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POST DATE

16/01/2023

ISSUE NUMBER

JEHRHE #8

SECTION

Special issue

THEME OF THE SPECIAL ISSUE

Shifting Narratives of Electricity
and Energy in Periods of
Transition

KEYWORDS

Electricity; Transition;
Consumption; Politics; Power

DOI

in progress

TO CITE THIS ARTICLE

Animesh Chatterjee, Daniel
Pérez-Zapico, "Shifting
Narratives of Electricity and
Energy in Periods of Transition",
Journal of Energy History/Revue
d'Histoire de l'Énergie [Online],
n°8, published 16 January 2023,
consulted 16 January 2023, URL :
energyhistory.eu/en/node/311

Shifting Narratives of Electricity and Energy in Periods of Transition

Abstract

This special issue aims at providing nuanced and multi-layered understandings of historical choices regarding, and perceptions of, electric supply and electrical technologies, by taking into consideration diverse groups, actors, agencies, and communities in distinct historical and regional settings. It also aims at rethinking energy systems, practices, and transitions through questions of gender, religion, race, design and architecture, material culture, colonialism, nationalism(s), and varied interpretations of tradition and modernity. It insists on reorienting our gaze from centring on electricity to examining electricity within existing energy regimes and sources, to historicise and problematise the place of electricity, electric supply and use within complex conceptions of energy transitions, thereby challenging linear narratives of progress and modernisation.

Plan of the article

→ New Modes of Thinking: Beyond Electrification and Transitions

- 1 This special issue arises from ongoing dialogue within and between the fields of electrical history, energy humanities, and other historical sub-disciplines. The articles that comprise this volume are products of conference panels and workshops that involved papers providing nuanced and multi-layered understandings of historical choices regarding, and perceptions of, electric supply and electrical technologies, especially taking into consideration diverse groups, actors, agencies, and communities in distinct historical and regional settings. Much of the work also happened in reading groups organised by the Electrical History Research Group based at the Centre for History and Philosophy of Science, University of Leeds, as we sought to understand the consequences of our collaborations and think about transforming individual papers and research into a coherent volume of articles. What historiographical contributions could be drawn from all the workshops and seminars, and individual research? What analytical and/or methodological threads tied our studies that traversed broad geographical and chronological ranges? How could histories of electricity be written through analytical and theoretical frameworks defined by other fields of historical inquiry? In short, what might our volume add to current discussions around not simply histories of electricity, but to a rethinking of energy systems and practices through questions of gender, religion, race, design and architecture, material culture, colonialism, nationalism(s), and varied interpretations of tradition and modernity?
- 2 Although the empirical research and historical analyses in these articles contribute to electrical historiography in their own right, this special issue has been conceptualised primarily in terms of how electrical histories can engage with, elaborate and contribute to energy histories. As such, in organising this special issue we sought to engage with a central concern in both energy and electrical histories and scholarships: concepts of energy systems and transitions. Our volume starts from the premise that electrical history can offer a more subtle approach to energy transitions by challenging and unsettling a traditional narrative in both energy and electrical scholarship — and in public debate more broadly — dominated by technocratic debates and agencies, system-centred thinking, and notions of (Western) modernity as the outcome of the spread of large technological systems. Together, the studies in this volume insists that instead of seeking a framework that examines transitions — both energy and electrical — as processes of startling modernisation, we need to reorient our gaze from centring on electricity to examining electricity within existing energy regimes and sources that existed before, alongside and competed with electricity. As such, while recognising the ways in which historians of technology and electricity, and energy scholars have rooted themselves in analyses that complicate the positivist, technocratic and teleological connotations of terms such as “electrification” and “energy transition”, this special issue asks (and answers) a more pertinent and pressing question: how can we historicise and problematise the place of electricity, electric supply and use within complex conceptions of energy transitions, broadly understood as processes of crisis, change and uncertainty, beyond “phasi-st-style” thinking? Each of the detailed studies in this volume provide their own answers to this question.
- 3 Discussing, and even questioning the place of electricity within energy regimes makes our volume relevant to discussions normally located well within the separate disciplinary realms of electrical histories and energy humanities. In challenging the perversely linear, teleological, and positivist models that continue to define much of the “modernist” scholarship, this volume requires that we first understand and problematise what energy and electrical systems are the centre of. As such, canonical literature in both energy and electricity history has for so long reflected epistemological centres that are not aware of how many contingently situated factors mattered in the past when “electrifying” societies and will matter in the energy transitions of the present. The articles in this volume, therefore, while studying histories of electric supply and technologies, are more focused on the specific sites and energy regimes within

which they were introduced and, hence, produced. The approach we take to electrical histories in this volume takes into consideration the factors that drive individual and collective energy choices, the socio-political frameworks within which these choices were made, the evolving social roles in energy systems, and the values of everyday practices and beliefs. Our approach displaces the centrality of electricity and electrical systems by introducing material, social, cultural, and political nuances into historical examinations of how communities and social groups understood, imagined, responded to, or engaged with electricity, electric supply and use, and other sources of energy from within their existing practices, experiences, and distinct outlooks. Only by acknowledging new and diverse agencies (social, cultural, political, material), introducing localised socio-cultural concerns and needs, as well as situating electricity within complex, plural and evolving contexts and environments can we form the most socially inclusive and culturally differentiated account of non-consensual and heterogeneous “electrification” and, by extension, of energy transitions. This allows for a reinterpretation of ideas of transition and energy shifts as a move towards a more positive and utopian future.

