo to reject proposals to allow fracking in his state.[11] Finally, this network benefits from strong media advocacy, most notably the *New York Times*, which ran a series of investigative articles attacking the shale gas revolution and its effects on community. *Scientific American* and *National Geographic* magazines have also published 'scientifically grounded' reasons to be cautious (2012).

Overall we find a broad, varied but somewhat lopsided network populated heavily by environmentalists and celebrities, with lighter presence from elected officials, government representatives, or business. Compared to the pro-fracking network there is less integration and exchange between different members, especially between protesters intensely opposed, and those actors within government and business who share concerns but not the same oppositional zeal.

D. US Protest Network: Frames

The first frame is one of ***environmental degradation and risk***. Members have made the most of possible risks to water and health, especially at home, or in the community: 'Fracking threatens the air we breathe, the water we drink, the communities we call home and the climate on which we depend' (AAF 2012). The documentary *Gaslands* mentioned above embodied dramatically the degradation frame by depicting residents living near fracking sites lighting their 'burning faucets' for the camera; their tap water contained enough leaded methane to make them as flammable as lighter fluid. While members from the opposing network have strongly disputed the link between methane content and fracking depicted in the film, the connection between fracking and environmental danger stuck. Today the image of burning faucets remains one of the protest networks' most powerful images.

Linked to environmental degradation is the frame of ***technological uncertainty***, or an over reliance on technological fixes. A *Scientific American* (2012) editorial on fracking operations in several US states warned that: 'All these states are flying blind. A long list of technical questions remains unanswered about the ways the practice could contaminate drinking water, the extent to which it already has, and what the industry could do to reduce the risks'. NGO members conveyed the same message:

> We have learned, as a country, some hard lessons about the consequences of uncontrolled resource extraction. As we confront the emerging challenges of fracking, we must learn from our history, not blindly repeat it….We must get these protections right. We may not get a second chance (NRDC 2013).

A third frame was criticism of lax or ***insufficient regulation*** at both state and federal level. Federal legislation currently exempts fracking operations from protections under several Acts regulating air, water pollution and waste disposal. The 2005 Energy Act, for instance explicitly excludes fracking from the Clean Water Act.[12] Protest network members accused companies of refusing to disclose (supposedly for commercial confidentiality reasons) which chemicals were being used. The chair of NRDC complained that the US lacked necessary safeguards and that 'those protections we do have are no match for the explosive growth in the use of hydraulic fracturing'. Sierra Club's Michael Brune (2013) put it even more succinctly: 'If fracking is so safe, why can't the industry be held to the same standards as everyone else?'

The pro-fracking network's economic growth frame is difficult to ignore or entirely reject. The market and technological conditions described above have made exploitation of shale in the US economically feasible and attractive. Instead, the protest network has constructed a frame of ***skewed economic benefit.*** Some members claim that the profitability of operations is itself 'grossly overstated' (Urbina 2011). But the main thrust is that the economic benefits were primarily for large business. For instance, Sierra Club's Brune argued 'Although unrestrained development of the planet's shale gas deposits and other extreme fossil fuels would definitely mean profits for energy producers and prolong our dependence on carbon-polluting energy' it would do little to help the common man. This frame became highly polemical, reflecting the adversarial nature of network competition. Environmentalist and media members in particular accused oil firms of a campaign of 'intimidation and obfuscation' which sought to shape the agenda with an 'impressive propaganda effort carried by slick PR firms, industry funded front groups and predictable cabal of right wing industry toadies from cable TV and talk radio' (Kennedy 2011; see also Greenpeace 2013). This accusatory frame is not shared by all in the diverse network, but it is highly visible. In sum, the US protest network is vocal, but it remains primarily an external protesting force invoking often fiery frames. It includes few members from within government or across businesses which means it has difficulty shaping the government agenda even if its public presence is growing.

III. FRACKING IN EUROPE

Although Europe as whole is considerably less receptive to or active in fracking than is the US, it is not for lack of shale. According to the EIA (2012), the technically recoverable shale gas reserves are considerable and could account for as much as one-tenth of global resources. Northwest England alone features huge deposits – 'in the same league' as in the US (Chazan 2011). Fracking in Europe involves a broadly similar set of benefits and costs as found in the US, though structural conditions are less conducive to fracking operations. First, despite the European Union's (EU's) attempts to liberalise, 'a truly single energy market is far from complete' (Pearson, *et al* 2012). Europe's energy infrastructure is less developed with fewer integrated pipelines or transport networks. The regulatory setting is also less welcoming. There is currently no EU-wide shale regulatory framework; member states are permitted to choose to frack or not. But all states are affected by existing EU regulation, specifically water framework and chemical regulations. Crucially, this EU legislative is heavily qualified by the precautionary principle which advocates a cautious approach to perceived risks. How have European actors responded to these structural conditions and with what effect? Below we identify the competing European networks which seek to shape the fracking agenda.

