

WOMEN AND ENERGY

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RCC Perspectives: Transformations in Environment and Society is an open-access publication that exists to record and reflect the activities of the Rachel Carson Center for Environment and Society. The journal provides a forum for examining the interrelationship between environmental and social changes and is designed to inspire new perspectives on humanity and the wider world. *RCC Perspectives* aims to bridge the gap between scholarly and non-scholarly audiences and encourage international dialogue.

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Women and Energy

Edited by

Abigail Harrison Moore and Ruth Sandwell

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Contents

5	Foreword <i>Katie Ritson</i>
7	Editors’ Introduction <i>Abigail Harrison Moore and Ruth Sandwell</i>
11	Gender and Agency in the Anthropocene: Energy, Women, and the Home in Twentieth-Century Britain <i>Vanessa Taylor, introduced by Graeme Gooday</i>
17	Rethinking the Agency of Women in Energy Management: Early British Debates on Electrification <i>Graeme Gooday, introduced by Ruth Sandwell</i>
25	Switching from the Master to the Mistress: A Women’s Guide to Powering Up the Home <i>Abigail Harrison Moore, introduced by Petra Dolata</i>
31	Illuminating Women: The Case of Candles in the English Home, 1815–1900 <i>Karen Sayer, introduced by Maryse Helbert</i>
37	Fear and Anxiety on the Energy Frontier: Understanding Women’s Early Encounters with Fossil Fuels in the Home <i>Ruth Sandwell, introduced by Vanessa Taylor</i>
43	Our Own Memories: Women’s Experiences of Rural Electrification <i>Sorcha O’Brien, introduced by Abigail Harrison Moore</i>
51	Women and Energy in the Ruhr Area of West Germany, 1950s–1980s <i>Petra Dolata, introduced by Karen Sayer</i>
57	Transitions in the Niger Delta: Oil, Poverty, and Environmental Degradation <i>Maryse Helbert, introduced by Sorcha O’Brien</i>

Katie Ritson

Foreword

Frustration can be a potent source of energy in the Academy. In a coffee break at the American Society for Environmental History conference in California in 2018, I was struck by the force of a conversation I overheard between two women standing close by me. The air seemed to crackle and burn blue with the energy of it. Drifting closer to listen, I was drawn in by their wry, bitter words. The women seemed to be voicing their frustration about the preceding session, where the panel “Studies in Energy Transitions: Considering Women as Energy Agents” had just taken place. The panellists were, as it happened, all women, with the exception of the chair; but more tellingly, the audience for this panel was also entirely made up of women. Wasn’t it frustrating, one woman said to the other, that adding the word “women” to a panel title suggested a marginal, niche appeal? Along with associated words, such as “domestic” or “home”? The mainstream of environmental history still concerns itself with the *big* agencies of industries, political movements, energy companies, and fossil fuel reserves (without ever appending the “Men and...” to the title that might more accurately describe the topic in question). If the explicit agency of women appears at all, it is an afterthought, and, it seems, rarely worth the attention of the mainstream. So often absent from or ancillary to the stories told about energy, the agency of women is rarely seen as the force it is.

Energy and gender are categories that are currently deeply politicised and divisive. In many places in the world, the agency of women over their own bodies is shackled by a male legislature. Perhaps it is no coincidence that many of the same legislatures refuse to curb the drive to extract ever more sources of energy with no care for what the price might be. These are critical times, and the need to challenge prevailing narratives and pay attention to stories that have the potential to overturn conventional power dynamics has never been greater. This issue of *Perspectives* aims to channel frustration productively. It also intends to serve as a corrective to the idea that women’s agencies are small, individual, and marginal to the big story. “Women and Energy” provides a framework *and* a provocation to tell big and small stories differently; to challenge grand narratives, and reveal the forces that do not just alter our understanding of energy histories, but also of the present and possible futures of energy economies.

Rachel Carson must have felt incredibly frustrated when she sat down to write *Silent Spring* in 1961. All around her was the evidence that unregulated pesticide use was doing untold damage to the landscape and its human and nonhuman inhabitants. Unsurprisingly, the giant chemical companies and their armies of lobbyists and admen certainly didn't want to listen to her. The insults that came her way were not just aimed at her stance against pesticides, but at women in general, especially the dangerous, unmarried variety. She was derided, among other things, as "hysterical," that well-worn barb with its overtones of sexual frustration and uncontrolled passion (that she was in fact in a relationship, with another woman, would not have tempered that implication of improper sexuality had it been common knowledge in 1962). Carson's frustration, though, was a resource that she combined with her careful scholarship and elegant prose to tell a story so convincing that the grand narrative of pesticide use began to dissemble. Her alternative story, of the slow accretion of poison in water, plants, and human and animal bloodstreams, continues to reverberate today in environmental debates.

I took my coffee cup and joined the two women discussing energy, my own frustrations in tow, and just over a year later, I was able to be there again when the participants in the Women and Energy workshop met at the Rachel Carson Center in Munich. This volume, which is a first response to that workshop, is about more than reframing the histories of energy and asserting the central role women's agency has played in different places and contexts. It also aims to push scholars to use *frustration* itself as an energy source, something that can be used to build networks and drive research, and to write compellingly and politically about the way energy should be managed in the future. Frustration at the status quo is not just collateral, but a resource that can contribute to many fields of study, including the study of energy regimes. Frustration drives change, and change is needed.

Abigail Harrison Moore and Ruth Sandwell

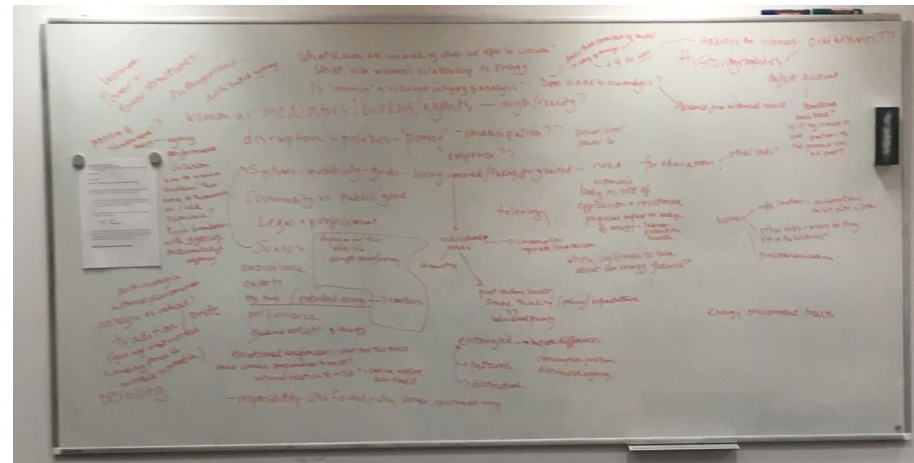
Editors' Introduction

The workshop "Histories of Women and Energy" took place at the Rachel Carson Center for Environment and Society in April 2019. Participants were invited to present their perspectives on any aspect of the history of women and energy in a collaborative workshop environment. The workshop brought together a group of researchers representing diverse disciplines, approaches, and geographies. This included explorations of women's pivotal roles in the consumption and production of energy within the home and their engagement with and responses to particular energy transitions. Consequently, themes emphasising women's changing energy-related identities, behaviours, and experiences in the context of being and becoming political energy activists were highlighted, including the factors influencing women's decision-making with respect to new energy products. We also honed in on research methodologies and conceptual approaches to examining the varying and dynamic roles and places of women in energy history.

Forming a working group early on in the development and writing process enabled us to think collectively and spontaneously in a shared, respectful, and thought-provoking space. The Foreword by the managing editor of the Rachel Carson Center, Katie Ritson, who fuelled and guided our journey to this finished publication, captures the energy and impetus that drove it into being. As a way of transcribing something of this dynamic spirit of fruitful "conversation" between the contributors, each piece in this volume is introduced by one of the fellow authors. The non-hierarchical and engaging nature of our writing process made this new collection on the history of women and energy both possible and incredibly re-energising (pun intended!) for us all.

We want to conclude by thanking the Rachel Carson Center for the financial and institutional support that it provided for the workshop and this collection of essays. We particularly want to thank Director Christof Mauch and Managing Director Arielle Helmick for their encouragement and kindness. We are delighted to confirm that *In a New Light: Histories of Women and Energy*, an edited volume of chapters developed out of the workshop, is currently under review with McGill-Queen's University Press.

A snapshot of the workshop whiteboard illustrates the diversity of ideas and the enthusiasm of the participants.



Introduction

This paper offers a stimulating discussion of women's agency in energy management, covering a broad period in the recent Anthropocene. Vanessa starts in Northern Scotland after World War II with the example of how an electricity demonstrator sought to convert remote highland solid-fuel users into consumers of hydro-electric power delivered to their homes directly by a new grid. The agency of women is apparent in both this demonstrator's effectiveness at "converting" traditional highland crofters into efficient modern electricity consumers, but also in the apparent resistance of some such crofters to efforts to stigmatise traditional fuel-gathering methods as irrational. Both forms of agency were clearly heavily constrained in their operations, however, by the expectations of others: crofters having to meet domestic obligations to ensure a reliable functioning household, and demonstrators working under the obligation of electricity boards to deliver more consumers to increase their profitability. An important feature of the story is that even in the new electricity regime, when most electricity suppliers were burning fossil fuels, traditional local identity was maintained in one case with the use of hydro-power from Scottish rivers to supply a sustainable "Scottish" form of electricity. The gas industry also lobbied hard for householders to adopt their alternative form of "modern" energy supply, and similar issues of agency arose with the Women's Gas Federation. It is evident that in order for women to secure independent careers outside the home, they were obliged to participate in supply company projects in which they were largely bit-part players, purveying the evangelical propaganda of modernisation to earn their salary and thus some degree of financial autonomy. Overall, Vanessa argues that we should pay more attention to the home and women's domestic roles in relation to the wider environment, both as a project of history but also in relation to current environmental concerns. As Vanessa rightly says: it was never just about the energy.

Graeme Gooday

Vanessa Taylor

Gender and Agency in the Anthropocene: Energy, Women, and the Home in Twentieth-Century Britain

As a very new demonstrator in a very new Board, I felt strange and uncertain, because I had first to convince myself that the new ways were going to be better than the ones I ... had grown up with. Having done this, I had to pass on my conviction to other people. At times, it was not so easy, because tradition dies hard.¹

This was Edna Petrie in 1963, looking back on her early days as an electricity demonstrator for the North of Scotland Hydro-Electric Board. Founded in 1943, the Hydro Board had a mission to provide electricity for all in the Scottish Highlands and to break the dominance of coal- and peat-fired cooking, heating, and washing. This dramatic transition saw a rise from just under 2,000 farms and crofts electrified in 1948 to over 33,000 by 1963: amounting to around 85 percent of such properties in the region.² Edna Petrie was one of hundreds of demonstrators and Home Advisors employed by electricity and gas boards in mid-twentieth-century Britain. There were also thousands of women active in voluntary organisations sponsored by energy suppliers (at first private, then nationalised bodies from 1948): the Electrical Association for Women (established 1924), Women's Gas Federation (1935), and the Women's Advisory Council for Solid Fuel (1943). These women in Britain, and their counterparts in other industrialised countries, were crucial to new and expanding demands for electricity and gas in twentieth-century homes. This paper asks about the role of such women in the light of what we now know about fossil fuels. The North of Scotland Board was unusual for its water-powered generation, supplemented by steam and diesel; most electricity in Britain was generated using coal, with electricity and gas seen as clean alternatives to polluting domestic coal in the postwar years. Fossil fuel use is now recognised, of course, to be at the heart of a global climate crisis. The residential sector was estimated to contribute 14 percent of all UK greenhouse gas emissions in 2016.³

1 Edna S. Petrie, "A Demonstrator's Work in the North of Scotland," *The Electrical Age* (January 1963): 497, The Institution of Engineering and Technology Archives.

