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From laissez-faire to intervention: Analysing policy narratives on interoperability standards for the smart grid in the United States



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ABSTRACT

The imperative of realizing utopian visions of the smart grid puts unprecedented policy focus on standardization. Because standards are a prerequisite for deployment, the US federal government - in a departure from established hands-off practice - intervened to coordinate and accelerate standardization activities. This research uses narrative analysis to explore how such a policy of intervention was constructed. What emerges has elements of a hero story, describing a situation to be remedied: an aging electricity grid, plagued by blackouts and modernization hampered by an electric utility industry composed of stand-alone “silos”. In contrast, the vision of a future “smart grid” with promises of improved energy security, reduced carbon emissions, renewable resources, “green innovation” and jobs. The threat: without standards, the risk that sizable public investments become obsolete prematurely. The villain: unnamed companies engaging in uncompetitive behavior. The unlikely hero: The National Institute of Standards and Technology, able to act as an “honest broker”, proving that the government can act as “catalyst” in partnership with industry. While succeeding in making a strong argument for government intervention, the story can be criticized for making exaggerated claims about the effects of standards, for downplaying the complexity of the process and for failure to outline policy alternatives beyond a five-year plan.

1. Introduction

In recent years, the creation of a “smart grid” has become a key element in the quest of policymakers to operationalize the goal of “sustainable development”. At a *practical* level the smart grid entails the integration of information and communications technology (ICT) into electric transmission and distribution networks. As a *visionary* project, however, the smart grid also promises to support ambitious targets of reduced carbon emissions and increased use of renewable resources. Additionally, the smart grid is presented with the lure of “green innovation” and jobs. Thus in the European Union (EU), the implementation of smart grids has been described as “a significant opportunity for European industry to research, market and export new technologies, to create new jobs and to maintain global technological leadership.” ([1], p. 8). And in the United States (US), progress on building the smart grid is important for the country “to lead the world in the 21st century economy, be at the forefront of the clean energy revolution, and to win the future by encouraging American innovation” ([2], p. v). These visionary accounts of the smart grid promise to solve some of the most pressing societal challenges of today; the appeal to policy-makers is obvious.

Policy documents identify the development of a common set of

interoperability standards as a prerequisite for delivering the smart grid. Hundreds of standards are needed and the effort required by the standardization world to achieve this task has been described as “*unprecedented*” in scope and complexity [3,4]. While standardization in more regulated sectors has seen varying degrees of government intervention, US governments have generally been reluctant to intervene in the ICT standardization field because it has been seen as important to ensure that innovation is not hampered by premature standards-setting or lock-in to inferior technology. Instead it has relied for the most part on industry self-organization [5]. However, citing the societal imperative of building the smart grid, the federal government has departed from established general policy on standardization to catalyse activities and act as a convenor.

This paper applies concepts from discourse theory and narrative analysis to explore how a case for federal government intervention in the smart grid standardization process was constructed given a decades-long policy in the US for industry leadership. The next section of this paper introduces the general approach of this research and key concepts used. Section 3 provides institutional and political context to the subsequent analysis. It shows an inherited policy on standardization which in recent years has favoured an industry-driven approach. In terms of the political environment, the development of a policy discourse on the smart grid has taken place against a

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background of an aging grid with high-profile blackouts and the need to justify public investment in the wake of the financial crisis of 2008. This paper then considers the argumentative context in which a policy on smart grid standardization has been formulated. Section 5 subsequently analyses the presence, absence, influence and interactions of different discourses in the policy documents concerned specifically with interoperability standards for the smart grid. What dominant and alternative discourses are drawn upon to create the official narrative or story-line on smart grid standardization policy? Key documents are analysed with the aim of discovering what discourses are drawn upon in problematizing the issue of bringing about smart grid interoperability standards and in formulating and legitimating a specific solution or behavioural action in the form of government leadership in the standardization effort. The analysis shows that the US policy discourse on smart grid standardization, while rooted in existing policy on standards as market-driven, draws on a range of discourses to legitimate intervention. Finally, it considers how this policy narrative that emerged displayed many features of the technological hero story [6] and discusses the limits of this type of story in light of the findings. While succeeding in making a strong argument for government intervention in smart grid standardization, the narrative developed in policy documents can be criticized for over-simplification and for failure to outline a practical policy alternative beyond a five-year plan.

Much of the optimism surrounding the smart grid is based on technical research and engineering-based calculations of technical potential, or on economic calculations with regard to what is often called user flexibility. The practical work on smart grid development echoes this: the focus is typically technology-centric. However, in recent years there has been an increase in social-scientific research engaging in critical dialogue with this development. Scholars have pointed to the different ways that public debates on smart grid have been framed [7,8] and to the utopian nature of the smart grid discourse [9]. Others have focused on public acceptance, public engagement, and public resistance to certain salient aspects of a sustainable energy network, such as smart meters and the deployment of wind energy. Finally, legal scholars in both Europe and the US have considered the regulatory innovation required to align energy policy, technology regulation and smart grid developments ([10,11]).