A. European Pro-Fracking Network: Members

The pro-fracking network in Europe features many of the same players as in the US, but with some notable differences. ***Industry*** players again play the most prominent role. Global oil and gas companies are as keen to shape a favourable agenda in Europe as in the US. Multinational companies such as Exxon, Chevron, or Dart Energy offer the same arguments in favour (economic growth, security), and can bring to the network huge financial and information resources. The recently launched coalition Shale Gas Europe(SGE) represents global but also European based firms such as Cuadrilla, the main firm active in the UK. Similar to the Marcellus Shale Coalition, SGE sees as one of its main aims to nurture a debate that is 'balanced, informative and engaging to allow the public to come to their own conclusions on the issue' (SGE 2013).

But even with the ample resources of SGE, the European network includes far fewer associated services or financial actors active in the US. Because Europe lacks the chain of supporting industries producing, say, equipment for exploration and drilling, the European network does not enjoy the same cheerleading from associated firms. Nor are as many investors on board. Questions of how easily technically recoverable resources of shale gas will actually translate into production continues to create 'serious investor uncertainty' (Stevens 2012: 10).

Government advocates are found primarily at the member state level. There are fewer sub-national or local government supporters because while disruption is felt locally, benefits are not. Unlike in the US, royalties and revenues from operations accrue primarily to the national level governments. Advocates from national governments are more active in certain member states. They work with others to shape policy or institutions conducive to pro-fracking agenda. For instance, the UK the chancellor of exchequer (finance minister) George Osborne has set up an 'Office of Unconventional Gas and Oil' to simplify the regulatory process, and has suggested introducing tax breaks

to attract shale gas developers (*Economist* 2012). Similarly Polish government officials have been enthusiastic proponents, working through EU institutions to ensure EU wide legislation does not 'unduly' limit fracking opportunities (Boersma and Johnson 2012). But elsewhere national government support is lukewarm or lacking entirely (such as France, the Czech Republic or Bulgaira).[13]

At the EU level, institutional support is mixed but overall hesitant. We certainly do not find the active EU institutional 'cheerleaders' as found in, say, the area of climate change. The European Commission, which proposes legislation includes advocates and critics. Those in the Commission's Energy Directorate are most enthusiastic, though they also stress the need for caution and vigilance That cautious embrace is reflected by the Director-General of Energy, speaking at the launch of Shale Europe: '*If shale gas can be safely developed* in Europe then Europeans should not look a gift horse in the mouth' (Shale Europe 2013, emphasis added). Elsewhere the note of caution is louder, as noted in the opening statement from the Commission's Environment Directorate: 'Ensuring the environmental integrity of unconventional hydrocarbons extraction is the Commission's overriding concern' (European Commission 2013). Meanwhile the Council (where member state views are represented) has not yet endorsed fracking but is instead trying to reach consensus amongst the many different views represented there (McGowan 2012).

Overall, compared to its US counterpart the pro-fracking network in Europe is under-developed with less 'reach': there are fewer members from the local level, or associated industries, fewer landowners (they do not benefit directly from operations on their land), fewer enthusiastic members within government institutions, and less interaction amongst its members. However, the recently formed Shale Gas Europe may play a potentially crucial network-building function by coordinating actors across interests and EU institutions. Its launch in February 2013 brought together participants from the European Parliament, European Commission, industry, think tanks, NGOs and the general public 'to gain a greater understanding on the future of shale gas in Europe' (SGE 2013).

B. European Pro-fracking Network: Frames

Like proponents elsewhere, the European pro-fracking networks presents shale exploitation as a way of creating profits, providing jobs and reducing foreign imports. But framing is muted in comparison to the US. It is less strident and more cautious, reflecting the make up of the network.

