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How Households Shape Energy Transitions: Canada's Great Transformation

The crisis of climate change has prompted concerned citizens around the world to consider the impact of fossil fuels on the planet's environment and on society. Many individuals are struggling to understand how their own personal patterns of transportation, heating, cooling, entertainment, and eating might be contributing to the crisis, and they worry about what changes might be required in the near future. Climate change is also changing the way that researchers, including those in the social sciences and humanities, think about the world—past, present, and future. Following the pioneering work of E. A. Wrigley,[1] historians worldwide are now arguing that new forms of energy were at the heart of the transformations associated with industrialization. Societies were previously completely reliant on the organic, and usually quite limited, energy available from wood, wind, water, and muscle power, sources that were, however, typically renewable and sustainable. With the shift to the industrial energy of the "mineral energy regime" of coal, oil, gas, and electricity, energy became massively abundant, highly potent, easily transportable, and much cheaper than ever before. The new energy regime transformed just about every aspect of society, economics, and culture in the nineteenth and twentieth centuries. Unfortunately, as we now realize, its use is unsustainable. If, as now seems possible, the twentieth century emerges in the historical record as the first *and last* Age of Abundant Energy, historians and others will be reevaluating the sustainability not only of the mineral economy, but of the progress and modernity ushered in by those "new" fuels.

The concept of energy transitions has provided a way for scholars to engage intellectually with the enormity of change wrought by fossil fuels. This approach does little, however, to explain (to scholars or anyone else) how the transition was experienced within the contours of everyday life. But understanding the *experience* of energy transitions is arguably just the kind of knowledge people need today as they contemplate the challenges presented by climate change, and the need to transition to a postcarbon future. The emphasis on experience is important, because one of the defining characteristics of having cheap, convenient, and abundant energy at our fingertips is that

1 E. A. Wrigley, *The Path to Sustained Growth: England's Transition from an Organic Economy to an Industrial Revolution* (Cambridge: Cambridge University Press, 2016).

most of us do not actually experience energy, as such. The energy-harvesting practices that have made up so much of the social, material, and cultural fabric of human history—finding food and then cooking or preserving it, caring for animals, generating heat or light, making and building things, and almost all other forms of physical labor—are seldom initiated or enacted exclusively in local environments today. They have retreated into the background of modern lives in industrial society. We all eat food harvested from the ground, for example, but the labor (energy) involved in planting, tending, harvesting, and transporting the food—and in many cases processing, preserving, and even cooking it—is done elsewhere, in places and in ways that are invisible to us. The relationships between the energy we consume and the environments that support us have been obscured by technology and distance; as a result, we know little about where energy comes from, how it is delivered, or what the full effects of its extraction, processing, transportation, and consumption are. But modern urbanites around the world nevertheless remain deeply linked to the environment through their energy use, as the crisis of climate change and a host of other environmental problems confirm.

To phrase this in a slightly different way, the energy a society uses significantly determines its relationship to the environment. Arguably, it will only be when people have a deeper understanding of the relationship between energy and society, including the intended and unintended consequences of each on the other, that they are going to be willing and able to make the society-wide changes required to address urgent problems of climate change and global pollution.

A study of the household through time, I would suggest, provides a welcome window on people's energy-related experiences, allowing a view of the ways in which people were directly, and viscerally, linked to their environments through their daily energy-related practices in earlier times. As Elizabeth Shove has argued, the way people use energy is deeply entwined with social as well as material practices; understanding what energy is *for* in people's lives tells us a lot about its uses and significance, at both the personal and the social level. Situating energy use firmly within the household and the contexts of everyday life, and "conceptualizing energy as an ingredient of specific social practices" sheds considerable light on what energy means, and therefore offers considerable insight into why people made changes to their energy-related behav-

iors.[2] This approach challenges earlier, and simpler, triumphalist narratives suggesting a "natural" or painless progress to modernity. For, notwithstanding the big picture of the transition from the organic to the mineral regime, a close look at patterns of everyday energy use demonstrates that energy transitions have been highly variable, intermittent, overlapping and, in some cases, strongly resisted. A focus on households, therefore, moves beyond concepts of inevitable monolithic, homogeneous, and one-directional change. These are particularly unhelpful for people who are either trying to understand energy transitions generally, or looking for examples from the past to illuminate the way forward into the next energy transition to sustainable energy.