- 4 The dominant theoretical frameworks in existing literature on electrical and energy histories have arrived at junctures that provide an instructive starting point for the kinds of historiographical interventions in this volume. Electrical histories have had a complex relationship with the concept of transition. There is a long tradition within electrical historiography that has been concerned with the ways in which electrical and energy systems “developed,” broadly defining these processes through lenses of industrialisation and modernisation. Questions about transitions to industrial and electrified societies, the relations between the state, market and experts, and the gradual modernisation of societies and lives have revealed “transition” as a technocratic idea. Since Thomas P. Hughes’s *Networks of Power* (1983), historians have examined the development of electric supply as a top-down and almost unavoidable process of evolution and

growth influenced by economic, regulatory, managerial, legislative, and governmental principles and institutions. Hughes focused on the hegemony of engineers and entrepreneurs, and their interactions with the state and other political agents, thereby making these “system builders” the main, even unique, actors within historical narratives. The Hughesian narrative, with its assumption of an engineering (and masculine) prerogative, conveys the image of consumers as passive and acquiescent actors whose only behaviour is to respond to external pressures and learn how to use new electrical technologies. Although historians inspired by Hughes have attempted to complicate the narrative by being more sensitive to social dimensions of electric production and supply, they tend to centre on the technocratic premise that political, economic, and technological contexts mainly define the processes central to the growth of electrical systems. Since Hughes, other studies, for instance David E. Nye’s *Electrifying America* (1992), have offered nuanced accounts of electrification as a symbiosis of technology, society, and culture. Nevertheless, even such complex narratives are weakened through situating “electrification” — understood as the unfolding of electric supply and use — within the conceptual, ideological, and cultural caging of “modernisation”.¹ Since “modernity” was a desirable and unavoidable outcome of the spread of electrical technologies, the development of electricity harmonised with society’s demands for new sources of energy, while rejections and anxieties are treated as relatively marginal phenomena.

System-centred accounts in electrical history 5 have oftentimes converged with phasist-centred accounts in energy history, thus affecting ideas on both energy and electricity transitions. Based on grand historical narratives of the development of energy resources and technologies, discussions on transitions have focused on the ways in which economic growth has

¹ Suvabrata Sarkar’s works on the history of electricity in colonial Bengal, for instance, follow Nye’s analytical framework. See: Sarkar Suvabrata, “Electrification of Colonial Calcutta: A Social Perspective”, *Indian Journal of History of Science*, vol. 53, n° 4, 2018, 211-216.

been dependent on access to ever-increasing amounts of new energy resources² The technocratic and innovation-centric determinism in these approaches has produced historical insights that have widespread implications for public debate on climate change and the depletion of resources, including assumptions about the necessity, legitimacy and sustainability of current energy regimes, practices, and ideas of unlimited growth. Reducing carbon emissions and choosing between alternative energy resources and technologies would require complex and multi-layered modifications to the organisation and operation of energy systems. Such processes would also involve disentangling the different forms of social, political, cultural, and economic assemblages that, in combination with energy systems and resources, have institutionalised certain energy regimes, energy-related lifestyles and cultural understandings of energy.³ Yet, energy planning overlooks the broader social and cultural dimensions of energy change, including the meanings and consequences of energy systems for human societies through history. Technocratic approaches and systems-centred thinking oftentimes consider energy transitions as unproblematic processes that can be accomplished without interrogating current energy regimes, and their implications for social and environmental justice. By placing energy as the main driver of economic and social change and arguing that social or political organisation was unthinkable without the utilisation of energy resources, both historical and current discussions have, therefore, privileged the large-scale, macro-social and institutional aspects of energy production and provision. Likewise, they take incumbent energy practices for granted as

unquestioned “standards”. The end point of such histories is also self-evident — an introduction of modernity characterised by “transitions” to new and varied sources of energy and related technologies.