As in the US, the pro-fracking network's dominant frame is that of ***economic growth.*** SGE underlines the exciting potential of stimulating jobs and the economy. The UK high-level business group Institute of Directors is keen to publicise the chance to exploit ' a really valuable asset right on our own doorstep' which can offset declining yield from the North Sea (quoted in *Financial Times* 9 Oct 2012). Or, as expressed by the UK finance minister: we don't want British families and businesses to be left behind as gas prices tumble on the other side of the Atlantic' (quoted in the *Economist* 2012). But this frame is often tempered with the caveat - more pronounced than in US - of the need to regulate robustly. There is, for example, an emphasis on the need to 'effectively manage'

risks (SGE) rather than an attempt to downplay or ignore them. Or, whereas the US Business roundtable fully and unconditionally endorsed shale as a core part of US energy strategy, the European equivalent (European Roundtable, ERT) adopts a different frame. It applauds the economic benefits of shale as part of an energy strategy but 'believes that Europe needs an Energy Strategy that ensures the transition to a low-carbon economy while safe-guarding energy security, quality of supply, and cost to industry and society' (ERT 2013).

Security: the desire to free European states from foreign oil, especially Russian gas, creates a strong second frame. Although not as prominent or widespread as found in US, certain network members emphasised it heavily. Industry members made much of this frame as seen in Shale Europe's promise that 'Europeans can now look forward to the new era of gas. Abundant sources right here in Europe promise to consign energy security worries to the past' (Shale Europe 2013). And the frame was pronounced amongst certain member states. The Polish minister in charge of national shale gas exploitation, for instance described the embrace of shale as a way to reduce dependence on Russia which had become 'absolutely intolerable given [that] the supplier [Gazprom] is absolutely unreliable and you can never know when you have gas or when you don't ….we need to rely on something else' (quoted in *Euronews* 2012) .

The ***technical expertise and reassurance frame*** was also present, but not as resonant as in the US. First, technological innovation in this area is well behind the US. Secondly, it is a harder frame to sell because of broader mistrust amongst the public (see below). But assurances from global firms are similar to those heard in US. For instance, Dart Energy, which has applied for permission to sink wells in the UK, insists it 'follows all the established oilfield regulations and best practice…Our water based drilling fluids contain only safe, non-toxic biodegradable additives' (*Scotsman* 9 Dec 2012). More generally the environmental impact of fracking can be 'effectively curtailed through a combination of technological innovation and smart regulation' (Breitling Gas spokesman, quoted in the *Scotsman* 9 Dec 2012) . However network actors beyond the oil and gas industry express more caution. The ERT, for instance notes that 'Over the next ten years, we can expect further technological evolution that will support creation of a sustainable energy economy, and impact our day-to-day lives, but that is unlikely to involve changes of science fiction proportions' (ERT 2010). In sum: in their central message the European pro-fracking frames are similar to those in the US – fracking brings economic growth and security and risks can be managed effectively - but overall the frames are more muted, neither as definitive nor resonant as in the US.

C. European Anti-Fracking Network: Members

Fracking operations are not nearly as developed in Europe as in the US, but the protest networks are. Health and especially environmental concerns have prompted the rapid growth of ***community and grassroots groups*** opposed to the development of shale gas across Europe (see McGowan 2012). For local groups, the main concerns are water quality, noise and a fear that fracking and underground disposal could trigger earthquakes.[14] Community groups in Europe also worry about local disruption, especially

in densely populated areas.[15] These members include local environmental campaigners such as the 'Frack Off' campaign, but also a much wider range of members. To take a recent example from Somerset in England, the local organiser of protest meetings noted: 'It's not just people who have been involved in the green movement before. We're seeing farmers, landowners, parents, health workers, church groups expressing interest and concern' (Morris 2013). In the US these protesters are at least partially offset by a key member of the pro-fracking network: individual landowners. These potential 'local champions' are missing in Europe because the revenues from exploitation accrue to the state. Because communities most affected do not see any immediate benefits they are less likely to accept disruption and risk of development.

Moreover, (and much more than in US) these groups receive substantial levels of support from main environmental NGOs, some political parties and elected representatives (McGowan 2012). For instance, in exchange for local support and ideas, these groups received from national NGOs advice and knowledge, for instance on using local planning systems to stop fracking operations (FoE 2013).

European environmental NGOs became key protest network members for the same reasons as their US counterparts. They share the same profound concerns about fracking's impact on environment, health and safety. They bring to the network a particular focus (and expertise) on certain concerns such as water use: fracking uses huge amounts (millions of gallons for each well) which could have greater implications for more densely populated, resource-scarce European countries. European NGOs also focus more on the climate effects than do US protesters. Unconvinced by arguments about shale's 'clean' image, they highlight the risk of escaped methane, a greenhouse gas more potent than CO2. National NGOs have worked very closely with local protesters on this issue. For instance in France mobilization of local groups on methane leaks triggered campaigns in parliaments and government 'at local, regional and national levels' (McGowan 2012: 11). In the Czech Republic, Bulgaria, UK, Romania and now Poland, several national NGOs have taken on local cause by, for instance, calling for a national or EU moratorium on exploration and drilling (*The Guardian* 2013).

