



Original research article

More than filler: Middle actors and socio-technical change in the energy system from the “middle-out”

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ABSTRACT

This paper concentrates on ‘middles’ and ‘middle actors’ in energy systems and introduces a “middle-out” framework for examining and supporting systemic change to a lower carbon society. We propose this “middle-out” approach as a complement to “top-down” and “bottom-up” strategies. Our approach suggests that two essential elements for successful systemic change are actors’ agency and capacity, where ‘agency’ refers to actors’ abilities to make their own free choices, and ‘capacity’ refers to actors’ abilities to perform the choices they made. We argue that due to their position between top and bottom actors and between technology and implementation, middle actors play crucial functions in the transition process. Their abilities are based to their own agency and capacity which they can exercise to influence the agency and/or capacity of other actors. The paper discusses middle actors vis-à-vis ‘intermediaries’ and demonstrates the value of the middle-out approach. Through elaborated examples of three middle actors – congregations, building professionals, and commercial building communities – it shows how middles exert influence upstream (to top actors), downstream (to bottom actors) and sideways (to other middle actors) through mediating, enabling and aggregating both themselves and others. A few weaknesses of this approach are discussed as well.

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1. Introduction – the missing middle

Keeping the ‘lights on’, the ‘cars moving’ and the ‘economy growing’ are seen by many as vital indicators for a thriving and healthy modern society. These rely on well-functioning energy systems, which we define as the set of technologies, physical infrastructures, institutions, policies and practices which enable the generation, delivery, and use of energy and its services. At the same time mitigating climate change requires a transition to a low-carbon society which entails fundamental and systemic changes to the technologies and practices of our existing energy systems.

Sovacool [1], in his mapping of the energy research field, points at knowledge gaps in existing literature and proposes a social science research agenda that may help filling them and thus improve our understanding of energy systems. One particular gap that Sovacool recognizes is the underestimation of social and socio-technical aspects that shape and construct energy production, use and

consumption. This paper proposes a new socio-technical analytical perspective, the middle-out, and applies it to examine overlooked actors in the system and to highlight strategies that could promote and support transition to a low carbon society.

Although energy systems are complex and socio-technical by nature, they are often simplistically divided into suppliers and consumers in policy forums. Governments promote the transition to a low-carbon society by regulating energy suppliers, while small end-users are being mostly encouraged – economically and morally – to reduce their energy consumption and carbon-emitting behavior [2]. Another related and prevailing dichotomy in the policy discourse is between technology – or technological innovation – and its implementation by users. In this case, much attention (and funding) is given to the development of new technologies [3,4], with the assumption that once the technology exists, and given the right financial incentive, it will be instantly and widely adopted.

There seem to be two underlying assumptions underpinning these dichotomies: first, that the systemic change will be initiated and driven from the top-down, i.e., by government regulation, suppliers initiatives, or new technologies, and from the bottom-up, i.e., by civilians and grassroots (e.g., [5]); and second, that these ‘tops’ and ‘bottoms’ – i.e., government/suppliers and consumers or

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technology and its uptake – meet at some point in the middle to deliver change. It seems that this middle point – or middle area – is often perceived by policymakers merely as ‘filler’ between the two levels. These assumptions are institutionalized by procedures and structures set by policies and practices, which emphasize the two edges – top and bottom – while often overlooking the ‘middle.’ This omission fails to recognize the roles that many middle actors could play in the transition, and the effect they could have if utilized wisely.

Here we suggest a new socio-technical conceptual analytical perspective for understanding the middle in energy systems. We frame our work according to the above mentioned top-down and bottom-up dichotomies to reflect over-simplifications of the system that are already in use. There are, of course, more nuanced and complicated ways of looking at the system. The literature on multi-level governance, for example, focuses on the various interacting authority structures acting at the local, national and international energy systems, connecting between levels of influence, and shaping governance and practices. This literature interrogates, among other things, the arrangement, distribution, and efficacy of power as embodied in various state and non-state actors or between institutions of various levels (e.g., [6,7]). For the purposes of this paper, we bundle aspects from the multilevel governance literature that explore the nuances of governance and related discourses about control and power in institutions into the ‘top’ and set it to one side. There is also a large literature on the shape and nature of consumers, individuals, citizens, and their active or passive participation in the energy system. For the purposes of this paper, we put this literature and related discourses into the ‘bottom’ and set it aside.