Systems-centred accounts, however, remain 6
influential for understanding the role of inventors, engineers, utilities’ managers, financiers, and infrastructures in the development of energy systems and their capacity to evolve in distinct national and regional settings. In addition, more recent LTS authors are developing more refined approaches by conceptualising system building “as a distributed, highly contested, and open-ended multi actor game that cannot be adequately captured from a single theoretical or actor perspective and should be studied empirically at multiple sites and scales”.⁴ Furthermore, historians have in recent years convincingly attempted to reorient disciplines and methodologies within histories of electricity and energy humanities by recognising the limitations of terms that have defined both disciplines: “electrification” and “transitions”. “Electrification”, according to recent historical critique, is a simplistic and problematic representation of electricity as an autonomous force capable of triggering broad social, cultural, and political changes, and modernisation. In *Domesticating Electricity* (2008), Graeme Gooday has warned us of the teleological and deterministic historical narratives that such approaches entail, maintaining that historians must instead re-evaluate and historicise the contested nature and meanings of electricity itself. As historians have shown, the cultural problems generated by the arrival of electrical power and communications were not merely transitory inconveniences, but opportunities to meld electrical hardware into culturally agreeable forms — including aesthetic and environmental cultures — and amplify

² Fred Cottrell, *Energy and Society: The Relation Between Energy, Social Change and Economic Development* (Westport, CT: Greenwood Press, 1970); Alfred Crosby, *Children of the Sun: A History of Humanity’s Unappeasable Appetite for Energy* (New York, NY: Norton, 2006); Allan Mazur, *Energy and Electricity in Industrial Nations: The Sociology and Technology of Energy* (Oxon and New York, NY: Routledge, 2013); Vaclav Smil, *Energy and Civilization: A History* (Cambridge, MA: MIT Press, 2017).

³ Clark A. Miller, Illes Alastair, Christopher Jones, “The Social Dimensions of Energy Transitions”, *Science as Culture*, vol. 22, n° 2, 2013, 135–148 (at 135).

⁴ Benjamin K. Sovacool et al., “Sociotechnical Agendas: Reviewing Future Directions for Energy and Climate Research”, *Energy Research & Social Science*, vol. 70, 2020, 1–35 (at 10); also, Mikael Hård, “Beyond Harmony and Consensus: A Social Conflict Approach to Technology”, *Science, Technology, & Human Values*, vol. 18, n° 4, 1993, 408–432.

cultural contours in new ways. Indeed, the eventual acceptance of electrical technologies in the 19th C. and early 20th C. was not inevitable but happened in different ways and places involving several actors and choices.⁵ Moreover, rejections and negotiations meant that electricity was not always interpreted through the framework of modernity. Given the cultural problems derived from unresolved questions of electricity's origins and physical nature throughout the 19th C., discussions on electricity encompassed divergent threads beyond modernisation and industrialisation — from the romantic to the occult.⁶

7 A wealth of literature is now looking at the numerous settings which mattered, including mapping out the rich diversity of actors — both human and non-human — networks, meanings, and interpretations of electricity through social, political, and cultural engagements. Electricity, as opposed to an entity defining and, concurrently, being defined by interlocking economic and political systems, is now situated by historians as a socio-technical assemblage that

involves machines and material infrastructures, their social and institutional organisation, social groups, consumers and non-users — including their complex and diverse identities in flux during their encounter with electrical technologies — and perceptions and representations of electricity and other sources of energy. Discussing and engaging this diverse bundle of agents but also re-reading the role of conventional system builders as to highlight their complex interactions with other agencies and drivers, allows for a richer understanding of the factors and actors that shaped trajectories of electrical adoption, scepticism, resistance, non-use, and misuse. Placing such complexities at the centre of historical analyses, especially moving from “big histories” of large technological systems to specific, temporally, and spatially bounded sites or communities where energy debates occurred, has allowed historians to complicate notions of large-scale, centralised electric power as extensions of political and ideological power, and the advent of an electrical modernity as a straightforward consequence of “electrification”.⁷ The historical entanglements between electricity and “modernity,” historians have shown, depended on the multifaceted ways in which different individuals and social groups imagined and employed electricity from within their diverse social, political, cultural, and ideological outlooks. Moreover, the variegated interpretations of electrical modernity were tied to the type of promises and challenges emerging from “modernisation” as a messy and complex process of societal and cultural change that was different everywhere.⁸

⁵ Charles Bazerman, *The Languages of Edison's Light* (Cambridge, MA; London: MIT Press, 2002); Ronald Kline, “Resisting Consumer Technology in Rural America: The Telephone and Electrification”, in Nelly Oudshoorn, Trevor Pinch (eds.), *How Users Matter. The Co-construction of Users and Technology* (Cambridge, MA: MIT Press, 2003), 51–66; Chris Otter, *The Victorian Eye: A Political History of Light and Vision in Britain, 1800–1910* (Chicago, IL: University of Chicago Press, 2008), 173–214; Abigail Harrison-Moore, Graeme Gooday, “True Ornament? The Art and Industry of Electric Lighting in the Home, 1889–1902”, in Rebecca Wade, Gabriel Williams and Kate Nichols (eds.), *Art versus Industry? New Perspectives on Visual and Industrial Cultures in Nineteenth-Century Britain* (Manchester: Manchester University Press, 2016), 158–178; Karen Sayer, “Atkinson Grimshaw, Reflections on the Thames (1880). Explorations in the Cultural History of Light and Illumination”, *Annali di Ca' Foscari. Serie occidentale*, vol. 51, 2017, 129–147.