2 North of Scotland Hydro-Electric Board, *Annual Report and Accounts* (Edinburgh, 1963), 20.

3 Department for Business, Energy & Industrial Strategy, *2016 UK Greenhouse Gas Emissions, Final Figures* (London, 6 February 2018), 24–5. This excludes electricity used in the home.

Edna Petrie with a resident of the North of Scotland and her dog. Image in E.S. Petrie, "A Demonstrator's Work in the North of Scotland," *The Electrical Age* (Jan. 1963): 496. © Reproduced here with kind permission from The Institution of Engineering and Technology Archives.



och tend to focus on the major power brokers and main beneficiaries of environmental exploitation. But if we take seriously the transitions that resulted from the multitude of incremental changes in everyday life—transitions in which women played a central role—what difference does this make to our understanding of women's entanglement in the Anthropocene? Can we make women more visible in this "man-made" crisis?

We can make women more visible if we pay more attention to the home and women's domestic roles when thinking about the wider environment. Four features of the home are important here. Firstly, a key tenet of feminism since the 1970s has been the importance of women's unpaid role in biological and social reproduction in the home that makes possible the world of paid work and capital accumulation. As Nancy Fraser has argued, this is akin to the "hidden" role of cheap or value-less nature under capitalism. Second is the "semi-industrialised" nature of the home, which Ruth Schwarz Cowan and others have demonstrated. Everyday life in the home was transformed in the late nineteenth and twentieth centuries through the introduction of new technologies marketed

Since the year 2000 a growing literature has started to explore questions of agency, historical origins, and culpability in environmental crises in the light of the "Anthropocene," the term for human-made environmental transformation and destruction on a global scale commensurate with a new geological epoch. What is striking is how absent women are from these discussions. From Andreas Malm and Alf Hornborg's critique of the concept of the Anthropocene as obscuring the real historic culprits—the "clique of white British men" who invested in steam for capitalist gain—to Raewyn Connell's recent discussion of institutionalised "power-oriented masculinity," women's role in our rising reliance on energy-hungry technologies is largely invisible. Discussions of agency and culpability in this ep-

as "labour-saving" (though with ambiguous results). This was part of a wider expansion of urban networks, as homes became increasingly linked to water, gas, and electricity systems during this period. Thirdly, recent scholarship has revealed many ways in which these technologies shaped domestic practices but were themselves also shaped by people in the home. Energy-using devices were appraised, adapted, and resisted, as well as adopted; this is clear from the work of historians such as Graeme Gooday, Joy Parr, and Ruth Sandwell. Despite the successes of the Scottish Hydro-Board—by 1963 they could boast a higher proportion of consumers with electric cookers than any other electricity region in Britain—a full 50 percent of their customers remained attached to coal- or gas-fired cooking, or other methods.⁴

Fourthly, women's activities outside the home during this period were often an extension of their perceived domestic role: a result of their limited choices. Edna Petrie had herself been shoehorned into domestic science as a child, as had thousands of women like her. At the same time, women's paid and voluntary work in energy promotion, home economics, and social welfare was crucial to the reform of domestic space, better housing, and rising standards of living for women, men, and families in twentieth-century Britain—as well as to new working opportunities for women. It was never just about the energy. Everyday practices outside the home, but often traced to women's domestic roles, include the use of the car. Between 1975 and 2005, the proportion of women holding driving licences in Britain increased from 29 percent to 63 percent. This has had environmental consequences. A 2007 report indicated the extent to which car travel replaced walking during this same period and the role of local journeys in this, such as those linked to shopping and the school run. This shift was estimated to account for nearly 16 percent of increased CO₂ emissions from passenger cars in the UK.⁵ Such trends point to rising affluence and changing urban environments, as well as individual decision-making. Agency is not the property of individuals alone but is distributed across groups of actors and socio-technological systems, as Harold Wilhite and others have suggested. Women's agency in relation to the environment is not confined, of course, to their movements across domestic and semi-domestic urban spaces; they just become more difficult to track when not carrying out such relatively well-explored domestic roles.

⁴ North of Scotland Hydro-Electric Board, *Annual Report and Accounts* (Edinburgh 1963), 19.

⁵ Adrian Davis, Carolina Valsecchi, and Malcom Fergusson, *Unfit for Purpose: How Car Use Fuels Climate Change and Obesity* (London: Institute for European Environmental Policy, 2007). Sections 3.1, 4.3, 6.2, 6.3, Table 10.

So, who were these women who need to be more fully incorporated into discussions of the Anthropocene? Two recurring tensions are important here. First, there is the problematic nature of the category “women” itself, cut through with differences of class and life chances, race, ethnicity, geographical location, women with children and those without, women at home and those in full-time work. Affluent women and poor women have had very different relationships to the causes and impacts of environmental degradation. Second is the question of sameness and difference: are women equivalent to men and only in need of being brought to full equality, or do they somehow embody different aspirations and values? Despite women’s large-scale entry into full-time work in recent decades, they remain a distinct category in discussions of the environment. This is partly because women are not (yet) in a position of equivalence with men, and partly because the category “women” is still loaded with symbolic meanings as well as historically traceable realities.

Discussions of gender and the environment in political and popular discourse in Britain and elsewhere are still often laced with assumptions about women’s greater environmental consciousness and primary familial role. Eco-feminism embraces women’s difference as a springboard of environmental agency, often tied to beliefs in women’s mothering nature. In this spirit, lesbian “back-to-the-land” communities in 1970s Oregon opted out of networks altogether, as Catherine Kleiner has shown, combining spiritual goals with “ecologically responsible lifestyles,” living off-grid with solar panels and kerosene lamps. The desire for a return to localised, off-grid, “circular economies” has been a feature of utopian alternatives to the iron cage of centralised energy networks since the 1960s.⁶ More recently, former Irish President Mary Robinson has suggested the roots for her environmental work: “[t]here’s a nurturing quality, a concern for children, that’s very deep in women. And women change behaviour...”⁷

What does this mean for women’s agency in the Anthropocene? If women are seen as having a predisposition to care for nature, or if the environmental impacts of domestic households are neglected, it is possible to ignore women’s contributions to the current crisis. But women clearly have acted as “geological agents,” though with significant

⁶ See also the experimental community of Auroville in Tamil Nadu, India, founded by “The Mother” in 1968, described by Strauss and Eggleston in “Energizing the Spaces of Everyday Life: Learning from the Past for a Sustainable Future,” edited by Heather Chappells and Vanessa Taylor, *RCC Perspectives: Transformations in Environment and Society* 2019, no. 2., 65–75.

⁷ Rory Carroll, “Mary Robinson on Climate Change,” *The Guardian*, 12 October 2018, <https://www.theguardian.com/science/2018/oct/12/mary-robinson-climate-change-former-president-ireland-ipcc-report>.

constraints, and they have made active energy choices. The work of women energy promoters was crucial to rising domestic fossil fuel use. Given the right conditions, women can promote any technology or relationship to nature but, chosen to act as intermediaries between energy suppliers and women in the home during this period, their work was expected to embody an ethic of welfare. As Edna Petrie put it, “the new ways” had to be “better” than the old ones. The path to affluence and environmental degradation was paved with good intentions as well as relationships of exploitation. While women in their domestic roles have—like men—exploited cheap nature, the idea of “women” nevertheless acts as a kind of cultural resource, similar to Nancy Fraser’s “reservoirs of ‘non-economic’ normativity.”⁸ This idea holds out the promise of doing things differently in the future. We need to keep trying to realise this potential, while not forgetting the many ways in which women have also always been part of the problem.

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⁸ Nancy Fraser, “Behind Marx’s Hidden Abode: For an Expanded Conception of Capitalism.” *New Left Review* 86, (2014): 69.

Introduction

As Graeme places women's experience at the centre of the transition to electricity, his work offers an ongoing and influential challenge to the naturalness and inevitability of modern energy decisions. He argues against a set of assumptions that have characterised much of the research on domestic electrification, in the United States in particular. In the context of this collection, Graeme's paper provides a welcome focus beyond women's role as consumers within the last energy transition. He explores the role of women as professionals within the new energy industries, women who worked in their own right as engineers in the early twentieth century, and women who acted as professional advisors to other women on electricity as it pertained to their domestic roles. Later in the paper, he returns to women as consumers specifically to argue that historians need to look beyond the traditional "deficit model," where ignorance is used to explain women's reluctance to adopt new types of energy. Instead, he shows that women actively assessed different types of energy, evaluating what was best suited to their different tasks and preferences, forcing electricity and gas companies, in particular, to compete with each other in the process. Women's choices were not the result of ignorance, but signs of agency and resistance.

Ruth Sandwell

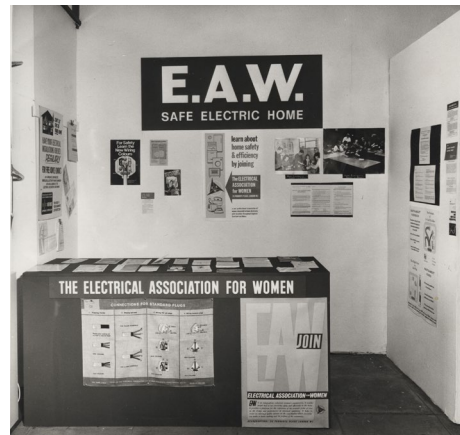
Graeme Gooday

Rethinking the Agency of Women in Energy Management: Early British Debates on Electrification

Our historical understanding of past energy transitions has not paid sufficient attention to women's voices and perspectives. Although evidence of their roles has typically been harder to trace and recover than men's more fully documented participation in energy management, it is incontestably the case that—in the early phases of electrification at least—women were often presumed by electricity suppliers (among others) to be the primary arbiters of domestic energy consumption. And indeed we know from studies of contemporary energy activism around the world that women are often responsible for enacting sustainable energy management and thus also agents of resistance to unsustainable practices. Yet, as a range of feminist critics have pointed out, there is a danger that associated research on anthropogenic climate change will turn the phenomenon of study into a "Manthropocene." This is because at all levels the expertise of male writers on energy management has occluded women's agency both in explaining how energy scenarios have been arrived at and how they have then been managed. Where then to look for alternative stories from which to highlight more explicitly and subtly the various roles that women have undertaken in key debates on energy transitions?

