

ARTICLE

The Other Kitchen Debate: Gender, Microwave Safety, and Household Labor in Late Cold War America

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“The Other Kitchen Debate” places the history of the microwave oven in the context of Cold War anxieties and gender politics. Discrepancies between Soviet and U.S. safety standards, Soviet deployment of microwave espionage, and the prospect of nuclear war triggered fears about the possible dangers of kitchen appliances powered by low-level radiation. During the 1970s and early 1980s, politicians, government regulators, industry representatives, advertisers, home economists, media, and consumers engaged in lively debates over oven safety and the merits of microwave cookery. By the late eighties and early nineties, as East–West tensions waned and record numbers of American women entered the paid labor force, American media perceived fewer distinctions between the hazards posed by electronic ovens and those presented by their conventional counterparts. New definitions of safety redefined microwave ovens as purely domestic appliances, leaving questions about the potential risks of nonionizing radiation unresolved.

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“Worries About Microwaves Have Set off Reverberations in Cooking, Diplomacy and Health” an article in the November 7, 1976, issue of the *New York Times Magazine* announced. With characteristic clarity, science writer Marion Steinmann enumerated concerns regarding the safety of the low-level radiation that powered Soviet eavesdropping equipment, long-distance telephone conversations, airport control towers—and consumer-grade microwave ovens.¹ By linking the diplomatic and the domestic, Steinmann implicitly, if unwittingly, evoked an event that had taken place only seventeen years before, the famous “Kitchen Debate” at the 1959 American Exhibition in Moscow. There, during a brief thaw in the Cold War, U.S. vice president Richard Nixon and Soviet premier Nikita Khrushchev argued over which nation manufactured the better refrigerators and washing machines and debated the relative merits of

1. Marion Steinmann, “The Waves of the Future? Worries About Microwaves Have Set off Reverberations in Cooking, Diplomacy and Health,” *New York Times Magazine*, November 7, 1976. In fact, Steinmann anticipated many of the arguments put forth in Brodeur’s *Zapping of America*.

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capitalist and communist “attitudes toward women.” To Nixon, the trade show’s corporate sponsors, and many Americans back home, the exhibition’s four demonstration kitchens represented potent symbols of the superiority of the American way of life—scientific and technological progress, consumer abundance, postwar domesticity and its attendant gender roles.²

Steinmann’s essay reveals the outlines of another kitchen debate, one we can trace through the late twentieth-century history of the microwave oven. If this history lacks the drama of confrontation between world leaders—or even a single inflection point—it nevertheless suggests ways in which the Cold War continued to shape domestic life well into the 1980s. If, as the historians Ruth Oldenziel and Karin Zachmann suggest, modern kitchens served to domesticate technological innovation “in an era in which most people felt that novel technologies such as the atomic bomb threatened the routines of their daily lives or could even be lethal,” what of the new appliances that beamed radiation into American kitchens?³ How did politicians, government regulators, industry representatives, advertisers, home economists, media, and consumers navigate the politics of gender in an era that witnessed both the rise of second wave feminism and the expansion of women’s paid employment?

In the 1970s and 1980s, these various constituencies confronted two related issues, both rooted in Cold War politics: the hazards of microwave radiation and the gradual, if uneven, demise of the postwar domestic ideal that anchored the American way of life. It would be claiming too much to say that the Cold War represented the only factor that shaped perceptions of microwave oven safety. Yet Cold War *contexts* rendered microwaves’ potential dangers most visible, even as policy makers and scientists embraced increasingly outdated visions of gender. By the late eighties and early nineties, as East–West tensions waned, American media perceived fewer distinctions between the risks posed by microwave ovens and those presented by their conventional counterparts. Despite a dramatic rise in the numbers of gainfully employed wives and mothers and newly affordable machines that promised to make cooking fast and effortless, household divisions of labor remained largely intact. Once the housewife’s miracle assistant, the microwave was now the superwoman’s not altogether reliable helpmeet. It was just like any other kitchen appliance, only (sometimes) a little speedier.

The Military Origins and Cold War Heritage of the Microwave Oven

Microwave ovens figured in the Kitchen Debate, if only tangentially. Portions of Nixon and Khrushchev’s iconic confrontation took place in RCA Whirlpool’s Miracle Kitchen, which debuted at (racially segregated) U.S. home shows in 1957 and 1958 and had come to Moscow by way of the 1958 Milan Trade Fair (Figure 1). RCA Whirlpool’s “kitchen of the future” featured a “mechanical maid” floor cleaner, a self-propelled cart that delivered clean dishes to the table and dirty ones to an automatic dishwasher, and an “electronic [microwave] oven”

2. For discussions of the Kitchen Debate, see May, *Homeward Bound*, 19–23; Marling, *As Seen on TV*, 243–260, 271–283; Hixson, *Parting the Curtain*, 161–183; Oldenziel and Zachmann, “Kitchens as Technology and Politics,” 1–16; Carbone, “Staging the Kitchen Debate”; Reid, “Our Kitchen Is Just as Good”; Reid, “Who Will Beat Whom?”; Baldwin, *The Racial Imaginary of the Cold War Kitchen*, esp. 1–15, 41–47, 51–53, 63–67, 76–77.

3. Oldenziel and Zachmann, “Kitchens as Technology and Politics,” 9–10.



Figure 1. The *Chicago Defender*, the nation's preeminent African American newspaper, sponsored home shows (this one in 1959) that demonstrated the RCA Whirlpool Miracle Kitchen to Black audiences. The "electronic [microwave] oven," concealed in one of the upper cabinets, could be lowered with a wave of the hand.

Courtesy of the Obsidian Collection Archives (item number 930429703), Chicago, Illinois.

that "bakes a cake in 3 minutes."⁴ The microwave oven presumably numbered among the "gadgets" Khrushchev famously scorned, although he apparently singled out the automatic floor cleaner for particular derision.⁵

4. Marling, *As Seen on TV*, 243; Carbone, "Staging the Kitchen Debate, 70; "There's Magic in the Kitchen," *Washington Post*, February 10, 1957; "Crowds Flocking to New England Homes Show Every Day," *Boston Globe*, February 16, 1958; "Miracle Kitchen Tests Housewife Preferences," *Indianapolis Star*, April 26, 1957; "Kitchen Miracles," *Chicago Defender*, September 22, 1958; "Defender Future Wonders Exposition Draws Thousands," *Chicago Defender*, September 29, 1958. The floor cart and mechanical maid were less than fully automatic; in Moscow, an operator concealed behind a two-way mirror maneuvered the appliances via remote control; see Tate Delloye, "Dick vs. Nik: The Infamous Cold War 'Kitchen Debate' Between Richard Nixon and Nikita Khrushchev over American Capitalism, Chevy Cars, Betty Crocker Instant Cakes and Space-Age Appliances Designed to 'Make Life More Easy for Our Housewives,'" *Daily Mail*, June 25, 2019, www.dailymail.co.uk/news/article-7160173/60th-anniversary-Kitchen-Debate-summer-Nixon-sold-American.html.

5. Khrushchev, quoted in "The Two Worlds: A Day-Long Debate," *New York Times*, July 25, 1959; Carbone, "Staging the Kitchen Debate," 70; Anne Anderson, "The Thought Still Haunts Me: I Might Have Been One in That Russian Crowd!," *Better Homes and Gardens* (December 1959), 54–55, 94, 98. Anderson, *Better Homes and Gardens* kitchen editor, the Miracle Kitchen's senior demonstrator, and the daughter of Russian immigrants, spoke and understood Russian. She claimed that Khrushchev "liked most of the Miracle Kitchen's

If the ostensible purpose of the American Exhibition was to elevate peaceful competition over global—and nuclear—war, the cursory attention given to microwave ovens was only fitting. For the technology that powered them originated in less than peaceful purposes. Defined by science writer Paul Brodeur as “those frequencies lying just below the infrared region of the electromagnetic spectrum and ranging in wavelength for about 100 centimeters ... down to a millimeter,” microwaves were first deployed during World War II for military radar. Eventually they found applications in missile guidance systems, and as Brodeur presciently observed in 1977, “the highly classified ... eavesdropping operations of the National Security Agency.” By the late twentieth century they had acquired various civilian uses—communications satellites, radio and television broadcasting, shoplifting detection devices, and, of course, ovens. Still, the origins of microwave technology lay in the military. Tellingly, weapons manufacturer Raytheon produced the first commercially available microwave oven, the Radarange, in 1947.⁶

Newspaper and magazine articles published in the immediate postwar period celebrated the wartime heritage of “electronic ovens,” as microwaves initially were called. “Radar—the same thing they located submarines with during the war—had broiled a filet mignon,” a 1947 *Washington Post* article declared.⁷ The broiling took place in the kitchen of a hotel restaurant; the size, installation requirements, and cost of early microwaves rendered them unsuitable for home use. By the time household models made their first appearances in 1955, media reports rarely noted their military origins.⁸ Why is not clear. Perhaps a war that ended a decade earlier had lost its relevance; perhaps microwave manufacturers feared references to radar might alarm atomic age consumers. Sales at any rate stalled, primarily because most Americans had neither the space nor the money for an appliance approximating the dimensions of a

unusual appliances and devices except the self-propelled, electronic floor cleaner. He said he thought women should still get down on their hands and knees and scrub the floor” (94).

6. Brodeur, *Zapping of America*, 5–15, quotations, 5, 8. For scholarly accounts of the origins of microwave ovens, see Hammack, “Reverberations”; Cooper, “Microlessons,” 588–589; Cockburn and Ormrod, *Gender and Technology in the Making*, 17. Susan Strasser’s op-ed, “What’s in Your Microwave Oven?,” *New York Times*, April 14, 2017, offers a superb and accessible overview. See also Marx de Salcedo, *Combat-Ready Kitchen*, 193.

7. Lucia Brown, “Radar Comes into Kitchen to Broil Meat Without Heat,” *Washington Post*, September 12, 1947; see also Paul W. Kearney, “Better Meals with Less Work: Here’s Good News for the Girls—and also for the Boys Who Have to Help These Days in Getting Meals at Home,” *Redbook* (January 1946): 62, 72, 74; and Hazel Streeter Davenport, “‘Radarange’ Heats Pie a la Mode Without Melting Ice Cream,” *Boston Globe*, August 3, 1947.