⁶ Julie Wosk, “The Electric Eve”, in Julie Wosk, *Women and the Machine. Representations from the Spinning Wheel to the Electronic Age* (Baltimore, MD: JHU Press, 2001), 68–89; Graeme Gooday, *Domesticating Electricity: Technology, Uncertainty and Gender, 1880–1914* (London: Pickering & Chatto, 2008), 197–219; Iwan Rhys Morus, “No Mere Dream: Material Culture and Electrical Imagination in Late Victorian Britain”, *Centaurus*, vol. 57, n° 3, 2015, 173–191; Koen Vermier, “Electricity and Imagination: Post-romantic Electrified Experience and the Gendered Body”, *Centaurus*, vol. 57, n° 3, 2015, 131–155.

⁷ Paul Brassley, Jerney Burchardt, Karen Sayer (eds.), *Transforming the Countryside. The Electrification of Rural Britain* (London: Routledge, 2016); Diana Montaña, *Electrifying Mexico: Technology and the Transformation of a Modern City* (Austin, TX: University of Texas Press, 2021); Abigail Harrison-Moore, Ruth W, Sandwell (eds.), *In a New Light: Histories of Women and Energy* (Montreal; Kingston; London; Chicago, IL: McGill-Queen's University Press, 2021); Abby Spinak, “Not Quite So Freely as Air’: Electrical Statecraft in North America”, *Technology and Culture*, vol. 61, n° 1, 2020, 71–108; Ryan Driskell Tate, “Rural Revolt: Power Line Protests and the Alternative Technology Movement in the United States, 1970s”, *Technology and Culture*, vol. 62, n° 1, 2021, 1–26.

⁸ Mikael Hard, Andrew Jamison (eds.), *The Intellectual Appropriation of Technology: Discourses on Modernity, 1900–1939* (Cambridge, MA: MIT Press, 1998).

Meanings and ideas about electricity evolved differently across different contexts and were adapted to distinctive cultural resources, traditions, historical backgrounds, and challenges. In short, using historical actors, groups, regions, and nations as points of focus has provided important ways to examine the place of electricity and electrical technologies in complex and historically contingent ideas of time and space, self, human and non-human bodies, class, race, gender, imperialism, capitalism, nationalism(s), and what it meant to be “modern”.

8 The place of the “intricacies of the social processes, the nature and capacity of political change, and the circulation and organisation of symbolic meaning through culture” in the ways our material infrastructure are shaped and built, and our cultural, social, and political engagements with energy are defined is rightly a crucial theme in electrical histories as well as energy humanities.⁹ Energy scholars, much compelled by the urgency of examining climate change, and the social and environmental consequences of energy production and use, are trying to illuminate the limits of current public and policy discourses on energy transitions. Most of these efforts are trying to bring together scientific knowledge about the causes and consequences of climate change along with social and cultural insights into the origins of our current energy regimes and their social and environmental consequences. Energy history has emerged as a blossoming field with methodologies and frameworks that are providing more detailed and critical understandings of past and present energy societies and their capacities of transition. This includes a re-evaluation of how energy systems emerged or the particularities of distinct energy histories. Changes between energy and society or the assessment of energy consumption practices as the outcome of cultural traditions and societal contracts at a given time have also figured as recent avenues of inquiry, along with an analysis of the uneven distribution of energy resources throughout history, the

variety of energy choices available, the interrelations between newer and older forms of energy or the creation of energy landscapes.¹⁰

9 Energy historians have long pointed to the incomplete nature of “energy transitions.” Recent scholarship has raised social, cultural, and political issues embedded in, or affected by, energy transitions. However, while these approaches have challenged the notion of energy transitions as linear and teleological processes of technological change related to unproblematic concepts of “modernity”, “development”, and economic or market “growth”, they have remained silent on differences of opinions in energy politics.¹¹ Energy scholars are also complicating conventional approaches to energy in social theory as to avoid the risk of affirming the agency of energy.¹² This implies more nuanced renderings of energy supply and demand that situate energies within the continual reproduction of evolving social practices. Energies, then, emerge from and are defined by social practices that are enacted, produced, and transformed in any given society, and by which social orders and societies emerge.¹³ Questions about how and why energy are adopted and diffused

¹⁰ David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, MA: MIT Press, 1999); Nina Möllers Nina, Karin Zachmann (eds.), *Past and Present Energy Societies: How Energy Connects Politics, Technologies and Cultures* (Bielefeld: Transcript Verlag, 2012); Ruth Sandwell, *Powering Up Canada: The History of Power, Fuel, and Energy from 1600* (Montreal: McGill-Queen's Press-MQUP, 2016); Cara New Daggett, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham, NC: Duke University Press, 2019); Ute Hasenöhr, Jan-Henrik Meyer, “The Energy Challenge in Historical Perspective”, *Technology and Culture*, vol. 61, n° 1, 2020, 295-306.