In this paper, I will study the introduction of electricity into the homes of interwar Britain. To do this, I will draw upon my recent research on two interrelated women's organisations in early twentieth-century Britain: the Women's Engineering Society (WES), founded in 1919 and now celebrating its centenary, and the Electrical Association for Women (EAW), founded in 1924 but closed down in 1986. As Suzanne Worden has noted, these two organisations had significantly different feminist agendas: WES's aim was to promote careers for women in engineering, and to enable women in such careers to share ideas and practices in a safe supportive environment, whereas the EAW sought to use electricity to rationalise domestic labour for women so that, with the main drudgery removed, they could (theoretically at least) seek independent careers for themselves outside the home. Looking further at their respective activities enables one to compare the different forms of agency that the women involved could exercise in debates about the technologisation of everyday life in general, and specifically in response to the introduction of electrical infrastructures, especially national power grids.

To complement previous studies of WES, I would emphasise how its membership and the contents of its institutional journal, *The Woman Engineer*, reveal how women were much more involved in the early supply of electric power than has hitherto been noted. Basically, although opportunities for peacetime engineering employment took a long time to reach the levels they first attained in World War I (during which many male engineers were typically serving in battle), some women were able to maintain employment not only in family firms as previously, but were also able to start up their own engineering companies, for example, consultancies for power station development. Although facing extremely challenging circumstances again after World War II, it was through such roles that WES maintained its membership, surviving up to the current day. Indeed it has been the model for similar groups in other nations, such as the Society of Women Engineers, which was set up in the United States in 1950. Looking at the membership of such organisations reveals how at least a handful of women have been involved in shaping national energy supply from the consultancy office, power station, or factory management system.



The Electrical Association for Women (EAW) stand at the Royal Highland Show, 1971, NAEST 093/08/25/10, IET Archives. Image is reproduced here with permission of the Institution of Engineering and Technology Archives.

By contrast, the EAW flourished early with the support of the electricity manufacturing and supply industry, which eventually paid for much of the EAW's operations. These blossomed particularly from the mid-1930s, when EAW training and education schemes generated cohorts of hundreds of teachers and demonstrators in technical electricity all across the UK, and many times more women trained in the arts and sciences of electrical usage. EAW training qualifications usefully opened up careers for women working in mainstream industry because the availability of accredited saleswomen and advisers in energy supply was clearly crucial for an industry that needed women's expertise and authority in persuading others to drop older forms of energy supply and adopt electricity instead. However, this mediating strategy of the EAW was not sustainable in the long term, with resistance to complete electrification being too great given the highly effective operations of the rival Women's Gas Federation. And once market saturation had been reached in the mid-1980s there were clearly no more households left needing persuasion to adopt electrification.

Ironically perhaps, given its mission of enabling "housewives" to escape housework into careers of their own, it is hard to see any evidence that such emancipation occurred except for the EAW demonstrators and lecturers themselves, whose careers were made by the very operations of the EAW. In fact, I suggest that the central educational prerogative of the EAW was largely about creating technical career structures for women at a time when careers in engineering were much more challenging to secure—as the leaders of WES had so obviously found. While previous historians, notably Carroll Pursell, have assumed that some degree of EAW education was *necessary* for women to become consumers of electricity, I argue that the deficit model on which this move is based is untenable. After all, there is much evidence to show that while some women did not need such an education to become consumers of electricity, for others the provision of education was simply not relevant to their decisions to either decline electrification or to pursue only partial electrification. Indeed, many embraced instead a mixed domestic economy of both electricity and gas supply, with coal usage lingering for decades.

To understand this point more deeply, it is important first to interrogate the very limited terms in which women's agency has been construed in many stories about electrification—insofar as it is investigated at all. Engineering accounts of electrification such as Thomas Hughes' *Networks of Power* (1983) have presumed that the adoption of electricity was so obviously a desirable option when it was available that there was simply no need to address women's agency. In Hughes' account, women's interest in and demand for electrical energy supply was taken for granted. In other more culturally sensitive accounts, most commonly based on the stories of the EAW themselves, women working at home were assumed rather crudely to be either compliant (potential or actual) consumers of electricity who embraced the efficiency agenda of electricity, or "irrationally" resistive non-consumers who preferred traditional fuel usage, despite the greater labour costs involved and (supposedly) lower efficiencies of fossil fuel techniques.

It is important to challenge and nuance that very simplistic view: it stems from the modernist technocratic agenda of presuming the only rational path to be acquiescence in the high-efficiency consumption of the utility of electricity, and leads to the EAW corollary that it was utterly irrational—i.e., inconvenient for supply companies—for consumers to do anything else. And in that regard, we learn much by comparing the situation in Britain with the much less technocratic approach in twentieth-century Canada, as documented in Ruth Sandwell's recent edited collection *Powering Up Canada*. This latter work makes

clear that the rationales for choosing energy supply forms cannot universally be seen as a matter of efficiency. Instead, Sandwell's collection shows that (amongst others) concerns about availability, sustainability, self-sufficiency, and localised convenience mattered greatly, far more than technocratic efficiency. We must thus include these factors in mapping energy supply debates in the UK's transition to electrification via the new National Grid launched in 1926.

Importantly, the imperative to adopt electricity on the ground that it was (theoretically) more efficient as an energy medium came from a supply industry that needed new consumers to be profitable. To be more precise, it needed domestic users of electricity to regulate consumption of electrical energy in a way that made daily cycles of electricity supply more profitable for the industry's owners (be they private or governmental). Attempts, however, to equate this pursuit of efficiency with a concern for prudent domestic economy underwent something of a mishap in translation. For householders who had experienced the rapacious greed of water supply companies, there were also issues of trust—becoming embedded in a monolithic technocratic supply system necessarily entailed acceptance of the suppliers' terms, such as quality, cost, and reliability. From the perspective of women as managers of household energy, we might ask the following question: Why would the familiar routines of securing coal or paraffin from a range of different suppliers somehow be less prudent than trusting an unknown faceless technocracy, or a vulnerable system that required repair or maintenance by technicians at unpredictable junctures?

It would have made much more sense to many householders to invest in more than one externally supplied energy utility—and indeed, many elected to adopt both electricity and gas supply, the latter most obviously for cooking. This enabled householders to maintain some discretion, as supply companies were forced to compete against each other for custom and maintain levels of value for money and reliability that were not characteristic of supply monopolies. Moreover, the traditional household deployment of different fuels that were optimised for different purposes could be maintained. In an era in which modernisation by means of mass electricity supply or gas network sought to play down the specificities of fuel types, this more delocalised and abstract notion of consumption was alien to many. It was for this reason and others that the all-electric house was hardly a universal success, and the all-gas house never even suggested!

Any attempt to persuade women at home to change their behaviour in order to adopt electricity entailed a changing of core values, not (just) education. This is why advertising mattered—it had to persuade consumers that they should change their priorities and embrace a different kind of energy consumption in the future. To the extent that advertising was successful is a moot point. Gerrylyn Roberts points out that in the 1920s, amongst most British households that adopted electricity for lighting, the only significant change in energy consumption was in the adoption of electric irons. These devices warmed up quickly and cleanly when plugged into light sockets, unlike the slow-heating and smoky irons that traditionally gained their operative warmth from the fireplace. This sort of discretionary choice shows how householders who did not adopt electricity *tout court* were not ignorant of the opportunities afforded by electricity. Instead, they had weighed up the alleged benefits of electricity and found almost all of them wanting.

In conclusion, when we look over the unsuccessful educational campaigns to encourage women to embrace an all-electricity solution for the home, we see the difficulties raised by the presumptive use of a deficit model to account for the “slow” take up of electricity. For many women, their non-engagement with electricity was not simply a matter of not knowing enough. Even sustained training in EAW courses did not necessarily transform them into compliant consumers of electricity as a utility. What we learn from this instead is that the agency of women to critically evaluate and then resist various “modernising” modes of electrical technocracy deserves much more detailed research by historians. By investigating the archival records and publications of the EAW and its counterparts in other countries we can discern a little more clearly the otherwise understated agency in many female roles in managing energy usage by both electrical and non-electrical means.

Further Reading

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Introduction

*Ambivalence is a major theme in Abigail's contribution. Her study of women decorators in England in the second half of the nineteenth century demonstrates how professional decorators, in their advice to women on how to use lighting in the house, were essentially helping them to take back their agency within the home. Until then, it was their husbands who made domestic design and technological decisions. But with the publication of books such as *Suggestions for House Decoration* by cousins Agnes and Rhoda Garrett in 1877, women could seek advice on how to decorate and light their homes. While this allowed them to take back power and master electricity in the home, it also created challenges to their newfound agency; the decorative approach introduced a higher level of choice, which revolved around the socially and culturally constructed concept of taste. Much could be done wrong and considered tasteless. Thus, while these professional female decorators empowered women and introduced electricity in the home as more convenient, they also "enslaved" women to newly emerging decorative norms and expectations, introducing them to a heightened male gaze through much brighter electric lighting. Abigail's analysis of the Garrett cousins in addition to the work of Mary Eliza Haweis, who published her book *The Art of Decoration* in 1881, provides important insights into how these first professional women decorators actively carved out a role for themselves in a male-dominated domain and influenced other middle-class women through their publications on decorating homes.*

Petra Dolata

Abigail Harrison Moore

Switching from the Master to the Mistress: A Women's Guide to Powering Up the Home

I am interested in the role that interior design, and particularly the work of the first women professional advisors on home decoration, had on energy decisions. My paper aims to bring together decorative art history, the politics of suffrage and the socialist attitudes of the Arts and Crafts Movement, and the direct instructions that were given to women about how to design and furnish their home at a time—the 1870s and 80s—when women were beginning to take on a key role in purchasing items and commissioning designs for their homes. Into this mix came an important set of advice books, including those published by Macmillan in their pioneering series *Art at Home*.

By focussing on two such books written by women for women, Agnes and Rhoda Garrett's *Suggestions for House Decoration* (1877), in which they spoke directly to the "ladies of the family" and Mrs Mary Eliza Haweis's *The Art of Decoration* (1881), I explore the influence they had on women's decisions as to how to light (and heat) their homes. This time period saw the expansion of the idea that domestic décor was an expression of a woman's personal character, linked to the concept of the home as a reflection of and influence on a person's morality and cleanliness. The guidebooks suggested that interior design was a public reflection of personal taste, and, as such, the fear of "getting it wrong" opened up a clear space for the development of professional decorators to assist and help avoid *faux pas*. At first, the majority of these "experts" were men, but it soon became clear that women were influential in the privacy of the home and would respond well to being guided by professional women.

