Lillian Moller Gilbreth (1878-1972): *AR* Reputations

By Barbara Penner DRAFT 24/11/2021

Lillian Moller Gilbreth (1878-1972) was famous for being two seemingly opposed things at once. She was one of the most celebrated mothers *and* one of the most celebrated engineers in twentieth century America. That one self-effacing woman could conquer the cut-and-thrust world of industry while bringing up a dozen happy children made her the subject of endless public fascination. It did not hurt her career either, which lasted six decades, four of those after the death of her husband and partner, Frank Bunker Gilbreth in 1924.

Unlike many other professional women of her era, Gilbreth has never been forgotten. Her impact on human environments and design, however, is not often discussed. One exception was Sigfried Giedion who, in *Mechanization Takes Command* (1948), cited Gilbreth as one of the founders of industrial psychology and a key figure in modernizing the kitchen. Yet when Giedion was writing, the work of which Gilbreth was most proud, designing rehabilitation facilities for the disabled, was only beginning.

Although Gilbreth regularly headlined at national conferences, served on presidential commissions and featured in the media, she was modest to a fault. Her lifelong pursuit was to memorialize Frank, posthumously keeping the spotlight firmly fixed on him. And then there was the Hollywood effect. Two Gilbreth children would chronicle their experiences of growing up efficiently in best-selling family memoirs, *Cheaper by the Dozen* (1948) and *Belles on their Toes* (1950), both made and remade as popular Hollywood comedies.

The comedy stemmed from the Gilbreths' efforts to apply scientific management to the chaos of large family life and the frequent gaps between rationality and reality. Nothing amused the children more than their mother's emergence as a kitchen expert given she didn't cook at home. In fact, there were many domestic tasks she didn't do. While played for laughs, Gilbreth's simplified version of home-making reflected her lifelong belief that human work, especially women's work, should be valued – never needlessly wasted. For women who did cook, a rational kitchen prevented the waste of time and energy. In her later rehabilitation studies, the rational kitchen became positively enabling, an assistive support for the disabled and elderly, allowing them to remain productive and independent at home.

Lillian's career began after marrying Frank in 1904. A successful building contractor. Frank published important efficiency studies of bricklaying and concrete construction and soon moved into industrial consultancy full-time. Together, he and Lillian worked on jobs and on publications, refining their own brand of scientific management. Unlike Taylorism, which focused on time and speeding up work, the Gilbreth system focused on motion and on showing workers a better and less fatiguing way of doing tasks – the 'one best way'. As Giedion appreciatively noted, this required they invent visual and analytical tools for capturing and teaching skills. Hence, cyclegraphs, micromotion films, process

and simo charts were born. They even patented a motion notation system, 'Therbligs' (Gilbreth spelled backwards).

As their system required gaining worker cooperation, Frank encouraged Lillian to study experimental psychology, an emergent field whose preeminent star was William James. Lillian would obtain a doctorate in the subject at Brown and subsequently introduced the idea of the 'human element' or 'human factor' into the Gilbreth system. The proposal that the worker be viewed as 'a personality' not an economic unit underlay her book, *The Psychology of Management* (1914), now recognized as a foundational text of industrial psychology. She wrote: 'the emphasis in successful management lies on the *man* not on the work; that efficiency is best secured by […] modifying the equipment, materials and methods to make the most of the man.'

Although the Gilbreths' innovations proved controversial, the late teens and early twenties were intensely productive ones. Notably, they conducted pioneering studies of disabled veterans. But in 1924, Frank died, leaving Lillian a widow with eleven surviving children to put through college. She tried to continue Gilbreth, Inc. on her own, but as contracts dried up, she shifted focus. Capitalizing on media interest in her family life – a woman engineer with a plethora of children was 'good copy' – she reinvented herself as a domestic authority, publishing *The Home-maker and Her Job* in 1927.

We might think the home terrain was thoroughly covered, particularly by Christine Frederick, whose 1913 *The New Housekeeping* influentially applied scientific management principles to domestic life. But as one of the co-inventors of motion study, Gilbreth's interventions were regarded as more credible and rigorous and she did far more to secure acceptance for home engineering amongst American university researchers, philanthropic funders and government officials.

The difference is evident if we consider Gilbreth's 'Kitchen Practical' designed for the Brooklyn Borough Gas Company in 1929. Whereas Frederick sought to save steps by routing workflow linearly and eliminating cross traffic, Gilbreth here explored 'circular routing', compressing the plan and using a wheeled serving table to bring key equipment and work surfaces as close to the home-maker as possible. In her diagram, the home-maker, positioned at the center of this tight arrangement, can easily reach most of the equipment needed for simplified coffee cake making (the simplification process shown in accompanying charts), minimizing motions by half and steps by five-sixths.