¹¹ Frank N. Laird, “Against Transitions? Uncovering Conflicts in Changing Energy Systems”, *Science as Culture*, vol. 22, n° 2, 2013, 149-156; Kathleen Araújo, “The Emerging Field of Energy Transitions: Progress, Challenges, and Opportunities”, *Energy Research & Social Science*, vol. 1, 2014, 112-121.

¹² On energy as an “inter-dependent historical agent” and the need to avoid over- and under- determinations, see Thomas Turnbull, “Energy, History, and the Humanities: Against a New Determinism”, *History and Technology*, vol. 37, n° 2, 2021, 247-292 (at 273).

¹³ Elizabeth Shove, Gordon Walker, “What is Energy for? Social Practice and Energy Demand”, *Theory, Culture & Society*, vol. 31, n° 5, 2014, 41-58.

⁹ Imre Szeman, Dominic Boyer (eds.), *Energy Humanities: An Anthology* (Baltimore, MD: JHU Press, 2017), 13-14.

pertain to the socio-technical assemblages in which energy resources and technologies are inserted, and the complexities inherent in these processes shape and produce both their meanings and use. Another fruitful line of inquiry involves discussing the wider entanglements of politics, energy, and culture as ways of unravelling the routines, social norms, values, and representations of energies that can underpin or compromise the stability and consistency of energy practices. Additionally, and as energy scholars point out today, energy systems are informed by largely unexamined cultural values to the point that, at least partially, they have determined our material and symbolic cultures.¹⁴ In the past decade, energy humanities have indeed emerged as an inter- and multi-disciplinary field trying to disentangle the ways in which we have built and shaped our material infrastructures, our social, economic, political, and institutional assemblages, but also our cultural practices and systems of belief, around energy.¹⁵ Some anthropologists and social scientists are addressing electricity along these lines, therefore contributing to criticising the teleological and deterministic tradition of “electrification,” arguing instead for a reconsideration of the different ways in which electricity manifested in social, cultural, and political life. Electricity, they argue, is not a single or stable object but produced, enacted, or re-enacted “through specific articulations of concepts, practices, meanings, materials and infrastructure” and that implicates “people in diverse forms of subjectification and objectification that reflect and reconfigure the lives of those involved, including concerns with identity, emotion, ideology, language, ethics and knowledge”.¹⁶

¹⁴ Stephanie LeMenager, *Living Oil: Petroleum and Culture in the American Century* (Oxford: Oxford University Press, 2013); Frederick Buell, “A Short History of Oil Cultures: Or, the Marriage of Catastrophe and Exuberance”, *Journal of American Studies*, vol. 46, n° 2, 2012, 286–287.

¹⁵ Imre Szeman, Dominic Boyer (eds.), *Energy Humanities: An Anthology* (Baltimore, MD: JHU Press, 2017).

¹⁶ Simone Abram, Brit Ross Winthereik, Thomas Yarrow (eds.), *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures* (London: Bloomsbury Publishing, 2019), 5–6.

NEW MODES OF THINKING: BEYOND ELECTRIFICATION AND TRANSITIONS

The articles in this volume introduce us to sites and activities that range from rural Ireland, Britain, post-imperial Spain and colonial Calcutta. We find here, despite the political, geographical, temporal, and historical range, important commonalities among discussions of electricity through material culture, energy imaginaries, everyday practices, and existing forms of energy, highlighting the complexities of articulating and using electricity. As such, our contributors reflect a new phase in electrical histories in which international comparative studies will bring us much deeper and rigorous approaches to understanding the heterogeneity and diversity of electrical systems, their emergence and transitions in multiple sites and spaces. This will help historians to map out contingencies, disruptions, discontinuities, variations, and differences as to stress the oftentimes localised nature of energy transitions, its non-homogeneous, non-consensual, evolving and partially unfinished nature, but also the presence of entanglements and transnational trajectories that transcended cultural, political, national, and even historical boundaries.

The first two studies take us to sites outside the normally urban-centric narratives of energy and electrical histories — the countryside. Sorchá O’Brien tackles reactions to energy transitions by analysing the introduction of electricity in rural Ireland’s domestic spaces in the 1950s and 60s. Here, we learn of rural housewives’ agency, and their multi-layered and emotional engagements with newly introduced electrical appliances. Studying the archives of ESB advertising companies and oral histories, O’Brien shows us that incorporating electrical technologies in the rural countryside implied developing new social practices and cultural meanings around the electric cooker, the iron, and the electric Sacred Heart Lamp. Thinking about material culture, design history and everyday practices highlights the ways in which rural women interpreted and actually used electrical technologies from within their prescribed and restricted

social roles. As such, one central concern of both the ESB but also the Irish Countrywomen's Association (ICA) was to combine modern fitted kitchen within traditional spaces, layouts and means of living. O'Brien also complicates the notion of national styles in domestic kitchens by using Geertzian notions of "essentialism" and "epochalism" to study how electrical technologies were negotiated in the context of the traditional farm kitchen and within Irish interpretations of "electrical modernity".