Mary Haweis's first section in *The Art of Decoration* is called "The Search after Beauty," and, clearly influenced by John Ruskin and William Morris' Arts and Crafts credos, she starts with a chapter called "The Art Revolt." She begins with a statement that, although addressed to everyone, is seemingly focussed on genteel women, those able to afford the services of a decorator or designer: "Most people are now alive to the importance of beauty as a refining influence. The design of your home is not just about aesthetics and function, but about spirituality and care." This idea was illustrated by the "important matter of warming and ventilating a house" and played to the rhetoric propagated by

those selling the first domestic electric lighting systems, who stressed that it was “clean” both in terms of emitting no dirt in comparison to gas or oil, and in terms of illuminating the dust in the corners of one’s home. Technologies that aided cleanliness, ventilation, and orderliness, although widely believed to be important to maintaining the health of the family, were not enough on their own. It was argued by Arts and Crafts commentators such as John Ruskin that only the cultivation of beauty would arouse the higher feelings. The pressure on the female consumer, therefore, was high and keenly felt. This is probably one of the reasons why Mary Haweis’ book was widely read and the Garretts’ book became such a commercial success, with six editions published by 1879 and 7,500 copies printed. The 1880s saw the rise of the department store, of Heals and Liberties and Harrods, and with this the ability of the customer to choose. But with choice, the inevitable concern about getting it wrong, and the pressure on women to create a house that reflected their moral standing as well as their taste, it is no wonder that the need for a guide did not fade away, but continued to grow with the move from working with a single designer or architect to buying from a range of shops and companies.

“Drawing Room Chimney Piece” from *Suggestions for House Decoration in Painting, Woodwork and Furniture*, by Rhoda and Agnes Garrett (London: Macmillan and Co., 1877).



Haweis’s comments on the role of the decorator also functioned as a call for women to exercise their own rights: “The province of a decorator is not to take your house out of your jurisdiction; he might as well control all your possessions and sell everything he did not personally covet. His province is to help you in that mechanical part which you cannot do yourself. He may guide you; he must not subjugate you.” In the 1870s, Agnes and Rhoda Garrett did several women’s suffrage speaking tours together and were committed members of the cause. Rhoda argued to an audience at the National Association for the Promotion of Social Science in 1876 that, “the woman’s sphere and woman’s mission is one of the most important problems of the present day, but here, at least, in the deco-

ration and beautifying of the house, no one will dispute their right to work.” As Elizabeth Crawford argues, house decoration was indeed taken up by some women as an agent of reform, “both carrying with it a moral imperative and furthering the woman’s cause.” The Garretts’ ambition to see the role of women in society transformed was not only represented by words but also in deeds: in 1875 Agnes and Rhoda set up their own business, “A & R Garrett House Decorators,” from their home at 2 Gower St. Bloomsbury—the first all-female design and decorating company in Britain.

The arrival of professional interior decorators indicated a new attitude to home decorating. In the late nineteenth century there was a reaction particularly from middle-class customers and designers, who deplored the failure of the interiors trade to provide decorative schemes that met with the moral and aesthetic standards of beauty they expected in their homes. Arts and Crafts objects that celebrated craftsmanship, materiality, and function were therefore promoted as conforming to Christian values that domestic life should demonstrate, and as having a political and social, as well as aesthetic significance. The Garretts and Mary Haweis clearly articulate the Arts and Crafts origins of their ideas in their books and in their advice on lighting design and installation. Good, honest design was weighted with the idea of proper god-fearing Britishness, and therefore the pressure increased on those tasked with choosing how to spend their money when decorating and lighting their homes.

From an energy point of view, the two volumes interestingly span the period that saw a move from gas to the increased possibility of electric lighting. Haweis’s book is particularly significant. Whereas the Garretts, writing in the 1870s, could only choose from gas, oil, or candlelight, in Chapter VIII of *The Art of Decoration*, Mary Haweis turns to guidance on “Lighting and Ventilation” and produces one of the earliest examples of a woman advising women on electric lighting in England that I have come across to date. Given the date of publication, in 1881, during the very earliest period of electrification—only one year after William Armstrong had first lit up Cragside using Joseph Swan’s lightbulbs—it is unsurprising that Mrs Haweis starts her chapter on lighting with the statement: “Until the electric light is more manageable than it now is, there are two ways of lighting rooms—gas or lamps and candles.” Electric lighting remained a luxury in the UK even in 1900, and so Mary Haweis was very much ahead of the times in 1881 when she stated, “When the electric light comes into common use, the problem how to light adequately a large room without heating it will be solved.” She recognised that,

for women particularly, new lighting types would alter the appearance of the home, and mean change for those who spent most of their time in it: the women of the house. Therefore, they were the ones most concerned about both the practicalities and the aesthetics of change. In the battle between the gas and electricity companies, women were key in convincing women as consumers which energy source to plump for in the home.

It was in the same year as Mary Haweis published her contribution—1881—that the British House of Commons was first lit by incandescent lamps. The first great exhibition of electricity was held in Paris, and the electrical company Crompton installed a thousand Swan lamps to illuminate the Savoy Theatre. But, as there was still no centralised supply of electricity, and current had to be provided from expensive generators installed on individual premises, these innovations attracted widespread popular attention but did not move as quickly into the home as the electrical companies would have liked. For electricity to be adopted in the home, and chosen over alternative energy carriers, there needed to be a programme of persuasion. Printed materials would both celebrate the design and technological possibilities of adopting this energy source, and challenge a rhetoric of fear—of threat to the body and home—and the aesthetic revulsion to electric light held by many, especially women. Agnes and Rhoda were pioneers in changing the opportunities open to women, and, as decorators, were also pioneers as women advising women on planning and furnishing their homes. Mary Eliza Haweis was a pioneering woman in the history of electrical lighting. As such, these women deserve to feature more prominently in the histories of energy.

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Introduction

When reflecting on the story of candlelight, Karen points to the necessity of paying attention to the small, everyday examples of material culture that illuminate the history of women and energy. Her research draws out the messiness of the energy transitions in English homes to counter the widely accepted narrative that the technology of illumination is one of linear progress.

In the story of illumination, women made decisions about lighting in their homes. These decisions were linked to class, availability, cost, effectiveness, and the different sorts of human effort required to manage to them. The versatility of candles perpetuated their use, even after the introduction of gas and electricity.

In tracing the everyday histories of energy decisions in the home, Karen underlines the importance of looking at the “humble as well as the illustrious,” as evidenced in the material culture that has been left behind. Such a nuanced view is necessary to fully comprehend the entangled and complex nature of energy transitions now and in the future.

Maryse Helbert

Karen Sayer

Illuminating Women: The Case of Candles in the English Home, 1815–1900

My contribution assesses the domestic use of candles and candlelight in Britain throughout the nineteenth century in order to illuminate the non-linear, non-progressive nature of energy transitions. It is about small everyday things, inflected by class as well as by sex. By looking at women and candle-lighting we find that, in this period, energy consumed within the home was shaped more by continuity than change. This is a history of utility, of entrenched decision-making, and habits of thought rather than eye-catching innovation.

The candle is rarely written about in history perhaps because it has a less “heroic” tale to tell than gaslight or electricity, or even the eponymous Argand oil lamp. Those who brought in and profited from new sources of artificial light in the period often treated candles as part of a darker past, in which existing forms of illumination were supposed to be inadequate and their safety poor. They told thrusting teleological tales of improvement and invention that capitalised on dominant Victorian cultural conventions that associated the idea of lighting with luxury, progress, and civilisation. Nevertheless, the evidence shows that all sorts of candles continued to be used, despite innovation and competition. By the end of the period, at least one of the major manufacturers, Price’s Candles, was able to report a comfortable increase in sales, both at home (i.e., within the UK) and overseas, resulting therefore in profits for the shareholders, and successful reinvestment in their factory as a result.

We will not be able to understand and therefore address climate change until we recognise the intimate relationships that have always existed between people when they purchase, consume, and labour to create energy. These become visible in the small domestic histories of candlelight. Candles were made from all sorts of materials, each with their own social meanings and impacts. Though the range of those materials expanded through the nineteenth century, very few dropped away altogether. Candles can be fuelled by almost any animal, mineral, or vegetable oil. In the nineteenth century, candles were made of beeswax, tallow, stearic acid and sperm whale oil, paraffin wax, palm or coconut oil, or combinations of these, plus other ingredients (most famously arsenic,

to whiten and brighten the light). The diversity of candles available, and financial and aesthetic choices to be made, complicate traditional linear histories that focus on one-directional change.

There is *some* change in this story, as we can see when we look at the legislative and commercial context within which candles were bought and sold, and the social, political, and economic history of the period. At the start of the century, the cheapest candle of all was the homemade rushlight, made from peeled rushes dipped in fat with the pith as the wick. Held in a simple clamp these could burn for up to an hour, and could be made at home, a task seen as women's work, as we find in sources like writer and reformer William Cobbett's *Cottage Economy* (1822). Aimed ostensibly at the "cottager"—the poor labouring man—*Cottage Economy* was a carefully costed social commentary intended to offer both a political critique of the new capitalist class and to support the rural working class by offering practical advice. Drawing on his upbringing, his experience of travelling extensively during various revolutions on the European continent, and the periods in which he was a political exile in the United States, Cobbett gave instructions on making bread, brewing beer, caring for livestock, and making candles. Though writing for a male readership, he leaves an incidental trace of women's skill in making light, which is represented as a commonplace domestic task, and through his political rhetoric makes the economic value of that skill visible. In his view (framed by his radical political reading of past life in rural England, and recollection of his grandmother's domestic work), "potatoes and taxed candles seem to have grown together." In the past, he suggested, "the labourer" had been well-fed with bread and good "meat dinners," which resulted in left-over grease that was turned into rushlights—the rushes gathered near the home, stripped and soaked in the grease. But by the 1820s the money and labour had shifted from buying good meals and making free rushlights to the purchase of (taxed) candlelight and digging potatoes.

Yet, there was also *continuity*. The 1907 edition of *Mrs Beeton's Book of Household Management* still detailed the work of setting candle and matches next to the bed as part of a housemaid's tasks. She explained how they should clean tallow from candle sticks, despite having access to incandescent gas mantles or even electric light in well-to-do homes. In this description of the housemaid's work, this prescriptive text also shows the gendered labour involved in the housewife's management and use of candlelight within her household economy. In Mrs Beeton's book, the aspirational middle class wife allot-

ted the tasks of scraping candlesticks and the careful placing of candles and matches when setting up a room for the night to the housemaid. Choices about energy and material showed social standing, because of the necessary purchasing power required. Expensive beeswax was burned in candelabras for social display and aesthetic effect in the public spaces of wealthy homes (dining rooms and drawing rooms), to the hostesses' credit. Cheap tallow was reserved for the servants' quarters, carried late to bedrooms. Different materials required more or less human effort to manage in order to deliver the best effect in terms of illumination. The cost of a candle could be matched to the use of energy either in terms of the material burned or in women's labour required to trim or snuff a candle ("snuffing" was the regular trimming of a candle wick, which had to be done to reduce the impact of "guttering," i.e., to keep the light steady and to stop it wasting the melted wax through dripping, and was a task that needed to be carried out more often with lower-grade materials like tallow). In 1843, Price's "Composite Candles" that needed no snuffing cost 1s. (*shilling*) per pound (lb), whereas their "Coco Nut Candles" that needed snuffing cost considerably less at 10d. (*pence*) per pound (lb). It is here that you can see that decisions about energy use were the complex products of a class-bound and gendered economy.