A key difference between protest networks in the US and the EU is that the latter includes the involvement and interaction between actors from within and outwith government. In Europe protest networks often garnered substantial levels of support from ***political parties and parliamentarians*** as core network members. For instance McGowan (2012: 10) notes how Dutch local groups worked with Dutch MPs to campaign against plans for test drillings. Similarly, in Germany, local protest was embraced by the Green party at the sub-national (Land) level where much of responsibility for regulation rests. In France a network of local protesters slowly built momentum drawing in opposition parties, first Greens and then the Socialists.

Many members of the European Parliament have also played a supporting role. In 2011 the EP's report concluded that the risks of shale required a new EU directive. In a November 2012 vote the EP stopped short of a moratorium but did demand the issue receive far more robust attention, including an EU wide 'risk management framework'

which would ensure that 'provisions for the protection of human health and the environment apply across all Member States' (European Parliament 2012). Meanwhile, DG Environment commissioned numerous studies, including one specifically on the environmental effects of shale. Their conclusion – widely distributed within the network - was that shale extraction imposed 'a larger environmental footprint than conventional gas development' (European Commission 2012).

Finally, ***green technology and renewable energy firms*** have joined the network, motivated by concerns that investment in shale gas investment will substitute for investment in renewables and low carbon technologies. The Aldersgate Group, for instance, a coalition made up of 50 green energy and technology companies and investors has worked with the EU institutions and NGOs on this issue because they are worried that even the anticipation of cheap gas could mean lower investment in renewables. Rather than shale as a 'bridge' or transition fuel as advocated by shale's proponents, these member fear exploitation would lead to gas substituting 'not for coal, but for renewables' (Stevens 2012).

D. European Anti-Fracking Network: Frames

In Europe the dominant, overarching frame is undeniably one of **risk:** risk to human health, landscape and, especially, climate and the environment:

> Shale gas poses a real and serious threat to the climate, the environment and local communities. The extraction of shale gas leads to ground-water contamination, serious health impacts, and significantly higher carbon emissions than other fossil fuels (FoE Europe 2012).

A more sober source (a European Commission study) delivered a similar message about the potential environmental risks of shale gas extraction:

> Risks of surface and ground water contamination, water resource depletion, air and noise emissions, land take, disturbance to biodiversity and impacts related to traffic are deemed to be high in the case of cumulative projects (European Commission 2012).

While the message is nearly identical to that delivered in the US, the 'risk frame' falls on more receptive ears in Europe. First, policymakers in Europe have generally adopted a more precautionary approach to risk compared to the US (Majone 2002; Bomberg 2004)[16]. Secondly the European public display greater scepticism towards regulatory efficacy, especially the ability of governments to protect citizens from risks (Vogel 2012). Moreover, concerns over risk may be compounded because of Europe's greater population density, and constraints on water and land use. Finally in Europe this risk frame is being deployed in advance of most major fracking operations, whereas in the US concerns emerged primarily after large scale operations were already underway. This timing matters. First it provides 'lessons from abroad' that can strengthen the validity of the risk frame:

> Communities around the world are seeing the devastating impacts of coalbed methane and shale gas exploitation. We need to learn from these experience and ensure that same doesn't happen here' (activist quoted in the *Scotsman* 9 Dec 2012).

Secondly, as outlined in the US section, once fracking operations begin to deliver clear economic benefits the economic growth frame strengthens and the 'risk' frame may be diluted.

Another frame, and one led not just by renewable firms, is one of '***fossil fuel lock-in***'**–** the worry that shale will nudge out investment in renewables, slow the transition to low carbon economy, and 'lock-in' damaging fossil fuel dependency. In Europe the frame is expressed by many NGOs, including FoE's Rimmer (2013):

> The reality is we do not need to gamble on fracking. Investing in clean….energy from the wind, waves and sun – along with a major energy-saving drive – would create hundreds of jobs, boost energy security and keep the lights on.

This frame resonates for several reasons. First, Eurobarometer surveys underline very strong public support for renewables but also energy savings as a desired key strategy. (Eurobaromter 2011) Second, unlike the US, the EU prides itself as leader on global climate change, a mantle it is keen to maintain. In sum, several of the protest network's frames are similar to those in the US, but structural conditions (geographic, economic and regulatory) mean they resonate more strongly in Europe.

