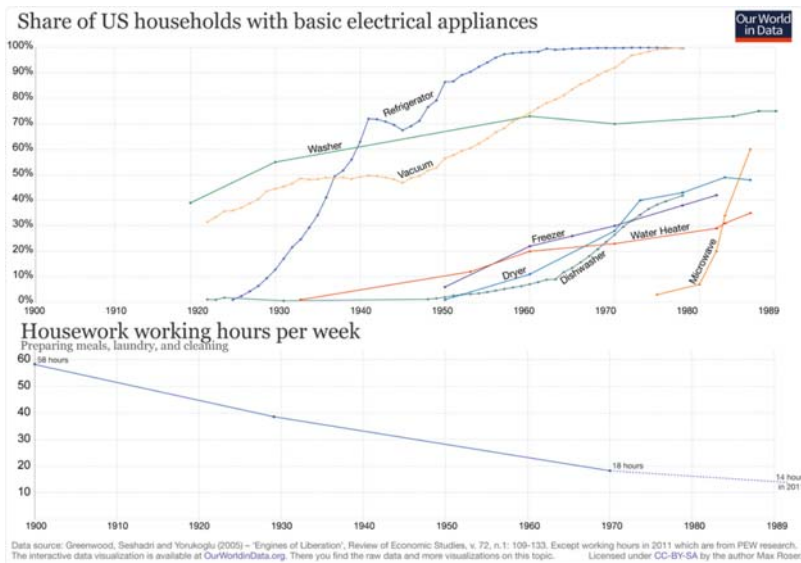


By Ana Swanson October 14

The most disruptive technology of the last century is in your house

When people talk about "disruptive technologies," they're usually thinking of the latest thing out of Silicon Valley. Technologies like the smartphone, the computer and the Internet have, of course, dramatically changed the ways we live and work. But Max Roser, the researcher who runs the site [Our World in Data](#), offered a great reminder yesterday that some of the most historically disruptive technologies aren't exactly what you would expect.



 **Max Roser**
@MaxCRoser

Your washer is a truly 'disruptive technology'

The rise of household appliances and the decline of household work.

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This fascinating chart shows the dramatic rise in ownership of basic home appliances through the 20th Century, as the arrival of electricity in the American home gave rise to a revolution in consumer goods. Here's another view of Roser's chart, which uses data from [a paper by Greenwood, Seshadri and Yorukoglu](#) in 2005.

Arguably, one of the most disruptive technologies of the last century is the refrigerator. In the 1920s, only about a third of households reported having a washer or a vacuum, and refrigerators were even rarer. But just 20 years later, refrigerator ownership was common, with more than two-thirds of Americans owning a refrigerator.

As Helen Veit wrote in [a recent piece in The Atlantic](#), that surge in refrigerator ownership totally changed the way that Americans cooked. As Veit writes, "...before reliable refrigeration, cooking and food preservation were barely distinguishable tasks." Techniques like pickling, smoking and canning were common in nearly every American kitchen.

With the arrival of the icebox and then the electric refrigerator, foods could now be kept and consumed in the same form for days. Americans no longer had to make and consume great quantities of cheese, whiskey and hard cider -- some of the only ways to keep foods edible through the winter. "A whole arsenal of home preservation techniques, from cheese-making to meat-smoking to egg-pickling to ketchup-making, receded from daily use within a single generation," writes Veit.

The rise of other technologies was more gradual, but also transformative. Perhaps surprisingly, the percentage of households with washers went from 40 percent in 1920 to only 75 percent in 1990. Vacuums also started out slowly, then became much more common in the 1950s and 1960s. Freezers, water heaters, dryers and dishwashers were all relatively uncommon, but started to spread in the 1960s and 1970s. (Greenwood and his fellow researchers put these figures together from various consumer surveys -- you can see the data [here](#).)

Here's another chart from Greenwood et. al., which shows how the spread of electricity, running water, the flush toilet and central heating accompanied these changes. In 1890, only a quarter of houses had running water, and none had central heating -- meaning the average household had to bring home 7 tons of coal and 9000 gallons of water per year, Greenwood and his colleagues write.

These technologies were so disruptive because they massively reduced the time spent on housework. The number of hours that people spent per week preparing meals, doing laundry and cleaning fell from 58 in 1900 to only 18 hours in 1970, and it has declined further since then.

That change has made it possible for Americans to spend much more time at leisure and at work -- specifically for women, who were responsible for almost all housework, to get jobs and become economically independent. Just 100 years ago, most married women were working at home. Now, about 57 percent of working age women are in the labor force.

"The housewife of the future will be neither a slave to servants nor herself a drudge," inventor Thomas Alva Edison told Good Housekeeping magazine in 1912, according to Greenwood's paper. "She will give less attention to the home, because the home will need less; she will be rather a domestic engineer than a domestic labourer, with the greatest of all handmaidens, electricity, at her service."