When writing history there is a temptation to project our ideas onto the past. In the case of energy transitions, the temptation is to write muscular rhetorics that offer heroic grand narratives of change over and above continuity. The danger is that we do not write about life as it was lived, and overlook small details, such as candles and those who were responsible for dealing with them. As Virginia Woolf asked in "The Art of Biography":

Is not anyone who has lived a life, and left a record of that life, worthy of biography—the failures as well as the successes, the humble as well as the illustrious? And what is greatness? And what smallness?

In my work, the wish to reconstruct the fullness of past lives—"the humble as well as the illustrious"—means that I need to pay attention to the small traces of the past, and those traces include material culture. Domestic objects such as Clarke's "Pyramid" infant food warmer (1884) that relied on a safety "tea light" designed to warm the "pap" (soft food) used to wean babies, or the spring-loaded reflective reading lamp designed to increase the light from a composite candle, capture the "smallness" of connections within everyday life. These are evidence of past decisions about energy as it crossed

the small boundaries between women of different classes living and working in the household, and of energy as it shifted back and forth between the human body and the technological.



"Pyramid" food warmer invented by Samuel Clarke, England, c. 1884. Image via Wellcome Images Collection Gallery (contributed by the Science Museum, London), CC BY 4.0.

This history was messy and never linear. Sometimes innovations took off, but sometimes they did not. Sometimes old technologies persisted with new meanings—soft candlelit dinners, for example, have come to be preferred in some situations over the glare of electric light. Sometimes change is incremental, such as the demise of stearine for the manufacture of candles as the whaling industry failed slowly in the face of rapeseed oil, kerosene, and gas-oil. Multiple types of lighting were consumed in parallel. The candle remained popular through the century, despite the adoption of new lighting technologies such as gas and then electricity.

I argue that we should recognise the importance of the history of everyday life, in particular its gendered inflections. If we are going to change the ways we use energy now, we need to have a fuller picture of the past, and understand the minutiae of energy choices in our own lives. The continuing histories of women's capacities, skill, knowledge, and physical labour in the home, and the intricacies of their domestic relationships across classes—embodied in something as "small" as candlelight—have been overlooked, to the detriment of a proper and nuanced understanding of the histories of energy. If we tell history through a series of convenient, technological moments, strung together in series as the grand narrative of change, we simplify a much more complex and interesting story that is crucial to our understanding of decision-making in the present.

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Introduction

Ruth Sandwell's work is building bridges between often separate discussions. It charts uneven and gradual transitions from organic to mineral energy in the light of women's complex relationship to domestic technologies, and illuminates ways in which everyday life has shaped, as well as responded to, environmental change. She demonstrates the halting nature of the fossil fuel revolution in the homes of rural Canada. Women's everyday priorities and practices made them resistant to new energy-use technologies and a target for massive promotion campaigns. In this article, too, the experience of energy in the home takes centre stage. Ruth explores the fears and anxieties of women, the main family caretakers, as they assessed the all too obvious health and safety risks posed by coal, kerosene, gas, and electricity in their early stages. In the light of these risks, minimised by suppliers and blamed on carelessness when they occurred, she poses an important question: Can we use these complex responses to mobilise and effect change? This might lead us to a broader question for this volume as a whole: Does the fact that women today are still the primary caretakers within families create an ongoing, particular relationship to environmental risk?

Vanessa Taylor

Ruth Sandwell

Fear and Anxiety on the Energy Frontier: Understanding Women's Early Encounters with Fossil Fuels in the Home

Many historical studies of the transition to modern or industrial energy have focused on new technologies and systems, such as the steam engine and the electrical grid, that allowed people and industries to rely on coal, oil, gas, and electricity for most of the energy needs, for the first time. My work instead explores the experience of energy transitions, with a focus on the home. Such a close-up view highlights how men and women experienced, and made decisions about, new kinds of energy. In the process, it challenges some larger assumptions that historians have made about the inevitability or “naturalness” of the transition to modern fuels, power, and energy, and the relegation of women to the role of passive consumers of energy. This paper explores the experience of energy transitions from one particular vantage point: What role did fear and anxiety play in women's early encounters with new and extremely potent forms of energy?



“The Blessed Effects of Gas Lights or a new method of Lighting as practised in Great Peter Street, London,” published by S. W. Fores, 10 November 1813. Image via the Science Museum Group, Online Collection, CC BY-NC-SA 4.0.

As historians of Western Europe and North America have explored in some detail, by the later nineteenth century, domestic space became increasingly identified as a “haven in a heartless world,” where it became women's primary responsibility to isolate and protect the family from a hostile world of commerce, business, and rapid industrialisation. But it was also an age of growing anxiety about the home, and particularly for women. By the mid-nineteenth century, the sanitarian movement recognised the home as a leading cause of disease and danger, and wives and mothers as the home safety managers tasked with in-

sureing that poor sanitation, poor hygiene, and communicable diseases were held in check. Material infrastructure improvements in sewage treatment and the availability of fresh water were accompanied by a wide range of educational initiatives, from public health directives to an increasing volume of homemaking manuals and guides that sought to assist homemakers (always identified as women) in this monumental, and indeed heroic, task.

From the late nineteenth and into the twentieth century, these homemakers also became targets of a related sustained and multifaceted education campaign that has received less attention from historians: the ways that women cooked, cleaned, and heated their homes became the subject of considerable public and indeed corporate interest across the nation and beyond. Emerging networks of gas and electrical power, with their new economies of scale and vast investments capital, required mass consumption. From the vantage point of the household, however, the new forms of energy were expensive, their utility was untested, and they represented a potentially dangerous threat to the indoor environment for which women were held primarily responsible.

Persuading women to use new forms of energy was a hard sell. In Canada, energy in the form of fuelwood for heating and cooking was available “for free” (except of course for labour costs) for much of the country’s rural majority well into the twentieth century. In 1941, almost half of all Canadian homes (46 percent) and 90 percent of farms were still being heated with wood. Households had well-established ways of obtaining other forms of energy that were readily available, cost much less, and whose use and pricing was much easier to comprehend than electricity or gas lighting. In rural areas of Canada, 80 percent of farm homes still used coal-oil lamps for lighting in 1941; even in cities, where almost 9 out of 10 households had electricity by 1931, rates of electrical consumption were so low that it was clearly used exclusively for lighting, and sparingly.

Many factors influenced women’s decisions to accept (or not) new forms of energy into the home, including their evaluations of cost, convenience, and utility. But by the late nineteenth century, women’s risk assessments—their attempts to understand and evaluate the health and safety implications for the household of such new and potentially dangerous energy carriers as kerosene, gas, or electricity for lighting, heating, and cooking—were uneasily weighed against the increased leisure, convenience, comfort, and status promised by the promoters of the new energy sources. Women’s worries and fears for their family’s health and safety, exacerbated by the novelty and in the absence

of reliable information about new forms of energy, comprised an important and complex part of their energy-related decisions, and were a continuing feature of women’s engagement with modern energy carriers long after they were first brought into the home.

Fire was always a prime source of concern within the home—and in towns, cities, grasslands, and forests—when all cooking, lighting, and heating was done by means of a more or less open flame. In a theme repeated throughout advice literature and trade journals, the principal causes of fires were widely believed to be the result of carelessness, particularly of servants and other women. Women necessarily managed the fires of the open hearth carefully, aware of the necessity of keeping garments as well as small children away from the open flames, smouldering fires, and sparks that comprised their main work area. Candles in sleeping areas, particularly of children, were generally prohibited.

When the use of new cast iron coal and wood stoves became widespread in the 1860s, manufacturers were quick to identify their enclosed firebox as an important safety advance over the open hearth. But cracks and poorly fitting plates in cheaper metal stoves still allowed dangerous sparks as well as smoke to create potential danger. Stovepipe fires were a hazard, particularly in the cast iron wood-burning stoves so common across Canada; burning wood leaves behind a highly flammable residue of creosote, which could not be removed from the pipes during the long cold winter as families could not do without the heat. If the creosote ignited, the pipes could get red hot, posing a direct threat to the walls through which they passed, and which were often insulated with rags or newspaper.

Lights and lighting were identified as a main cause of fires in the home: candles next to a bedside setting the bedding on fire, gas lights that set the woodwork on fire, accidentally knocking over a lamp, or clothing catching on fire while moving a lamp around, were all potential sources of fire. Although coal-oil (or paraffin) lamp manufacturers and petroleum salesmen argued that the coal-oil lamp offered increased safety compared to candles and other older lamps because the flame was contained by a glass chimney, the oil itself was significantly more flammable than the organic illuminating oils it replaced. The newspapers never tired of reporting dramatic tales of fires caused by the careless handling of fire.

While women expressed some fears about explosions from coal-oil lamps as well as fires, it was stoves (particularly gas but also oil) and a variety of gas appliances that caused them most concern about explosions. The standard cast iron wood and coal

stoves, as T.M. Clark patiently explained in his 1904 *Care of the House*, were very unlikely to create a really dangerous explosion—unless of course someone lit a fire when pipes between the stove and water tank were frozen: “many an unfortunate servant has been killed, and many a kitchen wrecked, by the terrific explosion which is sure to follow such carelessness in this respect.”¹

Most of women’s explosion-related fears in the later nineteenth century were directed, however, at gas appliances. Leaks from gas pipes and fixtures were common; gas trade journals and sales catalogues claimed that accidents were extremely unlikely unless the housewife were guilty of “mismanagement” by neglecting to ensure that burners were kept free of dirt and residue build-up, or by turning up the lights to too high a flame. Gas companies responded, however, to growing concerns about the safety of gas appliances in the early twentieth century by hiring professional female instructresses to teach housewives how to alleviate some of the worst dangers of the new appliances.

The third and final source of considerable energy-related fear and anxiety was from what was generally called “insalubrious,” poisoned, or vitiated air. Interior air quality concerns had become acute by the mid-nineteenth century (strangely, outdoor air was not nearly so much a cause for concern), largely as a result of the hygiene and miasmic theories of disease. People literally believed that bad-smelling air caused disease. Numerous authorities declared that both the new coal and wood cast iron stoves and gas lighting were posing particular threats to the air inside the home. These cast iron stoves not only dried out the air, making breathing uncomfortable, but they were increasingly linked with a newly-identified, but highly poisonous substance: carbonic acid, which interacted with the cast iron stoves in some particularly harmful ways. Carbonic acid, which in retrospect combines some of the qualities of carbon dioxide and carbon monoxide, was a byproduct of simple exhaling, but could also (it was believed) be created by burning carbonous materials such as coal or gaslight that was distilled from coal. It was widely reported that in rooms that were poorly ventilated, or into which too many people were crowded, carbonic acid could be a deadly poison, creating a wide variety of health complaints from neurasthenia to cholera, and in its most concentrated forms causing immediate death. This was in addition to the hundreds of deaths each year attributed to

¹ T.M. Clark, *The Care of a House: A Volume of Suggestions to Householders, Housekeepers, Landlords, tenants, trustees and others, for the economical and efficient care of dwelling-houses*, rev. ed. (1914; New York: Macmillan Co. 1903), 46–47.

undetected gas leaks, or by people dying in their sleep, poisoned because of accidentally leaving the gas on after blowing out the flame.