8. See, e.g., “EXTRA! Electronic Cooking at Home!,” *Better Homes and Gardens*, April 1956, 44, 134; Ann Worden and Anne Anderson, “Exciting Trends in Today’s Kitchens,” *Better Homes and Gardens*, August 1956, 53; “Take a Look at the Latest Kitchen Helpers,” *Better Homes and Gardens*, May 1957, 111; “Microwave Cooking: A New Era in Cooking,” *Good Housekeeping*, May 1957, 263–264; “What’s Coming for Your Kitchen,” *Better Homes and Gardens*, September 1958, 155; Margaret Davidson, “A Portfolio of Six Unforgettable Kitchens,” *Ladies’ Home Journal*, November 1958, 64; Jane Cornish, “The Electronic Range: A Report and a Promise,” *Good Housekeeping*, September 1960, 166–167. For an exception, see David Bill Hempstead, “What the ‘Think Machines’ Will Do for You,” *Redbook*, May 1955, 76, which explained that electronic ovens worked “by bombarding the food with microwaves like those employed by military radar.” Perhaps not surprisingly, the only writer to make the military-home front connection was a man. Anne Anderson coauthored “Exciting Trends in Today’s Kitchen” three years before she demonstrated those trends in Moscow.

conventional range that retailed for \$1300 (more than \$11,000 in 2020 dollars).⁹ Until more affordable countertop versions premiered in the late 1960s and early 1970s, and for nearly a decade thereafter, microwaves designed for commercial use in restaurants, hospitals, and schools outnumbered home models. By then, few traces of the military-industrial complex remained. Raytheon marketed its 17.25 by 22.75 by 14.5 inch Radarange (1967) under the Amana brand, which it acquired in 1965. By the same token, Litton Industries gave consumers little reason to suspect that it made both MinuteMasters (1971) and missile guidance systems.¹⁰

The increasing popularity and affordability of microwave ovens nevertheless coincided with fears about their safety. Concerns about radiation in daily life, especially as it pertained to color TVs (which emitted X-rays) and diagnostic X-rays, surfaced in the late 1960s, culminating in the passage of the Radiation Control for Health and Safety Act in 1968. The new law empowered the Department of Health, Education, and Welfare (HEW), through its subagency, the Food and Drug Administration (FDA), to establish and enforce safety standards and oversee relevant research.¹¹ Microwaves, unlike X-rays or nuclear weapons, are a form of nonionizing radiation—or as the FDA puts it, one that “does not have enough energy to knock electrons out of atoms.”¹² Hence, many believed them harmless. Nevertheless, microwave ovens soon joined the list of potentially hazardous appliances. First, there were reports of radiation leakage from commercial ovens, many of them with faulty door locks, purchased by the U.S. military for the Walter Reed Army Medical Center. A year later, in 1969, scientists at HEW found that about a third of the microwave ovens they tested as part of a random survey leaked radiation in excess of the agency’s proposed standards, set to go into effect in 1971, and the industry’s laxer, voluntary guidelines.¹³ (The new federal standard, still in use today, “limits the amount of microwaves that can leak from an oven throughout its lifetime to 5 milliwatts (mW) of microwave radiation per square centimeter at approximately 2 inches

9. “Electronic Oven is Still Shunned: Price Is Factor,” *New York Times*, January 15, 1959; Measuring Worth, www.measuringworth.com/calculators/uscompare/relativevalue.php.

10. “The Miracle Worker [Amana Radarange advertisement],” *Chicago Tribune*, December 14, 1967; Cecil Fleming, “Kitchen Change Looms in Microwave Cookery,” *Los Angeles Times*, April 11, 1968. The first advertisements for Litton’s MinuteMaster appeared in 1971. See, e.g., *Minneapolis Star Tribune*, July 7, 1971; *Chicago Tribune*, November 18, 1971; *Los Angeles Times*, November 25, 1971; and *New York Times*, December 5, 1971; Cooper, “Microlessons,” 589. According to Cooper, “What came to be called military technology transfer or conversion, along with less-than-subtle traces of cold war defense culture, were discernible in Amana’s “Radarange” brand name and the atom logo on Litton ovens, the redundant interlock mechanisms on oven doors to prevent accidental radiation exposure, the digital countdown sequence to a food’s personal ground zero, and—over time—the popular locution of ‘nuking’ or ‘zapping’ food in an oven.” Yet I would argue that “traces of cold war defense culture” became visible only at particular moments in the history of microwave ovens.

11. “Owners of 9,000 Color TV Sets Warned of Rays,” *New York Times*, July 22, 1967; J. V. Reistrup, “Many Electronic Products May Pose Radiation Danger, U. S. Scientist Says,” *Washington Post*, August 15, 1967; “Radiation Hazards Bill Is Agreed On,” *Atlanta Constitution*, October 11, 1968; Radiation Control for Health and Safety Act of 1968; Clayton Knowless, “Great Society: What It Was, Where It Is,” *New York Times*, December 9, 1968. See Tran, “The Radiation Control for Health and Safety Act of 1968,” for an excellent overview.

12. U.S. Food and Drug Administration, “Microwave Oven Radiation.”

13. “Radiation Leak in Microwave Ovens Found,” *Los Angeles Times*, September 3, 1968; “Radiation Leaks in Army Ovens Bared,” *Washington Post*, June 21, 1968; “Survey Reports Some Microwave Ovens Are a Health Hazard,” *New York Times*, January 5, 1970.

from the oven surface.”¹⁴) Early in 1970, investigative columnist Jack Anderson, famed for his exposés of organized crime and CIA assassination plots, accused HEW’s director of caving to industry pressure by deleting details of the specific effects of excessive exposure from its report. By December of that year, further testing by the Bureau of Radiological Health (BRH), the FDA division charged with administering the Radiation Control for Health and Safety Act, had “cleared” most models, blaming the problem not on the ovens themselves, but on inadequate maintenance.¹⁵

Cold War espionage would raise further questions about the safety of the revolutionary new appliances that were beginning to populate American kitchens. In 1972, Anderson revealed the existence of a hitherto secret CIA file labeled “Operation Pandora.” According to its contents, the CIA and other government agencies had known for years that the Soviets had been beaming microwaves at the U.S. Embassy in Moscow, perhaps to spy on U.S. envoys, perhaps to “brainwash” them. These revelations, according to Anderson, generated a series of bizarre American scientific experiments on the impact of microwave radiation. Some of these endeavors reportedly substituted monkeys for diplomats; others used U.S. Navy personnel as “human guinea pigs.”¹⁶

Anderson’s allegations gained little immediate traction; “Anderson caused a flurry, but only a flurry,” *Washington Post* columnist Stephen S. Rosenfeld wrote four years later.¹⁷ Subsequent developments brought the Cold War home—to American kitchens. Only a year after Anderson revealed the existence of Operation Pandora, *Consumer Reports* magazine pronounced microwave ovens “NOT RECOMMENDED.” Citing evidence that prolonged exposure to microwaves caused “irreversible cataracts” in humans and reduced “testicular function” in laboratory animals, *CR*’s April 1973 issue concluded, “We are unable to uncover data to establish to our satisfaction what level of microwave radiation emission can unequivocally be called safe.” The problem, as *Consumer Reports* saw it, was not an absence of standards. The problem was whether the standards had any meaning.¹⁸

Consumer Reports forged no explicit link between Anderson’s revelations and its own recommendations. Nevertheless, by referencing the work of Soviet and Eastern European scientists, who had conducted most of the publicly available research on nonionizing radiation, it implicitly placed its findings within a Cold War framework. “NOT RECOMMENDED” linked Moscow and Middle America by claiming that the exposure levels permitted by the BRH in American homes was 500 times higher than the Soviet bloc’s established protocols (though it noted that the two sets of standards were not strictly comparable). Equally disturbing, *CR* testers found significant variation between the ideal usage patterns that underpinned manufacturers’ safety ratings and the circumstances of real-life kitchens. All of the models *Consumer Reports* evaluated, each carrying a sticker attesting compliance with the BRH’s

14. U.S. Food and Drug Administration, “Microwave Oven Radiation.”

15. Jack Anderson, “Peril in Microwave Ovens,” *Atlanta Constitution*, January 19, 1970; “Some Ovens Found Free of Radiation: Federal Agency Reports on Microwave,” *New York Times*, November 11, 1970; “Minneapolis: Litton Reports its Microwave Oven Is Safe,” *New York Times*, December 6, 1970.

16. See, e.g., Jack Anderson, “‘Brainwash’ Attempt by Russians?,” *Washington Post*, May 10, 1972; Jack Anderson, “Navy’s Using Human Guinea Pigs,” *Atlanta Constitution*, November 12, 1972.

17. S. S. Rosenfeld, “Radiation Sickness: Medical and Political,” *Washington Post*, January 7, 1977.

18. “Microwave Ovens: Not Recommended,” *Consumer Reports*, April 1973, 221–230.

standards, allowed at least some microwave radiation to escape through their door seals. Various experiments—trapping paper towels in doorframes, spilling food, running an oven while empty or with small amounts of food—resulted in further leakage.¹⁹

While the timing was coincidental, hearings on radiation and public safety convened by the Senate Committee on Commerce began just a day after Consumers Union announced that the next issue of *Consumer Reports* would label microwave ovens “NOT RECOMMENDED.” The committee cast a wide net, summoning witnesses who testified on topics as diverse as nuclear radiation, diagnostic X-rays, and communications systems. Microwaves in general and microwave ovens in particular commanded considerable attention; as presiding officer John V. Tunney (D-California) explained, their rapidly rising popularity rendered them a “major source of concern.”²⁰

Testimony from a predictable mix of experts, bureaucrats, and industry representatives yielded no discernible conclusions and few concrete results. BRH director John C. Villforth defended his agency’s testing record, though he acknowledged that factory inspections depended on the voluntary compliance of microwave manufacturers. Even as he asserted confidence in FDA’s standards, he was forced to admit that “the long-term bio-effects of chronic, low-level microwave radiation have not been investigated in this country, and that effects of such radiation on biological structures are unknown and not reasonably postulated.” Milton M. Zaret, an ophthalmologist whose research contracts with the Army, Navy, and Air Force had been terminated, allegedly because his studies revealed the inadequacy of military safety standards, pronounced “a clear, present and ever-increasing danger to the entire population of our country from exposure to the entire non-ionizing portion of the electromagnetic spectrum.” These dangers, he claimed, included cataracts, “testicular malignancy, mental illness, cardiovascular disease, hormonal imbalance, [and] arthritis.” Raytheon research scientist John Osepchuk, testifying on behalf of the Association of Home Appliance Manufacturers, responded by paraphrasing astrophysicist James Van Allen (“The hazard from microwave ovens is about the same as getting a skin tan from moonlight”) and assailing “misinformation and nonsense based on observations and experiments by individuals of questionable competence.”²¹

Witnesses made no mention of Soviet espionage, but devoted abundant attention to the merits and deficiencies of Soviet research, as well as to the validity of *CR*’s findings. Villforth downplayed differences between Soviet and U.S. standards and claimed—correctly, it seems—that *Consumer Reports* had conflated emission leakages and exposure standards. At the same time, he, like many others, cast doubt on the validity and methods of Eastern bloc research. So, too, did Osepchuk’s associate, University of Rochester biophysicist Sol Michaelson, who dismissed “questionable literature from the U.S.S.R.” characterized by “limited

19. *Ibid.*, 222–225. Four months later *Consumer Reports* reiterated that the two standards were not “comparable,” but refused to back down from its previous recommendation. See “Microwave Ovens Still Not Recommended,” *Consumer Reports*, August 1973, 489.

