



Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Original research article

Spatial adventures in energy studies: An introduction to the special issue

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ARTICLE INFO

Keywords:

Relational space
Mapping
Visual representations of energy
Energy and everyday life
Energy geographies

ABSTRACT

This paper has two purposes: first, it makes a case for the development of energy studies perspectives that consider 'relational space' as a critical concept organising the provision and use of energy. Second, it presents an overview of this field of research with consideration of the papers included in this special issue. The argument has three parts: first, there is an analysis of the growth of relational perspectives on space and energy looking at current debates within the literature; second, there is an analysis of visual representations of different energy features to demonstrate the empirical importance of a grounded understanding of relational space; third, there is an overview of the papers in this special issue as a means to put forward a diverse research agenda in this area. We conclude that relational perspectives have the potential to inform future energy studies and provide new insights for policy and practice.

1. Introduction

The visual lights display over Victoria Bay is one of the highlights of any visit to Hong Kong. Laser, LED lights, and other forms of lighting are displayed at different rhythms in more than 40 buildings over the harbour. The Hong Kong Tourist Board calls it "A Symphony of Light." Light-based spectacles are common attractions for tourists, from singing fountains to light shows. Active since 2004, the Hong Kong display is extraordinary because it combines the fascination of the experience of light and sound with the features of the skyline over its emblematic harbour.

This example demonstrates the complex entanglements between space and energy services. The display is a means to reaffirm the world-class city status of Hong Kong. It is presented as a tourist attraction, and it undoubtedly is one, but it is also a symbolic exercise to project the vision of an ultramodern city. Hong Kong is known for its liberal economic policies connecting flows of international capital. The display draws attention to the centres of those flows, the buildings where transactions take place. Light is central to the Hong Kong experience and the display makes that explicit (Fig. 1).

The powerful impression made by the display results from the confluence of spatial factors: the history of spatial development around the harbour; the focus on high-rise buildings motivated by the constraints of urban development and land scarcity; the development of a supply of electricity based on cheap provision from fossil fuels; and the symbolic role that light has traditionally played in Hong Kong's commercial areas. These are only some examples of the entanglement of energy and urban form in urban energy landscapes. Such a relationship was already wonderfully described by Susan Owens [1] in her seminal study of 'Energy, planning,

and urban form.' However, despite this early pioneering work, there has only been limited attention to this relationship, and especially how it influences trajectories of urban sustainability [2]. In Hong Kong, the relationship between energy development, energy supply, and energy services is shaped by spatial factors.

Over the last decade, there has been an increasing interest in the study of energy as a spatial problem. Work in this area emerged first out of a concern with the sustainability of energy and linked research results to policy recommendations [3–6]. Three new books [7–9] showcase the vibrancy of the field, the growing engagement with critical theory, and its potential to deliver new theoretical and practical insights to achieve sustainable energy goals. This special issue departs from the assumption that spatially-engaged energy research can make step-change contributions to understand the global energy challenge. The inclusion of a specific goal for energy in the United Nations' Sustainable Development Goals (SDGs) is a reminder of the contemporary relevance of a global policy agenda on energy. SDG7 ("Affordable and Clean Energy") underscores the global challenge of energy access (with 1.3 billion people still lacking access to electricity and over 3 billion people lacking access to modern fuels) alongside the increasingly pressing mandate to deliver a transition to clean energy and away from fossil fuels. Questions of distribution and differentiation are central to energy access. Concerns over 'space' are also at the heart of discussions of low carbon transitions [10].