In conclusion, the historical record contains considerable evidence to signal and explain women’s fears and anxieties relating to energy. The particular response to fossil fuels that this paper has documented—to fear it but to continue, for the most part, to use and negotiate with it—seems particularly relevant as we contemplate our own responses to energy-related danger in the present. Citizens around the world are mobilising their fears of climate change to urge the necessity of our next energy transition to a post-fossil fuel world. And the direct links between fossil fuels and human health, particularly that of children, is being discussed with increasing urgency. As the Director General of The World Health Organization recently put it, “air pollution is the ‘new tobacco’: the simple act of breathing is killing 7 million people a year and harming billions more, but a smog of complacency pervades the planet.”²

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² Damian Carrington and Matthew Taylor, “Air pollution is the ‘new tobacco’, warns WHO head,” *The Guardian*, 27 October 2018. <https://www.theguardian.com/environment/2018/oct/27/air-pollution-is-the-new-tobacco-warns-who-head>.

Introduction

Sorcha is currently conducting a significant, cross-generational, and far-reaching analysis of the social impact of and reactions to the move to rural electricity supply in Ireland in the 1950s and 1960s. The traditional bread oven, known as a bastible, was used daily by women before electricity was introduced. This bread oven was basically a three-legged, covered iron pot designed to sit in the open hearth, just above or in the fire. One of the most powerful examples that Sorcha discussed during our workshop was a bastible with its legs cut off, adapted so that it could fit inside a modern stove. It provided us with a thought-provoking example of how Sorcha's focus on material culture can tell us so much about women's attitudes and behaviours around changing energy use.

In their ambition to secure a network of electrification across the country, the Electricity Supply Board (ESB) in Ireland had to persuade these women to change their practices and to embrace the new. The bread oven illustrated for me both the challenges to and the success of this endeavour, and beautifully reflected the voices of the women, now in their 70s and 80s, that were interviewed for Sorcha's research. These women reflected on the impact of electrification, and Sorcha's paper demonstrates the mix of nostalgia and memory that underlines their accounts of the impact of electricity in their homes. The legs were sawn off the traditional bread pot in order to fit it into the worrying, but supposedly liberating, electric ovens—representing a combination of history and the future, in a powerful demonstration of the importance of thinking about energy history through the everyday lives of women in the home. Sorcha's work explores the impact of the campaign to bring a new form of energy into the rural Irish home, setting this powerfully against a political and religious rhetoric that sought to limit the role of Irish women to that of mother and homemaker. In this piece, we are treated to the transcript of a radio show, where Sorcha speaks about the project and Noreen Durken, a participant in the project, recounts her experiences.

Abigail Harrison Moore

Sorcha O'Brien

Our Own Memories: Women's Experiences of Rural Electrification

Edited Transcript of The Tommy Marren Show, Midwest Radio, 27 May 2019

Tommy Marren: I was mentioning earlier on, in relation to an event that is happening over in the Museum of Country Life in Turlough in Castlebar this Thursday—it's an event that's to do with taking people back to the time and the impact of rural electrification in Ireland, back in the 1950s and '60s. It's a project which is called the Electric Irish Homes textile project, and on Thursday between two and four at the Museum of Country Life in Turlough in Castlebar, some women from the region are going to share and explore their experiences and their memories of rural electrification and they're doing it using a variety of very creative approaches. And I think it's a very interesting little project this, and I am first of all delighted to have on the line Dr. Sorcha O'Brien from Kingston University. Good morning and thanks for joining us. [...] Now, you were head of the research team on this, were you?

Sorcha O'Brien: Yes, this is part of a research project that started off as a historical investigation into rural electrification and the effect on rural Ireland, and very much about the effect on everyday life. And what I ended up doing was really focusing it to look particularly at women's experience of rural electrification and particularly looking at the introduction of electric appliances into the home. So, we have been looking at things like washing machines, the fridge, the electric iron, and looking at what effect did they actually have on everyday life in the home, and very specifically in the kitchen. Because you have all of these new appliances coming in, people are getting electricity into their house for the first time and there's just all the advertising and the promotion where the ESB [Electricity Supply Board] have rolled out the whole [electrical] network, and there's all of these advertisements promising this amazing modern new life. And really, what we're interested in doing, is looking at: what effect did it actually have? That's the fantasy, what was the reality, as well?

Tommy Marren: Yes, because it's so long ago now, and the people who will be giving their experiences on Thursday about the impact that suddenly being able to plug in an iron or a washing machine or a kettle had. I mean, the kettle was always on the boil on the range, because that was the only way of doing it. Because it was so long ago, sadly, the generation who remember that are now in their twilight years, aren't they?

Sorcha O'Brien: Well, the thing about it is that it's not actually all that long ago, because you're talking about living memory and there are quite a lot of people still around who remember this, and for them that's their lived experience. We're having an exhibition on this topic [...] opening in the museum in July, but part of that was that we did an oral history project where we went and interviewed about 60 women, who are mostly in their 70s and 80s, about their experience and their memories. And this is part of what we were doing with the textile project as well—that an awful lot of them said... when we asked them, “what did you do when you got, for example, a washing machine, and you weren't doing a Monday wash day anymore—what did you do?” And an awful lot of them said, “we did textile work, we did knitting, we did sewing, we did crochet...” [...]

Tommy Marren: And one of the participants is actually on the line: Noreen Durken. [...] And how did you get involved in this?

Noreen Durken: Well, Sorcha came to speak to us in the ICA [Irish Countrywomen's Association], and she asked us to take part in this project, and it sounded very nice and it sounded as if we all needed to record our memories, because as long as you are able, because, you know—another generation and people won't ever know what happened at that time. So we did sign up to doing it and then we had interviews and we did all that and that was all very nice, and it took us a little while to put our thoughts together and to get them down on paper in good order. We had to think about our punctuation and proper phrases and all that because we knew people would be reading it. [...]

Tommy Marren: [...] Can I take you back, do you remember the fellas putting up the poles?

Noreen Durken: I do indeed, very well.

Tommy Marren: When you were in National [primary] School, now, was there electricity?

Noreen Durken: No. No.

Tommy Marren: No. So everything was done by hand?



Embroidered panel by Noreen Durken, from the Electric Irish Homes textile art project, May 2019. Photograph by Brian Cregan for the Electric Irish Homes research project.

Noreen Durken: You got up in the morning, or your mother got up in the morning and she had to take out the ashes—the fire was made the night before—and make sure the coals were alive, and put on the fire and put on the big kettle with the water in it—water had to be got from somewhere, the well or someplace, if it wasn't there already, and wait for the kettle to boil... And really and truly when I look back at the slavery, and it was slavery—now that we all have a better way of life—that our mothers went through, and they did all this work and an awful lot more, without a word, everybody was the same, nobody had anything better than anybody else, so long as people had their health and a few shillings to pay their bills, that really was their big worry. [...] Actually, my grandmother lived to be 99 and [...] I will always remember my grandmother, when the light came on, she said it was the light from heaven. [...] But people saw corners in their houses that they never saw before! And the dust and everything that we never saw! And it was such a blessing. It was the most important thing, I think, that ever happened in rural women's lives.

Tommy Marren: Yes, without a shadow of a doubt, because as you say, I mean they didn't regard it as slavery, but we could definitely term it slavery now, if you compare it with the mod cons of today. We have Alexa now, all we have to do is say, "turn on the radio, Alexa," and it's done. It's gone from one extreme to another...

Noreen Durken: ...it is, and for that reason alone I think it was great to write our memories. Now, they're not perfect. I mean they're *our* memories, so they are our memories. So it was great, some of the generations along the way, or even our own children that never saw this day, will be able to look back and say, "well look at the way people worked in those times, and what a blessing the electrification was." It was *the* most, as I said, the most important thing in rural women's lives.



Irish Homes
textile art project
participants at
work with artist
Anna Spearman
(centre), Noreen
Durken second
from left, January
2019. Photograph
by Brian Cregan
for the Electric
Irish Homes
research project.

Tommy Marren: Yes, it's amazing, people are texting in their memories of when the electricity arrived. One [...] lady rang to say that her mother would take out the light bulbs after they were switched off, in case they went on fire. There was an element of real fear about it.

Noreen Durken: That's right, there was. And the other real fear that people had was: Could they pay for it? Because they really weren't used to having bills, apart

from maybe a few shillings for the rates, and the other bills were paid off when you sold cattle or brought eggs to the shop or the butter that you sold, and the groceries were bought then. So people were terrified that they were going to have huge bills.

Sorcha O'Brien: And that's one of the things that you see from the ESB advertisements from that time as well, is that they were advertising to people, not just that this is cheap, but what can you get for this money? You know, that it's going to bring new things into your life and you're going to be able to have a better standard of living, to try and combat that fear about the cost. [...]

Tommy Marren: A gentleman called in to say that when the first electric kettle came to their house, their grandmother lived with them. She refused to drink the water from the kettle because she said she would only light up inside.

Noreen Durken: Yes. It was absolutely surprising what people thought, they had great imaginations!

Tommy Marren: Yes. [...] Another caller says when the electricity arrived in their parish, again it was a granny living with them, and I suppose it was an era then in the 50s and 60s when grannies did live with their sons and daughters, and she wondered, would there be electric knitting needles?

Noreen Durken: She was before her time!

Tommy Marren: She sure was. Yes, she sure was. Well, look, it sounds fascinating, [...] and it was forward thinking for its time, Sorcha, wasn't it?

Sorcha O'Brien: Absolutely, it very much was, and was very much the idea of trying to bring modern services and modern infrastructure to the entire country—that it was for everybody. And that was very much rolled out by the ESB across the country, area by area, but what they were doing was trying to give the same facilities: whether you lived in the centre of Dublin, you would have the same facilities as if you lived out in rural Mayo—that it would make absolutely no difference at all. [...]

Tommy Marren: Yes. And you know, this has generated a huge number of calls and I'm delighted, because people are even saying, you know, their moms and dads are no longer alive and they never got this kind of information from them, so it's great to have it. [...]

But look, that's where we are anyway, Thursday afternoon of this week, the Museum of Country Life in Turlough in Castlebar, between two o'clock and four, drop in if you're around and relive some of those wonderful memories. [...]

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Introduction

This paper raises some fascinating questions about the ambivalent role played by women in the Ruhr, Germany, who on the one hand protested pollution from the mining industry via domestic cleanliness (and the choice of white clothes) and on the other hand protested coalmine closures to protect men's jobs. Women took great pride in cleanliness in the home. In the Ruhr, as in many other coal-mining regions, we see laborious, effortful work, grounded in dominant notions of femininity and the prescriptive, idealised role of the housewife. This work generated a sense of power and agency out of hard-won domestic "respectability." In the Ruhr, women's sense of pride and authority gave them the right to speak about environmental impacts on children's health, and also required that they take action and speak for their communities and husbands. Arguing against the tendency to dismiss, denigrate, or accord low status to women's work, Petra instead shows us how housework has been activated and placed onto the public stage.