20. *Radiation Control for Health and Safety Act of 1968* (1973) (opening statement, Senator John V. Tunney, March 8, 1973), 1–2.

21. *Ibid.* (statement, John C. Villforth, director, Bureau of Radiological Health, March 8, 1973), 9–10, 174; (statement, Milton M. Zaret, director of Research, Zaret Foundation, Inc., March 9, 1973) 109, 112; (statement, John M. Osepchuk, Raytheon Research Division, March 9, 1973), 113–114, 120–121.

statistical analysis of data, inadequate controls, and lack of quantification of the results.”²² In short, assessments of microwave safety hinged in part on the willingness of American experts to accept communist science.

To a certain extent they did. Partly in response to petitions by *Consumer Reports*' parent organization, Consumers Union, the BRH required warning labels on ovens manufactured after September 29, 1975, that cautioned consumers against operating any model with faulty or damaged doors and interlock switches that prevented ovens from running with their doors open. (Nevertheless BRH standards for allowable leakage remained unchanged.) In fall 1973 and winter 1974, scientists from the United States joined their Eastern bloc counterparts at international conferences on microwave radiation.²³

Early in 1976, however, when news leaks forced the U.S. government to acknowledge the truth of Anderson's claims, scientific détente collided with diplomatic crisis. Both U.S. and Soviet officials insisted that the “Moscow Signal”—the term intelligence officials and, later, news media used to describe the irradiation of the U.S. Embassy—was intended to jam the Americans' own spying equipment rather than eavesdrop or threaten diplomats' mental health. Evidence, however, suggested that intentionally or not, microwave exposure constituted a threat to *physical* health; American media outlets reported an alarming incidence of cancer and blood disorders among embassy personnel and developmental disabilities in their children. Rumors regarding the health of American ambassador Walter Stoessel, the evacuation of two American children for medical treatment in the United States, the federal government's decision to compensate a former embassy staffer for his wife's death from cancer, and the Ford administration's bungled public messaging bolstered Zaret's claim that microwaves posed “a clear, present and ever-increasing danger.”²⁴ Indeed, the State Department's decision to install aluminum screens on the embassy's windows and investigate possible health effects of the Moscow Signal on embassy staff suggested that the federal government believed non-ionizing radiation unsafe.²⁵

The embassy incident raised a troubling question: If microwave emissions caused cancer in diplomats, what of the microwave radiation Americans encountered at home? “What about microwave ovens, the instrument that would probably concern American homeowners most?” *Boston Globe* reporter Jonathan Winer asked as part of a wide-ranging discussion of Soviet transmissions, TV and radio towers, and the health problems of radar operators. Or as

22. *Ibid.* (Villforth), 16–20; (statement, Sol Michaelson, professor, Department of Radiation, Biology, and Biophysics, University of Rochester, March 9, 1973), 121–124.

23. “Federal Tests Support CU's Microwave Petition,” *Consumer Reports*, January 1974, 4; “FDA Sets Warning Labels for Microwave Ovens,” *Consumer Reports*, June 1975, 339; “Microwave Ovens,” *Consumer Reports*, January 1976, 314, 320; *Radiation Control for Health and Safety Act of 1968* (statement, Villforth), 16.

24. For examples of media coverage, see Christopher S. Wren, “Bugging in Moscow Causes Health Scare,” *New York Times*, February 9, 1976; “Moscow Microwaves,” *New York Times*, February 28, 1976; “Microwave Furor,” *Time*, March 22, 1976; “U.S. Moscow Envoy Reported to Be Ill; Embassy Denies It,” *New York Times*, February 17, 1976; “U.S. Denies Stoessel Has Illness,” *Baltimore Sun*, June 25, 1976; “2 U. S. Embassy Children Have Blood Problem,” *Los Angeles Times*, June 25, 1976; and “Girl from Embassy in Moscow Ailing,” *Los Angeles Times*, July 9, 1976.

25. “Radiation Shield for Embassy,” *Atlanta Constitution*, February 11, 1976; “U.S. Embassy Gets Protective Screens,” *Washington Post*, February 12, 1976; William Beecher, “Embassy Blocks Soviet Radiation,” *Boston Globe*, March 3, 1976; “U.S. Embassy in Russia Cuts Radiation 90% by Screens,” *Los Angeles Times*, April 26, 1976.

Steinmann's *New York Times Magazine* piece put it, "Worries About Microwaves Have Set off Reverberations in Cooking, Diplomacy and Health." Accounts like these took their cue from *Consumer Reports* by contrasting apparently lax U.S. regulations for oven radiation leakage with stringent Soviet safety standards. Steinmann explained the apples-and-oranges nature of the relevant measurements; Winer opted for direct—and consequently more alarming—comparisons. Yet even Steinmann remained wary. After quoting a BRH scientist who pronounced "the exposure level possible to consumers using microwave ovens in the home ... probably less than is permissible under the Russian occupational standard," she reached a sobering conclusion. "Is this level safe, especially when you're exposed to it repeatedly—day after day—in the kitchen? No one can say for sure."²⁶

Microwave ovens sales nevertheless continued to rise, surpassing purchases of gas stoves. Sales figures did not necessarily connote ignorance or complacency. People knew about microwaves' potential risks, a 1976 Consumers Union survey suggested, but bought them anyway. How many respondents referenced the U.S. Embassy is unknown. Many reports of microwave radiation abroad, moreover, made no mention of microwaves at home; some small-city newspapers ran Mother's Day ads for microwave ovens alongside stories of events unfolding in Moscow.²⁷ Still, articles such as "Radiation Fears Fail to Slow Growth of Microwave Sales" and "Microwave Ovens Are Hot-selling Items Despite Continuing Questions on Safety," which discussed microwave safety in light of the embassy affair, conveyed a disturbing implication: The hazards that menaced Tchaikovsky Street potentially imperiled American suburbia.²⁸

The members of the Senate Committee on Commerce, Science, and Transportation had the Moscow Signal on their minds when they reconvened in June 1977 for another set of hearings on radiation health and safety, this time with Senator Wendell Ford (D-Kentucky) presiding. Ford's opening remarks referenced "the present public concern over many reports concerning radiation effects which have appeared in the media—for example, the controversy surrounding mammography, the microwave irradiation of the Moscow embassy, the Navy's proposed project Seafarer" (a never implemented communications system). Herbert Pollack of the State

26. Jonathan Winer, "Microwaves: No One Knows What Dangers They Pose," *Boston Globe*, July 25, 1976; Steinmann, "Waves of the Future?" Winer repeated *Consumer Reports'* previous assertion that the U.S. standard was 500 times that of the Soviet standard. For other accounts that connected the irradiation of the U.S. Embassy and microwave ovens, see Peter Osnos, "Embassy Admits Radiation Exists," *Washington Post*, February 11, 1976; Jim Anderson, "A 'Spooky Hazard,' Quiet Screams," *Atlanta Constitution*, March 21, 1976; David Wysoki, "Microwave Ovens Are Hot-selling Items Despite Continuing Questions on Safety," *Wall Street Journal*, August 11, 1976. Conservative opponents of détente accused the Soviets of turning the Embassy into a "giant microwave oven" (John D. Lofton, Jr.) or a "five-story microwave oven" (Patrick J. Buchanan). Lofton, "Détente and the Embassy Bugging," *Philadelphia Inquirer*, February 25, 1976; Buchanan, "Defaults by Foes Put Carter Out in Front," *Orlando Sentinel*, March 14, 1976.

27. See, e.g., "Diplomat Group Worries about US 'Cover-Up' on Embassy Radiation" and "The New Revolutionary Amana Touchmatic," *Cedar Rapids (Iowa) Gazette*, April 26, 1976; "Nixon Target of Radiation?," and "Let Mother Choose the Best Way to Cook with the Litton 650 Combination Microwave Range," *Salem Capital Journal*, "Scientists: Studies Were Ended Too Soon," and "Happiness is a Litton Microwave Oven for Mother's Day," *Palm Beach Post*, May 6, 1976.

28. "Microwave Ovens," *Consumer Reports* (January 1976): 314; Ernest Dickinson, "Microwave Sales Sizzle as the Scare Fades," *New York Times*, May 2, 1976; Jean Dietz, "Radiation Fears Fail to Slow Growth of Microwave Sales," *Boston Globe*, March 15, 1976; Wysoki, "Microwave Ovens Are Hot-selling Items Despite Continuing Questions on Safety."