Canada's Great Energy Transition: The Big Picture

Canada is a great place to study the history of energy and everyday life. Canadians have long been among the highest per capita consumers of energy. On par with Americans, they have consumed more than twice as much energy as Europeans since before the early nineteenth century, a trend that continues to the present. And the society-changing shift from the organic to the mineral (or modern energy) regime occurred so recently that it is still within living memory for many Canadians, providing a wonderful range of sources and perspectives about changing energy use from which the historian of energy and everyday life can draw. Canada's huge energy consumption is generally explained by the country's long, cold winters, low population density, the great distances that separate people and markets, and an abundance of organic and mineral energy resources that have been increasingly exploited for personal use and for profit. The superabundant supplies of biomass fuel (wood) and the ease with which wood was transported via waterways have been used to explain the slow transition to the mineral regime: it was only in 1906 that Canadians obtained more energy from fossil fuels than trees, a benchmark that England and Wales had reached by 1800, and the United States by the 1880s. It was not until 1955 that Canada reached the 90 percent level of fossil fuel versus traditional energy use that Britain had attained by 1845.[3]

2 Elizabeth Shove and Gordon Walker, "What is Energy for? Social Practice and Energy Demand," *Theory, Culture & Society* 31 (2014): 41–58, 51.

3 Richard W. Unger and John Thistle, *Energy Consumption in Canada in the 19th and 20th Centuries* (Napoli: Consiglio Nazionale delle Ricerche, 2013).

Rural Households and the Energy Supply Problem

Understanding the role and nature of Canadian households and the practices of everyday life within them provides a scale of analysis that is particularly fruitful in explaining Canadians' long reliance on organic energy. Rural populations thrived in Canada and remained a majority of the population until the Second World War. The great distances separating individual homesteads militated, however, against the rapid spread of the newly emerging network services for gas or electricity, which relied on small distances and high population densities to be economically viable. The vast majority of rural Canadians never had access to gaslight, and even as late as 1941, only 20 percent of farm homes had central grid electricity. The relative deprivation of rural households compared to urban homes attracted growing attention from a wide variety of reformers in the early twentieth century. In the 1920s and '30s, electrical companies began publishing special pamphlets to encourage rural populations to "sign up for the hydro," including *Boosting Egg Production*, and *Ten Uses for Electricity on the Farm*. Other articles championed the health and well-being that would naturally follow with increased electrical consumption—"Summer Showers Chase Fatigue," "Optometrists Talk about Home Lighting," and "Electricity Will Lighten Washday Work." Others, like "Does Mother Do the Pumping on Your Farm?" and "Poor Mommy!" had a somewhat darker message directed at those who stubbornly continued to "put up with a lot of needless bother and inconvenience" from old-fashioned ways of working in the home, when the "cool, calm and collected . . . [m]odern girls don't go in for red faces."[4]

Rural Households: Understanding the Rural Energy Landscape

While it was rural deprivation—manifested most emblematically in the absence of a grid delivery system of electricity—that attracted the most attention from urban observers by the 1920s, the energy situation of rural Canadians looked a little different from the vantage point of rural dwellers themselves. The millions seeking independence on their own rural lands in nineteenth- and early twentieth-century Canada were well aware that, even if rural households were only marginally suited for commercial agriculture and

4 BC Electric, "Home Service News," June 1932, October 1933. For an overview of Canada's energy history, see Ruth W. Sandwell, ed., *Powering Up Canada: A History of Power, Fuel and Energy from 1600* (Kingston, ON: McGill-Queen's University Press, 2016).

remained unconnected to the electrical grid, the land would still provide a wealth of food and fuel opportunities to support a family: either indirectly through commodity sales, or directly through home consumption (self-provisioning). A third pillar of economic support in rural areas was gained from wages: most rural men worked part of the year in the rural resource industries including logging and fishing, and in infrastructure projects including the construction and maintenance of roads, power plants, transmission lines, and later, oilfields. Wood, waterpower, and the muscle power of people and their animals dominated families' economic support on and off the farm until the 1940s, when gasoline-powered tractors began to displace horses for the first time, and bulldozers, chain saws, and gasoline-powered engines first made their appearance.

Figure 1:
Mary Tidd doing laundry in her Ross River home. A woodstove, wicker basket, two water barrels and two laundry tubs are all visible, ca. 1930. Photo by C. Tidd ©. Used with permission from the Yukon Archives, Claude and Mary Tidd fonds, 77/19, #8533.

Energy practices of the organic regime can also be clearly seen inside the home. Throughout rural Canada (and in parts of small-town urban Canada as well), most women continued to grow, cook, and preserve foods that they had gathered, grown, or tended on their own and nearby lands, well into the 1950s. Many kept livestock and sold eggs, milk, and cream. Horses provided transportation; wood provided the energy needed for cooking and heating, and for washing clothes, which the wind dried. Women preserved food through processes like smoking, as well as heating and canning; Canada's cold climate anticipated indoor freezing technologies of the post-1930s era, and ice, another link to the organic economy and local environments, continued to be used for food preservation by urban and rural women alike throughout the 1930s and '40s in many areas. Water was pumped or carried using human muscle power, as few rural houses had running water until the mid-twentieth century.

Rural Households and the Energy-Demand Problem

Figure 2: Two women baking bread in a woodstove, ca. 1940s. Note the electric light in the ceiling. Many homes took advantage of electricity for lighting but remained committed to using their multifunctional wood stoves for heating and cooking. Courtesy of Library and Archives Canada/National Film Board of Canada fonds/PA-108032.