Gilbreth's plan was much praised: Giedion called it 'a masterpiece of analysis'. But she did not demonstrate the 'work triangle' principle as is often claimed. This principle, a staple of domestic planning after World War Two, dictated that kitchens be arranged around three key pieces of equipment– fridge, sink and stove – placed in a triangular formation a total of 21 feet, 6 inches apart. In sum, it put equipment rather than bodies at the center of planning, which Lillian did not do. In fact, Lillian firmly believed kitchen equipment should be 'made-to-measure', tailored around each home-maker's height and 'work curve', shoulder

and elbow reaches . She even taught visitors to take their own measurements in order to hack kitchens back home, raising sinks up on blocks or sawing off kitchen cabinet legs as needed, as well as using moveable furnishings. As this flexible approach was at odds with commercial manufacturers' drive to standardize, the ever conciliatory Gilbreth advised them to produce kitchen equipment at short, medium and tall heights.

Gilbreth's re-envisioning of women's household labour went beyond kitchen planning. She had no patience with women wearing themselves out to meet impossible standards of cleanliness and maintained that if tasks that could be 'handed over' to outside help or businesses, they should be. Useless ones like ironing sheets should be eliminated. Any remaining ones were to be simplified and done cooperatively by *all* family members including the husband according to aptitude. The time and energy saved would allow the home-maker time for self-cultivation or even a career.

The connecting thread across her work remained Gilbreth's belief in the human need to work and she was increasingly concerned by what happened when people were unable to do so due to age or infirmity. During the war, she worked on rehabilitation projects for the U.S. Navy, and collaborated on a 1945 book *Normal Lives for the Disabled*. After the war, however, she began to concentrate on disabled homemakers, who were completely ignored in vocational rehabilitation. Gilbreth believed this was a mistake: paid or not, homemaking was productive work without which the material well-being of the household, community and nation would suffer.

Over the next three decades, Gilbreth developed the idea of homemaker rehabilitation through two major projects. The first was her 'Heart Kitchen', designed for the New York Heart Association in 1948. Here, efficient body-centered planning and moveable furnishings became the means by which heart patients might be spared dangerous exertion. The kitchen was presented as a kind of prosthetic device, no doubt why it was so enthusiastically received in rehabilitation, medical and therapy circles. Significantly, it would be reinstalled at the pathbreaking Institute of Physical Medicine and Rehabilitation in New York, placing Gilbreth's work at the 'heart' of the emerging civilian rehabilitation field.

The therapeutic potential of such spaces was investigated further in an ambitious federally funded study undertaken at the University of Connecticut between 1955 and 1960, for which Gilbreth, entering her eighties, served as Chief Consultant and patron saint. The project's main goal was to establish a process by which environments could be adjusted to suit the individual home-maker and their disability. This required a major shift in the Gilbreths' philosophy; 'the one best way' could not be sustained when faced with a full spectrum of users of extremely varied abilities.

Rather than singular, 'best' solutions, flexibility, adaptability, and experimentation prevailed, along with Lillian's rough-and-ready approach to customization. The book which summed up the study's findings, *Homemaking for*

the Handicapped (1966), featured photo after photo of disabled home-makers doing tasks with the aid of homemade devices, from reach extenders to stable flat-bottomed mixing bowls, and of wheelchair users comfortably performing domestic jobs in height-adjusted work spaces. Home-makers were shown creatively misusing standard elements of their domestic environment, such as a one-armed woman deftly opening a bottle cap in a door hinge.

Of course, these projects were not without problems. Critical disability scholars now challenge the underlying assumption that productivity and normalcy should be goals for people with disabilities. And Gilbreth arouses controversy in other ways too especially when assessing her legacy for women. She was undoubtedly dedicated to advancing women's status and championed their right to careers. Yet these more ambitious aims were often lost in translation. Second wave feminists read female body-centered kitchen plans as straightforward attempts to keep women at home, literally enclosing them in cabinets and appliances. And simplification charts of cake and meatloaf making were seen as the ultimate in triviality, totally inadequate to bringing down the patriarchy.

Today there is room for a more generous assessment of Gilbreth's work. Her practice may not have been feminist per se, but it did set out to value normally invisible female bodies, labour, time and care. Her close scrutiny of female bodies and use meant she drew attention to how life cycles, ageing, infirmity and disability impacted home environments at a time when such concerns were barely a blip on the radar of architectural modernism. And her rehabilitation work opened up design to bodies, needs, and routines of users of all abilities, a move which underlay the rise of user-centered and inclusive design today.

Her long-term impact on kitchens is less clear-cut. Though commercial manufacturers often deployed energy-saving rhetoric in advertising, Gilbreth never managed to convince them to produce equipment in small, medium and tall sizes. Quite the opposite. Despite consistently being deemed too high for average-sized women to work comfortably, the uniform 36" inch countertop prevailed – and continues to prevail – in fitted kitchens across America. As the writer Rachel Zandt eloquently puts it, women today are 'misfits' in their own kitchens, even though statistically they still do a disproportionate amount of work in them. Adaptable body-centered kitchens remain tantalizingly just out of reach.