Department's Office of Medical Services reported "that to date there have not been established any radiation-related health problems in the personnel who have served in the U.S. Embassy in Moscow." FDA and BRH administrators assured the committee that government standards for diagnostic X-rays, televisions, baggage inspections, and microwave ovens, among myriad other usages, protected public health. "Mr. Chairman, there is virtually no aspect of life in these United States that is untouched by any one or combination of the standards developed and administered by the FDA," deputy commissioner Sherwin Gardner proclaimed, even as BRH head John Villforth, who accompanied him, acknowledged the need for further research.²⁹ The president of the Association of Home Appliance Manufacturers lamented the "many charges and implications pointed toward microwave ovens." John Osepchuk, this time representing both the Institute of Electrical and Electronics Engineers and Raytheon, dismissed warnings about the radiation broadcast from communications towers and leaking from kitchen ovens: "This is science fiction... . Unfortunately, the Moscow Embassy incident has caused problems in this regard."³⁰ Still, there were disquieting moments. Charles Hardin of the Conference of Radiation Control Program Directors testified to "a need for standards on microwave exposure limits for people, in addition to source emission standards." "There is no easy way of checking up on such ovens once they have been installed in the home and used for an appreciable period of time," Richard Setlow, senior scientist at Brookhaven National Laboratory, cautioned. "We have no good notion as to precisely how dangerous such things are."³¹

Osepchuk once again took Consumers Union to task for "confus[ing] emission and exposure." He also pronounced two essays authored by *New Yorker* science writer Paul Brodeur "a disservice to the general public." Brodeur had previously taken on laundry detergent manufacturers and the asbestos industry, in both cases castigating government regulators for failing to keep workers and consumers safe.³² His articles on microwaves, it turned out, were merely a prelude to his full-length book, *The Zapping of America*, which appeared in print five months after the 1977 hearings. Though much of what he had to say was already public knowledge, Brodeur neatly tied together disparate threads—Project Pandora, the U.S. Embassy, *Consumer Reports*—into a persuasive whole, connecting radar operators and

29. *Radiation Health and Safety Hearings* (1977) (opening statement, Senator Wendell H. Ford, June 16, 1977), 1–2; (statement, Herbert P. Pollack, MD., Ph. D., Office of Medical Services, Department of State, June 27, 1977), 273; (statement, Sherwood Gardner, deputy commissioner, Food and Drug Administration, Department of Health, Education, and Welfare, June 16, 1977), 14–16, quotation, 19; (statement, John C. Villforth, director, Bureau of Radiological Health, June 16, 1977), 24–25.

30. *Ibid.* (statement, Guenther Baumgart, president, Association of Home Appliance Manufacturers, June 27, 1977), 422–423; (statement, John Osepchuk, Institute of Electrical and Electronics Engineers, Inc., Committee on Man and Radiation, Raytheon Division, June 17, 1977), 202, 212–213.

31. *Ibid.*, (statement, Charles Hardin, member and past chairman, Conference of Radiation Control Program Directors, and manager, Kentucky Radiation Control Program, June 29, 1977), 704–705; (statement, Richard Setlow, senior scientist, Brookhaven National Laboratory, June 29, 1977), 754–755.

32. *Ibid.* (Osepchuk), 211–212, 213; Paul Brodeur, "The Enigmatic Enzyme," *New Yorker*, January 16, 1971; Brodeur, "Casualties of the Workplace I: Some Nonserious Violations," *New Yorker*, October 29, 1973; "Casualties of the Workplace II: That Dust Has Ate Us Up," *New Yorker*, November 5, 1973; "Casualties of the Workplace III: Some Conflicts of Interest," *New Yorker*, November 12, 1973; "Casualties of the Workplace IV: No Tangible Effect on Sales and Earnings," *New Yorker*, November 19, 1973; "Casualties of the Workplace," *New Yorker*, November 26, 1973.

home cooks afflicted with cataracts to embassy personnel diagnosed disproportionately with cancer. In Brodeur's telling, microwaves—emanating from radar systems, power lines, television and radio transmitters, telephones, CB radios, garage-door openers, color televisions, and ovens—continuously zapped unsuspecting Americans as they went about their daily lives. Equally unsettling, Brodeur charged an unholy alliance of government officials and weapons manufacturers with perpetrating a massive cover-up that kept ordinary people ignorant of the dangers that surrounded them.³³

Published at a time of heightened environmental consciousness, when hitherto oblivious Americans learned that asbestos floor tiles, formaldehyde insulation, and toxic waste posed serious threats to their health, Brodeur's "rather shrill" (*New York Times*) albeit "popular and alarming book" (*Time*) found a ready audience. Its particular genius, however, was to suggest that no place was safe; the American kitchen, in Brodeur's rendition, was merely a subdivision of the military-industrial complex, or as he put it, "the military-electronics industry complex."³⁴ As *The Zapping of America* underscored, those who worried about the radiation emanating from microwave ovens knew they had reason to worry because of the afflictions that bedeviled diplomatic personnel and former soldiers. One of the latter, Raymond V. Krabbenhoft, attributed his numerous health problems—three heart attacks, two strokes, severe cataracts, and sterility—to his stint as a radar repairman on Iwo Jima. "I was cooked," Krabbenhoft told *Time* in 1978.³⁵

Microwave ovens, then, occupied ambiguous cultural terrain. Situated physically alongside refrigerators, dishwashers, and gas or electric ranges, they now appeared in the same sentences as police radar, communication towers, espionage, and satellites. They were, indeed, what their proponents proclaimed: space age appliances. Some Americans, especially after the 1979 accident at the Three Mile Island Nuclear Generating Station, feared they were atomic appliances. "One of the biggest problems we have had in the microwave industry," a Litton executive complained, "is the public's not distinguishing between nuclear radiation and X-rays, and microwave radiation."³⁶

During the seventies, newspaper headlines like "Are Microwave Ovens Safe?" and "The Invisible Dangers of MWOs" competed with "Microwave Oven Defended" and "The Magic of Microwave."³⁷ Claims of danger and safety corresponded closely, although not always exactly, with whether they appeared in the "news" section or the "women's" pages.

33. Paul Brodeur, "Microwaves: I," *New Yorker*, December 13, 1976; Brodeur, "Microwaves: II," *New Yorker*, December 20, 1976; Brodeur, *Zapping of America*.

34. Victor K. McElheny, "Microwaves and Men," *New York Times*, January 28, 1978; "Are Americans Being Zapped?" *Time*, August 28, 1978; Brodeur, *Zapping of America*, esp. 5–15; 61–71, 198–211, 302–317; "The Microwave Menace Is Zapping Us All, Warns Writer Paul Brodeur," *People*, January 30, 1978.

35. "Are Americans Being Zapped?"

36. Richard D. Lyons, "Radiation Monitors on the Defensive as Outcry Over Nuclear Safety Rises," *New York Times*, May 11, 1979; Richard Severo, "The Safety of the Ovens Remains in Dispute," *New York Times*, October 8, 1980.

37. See, e.g., the widely divergent opinions in a single newspaper. Melba Smith Cole, "The Magic of Microwave," *Los Angeles Times*, October 31, 1971; Rose Dosti, "Microwave Oven Defended," *Los Angeles Times*, March 22, 1973; Ellen Stern Harris, "The Invisible Danger of MWOs," *Los Angeles Times*, November 9, 1975; Peter Weaver, "Is Microwave Cooking Safe?," *Los Angeles Times*, November 28, 1976; "Oven of the Future—Here Now!," *Los Angeles Times*, December 27, 1975; Weaver, "Are Microwave Ovens Safe?," *Los Angeles Times*, October 11, 1977.

A veritable army of home economists and cooking instructors—many of them employed by appliance manufacturers—assured consumers that microwave ovens were both magical and safe.³⁸ If the magic eventually won out, Brodeur’s book, at least temporarily, hit its mark; a July 1978 issue of *Business Week* attributed a slump in microwave oven sales in part to the impact of *The Zapping of America*.³⁹

Gendering the Space Age: Cold War Kitchens in the 1970s

The view from the women’s pages, for the most part, looked different. Promoters of microwave cookery, unsurprisingly, steered clear of the military-industrial complex. The major women’s magazines—*Ladies’ Home Journal*, *Redbook*, *Good Housekeeping*—assured their readers that government standards kept microwave ovens safe, but made no mention of *Consumer Reports*, the embassy incident, or Brodeur’s book.⁴⁰

Yet the Cold War continued to echo in the world of domestic media, albeit in seemingly innocuous ways. The microwave revolution belonged to the space age, one more *Jetsons* than Sputnik.⁴¹ The future, as popular culture imagined it, bore a distinct resemblance to an idealized, culturally conservative present. Cooking, for instance, was women’s work, even if it required little more than pushing buttons. The home of the future depicted in Philco-Ford’s short 1967 film, *1999 A.D.*, featured individualized hot lunches ready in two minutes—but nevertheless the wife and “part-time homemaker” prepared them. She was “part-time,” it is worth underscoring, *not* because she worked outside the home, but because space age appliances promised her a “life of beauty and leisure.” In Philco-Ford’s vision, the

38. Cockburn and Ormrod offer a detailed analysis of the role of home economists in the UK’s microwave industry in the late 1980s and early 1990s; see *Gender and Technology in the Making*, 76, 84–97. For evidence of similar trends in the US, see Hammack, “Reverberations,” 55–56; Annette Ashlock Stover, “Microwave Cooking: Oven Testers’ Tips,” *Chicago Tribune*, July 12, 1973; Joseph Winski, “Grocers’ New Weapon: Microwave,” *Chicago Tribune*, July 5, 1978; advertisements for “Microwave Oven Cooking Demonstration by Thermador’s Home Economist,” and “Microwave Oven Cooking Demonstration by Litton’s Home Economist,” *Los Angeles Times*, December 10, 1973; Carol Kleiman, “Business Homing in on Home Economists,” *Chicago Tribune*, June 8, 1986; Barbara Hansen, “Quick, Easy, Safe: Microwave Oven Sales Expected to Gain Sharply,” *Los Angeles Times*, July 27, 1972; “Home Economists Introduce Products at the PX,” *Los Angeles Times*, December 14, 1981. Goldstein argues persuasively that home economists in the United States lost authority within corporations as firms increasingly emphasized marketing and scientific expertise. Yet the microwave industry, perhaps more than most, depended on home economists to reassure wary consumers. See Goldstein, *Creating Consumers*, esp. 269–281.

39. “Microwave Oven Sales Lose Some Speed,” *Business Week*, July 31, 1978.

40. Janet Briggs and Marjorie Cubisino, “The Institute Reports on the New, Improved Microwave Ovens,” *Good Housekeeping*, November 1975, 22; “Microwave Cooking: More Than a Flash in the Pan,” *Redbook*, February 1976, 70, 73; “Should You Buy a Microwave?,” *Ladies’ Home Journal*, November 1976, 154.