IV. CONCLUSION

A. Findings

This paper has sought to go beyond structural explanations by highlighting the role of agency in shaping the variable uptake of fracking in the US and Europe. It first identified competing networks of actors seeking to shape the fracking agenda, and then explored the frames employed to further that aim. It found that while both pro- and protest networks mobilized in both the US and EU, their ability to shape agendas varied as did the resonance of their frames. This section draws together preliminary explanations for that variance, focusing particularly on the character of the network, framing strategies, and how both were shaped by structural conditions.

Network character is determined by membership, integration and reach. This study has suggested that the mix of network members affects networks' agenda setting abilities. Especially important is how and to what extent government policymakers are involved. In the US, government representatives were core to the pro-fracking network, but largely missing in the protest network. Thus while the US protest network was lively, active and celebrity studded, it did not feature core members from within government who could push the agenda beyond the public sphere and into government policy.

A different dynamic prevailed in European networks. While few government actors were core to the pro-fracking network, they were key players in anti-fracking networks. The paper identified active legislators in sub-national, national and supranational levels of governance. Similarly this protest network included economic actors (especially those from low carbon industries) on its side. It thus spanned a greater variety of key actors able to spread a message beyond a traditional 'protest' contingent.

Integration and exchange of resources amongst members also affects a network's agenda-setting ability. For instance, even though the US pro-fracking network members did not share core beliefs or political values (oil monoliths sat alongside small farmers or energy academics), all members brought to the network key resources (financial clout, government access or local legitimacy) and all were able to cohere around a clear, simple message: the benefits of fracking outweigh the costs. By contrast the pro-fracking Europeans appear to have had, as of yet, fewer opportunities to work together, exchange resources or present a unified view. Instead, the message of global oil firms members (do not worry; risks are overstated) were countered by other network members in favour of further exploration, but also deeply cautious.

Linked to membership integration is the network's multilevel reach. In multilevel systems such as the US and EU, successful networks need to mobilize across interests and institutions but also across different levels of governance. While networks in both the US and Europe involved some multilevel interaction, the European networks, especially the protest network – featured striking multilevel cooperation and interaction. These protest networks provided a forum necessary for local protests to be taken up by actors at the national and even supranational level. In the US, that reach is, for now, less developed with fewer links between local, state, and national members.

This paper also highlighted the important role of *framing strategies* in setting the agenda. Both sides attempted to deliver a clear, simple message linked to the core imperatives of economic growth, environmental quality, risk and security. The frames differed between groups, but also transatlantically. The paper suggests that these differences were in part the product of structural constraints (regulatory, financial, political) around which networks need to work. In other words, the paper's focus on actors does not deny the importance of structural factors. Rather, it has revealed the interaction of actors and structures, focusing on how would-be agenda setters navigate structural terrain as they search for receptive public and policymakers.

For instance, given the legal conditions regarding land ownership and mineral rights in their respective domains, networks responded predictably. The US pro network focused its economic growth frame on local benefits (for individuals or community). The European pro-fracking network emphasised not individual gain, but national or supranational promise of cheap, secure supply. Another example of how actors navigate structural constraints was outlined in Section 3. It highlighted Europe's distinctive regulatory conditions, including public attitudes towards science and risk and how these attitudes rendered certain frames more or less resonant. These conditions help explain why, although the risk frame is crucial in both polities, it is especially powerful in Europe. Similarly it helps explain why thus far US actors have been more successful in delivering the 'reassurance' frame to help achieve their aim of maintaining a comparatively lax regulatory framework. That same frame would not and does not gain the same traction amongst European publics. Instead, protesters have employed the risk frame to slow the introduction of favourable regulations or incentives that facilitate the development of fracking in Europe.

B. Future research

While this paper offers only a preliminary study, it makes several empirical and conceptual contributions on which future research can build. The structural factors (technological, economic, geographic and regulatory) shaping fracking have received significant recent attention. However, few studies have focused on the role of actors, and even fewer have focused on both. This study helps underline the interaction between structure and actors and how they shape agendas. This focus helps us gain a greater empirical understanding of fracking: it underlines the extent to which shared structural factors are crucially important but alone do not explain variation in the embrace of fracking operations.