- 12 The entanglements of electricity with concepts of "modernity," "prosperity," efficiency and convenience are also central to Karen Sayer's study of the rhetorics of rural "electrification" in British advisory and official literature aimed at post-War (1947-1973) agricultural improvement. Processes of energy transitions were framed within the broader project of agricultural modernisation and increasing food production supported by a national network of agricultural advisory services. The knowledge and discursive productions brought human and other physiologies into energy debates in the British countryside. Sayer's study examines livestock bodies as boundary objects across which a wide range of ideas about the value and use of electricity in farming were tested by different human actors — farmers, livestock handlers, policy makers, advisors, and even the general public. Non-human animal subjectivities and responses to technologies on farms, nevertheless, helped shape those technologies and energies, contributing to specific social and economic scenarios where different meanings of electricity were articulated and adopted within different parts of the industry. The study acknowledges the importance of infrastructures and material culture, including the role of topography and the environment in dictating what could be put in place. Stressing the diversity and regional variations within rural British "electrification," Sayer presents a complex picture of the ways electricity in the countryside was negotiated through aesthetics, the prevalence of existing forms of energy, alternative sources of electricity, and "modern," effective and affordable energy competitors.

13 That existing forms of energy and ideologies entangled with electrical transitions is further demonstrated in Animesh Chatterjee's study of the visualisations of an "electrical Calcutta" in the late- 19th C. and early 20th C. Promoters' and the electrical fraternity's idea of a successful "electrical Calcutta" depended on how easily what they considered unreliable and inefficient human and manual energy could be replaced by more convenient and efficient electrical power. The transition from human/manual energy — especially in the form of servants in elite and middle-class domestic spaces — to electrical power was however linked to the multiple practices and interpretations of discipline, energy, work, and labour. At the centre of promoters' visions of a successful "electrical Calcutta" were servants and lower classes, especially those employed to pull fans or trim oil lamps. Chatterjee, however, extends the history of energy use and transitions beyond a consideration of a simplistic conflict between manual labour and electrically mechanised power. The promotion of the supposed conveniences of electricity did not merely involve electrical technologies, but also replayed and replicated pre-existing racial and class ideologies and perspectives. Electrical technologies were not just means of replacing servants' manual labour, but also disciplining the behaviours of those servants that could not be replaced in accordance with existing notions of morality, class and social hierarchy as defined by the Anglo-Indian and Bengali intelligentsia. The servant-centric concept of an "electrical Calcutta" was, however, unsettled by the middle-class's construction of class identities based on consumption, thrift, and the presence of the lower classes within domestic spaces, resulting in existing methods of lighting and ventilation, and servant labour being used often in close proximity to electric lighting and fans. In approaching energy — both manual and electrical — as ideological figurations, the study argues that "electrical Calcutta" was not a case of a smooth transition from manual energy to electrical power, but rather a struggle over how such a transition could be justified and constituted.

14 Transitions to new energy regimes involve intimate collaboration and strife between social disparate groups and their interpretations of the dynamic and complex landscapes they inhabit. The introduction of hydroelectricity in early 20th C. Spain, Daniel Pérez-Zapico's study shows, galvanised much of the collective desires and hopes for a national "regeneration", particularly given Spain's traditional lack of good energy resources and poor coal endowment. The study follows the ways in which transnational understandings of electricity as a socio-technical transformative force — integral to notions of development, economic growth, and civilisation in a growing nationalist European context — were adapted to fit Spanish needs, especially after the loss of the last remnants of its overseas empire in 1898. Pérez-Zapico historicises and interrogates fantasies around energy resources and ideologies of energy abundance, and their relations to the reconfiguration of political power and subjectivities within the context of self-perceived imperial and national decline. As such, most controversies around electricity in Spain revolved around notions separated from energy sources and technologies, and were aimed at addressing wider societal, cultural, and national challenges in a neither electrified nor (evenly) industrialised country. Within an increasingly polarised society where different modernising (even nationalising) schemes came to the fore, different actors and political groups — Spanish engineering communities, the Catholic Church, and the radical left — mobilised electricity within their specific and evolving political agendas and imaginaries, thereby infusing electricity (but also system-building) with distinct values that gave rise to divergent and non-consensual energy scenarios. Highlighting the highly politicised and divergent social constructs of electricity, the study argues that energy imaginaries and other cultural aspects are critical for historical and contemporary discussions around energy transitions.