41. See, e.g., advertisement, Corning Glass Works, “Cooking in the 70’s,” *Good Housekeeping*, October 1969, 60; “Space Age Cooking with Microwave Heat,” *Chicago Defender*, March 5, 1970; “Kitchens of the Space Age,” *Boston Globe*, September 24, 1972; Nancy L. Ross, “The Versatile, Space-Age Hot Potato,” *Washington Post*, July 26, 1973; “Golden Treasury of Cooking,” *Better Homes and Gardens*, November 1973, 106; advertisement, Rockwell International, *Town & Country*, February 1975, 41; Betsy Balsley, “The Two-Hour Turkey Dinner,” *Los Angeles Times*, November 9, 1975; Minnie Bernardino, “It’s Great If You Know What You’re Doing,” *Los Angeles Times*, September 2, 1976; “Microwave Saves Time, Flavor,” *Atlanta Constitution*, March 10, 1977.

future—at least of home cooking—was female. In a period marked by considerable turmoil (civil rights and antiwar protests, liberal feminist demands for workplace equality, and the beginnings of the women’s liberation movement—which emerged about the same time *1999 A.D.* premiered in American theaters), the world depicted in *1999 A.D.* offered a reassuring vision of space age domesticity.⁴²

By the time the future arrived in American kitchens, the United States could claim victory in both the space race and the contest over consumer goods (one reporter observed in 1972 that Soviet citizens now had access to “crude Western-style appliances,” including microwave ovens).⁴³ In a decade beset by inflation, unemployment, gasoline shortages, and rising energy prices, however, the space age looked less than bright. It was in this context that NASA, a key Cold War player, literally domesticated the space race and unveiled solutions—not especially practical ones—to the current energy crisis. Its Technology Utilization House, “a ‘house of the future’ ready today” (1977) incorporated solar energy and other “energy conservation techniques.” One of these was a microwave oven; it is not clear whether the model tech house even included a conventional stove. According to a pamphlet issued by NASA, “The use of a microwave is especially recommended as an energy-saving appliance, because foods cooked in a microwave oven require less time for cooking, thereby using less electricity.”⁴⁴

The house as it appeared in the technical support pamphlet was oddly or perhaps admirably genderless—and also people-less—although its *Popular Mechanics*-style format skewed masculine. NASA’s annual *Spinoff* report, on the other hand, offered subtle gender cues. While publicity stills failed to picture anyone cooking in the Tech House, they suggested a household division of labor that differed little from *1999 A.D.* They positioned women, but no men, inside the Tech House performing mundane tasks—opening the door, closing window blinds, operating a home security system, sewing while sitting on a couch upholstered in flame-retardant fabric. NASA’s recommendations for maximum energy efficiency, moreover, assumed the presence of a stay-at-home wife and mother who could do laundry in the morning. Alas, the real-life family who lived in the Tech House for a year as part of the agency’s energy-saving experiment subverted this plan; both spouses worked full-time outside the home.⁴⁵

42. *The Jetsons*, season 1, episode 1, “Rosie the Robot,” September 23, 1962; *1999 A.D.* For discussions of “traditional” imaginings of the future, see Spigel, “Yesterday’s Future, Tomorrow’s Home,” esp. 31–36; Irenen Cleraad, “The Radiant American Kitchen,” 122–123; Weber, “The Cult of Convenience,” 605–606, 616–617. On the emergence of women’s liberation, see Echols, *Daring to Be Bad*, esp. 3–5, 11–18. Newspapers list showings of *1999 A.D.* in November and December 1967.

43. David Nagy, “Quality of Soviet Life Has Changed Since Nixon’s 1959 Visit,” *Cincinnati Enquirer*, May 18, 1972.

44. National Aeronautics and Space Administration Technology Utilization Office, *NASA Technology Utilization House*, 20. Microwave manufacturers also jumped on the energy-saving bandwagon. “With the new Litton Minutemaster* 403 countertop microwave oven, you save your own energy. And the electric company’s energy.” Advertisement, Litton, *Good Housekeeping*, December 1973, 157. “You’ll ... save up to 75% of your normal power cost,” a 1976 Toshiba ad claimed. “Nice news in these days of energy conservation.” Advertisement, Toshiba Microwave Oven Operations, *Better Homes and Gardens*, December 1976, J5.

45. James J. Haggerty, “The House That NASA Built,” *Spinoff* 1977, 44, 46, 48, 49; “Our Year in NASA’s Far-Out House,” *Popular Mechanics*, June 1979, 128. One photograph implied that Elaine Swain, despite working full-time as a registered nurse, assumed responsibility for family meals; the only family member standing, she seems to be bringing a pitcher to the table. James J. Haggerty, “Tech House,” *Spinoff* 1978, 47.

In an era of rising divorce rates, newspaper and magazine articles occasionally referenced the utility of microwaves for bachelors. Most, however, continued to envision women as the primary users. One consulting home economist acknowledged that her husband and teenage children “use the microwave oven almost as frequently as I do, mainly to reheat foods on paper plates.” As retailers recognized, the “real” cooking fell to women, a distinction the British sociologists Cynthia Cockburn and Susan Ormrod would later term the difference between “cooking” and “zapping.”⁴⁶ A microwave oven, the proprietors of a California appliance store suggested, was “the ideal gift for the woman in your life for Valentine’s Day.”⁴⁷ In a similar vein, the president of Litton’s microwave division waxed rhapsodic over the potential of microwaves to liberate women. *Ms.* editor Lettie Cottin Pogrebin offered a pointed rejoinder: “As long as it is going to be viewed as a labor saving device for women, forget it. We are still in the kitchen.”⁴⁸

Just how much liberation microwaves had to offer was open to question. Advertisements and women’s magazines touted their labor-saving potential; as *Ladies’ Home Journal* announced in 1970, they were “breaking the time barrier in thousands of U.S. kitchens.”⁴⁹ In the early seventies, commentary assumed consumers would use microwaves to *prepare* meals, rather than heat or reheat pre-prepared foods. Actual recipes cast doubt on the notion that microwaves saved time or even energy; from-scratch microwave cooking typically required more work than pushing a button. Because the meat that emerged from microwaves had an unappetizing gray color, cooks were advised to brown it under their conventional broilers, hide it under a sauce, or concoct a mixture from food coloring to make it *look* brown.⁵⁰ *Consumer Reports* took a dim view of such advice. Browning under the broiler after cooking “created the nuisance of having to use and clean two appliances.” The magazine’s “careful check of one claim showed the ‘hours’ saved in cooking the complete meal described in the ad to be only a few minutes.” Indeed, only 28 of the 410 microwave owners *CR* surveyed in 1973 said that microwave ovens saved them time. Ten even said they required *more* time than using conventional ovens.⁵¹

Perhaps this was because users initially believed you could make *anything* in a microwave, a fallacy magazine advertisements eagerly promoted (Figure 2). Who could resist “the greatest cooking discovery since fire” (Amana) or “old-fashioned slow-cooked goodness at microwave speeds” (Litton)?⁵² Much as advertisers and assorted futurists seemed unable to imagine anyone but women in the space age kitchen, the food that emerged from space age ovens remained reassuringly traditional. Ads routinely pictured the results of microwave

46. Cockburn and Ormrod, *Gender and Technology in the Making*, 128–153.

47. “Valentine: Microwave Oven Gift Suggestion,” *Los Angeles Times*, January 29, 1976.

48. Lettie Scott Pogrebin, quoted in Dickinson, “Microwave Sales Sizzle as the Scare Fades.”

49. Margaret Davidson, “The Microwave Rage,” *Ladies’ Home Journal*, February 1970, 28.

50. Stover, “Microwave Cooking: Oven Testers’ Tips.” In 1980, Holland House introduced microwave browning sauces; see, e.g., “Microwave Break-Through” (advertisement), *Good Housekeeping*, December 1980, 108.

51. “Microwave Ovens: Not Recommended,” 225, 226, 228.

52. See, e.g., Advertisement, Amana, *Good Housekeeping*, May 1972, 179; May 1973; 209; advertisement, Litton, *Better Homes and Gardens*, November 1974, 151; *Good Housekeeping*, March 1975, 185.

Make the greatest cooking discovery since fire.

When the caveman started cooking with fire, civilization surged ahead. Then came instant fire—a faster way. And man was really cooking with gas. Now there's a new way. Faster, faster. A way to cook things in about a quarter the time you're used to.

The Amana Radarange microwave oven. Just small enough for a countertop (15" high, 22½" wide, 17½" deep) and just big enough for a 20 pound turkey. Just plug it in anywhere. (It works on 115-

volt household current, and takes about as much electricity as a fry pan.) Set the timer for 4 minutes. And put an Idaho potato—on a dish or even a paper plate. When the timer shuts off 4 minutes later—wow, a 4 minute baked potato.

And when you do a 5-pound roast in 35 minutes, it doesn't shrink away. All the good things are cooked in—not cooked out.

Splatter doesn't matter. The food gets hot—but the oven walls don't. So cleanup is

a cool snap.

More? Send for full color literature with some sample recipes. Write Ann MacGregor, Dept. 108, Amana, Iowa 52203. It'll give you the whole idea.

Or stuff a potato in your purse—and go to the store that sells Amana Radarange microwave ovens. Ask them to put it in the oven. And make the greatest cooking discovery since fire.

Take a potato to lunch today.

Radarange made only by **Amana**
MICROWAVE OVEN
 Backed by a century-old tradition of fine craftsmanship.
 AMANA REFRIGERATION, INC., AMANA, IOWA 52203, SUBSIDIARY OF RAYTHEON COMPANY

Figure 2. This 1970 advertisement for Amana’s Radarange was one of many that exaggerated the cooking capabilities of microwave ovens.