Conceptually a focus on the interaction between actors and structures can contribute to agenda-setting and framing literature. This study acknowledges Baumgartner and Jones' argument that the frames are most successful when linked to core imperatives. But however powerful the link to core imperatives, the success or resonance of frames is contingent also on the structural conditions in which they are formed and delivered. In short, the paper suggests how structure and agency combine to shape policy agendas.

The paper also contributes to our understanding of networks by outlining how certain network characteristics (membership and integration but also multilevel 'reach') can shape a network's ability to achieve its aims. Combining network and framing analysis allows us better to understand why certain frames are developed, and how they are communicated.

In sum, this study has demonstrated how network characteristics, framing strategies and structural conditions have all shaped the fracking policy agenda in the US and Europe. Further research is needed which examines this dynamic in more depth (through more detailed discourse analysis, or mapping of networks, or in-depth cases studies) or with more breadth (how do these factors explain fracking in other parts of the world?). Such studies are necessary and welcome as a means to capture the rapidly changing nature of shale gas politics and governance.

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ENDNOTES

[1] In the US, states vary dramatically in their embrace, from enthusiastic Pennsylvania and North Dakota, to ambivalent New York, to Vermont where the practice is banned. Similarly, European states represent a continuum from relatively enthusiastic Poles and Brits on one end, and adamantly opposed France and Bulgaria on the other. The focus of this paper, however, is on the differences between the US and EU as single units.

[2] Although framing is the broader concept, for the purposes of this paper the terms policy image and policy frames are used interchangeably.

[3] The content of different frames is derived from an analysis of the websites and key policy documents of key actors in the respective networks. As far as possible content was drawn from roughly equivalent groups (industry roundtables, key NGOs). For each group key documents relating to that actor or group's: definition and severity of the problem, and possible solutions to perceived problems. These were manually coded to identify key themes, phrases and words. The results were then used to make inferences about the messages within the text. The purpose was not to develop sophisticated framing analysis but rather to gain a general idea of key messages and priorities of the networks and how they compared.

[4] Our focus here on is on agenda-setting network. The network of actors engaging in policy making or implementation will differ; in particular it would feature more heavily regulatory agencies, legislative committees tasked with creating specific legislation or programmes. Davis (2012) offers insights into this legislative process.

[5] The Marcellus Shale lies underneath several states with Pennsylvania at its centre. It is estimated to hold over 50 percent of the nation's total shale gas (Rabe and Borick 2013).

[6] There are important exceptions, including the extremely unlucky residents of western Pennsylvania who were sold land, but not mineral rights (*New York Times* 30 June). They suffered considerable side effects and risks, but for no individual gain.

[7] Typical is academic such as Amy Jaffe, professor at the University of California, Davis and head of their Sustainable Transportation Energy Pathways.

[8] For instance, weekly monitoring of FoE websites in February revealed that while fracking featured prominently on FoE Europe or Scotland website (as part of their local action but also environmental justice campaigns), it was missing from FoE US. However, the related issue of tar sand extraction (and the pipeline due to carry resulting crude) is prominently featured.

[9] The Marcellus Shale, for instance, sits below some of most economically deprived communities of the US.

[10] The celebrity focus prompted its own backlash with counter documentary *FracNation* released in early 2013 promising to 'find the truth' and protect viewers from 'Hollywood elites' and 'green extremists' (see FracNation.com). It received a warm reception when screened in a private viewing to House Republicans in early 2013.

[11] The anti-fraking video (Don't Frack my Mother') was re-released in March 2013 with added stars including Maggie Gyllenhaal, Susan Sarandon, Liv Tyler and others: http://www.guardian.co.uk/environment/2013/mar/11/yoko-ono-susan-sarandon-anti-fracking-video

[12] The exemption become known as the 'Cheney-Halliburton Loophole' because it was advocated by then Vice President Dick Cheney, a former CEO of gas driller corporation Halliburton and key drafter of Bill.

[13] Bulgaria has called for European level regulation which would 'protect both environmental and local populations' (Le Renard 2012: 8), and in 2012 French President François Hollande promised to continue France's ban on operations.

[14] In the UK operations were suspended after minor earthquakes in 2011.A subsequent government report concluded the process was safe provided monitoring was robust, and the moratorium was lifted in late 2012.

[15] Building and supplying a shale well requires close to 1000 visits to the site by heavy lorries which 'could do a lot more harm to local nerves and foundations than tiny earthquakes' (*Economist* 21 Apr 2012).

[16] The precaution principle guiding political and regulatory action in the EU is based on a number of underlying concepts such as preventative action, proportionality and duty of care (see Bomberg 2004).

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