This rough segmentation of the existing literature allows us to focus on the ‘middle’ of the system, which we argue plays a more important role than currently recognized. We take notice of the growing and diverse literature on the role of ‘intermediaries’, which have recognized the potential of these actors to embody agendas of change in different areas and to promote it in various ways (e.g., [8–11]). Similar to the literature on intermediaries we argue that the middle is more than ‘filler’ between top and bottom, and that middle actors have many qualities and functions which are unique and essential for a durable systemic change. Yet, while our perception of middle actors overlaps with that of intermediaries, it does not duplicate it. Middle actors may operate in the same space as intermediaries but our conception of their influence and abilities sets ‘middles’ apart. Our perspective on the ‘middle’, thus, allows us to highlight some new and unique qualities of middle actors and points at strategies for action from the ‘middle-out’.

Our general conceptions of ‘middle actors’ as well as ‘middle-out’ strategies for change can be applied to different social and socio-technical transition arenas (e.g., public health, energy security, crime eradication, etc.). We, however, demonstrate our argument by concentrating on aspects of ‘middle-out’ activities that reduce energy use and associated emissions now and in the future. Other significant actions (e.g., renewable energy generation) are important but not the focus of our current work. Readers should note that while we call this process a “transition”, we do not specifically invoke transitions theory (e.g., [12]) and use the term connotatively to suggest a series of changes.

This paper focuses on several different kinds of ‘middle actors’ and develops the theoretical underpinning for a ‘middle-out’ approach for understanding and enabling transitions. It further expands our previous discussion of a particular kind of middle – building professions and professionals [13] – by considering additional types of middle actors and the conceptual basis for a ‘middle-out’ approach. We argue here that two essential elements for a successful transition are actors’ ‘agency’ and ‘capacity’. The

term ‘agency’ in our context refers to actors’ willingness and capabilities to make their own free choices, while the term ‘capacity’ refers to actors’ capability to perform the choices they made. We suggest that due to their position *in-between*, and due to their *own* agency and capacity qualities, middle actors are able to improve the levels of agency and capacity of *other* actors and increase the overlap between these two elements. Therefore middle actors could serve as important agents of change, performing crucial functions in the transition process that other actors either cannot or struggle to perform, and hence leading to a durable change. Yet, many middle actors are overlooked because policy makers tend to concentrate either on the big actors (‘top’) such as energy utilities, which have the capacity to make many changes but often lack agency, or the millions of small energy consumers (‘bottom’), which have the agency to decide on many changes but often lack the capacity to exercise them.

Previous conceptual research [14–16] has already suggested that a ‘middle-out’ approach could assist in the process of systemic change toward a low carbon society. Parag and Janda [14,15] considered various ‘middles’ articulated in different academic fields, including sociology; sociotechnical studies and transitions; public policy and administration studies; public health; processes of production; and energy studies. Janda and Parag [13,16] focused on the energy field and conceptualized the ‘middle’ (*vis-à-vis* ‘top’ and ‘bottom’) in energy systems and, amongst other issues, discussed characteristics of bottom-up and top-down approaches to energy transitions. They suggested that middle actors could promote change in various directions: downstream, upstream, and sideways, hence – from the middle out. Here, we further develop this conceptual framework while highlighting middle actors as more than intermediaries between government and energy consumers and between technology and end-users: they are active participants in the system, capable of creating (and sometimes preventing) change above, below, and across other actors.

The paper begins with a theoretical introduction to the terms ‘agency,’ ‘capacity’ and ‘middle actors’ in the context of an energy transition and with emphasis on aspects of transition related to behavioral change. Next, it provides a brief review of the literature on intermediaries. Based on this review, we argue that middles are somewhat different from intermediaries and that applying the middle-out analytical perspective allows us to notice overlooked significant actors in the arena. The paper then continues with the development of the ‘middle-out’ framework. Three elaborated examples – on congregations, building professionals, and commercial building communities – focus on very different types of middle actors and demonstrate the functions they perform in a middle-out approach to transition. These functions include mediation, but also enabling and aggregation. To different extents, they also exert influence on other actors to change the system in which they all operate. Following the practical examples, we return to intermediaries to discuss the contribution of the middle-out perspective and the notion of middle actors to the literature on intermediaries and to highlight how ‘middles’ are indeed more than filler between other actors. The paper concludes with some practical implications for the middle-out approach.

2. On agency, capacity and change

In sociology, individuals’ actions, behaviors and behavioral change are explained, among other things, by their ‘agency’ and by ‘structure’. In short, ‘agency’ refers to the individuals’ capabilities to act independently and make their own free choices, while ‘structure’ refers to factors that shape or limits individuals’ opportunities to act on those choices. ‘Structure’ includes variables such as social

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