Ladies’ Home Journal, May 1970, 78. Courtesy of the Herman B Wells Library, Indiana University, Bloomington, Indiana.

magic: roasts, breads, and assorted attractively garnished vegetable dishes, and, inevitably, turkeys (somehow always beautifully browned).⁵³

Those who believed the hype were in for a rude awakening. *CR* test cooks reported that microwave ovens did a “dreadful job of baking brownies.” When they tried painting brown coloring on a microwaved chicken, they “hesitate[d] to call the blotchy bird appetizing.” Similar complaints trickled in from other quarters: “dry, tough food, uneven cooking, and lack of browning”; “you can just destroy a roast on high power”; “everything seems steamed.”⁵⁴ Asked what they liked best about their microwave ovens, respondents to a *Good Housekeeping* survey ranked “cooking results” second to last.⁵⁵ A *Los Angeles Times* article titled “Microwave Oven Defended” acknowledged that “some foods cook well with microwave energy and others do not.” Of course, the piece continued, “You may use conventional ranges in combination with microwave,” an assertion that undercut claims that microwave cookery necessarily saved time. Careful readers might have noticed that the defense was full of holes: “Pork chops frozen in the store package and thawed in the microwave oven may be browned on the range-top, macaroni may be cooked on the range top while the sauce is prepared in the oven.”⁵⁶ Some manufacturers obliged by marketing “cooking centers” that combined microwave and conventional ovens; Litton and General Electric experimented with “combination” and “superstove” ranges that toggled between conventional and microwave heating.⁵⁷ “New, improved” features such as browning elements, temperature probes, and an ever-multiplying choice of power levels generated considerable confusion among consumers—“You have to be Thomas Edison to know how to use it”—and a proliferation of microwave cooking classes and “schools.”⁵⁸ One headline summed it up: “It’s Great If You Know What You’re Doing.”⁵⁹ Every add-on, moreover, reduced the time gap between space age cooking and its old-fashioned counterpart.

Space age cooking, as the Tech House engineers belatedly learned, coincided with a massive uptick in women’s paid employment. Many analysts were quick to connect the two. In 1976, for instance, the *New York Times* attributed “sizzling” sales to “the changing

53. See, e.g., Advertisement, Amana, *Better Homes and Gardens*, November 1968, 157; advertisement, Amana, *Better Homes and Gardens*, November 1971, 26; advertisement, Amana, *Redbook*, December 1972, 135; advertisement, Amana, *Ladies’ Home Journal*, December 1974, 141; advertisement, Litton, *Good Housekeeping*, December 1975, 155; advertisement, Amana, *Woman’s Day*, May 1976, 86.

54. “Microwave Ovens: Not Recommended,” 228; “Take the Guesswork Out Of Microwave Cooking,” *Atlanta Daily World*, May 31, 1979; Jeanne Lesem, “High Power ‘Destroys’ Tender Cuts,” *Los Angeles Times*, July 12, 1979; Marle Ellis, “The Butcher: Meeting the Meat,” *Los Angeles Times*, October 26, 1978.

55. Joan Mees, “Should You Buy a Microwave Oven?,” *Good Housekeeping*, December 1978, 280.

56. Dosti, “Microwave Oven Defended.”

57. Advertisement, General Electric, *Better Homes and Gardens*, April 1973, 83; advertisement, Litton, *Better Homes and Gardens*, December 1976, 92; advertisement, General Electric, *Ladies’ Home Journal*, April 1974, 117.

58. Briggs and Cubisino, “The Institute Reports on the New, Improved, Microwave Ovens,” 244; “Who Says a Microwave Can’t Brown Food?,” *Better Homes and Gardens*, November 1976, Z22; Ellen Connelly, “Cooking Meats the Microwave Way,” *Good Housekeeping*, November 1979, 282–283; “The Microwave Way,” *Redbook*, January 1977, 4; Carleton Hones, “Buying a Microwave Oven?,” *Baltimore Sun*, May 14, 1978; Carol Haddix, “The Kitchen Utopia Not So Far Away,” *Chicago Tribune*, March 16, 1978; Michael King, “Microwave Oven Market Comes of Age, but Growing Pains Afflict the Industry,” *Wall Street Journal*, December 28, 1979, 10. Interestingly, the person who lodged this particular complaint was a man.

59. Bernardino, “It’s Great If You Know What You’re Doing.”

role of women.”⁶⁰ The truth behind such claims is murkier; while several surveys suggested a majority of women who owned microwaves worked outside the home, at least one academic study concluded that wives’ employment status had little impact on ownership or use.⁶¹ As mainstream magazines increasingly featured “the working woman”—the title of a regular column in *Ladies’ Home Journal* that ran from 1971 to 1980—a smattering of articles emphasized microwaves’ utility for women employed outside the home. Others simply recommended them to “busy” women. Advertisers embraced a similar degree of ambiguity, hedging their bets by appealing to multiple constituencies: self-identified career women, working women who still considered themselves “housewives,” and full-time homemakers. If, as historian Beth Bailey persuasively argues, “changes in gender roles were negotiated and reconciled in the American consumer marketplace as much as in the realm of politics or ideas,” gesturing to all women’s work, paid and unpaid, eagerly sought and reluctantly undertaken, was a savvy marketing strategy.⁶²

Whatever their relationship to the marketplace, seventies microwavers, who accounted for fewer than a tenth of American households, were an elite group. If the newer compact ovens no longer retailed at the exorbitant prices of their refrigerator-sized predecessors, they were still expensive; at mid-decade an average model cost the equivalent of \$1800 to \$2100 in 2020 dollars.⁶³ The likeliest users, according to a 1980 government survey, were families whose annual income exceeded \$35,000 (approximately \$118,000 today).⁶⁴ African American newspapers were some of the first publications to recommend microwaves to working wives and mothers—not surprising given Black women’s proportionally greater labor force participation. Evidence nevertheless indicates that the vast majority of microwave owners were white.⁶⁵ If microwaves saved time—a debatable assumption—it appears that the cooks who

60. Dickinson, “Microwave Sales Sizzle as the Scare Fades.”

61. Truitt, “Ownership of a Microwave Oven,” 15; Strober and Weinberg, “Strategies Used by Working and Nonworking Wives.”

62. Rosen, *World Split Open*, 309. See, e.g., Davidson, “The Microwave Rage,” 115; Margaret Davidson, “When You Both Work,” *Parents*, April 1977, 67; Sally P. Torpey, “Cooking for Busy Families,” *Better Homes and Gardens*, May 1977, 145; Jill Newman, “A Report on How Working Wives Cope,” *Woman’s Day*, September 20, 1977, 196; “1-2-3 Dishes for Busy Days,” *Woman’s Day*, December 1977, 90, 194; “Kitchens for Busy Women,” *Woman’s Day*, September 27, 1978: 101; advertisement, Litton, *Better Homes and Gardens*, January 1974, 47; advertisement, *Better Homes and Gardens*, February 1976, 119; advertisement, Amana, *Parents*, October 1979, 96; advertisement, General Electric, *Woman’s Day*, October 11, 1979, 63; Bailey, “She ‘Can Bring Home the Bacon,’” esp. 108–109, 114–115, 124–126, quotation, 110.

63. On prices, see “Microwave Ovens,” *Consumer Reports*, June 1976, 315; Measuring Worth, www.measuringworth.com.

64. *Residential Energy Consumption Survey* (1980), 14; Measuring Worth, www.measuringworth.com/calculators/uscompare/relativevalue.php; DollarTimes, www.dollartimes.com/inflation.

65. See, e.g., “Working Women and Mealtime,” *Chicago Defender*, October 9, 1975; “Housewares Lighten the Load of Working Women,” *Chicago Defender*, March 21, 1978, 27–28. On Black women’s labor force participation, see Coontz, *A Strange Stirring*, 126. Truitt, “Ownership of a Microwave Oven,” 15. The federal government’s Residential Energy Consumption Survey included race, defined as “Black” and “White,” as a variable for the first time in 1990; its report showed that Black respondents were about half as likely to use microwaves as white informants but did not include statistics on ownership. *Residential Energy Consumption Survey: Household Characteristics 1990*, 21. In 1982, Whirlpool began publishing Spanish-language microwave instruction and cookbooks; see “Home Appliances: Advice for Owners,” *New York Times*, October 27, 1983.

might have benefited the most were the least likely to have one. After all, as *Consumer Reports* reminded its readers, microwaves oven were a “luxury.”⁶⁶

Gendering Radiation Safety: Senators, Scientists, and “Housewives” in the 1970s

During the 1970s, *Redbook*, *Woman’s Day*, *Ladies’ Home Journal*, and their ilk gradually incorporated the insights of second wave feminism, tackling such subjects as sexuality, domestic violence, and abortion as well as work outside the home.⁶⁷ Deliberations at the heart of the military-electronics industry complex remained oblivious—or perhaps resistant—to social change. As scientists, industry reps, government officials, and members of Congress gathered to debate the safety of microwave technology, domestic and diplomatic, in the home and on the battlefield, they conjured up a world that more closely resembled 1999 A.D. (itself on the verge of gender obsolescence) than *LHF*’s “Working Woman.” In an era marked by the women’s liberation movement and women’s widespread entrance into the paid labor force, both representatives of the military-electronics complex and their critics seemed unable to conceive of microwave oven users as anything but full-time homemakers. Take University of Pennsylvania scientist Lawrence Sher, who took part in a then-secret government project investigating the health impacts of the Moscow signals. At the 1969 Richmond Symposium on the Biological Effects and Health Implications of Microwave Radiation, Sher argued that microwaves were safer than conventional ovens because “my wife burns herself regularly.” “It is certainly not unusual,” he quipped, “for ovens, gas operated, to generate clinically significant problems such as the house catching on fire or other untoward results of cooking.”⁶⁸ Or “maverick” scientist Milton Zaret, who testified before the Senate Committee on Commerce in 1973 that the same sorts of cataracts that afflicted soldiers repeatedly exposed to radar could be observed in the eyes of a “housewife” whose only known exposure to nonionizing radiation was from using a microwave oven. “Photograph of the pupil in the housewife having been exposed to a leaky microwave oven, depicting microwave cataract,” read the caption for an image he submitted. “Are you satisfied that there is adequate protection that is being given to consumers in this country, particularly housewives who use microwave ovens?” Senator John Tunney asked Clay T. Whitehead, director of the Office of Telecommunications Policy.⁶⁹ Four years later, Kentucky senator Wendell Ford combined skepticism with folksiness when he asked a Litton representative if current regulations “require that you tell the consumer what to do in case the oven is damaged? For example, if the housewife hits it with a heavy cast iron skillet that we use to make cornbread out of or something of that nature?”⁷⁰

Perhaps most revealing is a slide Raytheon rep John Osepchuk presented during his testimony before the Senate Committee on Commerce. Demonstrating the “spatial distribution of worst-case leakage of fields from microwave oven” was an illustration of “a person.”