Karen Sayer

Petra Dolata

Women and Energy in the Ruhr Area of West Germany, 1950s–1980s

Growing up in the Ruhr area, I remember well how upset I was to learn upon moving into my own first rented apartment that I was expected to clean the communal hallway twice a week when it was my turn. There was a strict rotation with my other two older female neighbours, who lived on the same floor. So, every third week I was expected to clean the stairs and landing as well as the stairs down to the cellar. And not just sweeping the floor but, as my neighbours insisted, mopping it with a wet cloth, was the only acceptable way to do so. Not just once a week but twice, Wednesdays and Saturdays. Even to a German who was always very proud of how neat her room was, this seemed rather excessive, especially when none of us received many visitors who may have brought more than the average kind of dirt from the street into the hallway.

This happened in Bochum-Gerthe, on the outskirts of the city of Bochum in the heart of the industrial coal and steel region, in the mid-1990s. There used to be a coal mine in Bochum-Gerthe called Zeche Lothringen, but it closed in 1957. I myself had grown up in another Ruhr city where the coal mine had closed in 1972. Only later I learned that what these elderly women were introducing me to was one of the many peculiar remnants of living in a region defined by coal mining. Until higher smokestacks dispersed the fine coal dust all over Germany in the 1970s, thousands of housewives in the Ruhr area had to fight the daily battle against the fine black dust that would settle on washing hanging outside to dry, on windows, sills, and stairs. My mum told me that windows were cleaned every week and so were the white starched drapes that were so neatly pleated, unlike anywhere else in West Germany, which were a centrepiece of resistance against the most visible impact of an energy production system based on coal. This obsession with *strahlend weiß* (spotlessly white) and clean houses certainly still held sway over my female neighbours, who were in their late 60s. Women living in the Ruhr area after 1945, most of whom were miner's wives working at home, constantly had to deal with the effects of air pollution. For some, the constant cleaning was an attempt to challenge the image of the Ruhr area as dirty, but others were adamant that this was a silent protest against the air pollution. According to photographer Rudolf Holtappel, they even went as far as wearing white blouses on purpose to highlight the contrast between the spotless white garment and their polluted surroundings.

This highlights the very ambiguity of women's energy agency in the Ruhr region after 1945. Most of the houses that witnessed the women's daily battle against dirt and dust also accommodated those who created the black dust in the first place, coal miners. These coal miners, husbands to the women at the centre of my story, also earned the money that paid for renting, and later even owning little houses, and for the education of their children that enabled their upward social mobility. Women in the 1950s and 1960s were caught between demanding cleaner air for their children and supporting their husbands' livelihoods as coal miners. As has often been the case, women's roles were once again defined through being mothers and wives—worried about their children's health and their husband's job security. But what about women's (unpaid) work in these stories? How did women support and endorse the coal industry and how did they reject it? What was their involvement in protesting against mine closures one day and against the environmental impacts of coal mining the next day? What about their political engagement beyond their role as mother and wife? How did they position themselves within the coal-dominated energy system of post-war West Germany? And what does all this tell us about human agency in coming energy transitions?

Answering these questions and understanding the role of women in the coal mining region of West Germany lies at the heart of my contribution. It helps me combine my research interest as an energy historian focusing on the history of energy transitions with my personal background growing up in the coal-mining Ruhr region of West Germany in the 1980s. It speaks to my frustration with the fact that women's historical involvement in energy systems and transitions is either told as separate stories of consumption (mainly in the household) or subsumed under some collective historical experience, for example of the working class or Western consumer societies. It is informed by my understanding that individual life stories of the past may be helpful in creating empathy and critical engagement with current discussions about our energy futures, facilitating creative responses to today's energy challenges. It is particularly driven by the objective of acknowledging women's agency in energy transitions and to highlight stories of resilience. The aim is to uncover the highly normative discussions surrounding the history of women and energy by addressing women's ambivalent roles as both victims and perpetrators of the fossil fuel-based energy systems that endanger the survival of our planet. Thus, while I will make women more visible, I will also embrace the ambivalence these women exhibited as they endorsed and actively supported an energy system based on coal while openly rejecting aspects of it such as air pollution. Only if we understand the full spectrum of human

agency in energy systems—relating to both energy consumption *and* production—will we be able to capture the complex human experience of energy systems past and present.

I look at the Ruhr region from the 1950s to the 1980s to understand how the structural changes affecting coal production were noticed, experienced, and narrated by women. I want to understand how these women, through their words and actions, actively participated in, supported, and rejected this coal-based energy system. In order to do so, I am analysing letters to newspapers and governments (at the municipal, regional, and federal levels), personal narratives such as autobiographies and memoirs, photographs, newspaper coverage, promotional publications, and oral histories that were gathered as “histories from below.” For example, I am consulting the LUSIR oral history archives *Lebensgeschichte und Sozialkultur im Ruhrgebiet 1930–1960* (Life stories and social culture in the Ruhr region 1930–1960). This foundational project was started by Lutz Niethammer in 1980 as one of the first large-scale oral history projects in West Germany and aimed at documenting the experience of living in Nazi Germany and post-World War II West Germany. Another useful oral history source is the project *Digitaler Gedächtnisspeicher—Menschen im Bergbau* (Digital memory storage—people in coal mining)¹ conducted by the Stiftung Geschichte des Ruhrgebiets and Deutsches Bergbau-Museum Bochum. Methodologically, my contribution borrows heavily from both oral history and *Alltagsgeschichte* (everyday history), which is a kind of microhistory from below, founded by German historians Alf Lüdtke and Hans Medick in the 1980s.

Through these sources, we can see how some women welcomed more convenient heating and cooking arrangements via district heating or natural gas, which directly competed with and thus undermined the domestic and household demand for coal. In an effort to counteract such competition by rivaling fuels, coal companies started targeting women in their advertisements for coal-burning stoves, which were presented as modern, clean, economical, and easy to handle. Coal miners' homes were not exclusively heated by house coal (*Deputatskohle*), which was delivered as part of the miners' salary, but also by old-fashioned wood-fired stoves and brand new central heating. We encounter women who fought against pollution caused by coal mining from the 1950s onwards. They wrote letters to local newspapers and members of the federal and regional parliaments. They were particularly worried about their children, whose health was found to be adversely

¹ “Menschen im Bergbau,” Stiftung Geschichte des Ruhrgebiets and Deutsches Bergbau Museum Bochum, 2020, <http://menschen-im-bergbau.de>.

impacted. For example, according to a 1959 study, children in the Ruhr region were on average smaller and weighed less than their peers elsewhere in West Germany. When the first mine closures led to massive protests by coal miners in the late 1950s and early 1960s, women accompanied their men on protest marches and stood behind them at pit vigils. Later in the 1970s and 1980s, they organised their own protests, including sit-ins in front of the Chancellery in Bonn. When their husbands lost their coal mining jobs, some women, who had spent a lot of time alone at home taking care of the children and the household, found that they had to share their authority in the home with their unemployed husbands. And starting in the 1960s, the region attracted more service industries, as well as textile and electronics plants, which made it easier for these women to find jobs and reverse roles with men. Listening to the stories of these women and the changes they lived through as the region was transformed—from being defined by coal to looking a lot more like the rest of West Germany—highlights the complexity and ambivalence of human experience in transitioning energy systems. It also reminds us of the importance of understanding the specific experiences and impacts that women had during these transitions.

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Introduction

In her paper, Maryse writes about women's protests against the impact of global energy transitions in the Niger Delta. It is striking that these women engage in traditional and gendered physical actions to disrupt the business of oil extraction, utilising their bodily agency against a global corporation.

It is important in this collection to include work that opens a dialogue between historical and contemporary interventions and transitions, and highlights the disparity in agencies between the global North and the global South, as well as between men and women. Maryse makes the important link between natural resource extraction in Africa and the time when African bodies were themselves traded as an energy resource, in contrast to the Nigerian women discussed here, who reclaimed their own bodily agency in a climate of corruption, violence, and environmental degradation.

Sorcha O'Brien

Maryse Helbert

Transitions in the Niger Delta: Oil, Poverty, and Environmental Degradation

Energy transitions are long and protracted affairs. Women in the Niger Delta in Nigeria have been caught up in the transition since the first tanker full of oil left Port Harcourt, the industrial oil capital of Nigeria, for the European market in 1953. The development of the oil industry has profoundly and negatively shaped women's prospects for emancipation in the region.

Between July 2002 and September 2003, hundreds of women occupied eight oil facilities that belonged to the transnational oil companies (TOCs) Chevron/Texaco and Shell Petroleum. During the protests, six hundred Itsekiri women threatened to expose their bare bodies to shame male officials. This is the "curse of nakedness," a cultural practice only used in extreme and life-threatening situations. In this situation, their bodily protest was aimed at imposing "social death" on male oil-company dealers. The women wanted jobs for the male members of their families and Chevron agreed to hire more than two dozen villagers and build schools, water systems, and other amenities. The protest was the culmination of decades of oil activities that had dispossessed the local population. TOCs and the government were accused of illegally appropriating land, breaking economic development contracts, and illegally spilling oil and flaring gas.

The struggle for the control of natural resources in the Niger Delta is not new. In the fifteenth century, the increasing need for natural resources to feed emergent capitalism pushed western countries towards new resource frontiers. European explorers, missionaries, slavers, and colonial mandarins made their way to areas never before explored, such as the Niger Delta, to search for wealth and energy resources. The British rulers colonised the Delta, initially extracting slaves as energy resources to fuel the industrial development of western countries, and subsequently contributing to the development of fossil fuel extraction. While German oil companies had spotted oil seepage in 1905, the oil industry was only developed fifty years later under British rule. The extraction of oil in the Delta required technology and capital that only large, integrated TOCs, such as the Royal Dutch/Shell, could provide.

From its inception, the discovery of a large source of fossil fuel was promoted as a once-in-a-lifetime economic opportunity to massively increase Nigeria's wealth, thereby liberating the population from poverty. However, rather than being a tool for the emancipation for the local population, oil exploitation might be more accurately described as a curse. The power relationships between the different forces struggling for the control of the natural resources in the region have been highly unequal. The imbalance of power was in favour of TOCs and the government provided them with the means to impose political, economic, social, and environmental conditions on the local population to maintain access to cheap oil. The impacts of these conditions depend on factors of class, gender, race, ethnicity, and location.

Women have been the “battleground” in the violent struggle between forces for the control of natural resources. The triple alliance between the Nigerian state, the TOCs, and the local elites that replaced the colonial rulers has perpetuated the tight control of oil zones to allow the uninterrupted flow of oil. To secure the oil zones, the population were dispossessed of their land to leave room for the industry, protests were violently crushed, villages destroyed, and thousands of locals intimidated, killed, and displaced. Various forms of sexual violence were used as an instrument of intimidation, and the first victims here were women.