15 The articles in this volume illustrate how specific historical analyses can enrich both electrical and energy histories. They also show how joining historical studies with energy humanities

yields several broader insights. Collectively, the contributors historicise and contextualise electricity and energy. This complicates the place of electrical systems and technologies in pre-existing energy regimes and, therefore, ideas of energy transitions. Looking at the many settings and times where electricity converged with other energy resources, technologies, uses, but also wider social, cultural, economic, or political processes allows for a better understanding of the contested socio-cultural, or socio-material, identity of "electricity", and how it was constituted and produced within multiple and evolving scenarios and contexts, according to different instigators, drivers, and logics.¹⁷ Reflecting upon the historical importance of electricity as the outcome of a blend of applications, infrastructures, knowledge, expectations, political decisions, agencies, and practices points to a "cultural turn" in electrical and energy histories particularly useful to move beyond teleological narratives of "electrification" as pertaining to engineering languages and practices. This helps to enrich perspectives on energy transitions as the outcome of micro-level and localised socio-political concerns but permeated by macro-scale debates and transferences. Moreover, by looking at who has control over such processes, the articles also highlight the conflicts and uneven power relations in the unfolding of "electrification" and the vital role of marginalised and under-studied groups as complex actors in complex situations. In sum, by revealing the processes and complexities of these energy interactions — between humans, non-humans, infrastructure, technologies, meanings, interpretations, and energy sources — the articles in this volume also exemplify the fruitfulness of inter- and multi-disciplinary thinking.

This volume also speaks to current debates within electrical histories and energy humanities. While the articles in this volume are mainly historical in nature, they advance potential for

¹⁷ Arjun Appadurai, *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 2013); Lynn Hunt (ed.), *The New Cultural History* (Berkeley and Los Angeles, CA: University of California Press, 1989).

further dialogue between the methods, insights, and contributions of both the disciplines. Given many pressing issues in the contemporary world, historians, we believe, can help energy scholars and policy makers understand the complex historical meanings and interpretations of concepts of “electricity” and “energy” themselves. Such theoretical tools help challenge the utopian assumptions of current energy debates that maintain the idea of unproblematic and positive

energy transitions despite historical evidence to the contrary. These tools are not therefore just means of explaining resistance to changing energy systems but understanding the persistence and even maintenance of pre-existing energy sources and practices. In this sense, the title of this special issue, *Shifting Narratives of Electricity and Energy in Periods of Transition*, alludes to extended dialogue about the present and the future through the lens of history.

Bibliography

Abram Simone, Winthereik Brit Ross, Yarrow Thomas (eds.)

Electrifying Anthropology: Exploring Electrical Practices and Infrastructures (London: Bloomsbury Publishing, 2019).

Appadurai Arjun

The Social Life of Things: Commodities in Cultural Perspective (Cambridge: Cambridge University Press, 2013).

Araújo Kathleen

“The Emerging Field of Energy Transitions: Progress, Challenges, and Opportunities”, *Energy Research & Social Science*, vol. 1, 2014, 112–121.

Bazerman Charles

The Languages of Edison's Light (Cambridge, MA; London: MIT Press, 2002).

Boyer Dominic

“Energopolitics and the Anthropology of Energy”, *Anthropology News*, vol. 52, n° 5, 2011, 5–7.

Brassley Paul, Burchardt Jeremy, Sayer Karen (eds.)

Transforming the Countryside. The Electrification of Rural Britain (London: Routledge, 2016).

Cottrell Fred

Energy and Society: The Relation Between Energy, Social Change and Economic Development (Westport, CT: Greenwood Press, 1970).

Crosby Alfred

Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy (New York, NY: Norton, 2006).

Daggett Cara New

The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work (Durham, NC: Duke University Press, 2019).

Gooday Graeme

Domesticating Electricity: Technology, Uncertainty and Gender, 1880–1914 (London: Pickering & Chatto, 2008).

Hård Mikael

“Beyond Harmony and Consensus: A Social Conflict Approach to Technology”, *Science, Technology, & Human Values*, vol. 18, n° 4, 1993, 408–432.

Hård Mikael, Jamison Andrew (eds.)

The Intellectual Appropriation of Technology: Discourses on Modernity, 1900–1939 (Cambridge, MA: MIT Press, 1998).

Harrison-Moore Abigail, Gooday Graeme

“True Ornament? The Art and Industry of Electric Lighting in the Home, 1889–1902”, in Rebecca Wade, Gabriel Williams and Kate Nichols (eds.), *Art versus Industry? New Perspectives on Visual and Industrial Cultures in Nineteenth-Century Britain* (Manchester: Manchester University Press, 2016), 158–178.

Harrison-Moore Abigail, Sandwell Ruth (eds.)

“Women and Energy”, *RCC Perspectives: Transformations in Environment and Society*, n° 1, 2020.

In a New Light: Histories of Women and Energy (Montreal; Kingston; London; Chicago, IL: McGill-Queen's University Press, 2021).