66. “Microwave Ovens Still Not Recommended,” *Consumer Reports*, August 1973, 491.

67. Bailey, “She ‘Can Bring Home the Bacon,’” 114, 122–123; Rosen, *World Split Open*, 308–311.

68. Sher, quoted in Brodeur, *Zapping of America*, 122.

69. *Radiation Control for Health and Safety Act of 1968* (1973) (Zaret, 103, 111; letter, Appendix E, 443); (Tunney, 92).

70. *Radiation Health and Safety Hearings* (1977) (Ford, 423–424).

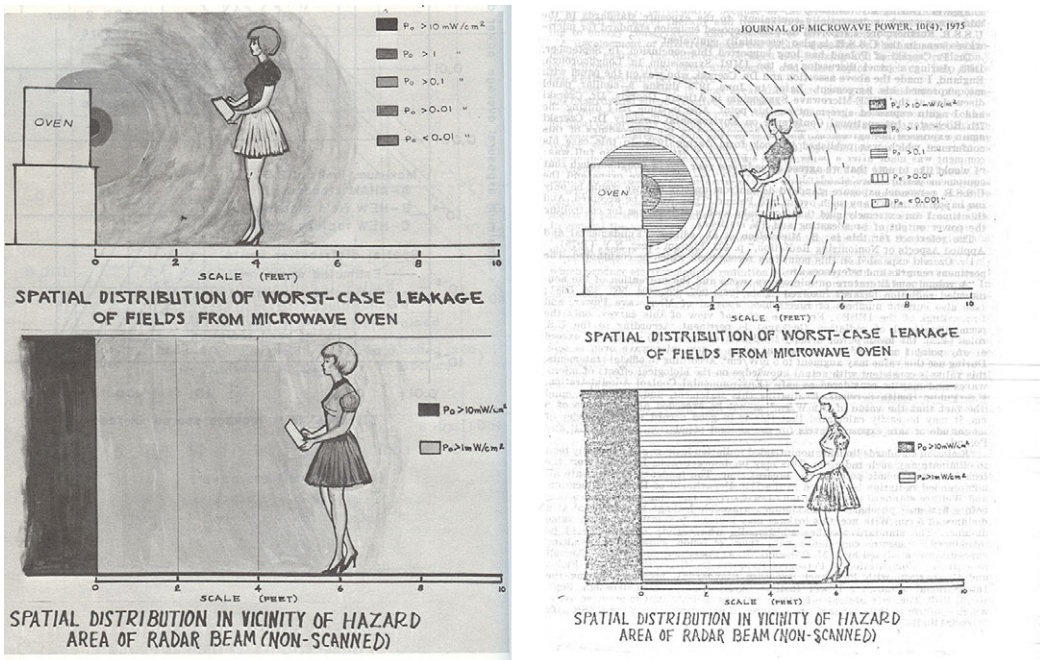


Figure 3. “Spatial Distribution of Worst-Case Leakage of Fields from Microwave Oven” 1973 (left) and 1977 (reproduced from the *Journal of Microwave Power*, right), a diagram a Raytheon representative presented at successive Senate hearings on radiation safety, depicted a mini-skirted “housewife”—an increasingly outdated image, both economically and sartorially.

Radiation Control for Health and Safety Act of 1968, Hearings on Public Law 90-602 before the Committee on Commerce, United States Senate, 93rd Congress (1973), 118; and Radiation Health and Safety Hearings Before the Committee on Commerce, Science, and Transportation, United States Senate, 95th Congress (1977), 236. Courtesy of the Herman B Wells Library, Indiana University, Bloomington, Indiana.

“A person” scored a point for gender neutrality. The accompanying illustration did not. It depicted a cartoon woman with shapely legs, attired in a tightly bodiced, very short dress and high heels, an odd cross between June Cleaver and Barbie. Women wore miniskirts in 1973, but they also wore pants, maxiskirts—both featured in magazine microwave ads published the same year—and the occasional midi.⁷¹ By 1977, when Osepchuk showed the members of that year’s Senate subcommittee a slightly modified version of the same image—this time reproduced from a 1975 article in the *Journal of Microwave Power*—the fashion it depicted definitely was outmoded (Figure 3).⁷²

71. *Radiation Control for Health and Safety Act of 1968 (1973)* (Osepchuk, 118); advertisement, Litton, *Better Homes and Gardens*, April 1973, 114; advertisement, Litton, *Better Homes and Gardens*, November 1973, 110–111.

72. *Radiation Health and Safety Hearings (1977)* (Osepchuk, 236). For women’s contemporary fashions, see, e.g., Ann Elkins, “Fabulous Fashions All Under \$25,” *Good Housekeeping*, July 1975, 92–97; Nancy Benson, “Fashion Update: Foxy New Tricks With Old Clothes,” *Cosmopolitan*, August 1975, 158–163; Nancy Benson, “Summer into Fall: The Uniform,” *Cosmopolitan*, August 1975, 164–165; Ann Elkins, “Sure-Fire

So was the world the Senate hearings collectively portrayed. Women's labor force participation was already climbing when Nixon debated Khrushchev, an upward trend that continued through the end of the century. A decade and a half later, neither senators nor witnesses acknowledged the nearly 45 percent of adult women who were gainfully employed in 1973 or the 48 percent in 1977, more than two-fifths of whom were mothers of children under six years of age. No one suggested that anyone other than a housewife push the buttons, although Osepchuk did opine that his children would think "it is fun to be able to do their own warming up of their hamburger in the microwave oven."⁷³

Like the testimony before the two commerce committees, Osepchuk's diagram conjured up an increasingly bygone era of male breadwinners and female homemakers, even if this particular homemaker wore a miniskirt instead of a New Look dress. Domestic containment, a vision of life under attack on many fronts by the 1970s, was alive and well in Osepchuk's world; little besides fashion had changed since 1959, when Nixon famously conflated American women, imagined as universally white and generically middle class, with "housewives."⁷⁴ But if Nixon had valorized American women, by the late 1960s and 1970s at least some scientific experts seemingly considered "housewife" a synonym for "halfwit." The illustration of a childlike, but strangely sexualized, housewife, like Sher's "my wife burns herself regularly," trivialized both women and household labor. It also trivialized the issue of safety.⁷⁵

Superwomen and Second Shifts: "Nuking" in the 1980s

By the 1980s, the space age was mostly in the past. Despite a brief resurgence of Soviet radiation directed at U.S. diplomats, a combination of interagency conflict, industry pressure, bureaucratic inertia, and Reagan-era budget cuts stymied further attempts to regulate microwave radiation in general and microwave ovens in particular.⁷⁶ Given the State Department's finding that microwaves had nothing to do with high white blood cells counts among embassy employees (a Johns Hopkins study blamed an unidentified "microbe") and given that

Fashions," *Good Housekeeping*, October 1975, 102–105, 136; "A Look of Your Own," *Redbook*, October 1977, 126–127, 177; "Perfect Makeup and Match-ups for Four Fall Wardrobes," *Woman's Day*, October 1977, 110–115; advertisement, Litton, *Better Homes and Gardens*, September 1977, 203; advertisement, Litton, *Good Housekeeping*, May 1977, 5.

73. "Labor Force Participation Rate by Sex, Race and Hispanic Ethnicity," Women's Bureau, U.S. Department of Labor, www.dol.gov/agencies/wb/data/lfp/lfp-sex-race-hispanic; "Labor Force Participation Rate of Mothers by Age of Youngest Child," Women's Bureau, United States Department of Labor, www.dol.gov/agencies/wb/data/lfp/mother-age-youngestchild; *Radiation Control for Health and Safety Act of 1968* (1973) (Osepchuk, 128).

74. May, *Homeward Bound*, esp. 11–18; Borstelmann, *The 1970s*, 73–83, 114–121; Baldwin, *The Racial Imaginary of the Cold War Kitchen*, 6.

75. Malcolm Browne, "The Untutored Public: Scientific Decisions," *New York Times*, April 22, 1979. Matthews traces these sorts of attitudes to the 1920s; see *Just a Housewife*, esp. 172–196.

76. *Radiation Health and Safety Hearings* (1977) (Ford, Gardner, 26–27); Seth S. King, "Changes Suggested in Radiation Curbs: White House Panel Proposed That Environmental Unit Be Given Top Role on Safety Rules," *New York Times*, April 18, 1979; James Worsham, "Congress to Investigate EPA Research Cutbacks," *Chicago Tribune*, April 12, 1983.

exposure during a 1983 incident was well below hazardous levels, at least as U.S. standards defined them, the current U.S. ambassador protested merely as a “matter of principle.”⁷⁷ As the Moscow Signal faded from the headlines, American media devoted less attention to the perceived dangers of microwave radiation. “Burning Issue of Microwave Safety Has Cooled Down,” a *Chicago Tribune* article announced in 1983. “Ten years ago, when my husband wanted to give me a microwave oven for our anniversary, I asked if he was trying to get rid of me,” *New York Times* health columnist Jane Brody wrote in 1986. “Last Christmas, however, I bought one myself.”⁷⁸

Doubts persisted. Brody touted microwaves’ improved safety and energy-saving potential. She praised the nutritional benefits of microwave cookery. Yet she conveyed a mixed message. The ubiquitous presence of microwaves—“military and police radar, long-distance telephone communications, UHF broadcasts, deep-heat treatments, computer terminals and many manufacturing processes,” she explained, exposed many Americans to “already substantial” levels of radiation. These circumstances warranted vigilance in the kitchen: “The best defense against escaping microwaves is to remain a foot or more away from the oven when it is in use.” Close to half of the microwave owners who responded to a survey commissioned by Campbell Soup Company a year later expressed concerns about safety. If the Moscow Signal had receded from view, the larger fears the Cold War engendered had not. The now commonplace slang for microwaving (“nuking”) first appeared in 1984, a time of intense anxiety about nuclear warfare.⁷⁹

Nevertheless, sales soared. According to the Department of Energy’s Residential Energy Consumption Survey, 14 percent of American households owned a microwave oven in 1980, 34 percent in 1984, and 79 percent in 1990.⁸⁰ Some commentators credited a steep decline in prices—by the late 1980s, some smaller models cost less than \$100. “Coinciding with the price drop has been an erosion in the safety fears about microwave use,” the *Chicago Tribune* explained in 1987.⁸¹ Others pointed to the widespread movement of women into the paid labor force. “Housewares Lighten the Load of Working Women,” the African American *Chicago Defender* noted in 1978. That same year, the president of Litton’s microwave products division predicted the tripling of the market by 1985 “mainly because of the growing spending power of working women.”⁸²

77. Craig R. Whitney, “Effects of Soviet Rays Discounted: Concern Was Acute in 1976, Aluminum Screens Were Installed,” *New York Times*, November 22, 1978; Thomas O’Toole, “Moscow Microwaves: No Harm Seen,” *Washington Post*, November 21, 1978; Serge Schmemmann, “Soviet Radiation Is Detected Anew,” *New York Times*, November 11, 1983.