While women have been at the receiving end of the triple alliance's violent control of the oil flow, they have not even benefited from the oil industry's job creation; overall, the oil industry does not hire many people, as it is based on capital-intensive technologies. The TOCs are also notorious for being highly discriminatory against women because of the masculine culture of the industry. In 2015, women made up only 15 percent of the oil industry's workforce in Nigeria. This poor representation is due to gender biases: TOCs believe that jobs in its industry should be based on values of toughness, competitiveness, self-interest, self-reliance, and aggression. According to TOCs, these values are in contradiction with the values that the TOCs attribute to women, which are values of care, empathy, kindness, and support to women.¹ This contradiction then explains the discrimination.

¹ Ghana started exploiting offshore oil in 2008. When the Network for Women's Rights in Ghana asked for better job opportunities in the emerging oil industry, the Chairman of the Parliamentary Select Committee on Energy and Mines and lead geologist of the Ghana National Petroleum Corporation asked women to forget about looking for jobs in the oil sector as they (women) were “unsuited for the rigours of the job.” He added, “You are talking about big, big tractors, and you're going to detonate things like bombs that make a huge noise that drowns your ears, and you have to work in massive jungles with safety boots. When you look at it, it's really very masculine.” Ghanaweb, 28 October 2010, available at: <https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Women-unsuited-for-work-in-oil-sector-Asaga-196202>.

The economic conditions that were set up by the triple alliance have limited women's economic opportunities as the oil wealth has been siphoned off the Niger Delta region for illegal appropriation. According to Transparency International, Nigeria is one of the most corrupt countries on the planet. As a legacy of the colonial era, all aspects of Nigerian society, public affairs, and private businesses are disrupted by corrupt practices. Between 2005 and 2015, the illegal flight of capital out of Nigeria was estimated at 8.6 billion U.S. dollars. This private and illegal appropriation of oil wealth dispossesses the population: this wealth cannot be redistributed to the population or provided through social services as benefits such as for education and health.

The negative impacts of the economic conditions were reinforced by the environmental impacts of decades of oil extraction. From the time of the first exploration to the time oil is pumped into an oil tanker, environmental damage occurs. Over time, oil exploitation in Nigeria has brought the Niger Delta ecosystems to “a near collapse.”² Deficient environmental governance has facilitated the ecological disaster. While there are environmental laws in the country, they lack systemic monitoring and enforcement. The failure to have proper mechanisms in place to minimise environmental degradation and its impacts is due to the overwhelming power that the TOCs yield, which provides them with the leverage to prioritise the protection of their capital over the protection of nature when negotiating environmental regulation with the host country.

Environmental degradation has more profound negative impacts on women, as they are traditionally the food providers for their families. Food is sourced through subsistence farming: oil spills and acid rain destroy crops and jeopardise local communities' means of living. Contamination from oil spills and acid rain is also absorbed through breathing polluted air or ingesting polluted food, and has dire consequences for the health of the local population. For instance, it has been shown that oil spills have doubled the risk of neonatal mortality in the Niger Delta.³

Dispossession, corruption, discrimination, and environmental degradation are conditions that have all contributed to women's increased vulnerability in the Niger Delta. It has pushed women to remain in unsafe environments and abusive relationships due to the

² Ike Okonta and Oronto Douglas, *Where Vultures Feast: Shell, Human Rights, and Oil in the Niger Delta*, San Francisco: Sierra Club Book, 2001, 2.

³ Anna Bruederle and Roland Hodler, “The Effects of Oil Spills on Infant Mortality: Evidence from Nigeria,” *Cesifo Working Paper Series*, no. 6653 (September 2017).

fear of having to survive without their own income, forcing young women and children especially into illicit and dangerous occupations like prostitution. Lastly, this poverty, vulnerability, greed, and violence has contributed to the increased human trafficking in oil-producing regions—particularly as the masculine culture of the oil industry patronises prostitution.⁴

However, as the huge protest and the curse of nakedness show us, women in the Niger Delta have not been passive victims of the oil industry. Rather, they have tried with varying degrees of success to reshape the development agenda associated with the oil industry. They have fought, protested, and negotiated with the TOCs. It is worth noticing the Abuja Declaration for Energy Sovereignty initiated by women in the Niger Delta. A conference was organised in Abuja in Nigeria by communities, Friends of the Earth International from 51 countries, and other international and national civil society groups and journalists. At the end of the conference, a model for the democratic control of natural resources was proposed as an alternative to neoliberalism. This conference put the Niger Delta women's struggles on the international scene.

My paper contributes a brief sketch of the experiences of women in the Niger Delta during the energy transition in European countries. Women in the Niger Delta have had to fight powerful forces to fulfil their most basic needs. In this struggle, the government and TOCs have used their overwhelming power to ensure access to cheap oil, and this has thwarted women's access to their means of living and harmed their prospects for emancipation. These social and environmental injustices are lessons to keep in mind as the world moves towards the next energy transition to a post-carbon society.

⁴ See Scott, "Fly-in crime," *Arena Magazine* 124, no. 44 (2013); Mayes Pini and Kate Boyer, "'Scary' Heterosexualities in a Rural Australian Mining Town," *Journal of Rural Studies* 32 (2013): 168–76.

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About the Authors

Sorcha O’Brien is a design historian interested in technology and identity, in both physical and digital forms. She is currently Senior Lecturer in Design History and Theory at Kingston University, London, as well as an AHRC Early Career Leadership Fellow, working on a research project on the introduction of electrical products into the Irish home in the wake of rural electrification in the 1950s and 1960s, in partnership with the National Museum of Ireland. Although domestic electric products were seen as modernising technologies in many other countries, this project uses object analysis, archival research, and oral history to consider to what extent these meanings held in the Republic of Ireland.

Petra Dolata is an energy historian with a background in both international history and international relations. She is Scholar in Residence at the Calgary Institute for the Humanities and principal investigator of a research project funded by the Canadian Social Sciences and Humanities Research Council (SSHRC) entitled “The 1970s Energy Crises and Energy Security: A Cross-national and Transatlantic History” (2017–2022). She is also on the editorial board of the Canadian Foreign Policy Journal and the University of Calgary Press. Her current research interests include European and North American energy history after 1945 as well as the history and politics of the Canadian and circumpolar Arctic.

Graeme Gooday is Professor of History of Science and Technology in the School of Philosophy, Religion and History of Science at the University of Leeds. He was educated at the Universities of Cambridge and Kent, and held British Academy Fellowships at both Kent and Oxford until moving to Leeds in 1994. His main research has been on the history of electrical science and technology in Britain between the 1870s and 1920s, focusing on issues of trust, expertise, gender, and patents, recently developing an interest in the historical relationship between hearing loss, acoustics, and hearing aids. His publications include *The Morals of Measurement* (Cambridge University Press, 2004), *Domesticating Electricity* (Routledge, 2008), *Patently Contestable* (MIT Press, 2013) co-authored with Stathis Arapostathis, and *Managing the Experience of Hearing Loss in Britain, 1830–1930* (Palgrave Macmillan, 2017) co-authored with Karen Sayer. He collaborates extensively on public engagement with museums, and in 2019 worked with the UK Women’s Engineering Society in commemorating its centenary.

Maryse Helbert is an advocate for and researcher of social and environmental justice. At the University of Melbourne, Australia, she completed her PhD titled “Women in the Oil Zones: A Feminist Analysis of Oil Depletion, Poverty, Conflict and Environmental Degradation,” in which she uses an ecofeminist approach to expose the unequal distribution of risks and benefits of oil projects between men and women in oil exploitation regions. Maryse received a post-doctoral writing fellowship at the RCC to write the thesis as a book. In a new fellowship at the International Institute of Social Studies, The Netherlands, she has extended her research framework to new sites of natural resource exploitation in Bolivia and Chile, where lithium is extracted to fuel the energy transition. In this new work, she questions the environmental and social justice of the post-carbon society.

Abigail Harrison Moore is Professor of Art History and Museum Studies at the University of Leeds, where she was the Head of the School of Fine Art, History of Art and Cultural Studies until August 2019. Previous publications include *Fraud, Fakery and False Business; Re-thinking the Shrager v. Dighton ‘Old Furniture Case’* (Continuum, 2011) and, together with Dorothy Rowe, *Architecture and Design in Europe and America, 1550–2000* (Blackwells, 2006). She has published a number of articles on nineteenth century Arts and Crafts approaches to designing for energy transitions, and together with Ruth Sandwell has edited “Off-Grid Empire: Rural Energy Consumption in Britain and the British Empire, 1850–1960,” a special edition of *History of Retailing and Consumption* (April 2018). Ruth and Abigail have developed an international network of researchers working on women and energy, and this volume of *RCC Perspectives* is the first publication arising from this project.

Ruth Sandwell is a professor and historian at the University of Toronto. In 2019, she was a Carson fellow at the RCC. She is the author of a number of articles exploring the history of energy and everyday life in Canada in the nineteenth and twentieth centuries. She was guest editor with Abigail Harrison Moore of the Special Issue “Off-Grid Empire: Rural Energy Consumption in Britain and the British Empire, 1850–1960,” *History of Retailing and Consumption* 4, no. 1 (2018). She edited *Powering Up Canada: A History of Fuel, Power and Energy from 1600* (McGill Queen’s University Press, 2016), and authored *Canada’s Rural Majority, 1870–1940: Households, Environments, Economies* (University of Toronto Press, 2016). She is currently finishing a monograph about the social history of energy in the home in Canada, 1800–1940.

Karen Sayer is Professor of Social and Cultural History at Leeds Trinity University, UK. She is also co-director of the Leeds Centre for Victorian Studies. Within the Leeds Centre for Victorian Studies and its wider networks, she draws on material culture, illustration, and text to work on Victorian social and cultural histories of landscapes of marginal spaces and experiences, e.g., nocturnal landscapes of waterways, rivers and coastlines, material technologies of sight and sound, cultures of light and illumination, and the aesthetics and material cultures of hearing loss. The key interlinking theme of her research is the ways in which bodies, materials, and environments are shaped in the nineteenth and twentieth centuries.

Vanessa Taylor is a historian based at the University of Greenwich in London, with research interests in energy, water, the environment, and gender. She was a research fellow with the AHRC-funded Material Cultures of Energy project (2014–2016) and a one-month Carson fellow in Munich in 2017. With Heather Chappells, she was guest editor of “Energizing the Spaces of Everyday Life,” *RCC Perspectives* 2019, no.2. She is currently writing a book on rivers: *Liquid History: The Story of Us in Seven Rivers* (Weidenfeld & Nicolson).

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This volume offers a collection of largely untold stories that together demonstrate women's pivotal agency in the consumption and production of energy within the home, as well as their engagement with and responses to energy transitions. Perspectives emphasising women's changing energy-related identities, behaviours, and experiences in many different contexts are accompanied by careful investigations into the factors influencing women's decision-making with respect to new energy products. The authors not only provide a basis for the reframing of energy histories but also call for the application of these key perspectives in driving more attuned research, and for forcing change on how energy types and transitions are considered and managed in the future.

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