Hasenöhr Ute, Meyer Jan-Henrik

“The Energy Challenge in Historical Perspective”, *Technology and Culture*, vol. 61, n° 1, 2020, 295–306.

Hughes Thomas Parke

Networks of Power. Electrification in Western Society, 1880–1930 (Baltimore, MD; and London: JHU Press, 1983).

Hunt Lynn (ed.)

The New Cultural History (Berkeley and Los Angeles, CA: University of California Press, 1989).

Jones Christopher

Routes of Power: Energy and Modern America (Cambridge, MA: Harvard University Press, 2014).

Kline Ronald

“Resisting Consumer Technology in Rural America: The Telephone and Electrification”, in Nelly Oudshoorn, Trevor Pinch (eds.), *How Users Matter. The Co-construction of Users and Technology* (Cambridge, MA: MIT Press, 2003), 51–66.

Laird Frank N.

“Against Transitions? Uncovering Conflicts in Changing Energy Systems”, *Science as Culture*, vol. 22, n° 2, 2013, 149–156.

LeMenager Stephanie

Living Oil: Petroleum and Culture in the American Century (Oxford: Oxford University Press, 2013).

Malm Andreas

Fossil Capital: The Rise of Steam Power and the Roots of Global Warming (Brooklyn, NY: Verso Books, 2016).

Mazur Allan

Energy and Electricity in Industrial Nations: The Sociology and Technology of Energy (Oxon and New York, NY: Routledge, 2013).

Miller Clark A., Alastair Illes, Jones Christopher

“The Social Dimensions of Energy Transitions”, *Science as Culture*, vol. 22, n° 2, 2013, 135–48.

Möllers Nina, Zachmann Karin (eds.)

Past and Present Energy Societies: How Energy Connects Politics, Technologies and Cultures (Bielefeld: Transcript Verlag, 2012).

Montaño Diana

Electrifying Mexico: Technology and the Transformation of a Modern City (Austin, TX: University of Texas Press, 2021).

Morus Iwan Rhys

“No Mere Dream: Material Culture and Electrical Imagination in Late Victorian Britain”, *Centaurus*, vol. 57, n° 3, 2015, 173–191.

Nye David E.

Consuming Power: A Social History of American Energies (Cambridge, MA: MIT Press, 1999).

Otter Chris

The Victorian Eye: A Political History of Light and Vision in Britain, 1800–1910 (Chicago, IL: University of Chicago Press, 2008).

Sandwell Ruth

Powering Up Canada: The History of Power, Fuel, and Energy from 1600 (Montreal: McGill-Queen’s Press–MQUP, 2016).

Sarkar Suvobrata

“Electrification of Colonial Calcutta: A Social Perspective”, *Indian Journal of History of Science*, vol. 53, n°4, 2018, 211–216.

Sayer Karen

“Atkinson Grimshaw, Reflections on the Thames (1880). Explorations in the Cultural History of Light and Illumination”, *Annali di Ca’ Foscari. Serie occidentale*, vol. 51, 2017, 129–147.

Shove Elizabeth, Walker Gordon

“What is Energy for? Social Practice and Energy Demand”, *Theory, Culture & Society*, vol. 31, n° 5, 2014, 41–58.

Smil Vaclav

Energy at the Crossroads: Global Perspectives and Uncertainties (Cambridge, MA: MIT Press, 2003).

Energy and Civilization: A History (Cambridge, MA: MIT Press, 2017).

Sovacool Benjamin K. et al.

“Sociotechnical Agendas: Reviewing Future Directions for Energy and Climate Research”, *Energy Research & Social Science*, vol. 70, 2020, 1–35.

Spinak Abby

“‘Not Quite So Freely as Air’: Electrical Statecraft in North America”, *Technology and Culture*, vol. 61, n° 1, 2020, 71–108.

Szeman Imre, Boyer Dominic (eds.)

Energy Humanities: An Anthology (Baltimore, MD: JHU Press, 2017).

Tate Ryan Driskell

“Rural Revolt: Power Line Protests and the Alternative Technology Movement in the United States, 1970s”, *Technology and Culture*, vol. 62, n° 1, 2021, 1–26.

Turnbull Thomas

“Energy, History, and the Humanities: Against a New Determinism”, *History and Technology*, vol. 37, n° 2, 2021, 247–292.

Vermier Koen

“Electricity and Imagination: Post-romantic Electrified Experience and the Gendered Body”, *Centaurus*, vol. 57, n° 3, 2015, 131–155.

Wosk Julie

“The Electric Eve”, in Julie Wosk, *Women and the Machine. Representations from the Spinning Wheel to the Electronic Age* (Baltimore, MD: JHU Press, 2001), 68–89.

Wrigley Edward Anthony

Energy and the English Industrial Revolution (Cambridge: Cambridge University Press, 2010).