With thanks to the Museum of Science and Technology, Ottawa, and their *Life, Love and Laundry Collection*, which first brought these images to my attention.

Rural men and women would eventually demand the same modern amenities as their urban brothers and sisters, but there was a long half-century or more when demand for such modern innovations was as limited as the supply. Patterns of household labor, and not just distance, continued to limit the appeal of electrical power. While many would have welcomed electric lighting at a price they considered affordable and fair, rural households balked at the high-priced inefficiency of electricity. Electrical power was, however, most cost-effective when in heavy and steady use, as in a factory. Most of the farm work that could be "lightened" by electricity, such as winnowing or grinding, was highly seasonal and relied on bursts of power for short durations. As well as being poorly adapted to many rural uses, where it did exist, rural electrical infrastructure was not only expensive but worked erratically, subject to frequent power failures and planned outages, often failing when it was needed the most. Farm men and women, like their urban counterparts, complained about the difficulties of retrofitting wiring into older houses, the high cost of installing the specialized wiring needed for stoves and heaters, and incomprehensible billing practices. All of this limited demand, providing influential vernacular counternarratives to the ongoing propaganda from the electrical utility companies about the benefits of rural electrification. For the most part, rural households continued to rely on energy carriers such as wood and draft animals that provided energy consistently, in ways that were cost-effective and which furthermore fit into familiar patterns of daily life.

The Hybrid Energy Transition in Rural Canada

Coal oil lamps and wood stoves are two cases in point. Coal oil (also known as kerosene and paraffin) was the first petroleum product to be used widely across Canada. Although it was technically a "modern" fossil fuel, it was nevertheless delivered through the same transportation systems as people and other goods—trains, and in large barrels by horse and wagon—rather than through a specialized grid system. Portable and inexpensive, the coal oil lamp was the artificial lighting of choice in almost all rural homes between the 1880s and 1950s. In daily use, it closely resembled the familiar oil lamp, though with the advantages of being brighter and less smoky.

Cast iron wood stoves were used by more than 80 percent of rural homes in Canada from their appearance in the 1880s and into the mid-twentieth century. They were created by the new smelting, forging, and transportation methods of the mineral energy regime of coal and steel. Their use in most rural homes, however, relied on familiar patterns of household labor, where men, women, and children first needed to find and process the fuelwood. And unlike the electric or gas stove, which could only provide one function (cooking), the wood stove provided a multiplicity of functions. As Harriett Beecher Stowe summarized in *The American Woman's Home*, read widely throughout Canada, with sufficient fuel the stove would "keep seventeen gallons of water hot at all hours, bake pies and puddings in the warm closet, heat flat-irons under the back cover, boil tea-kettle and one pot under the front cover, bake bread in the oven and cook a turkey in the tin roaster in front."[5] And in Canada, it had the advantages of keeping a house warmer than other sources of heat, and drying snow-coated clothing. The new wood stoves (which were also capable of burning coal in wood-starved areas) were transformed into "the first consumer durable with near-universal market penetration" because they were "affordable, versatile and reliable," and in large part also because they fell within established practices of everyday life.[6]

5 Catharine Beecher and Harriett Beecher Stowe, *The American Woman's Home* (New York: J.B. Ford and Company, 1869), 130.

6 Howell John Harris, "Conquering Winter: US Consumers and the Cast-Iron Stove," in "Comfort in a Lower Carbon Society," ed. Elizabeth Shove, Heather Chappells, Loren Lutzenhiser, and Bruce Hackett, special issue, *Building Research and Information* 36, no. 4 (2008): 337–50.

Conclusions

The low-energy practices so characteristic of the organic regime—decentralized, non-commodified, locally sourced, household based, and vernacular—continued to dominate rural Canadians' engagement with energy within the domestic sphere, helping to explain Canada's long reliance on organic energy. New energy practices in the home were adopted between 1850 and 1950, and in ways that increasingly linked households with the emerging industrial energy networks of production, transportation, and waste. But most characteristic of the energy transitions slowly occurring in rural areas was the adoption of hybrid patterns of change, where elements of the emerging fossil fuel regime could coexist (sometimes for generations) with older patterns and technologies that resembled those of the organic energy regime, and even alongside growing modern specialist networks of oil and electricity. The development of these hybrid energy carriers is an apt reminder that while rural people lived out their lives within the contours of the organic economy and were frequently criticized for being backward or recalcitrant, they made decisions based on what worked within their own political economy and patterns of everyday life. A focus on the household reveals that Canada's rural majority had a complex, varied, and intimate relationship with the world outside their door. It was a relationship forged by their reliance on the organic energy regime, which lasted longer than in other industrializing countries, even as new fuels slowly began to impact the country's environment and society.

Further Reading

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