However, space is a contested term subject to theoretical debates with implications for energy policy. The point of departure in this introduction is the work of Doreen Massey, who, in seeking to challenge the definition of space as a container of social life, defined space as 'constituted through the social' [11,12]. Massey developed her argument in dialogue with scholars

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<https://doi.org/10.1016/j.erss.2017.11.002>

Received 7 April 2017; Received in revised form 2 November 2017; Accepted 6 November 2017

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Fig. 1. Spectators observe the Hong Kong light show 'A Symphony of Light'.
Source: Castán Broto.

concerned with the political implications of thinking space as relational [e.g.,13,14–18]. It follows that space is actively produced through processes of connectivity, proximity, and differentiation. Thinking of space as relational helps to recognise multiple coexisting configurations and future possibilities. It is a means to contest hegemonic ways of thinking about collective social projects, such as the future of energy, with alternatives. For example, a commitment to relational space challenges the definition of spatial characteristics in terms of geographic positioning systems [19,20]. Relational space questions directly the spatial models of territorial control central to the exploitation and differential provision of energy resources [21].

In a special issue edited by Zimmerer [22], for example, Harrison and Popke [23] developed a persuasive account of the relational aspects of energy poverty, drawing on a case from North Carolina. Thinking relationally has also revealed the politics embedded in practices of energy at home [24]. Two seminal reviews of the spatial aspects of energy-related problems have highlighted the importance of relational approaches [25,26]. These perspectives both challenge traditional conceptions of spatiality in energy problems and invite us to rethink how the dynamics of energy provision can modify and transform spaces.

The concept of relational space extends beyond geography. It emerges in dialogue with long-standing debates in philosophy about the nature of space [e.g.,27]. Notions of relational space may be commonly deployed to study energy in disciplines such as anthropology or sociology [e.g.,28]. They have long influenced thinking within planning and architecture [29]. This special issue emphasises the importance of interdisciplinary work to examine the concept of space in energy studies.¹ Space emerges as a negotiating ground

¹ This special issue emerged from a workshop that took place in Windsor, in May 2016 on "Spatial adventures in energy studies" funded by the Economic and Social Research Council. The motivation for the workshop was to bring an explicit consideration of philosophical and geographical debates of space to energy studies. The workshop proposed 'an adventure' because it asked participants to write speculative essays aiming to look into the future of their own scholarship. Adventure comes from the Latin word *adventura*, 'what is about to happen', from the verb *advenire* 'to arrive'. Here the word 'adventure' was not proposed as an exploration, implying an exercise of intellectual appropriation (cf. Bridge's paper in this issue) but quite the opposite: an invitation to take intellectual risks out of love for the subject matter and to express audacious views in the sense of 'venturing an opinion'.

not just to secure energy access and move towards sustainable energy systems, but also to make explicit how we know and understand these problems.

In this introductory paper we draw the contours of this research agenda in relation to the contents of the special issue. The following section outlines relational perspectives on energy and space, explaining the growth of relational perspectives on energy and the development of the notion of relational space as a means to articulate energy debates. Section three provides an empirical survey of conceptions of energy and space by focusing on the assumptions about space made in different types of energy maps. If maps are propositions [30], energy maps represent proposals for energy-related actions that contain alternative conceptualisations of space. Thus, the systematic analysis of energy maps is a means to examine the assumptions about space mobilised in energy studies. The analysis suggests that scalar understandings of space are dominant in visual representations of energy and they limit the possibilities to interpret possible energy futures. The paper concludes with a review of the papers included in this special issue, evaluating the contribution of each one to the development of a spatial and relational perspective, and demonstrating the variety of ongoing interdisciplinary work. In doing so, we seek to inspire further work to develop relational perspectives on energy within and beyond energy geographies.

2. Understanding the relationship between energy and space

In an old seminal paper on energy geography, Hoare [p. 507] lamented the limited engagement of geographers with energy issues because "...energy developments are characterized by large-scale enterprise, ... few decisions are taken with an overtly spatial dimension, ... the spatial element is frequently subordinated to compelling economic and political issues, and ... obvious spatial impacts are few". Hoare was concerned with the limited presence of energy issues in a deliberately spatial academic field. Since then, there has been a reversing of the trend that Hoare described, with geographers and other spatially-concerned social scientists increasingly engaged in energy studies [25,32]. In 2011, a special issue in the *Annals of the Association*

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