In analysing policy discourse on smart grid standardization in the United States, the article seeks to contribute to this growing literature, and more widely to our understanding of a field that is under-developed yet of growing importance. As our societies are increasingly attempting to solve important challenges through the large-scale application of ICTs (smart transport, smart homes, smart cities), we need a better understanding of policy alternatives in standardization that go beyond the typical binary of legislation versus self-regulation.

2. Research approach and methods

According to Hajer and Wagenaar, “discourse analysis has changed the way policy-making is studied” ([12], p. 1). In the last few decades many scholars have described policy as discursive action [13–15], a trend which is related to the so-called “argumentative turn” in the social and political sciences [16]. A central tenet of discourse theory and the current research is the notion that the study of policy is *necessarily* a study of discourse: because “public policy is made of language” ([17], p. 1). Hajer defines discourse as “a specific ensemble of ideas, concepts and categorisations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities” ([14], p. 44). In more straightforward terms, policy discourse, as defined by Schmidt [18], consists of “whatever policy actors say to one another and to the public in their efforts to generate and legitimize a policy programme” (p. 211). Discourse is different from discussion as actors with diverging or opposing interests can and often do share the same *frames*.

Crucial for this research is the notion in discourse and narrative approaches that language does not simply mirror the world but it acts to

encourage certain ways of thinking and silencing others: policy sets out a dominant conceptualization of the problem which sets limits on what can be said and felt about it. Discourse, in this sense, is controlled by certain regulative principles, which prohibit certain topics, valorise certain concepts or legitimize certain forms of knowledge [19].

The argumentative context, here defined as the macro-social context comprising all the circulating discourses on an issue or that have the potential to be associated with it, includes earlier writings, inherited assumptions, and ideological contexts. Policy actors extract from this context in order to construct their particular argument and problematization Fairclough, 1992 or *storyline*. ÓTuathail describes storylines as “sense-making organisational devices that tie the different elements of a policy challenge together in a reasonably coherent and convincing narrative” (ÓTuathail quoted in [54], p. 16). In Hajer’s terminology, storyline is defined as “a generative sort of narrative that allows actors to draw upon various discursive categories to give meaning to specific physical or social phenomena.” Storylines are strategically employed by policy entrepreneurs so as to impose on others their version of events, as well as possible solutions, thus the ability to successfully frame policy alternatives can become a decisive aspect of the policy process [20].

The power of storylines is based not so much on empirical investigations or structural causality of the situation, but on the idea that it *sounds right* [14]. In addition to drawing on existing ideological repertoires, policy narratives gain credibility and become persuasive by ordering the elements of the story according to familiar plotlines. This can be done by invoking a classic myth or by referring to archetypal figures and motifs, e.g. the hero, martyr, or wanderer. The most common narrative follows a simplified version of the epic hero’s journey ([53], cited in Ref. [6]). In the epic form, the protagonist answers “the call” and finds itself, often in a parallel world, confronting a number of enemies and/or obstacles. Employing strengths, sometimes symbolised as a silver bullet or magic elixir, and overcoming weaknesses, the protagonist becomes a hero and returns to the ordinary world a saviour. In the romanticist form [21] the plot may involve a fall from grace and describe a return to or rediscovery of a purer self. Another recognisable plot has a David and Goliath character, with several small players attempting to topple a very large, dominant player [22]. Stone [23] identifies two broad categories of plots with numerous possible variations: stories of decline and stories of control. The plot of decline is a story emphasizing how things will get worse if the opposing solution is enacted; the plot of control is aimed to convince the audience that things once believed to be out of our control are now within reach.

Common to all these stories is that the recognisable form and characters help them make immediate sense to the audience. As such they can help get the policy message out and to build support for it, but this strength is also a shortcoming. Janda and Topouzi [6] show how the features of the hero story in particular have been used to communicate energy policy and that there is often a discrepancy between the promises of such a story and the policy outcome in the “real world”. They recommend that such accounts be balanced by the use of “learning stories”, which take into account the complexity of policy problems, the limits of what can be achieved, and the nature of the effort required. This paper considers how the case for government intervention in smart grid standardization resembles the hero narrative and whether the development of a learning story would be more helpful in building support for a sustained public involvement in the effort.

In applying concepts drawn from discourse theory and narrative analysis on the case of federal government intervention to bring about interoperability standards for the smart grid, this paper analyses policy documents (legislation, reports, speeches, press releases) produced by or endorsed by the US federal government. Discourse analysis gives epistemological and methodological priority to the study of primary texts like presidential statements and official policy documents [24]. These “monuments” or primary texts are often the result of an on-going discursive negotiation and can, at least in theory, be seen as having formed, absorbed and grasped the strongest representations. Primary

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