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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-

sure 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 miasmatic 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

Further Reading

Gooday, Graeme. *Domesticating Electricity: Technology, Uncertainty and Gender, 1880–1914*. London: Pickering and Chatto, 2008.

Kiechle, Melanie. *Smell Detectives: An Olfactory History of Nineteenth Century Urban America*. Seattle: University of Washington Press, 2017.

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Tomes, Nancy. *The Gospel of Germs: Men, Women and the Microbe in American Life*. Cambridge: Harvard University Press, 1998.

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>.