78. Margaret Sheridan, “Burning Issue of Microwave Safety Has Cooled Down,” *Chicago Tribune*, May 5, 1983; Jane E. Brody, “Microwave Ovens: How Safe Are They, How Useful Are They?,” *New York Times*, July 23, 1986.

79. Brody, “Microwave Ovens”; John Gorman, “Micro Is the Wave of Future in Food: Fast and Tasty Are the New Criteria,” *Chicago Tribune*, January 11, 1987. The *OED*, www.oed-com.proxyiub.uits.iu.edu/search?searchType=dictionary&q=nuke&_searchBtn=Search, traces the first usage of nuke “To cook or heat up (food) in a microwave oven; (also, more generally) to expose to any form of radiation” to 1984. See also Cooper, “Microlessons,” 588. On American fears of nuclear warfare, see Peacock, “Samantha Smith in the Land of the Bolsheviks,” esp. 422, 427–428.

80. *Residential Energy Consumption Survey* (1980), 14; *Residential Energy Consumption Survey* (1984), 11; *Residential Energy Consumption Survey* (1990), x, xiii, 21.

81. Gorman, “Micro Is the Wave of Future in Food.”

82. “Housewares Lighten the Load of Working Women”; Deborah Sue Yaeger, “Women at Work: Many Companies Find Employed Women Are a High-Profit Market,” *Wall Street Journal*, August 31, 1978.

In the era of the mythic “superwoman” who effortlessly combined work and family, women’s magazines catered more aggressively to readers who worked outside the home and presented them with meals that could be “fixed in a flash.” Newer publications such as *Working Mother* explicitly sought out career women, but filled page after page with childcare, housekeeping, and cooking tips—and time-saving recipes for home-cooked microwaved meals, including an entire Thanksgiving dinner.⁸³ Just how much time these superwoman cooks saved is unclear; much like 1970s home economists, *Working Mother*’s regular “Microwave Mastery” column acknowledged that “what the microwave is best at is working as a partner with your conventional oven, broiler, range and barbecue grill.”⁸⁴

Despite the advent of browning dishes, combination ranges, specialized cookbooks, corporate-sponsored cooking contests, and advice on home appliance partnership, many users gave up on “old-fashioned slow-cooked goodness at microwave speeds.”⁸⁵ Surveys showed that people used microwaves mainly for defrosting and reheating. Encouraged by the microwave industry and grocery chains—who hoped to counteract busy Americans’ growing dependence on fast food restaurants—food corporations rushed to fill the gap between increasing microwave ownership and decreasing use. Campbell Soup, Stouffer’s, Oscar Mayer, and Green Giant (an early adopter), among others, added microwaving directions to their labels.⁸⁶ Kraft rebranded Cheez Whiz as “the marvelous microwave in-a-minute cheese sauce.”⁸⁷ Pillsbury pioneered products manufactured specifically for microwaves—popcorn, cake mixes, and pancakes. Other makers of prepared foods followed suit; as a product manager for Amana’s Radarange explained in 1979, “virtually all the major food companies have issued what amounts to an edict that no new products will be developed unless they provide good results in a microwave oven.”⁸⁸ New products necessarily came in new packages—microwave-friendly paper or plastic replaced metal trays.⁸⁹

83. Rosen, *World Split Open*, 295–296, 304–305, 327–330. Bailey traces the roots of the superwoman image to the 1970s; see “She ‘Can Bring Home the Bacon,’” 125. “Fixed in a Flash!,” *Redbook*, May 1984, 136–140; Marcia Cone and Thelma Snyder, “Microwave Mastery: Thanksgiving Made Simple,” *Working Mother*, November 1987, 203.

84. “Make It in the Microwave!,” *Working Mother*, October 1987, 145.

85. Pillsbury added a microwave category to its Bake-Off contest in 1984; see, e.g., Margaret Sheridan, “America’s Bake-Off Faces Facts, Cooks up Microwave Category,” *Chicago Tribune*, March 29, 1984. My thanks to Sarah Elvins for this information.

86. J. Walter Thompson, *U.S. Frozen Foods Market* [1978]; Maxine Levy, “America’s Timesaver Comes of Age,” *Chicago Tribune*, August 7, 1986; Mary Jo Bergland, “Defrosting and Reheating Still Are the Basic Uses of a Microwave Oven,” *Chicago Tribune*, September 11, 1986; Judith Blake, “Microwaves: The New Frontier: Consumers Love Them but Remain Reluctant to Forge Beyond Defrost and Reheat,” *Seattle Times*, September 9, 1987; Winski, “Grocers’ New Weapon,” *Chicago Tribune*, July 5, 1978; Gorman, “Micro Is the Wave of the Future.”

87. Advertisement, Cheez Whiz, *Good Housekeeping*, September 1987, 179.

88. Peter J. Schuyten, “Microwave Ovens Gaining,” *New York Times*, December 6, 1979.

89. “Campbell Serves Up New Frozen Foods: 3-Minute Breakfasts,” *Wall Street Journal*, September 13, 1979; Abigail Foerstner, “Market Heats Up for Freezer-to-Microwave Food,” *Chicago Tribune*, September 30, 1982; Michelle Stasko, “At Last! A Pizza for the Microwave,” *Atlanta Constitution*, August 2, 1984; Lorraine Cichowski, “New Products for the Microwave: Popcorn, Cake, Other Foods Appearing in Supermarkets,” *Los Angeles Times*, September 23, 1982; Schuyten, “Microwave Ovens Gaining”; Elizabeth Neuffer, “The Expanding Microwave Galaxy,” *New York Times*, February 17, 1988.

These innovations built on decades of industrial food production and marketing campaigns that persuaded consumers to buy canned soups, frozen vegetables, instant oatmeal, and other “convenience” foods. Making a product microwavable promised to cook an already convenient food faster. In some cases, this meant simply changing the packaging, in others, such as microwave cake and brownie mixes, the formula.⁹⁰ In 1973, an *LA Times* food writer had predicted, “The time may come when whole sections of supermarkets will be devoted to prepared foods you can pop in your microwave oven.”⁹¹ By the late eighties, that vision had come to pass.

As Ruth Schwartz Cowan brilliantly argued almost forty years ago, domestic labor-saving devices tended only to increase women’s workload. Yet in an era of gender upheaval, microwaves theoretically had the potential to shift household division of labor. One 1980s television commercial for the Whirlpool TimeMaster implied as much, by showing a husband preparing dinner in advance of his power-suited wife’s arrival. The ad reflected a certain reality; a *Working Mother* survey revealed that husbands were more likely to use microwave ovens than other sorts of appliances, including dishwashers, washing machines, dryers, and vacuum cleaners. Still, wives used them more. Whirlpool’s ad, too, undercut any claims to gender equality; the couple’s tween-aged daughter, standing alarmingly near the oven door, had to show dad the TimeMaster ropes.⁹²

Housework remained stubbornly gendered, even if microwaving moved the needle just a bit. Study after study showed that in dual-career heterosexual families, women did the bulk of the housework, including the cooking. In this milieu, the marriage of convenience between microwave technology and a burgeoning frozen foods industry offered women who worked outside the home one privatized solution to what the sociologist Arlie Russell Hochschild in 1989 termed “the second shift.” Certainly, as Hochschild noted, advertisers marketed microwaves that way: “her husband may not be helping her at home, but her *machine* is.” At least one reader of *Working Mother*, “whose husband does nothing around the house except run the vacuum cleaner occasionally,” agreed: “Cooking on weekends and owning a microwave are all that stand between myself and insanity.”⁹³

Yet microwave ovens and microwavable meals failed to live up to their revolutionary potential, allowing for some corner-cutting, but saving little time overall. “Microwaves, self-cleaning ovens, and no-frost refrigerators have helped compress some household work,” a *Washington Post* article concluded, “but most working women are still swamped.” Even as late as 1990, only 23 percent of the households surveyed by the U.S. Department of Energy

90. Parkin, *Food Is Love*; Marx de Salcedo, *Combat-Ready Kitchen*, esp. 191–202; Weber, “The Cult of Convenience.” See, e.g., Winski, “Grocers’ New Weapon,” Foerstner, “Market Heats Up for Freezer-to-Microwave Food”; Mary Jo Bergland, “Frozen Foods Catering to Micro Tastes,” *Chicago Tribune*, September 12, 1985; Jesus Sanchez, “Food Product Makers are Hot for Microwave,” *Los Angeles Times*, January 26, 1988; Matt Murray, “The Latest Wave in Fast Foods Is Microwave,” *Los Angeles Times*, April 26, 1990.

91. Dosti, “Microwave Oven Defended.”

92. Cowan, *More Work for Mother*. Despite its subtitle, Cowan’s book had relatively little to say about microwaves. “Guess Who Does the Housework!,” *Working Mother*, February 1988, 74. For the Whirlpool TimeMaster ad, see www.youtube.com/watch?v=HDD8OnRTxSQ.

93. Berardo, Shehan, and Leslie, “A Residue of Tradition”; Eleanor Grant, “The Housework Gap,” *Psychology Today*, January 1988, 10; Robinson, “Who’s Doing the Housework?”; Hochschild, *The Second Shift*, 25; “Guess Who Does the Housework!,” 72.

used microwave ovens to cook more than half their food. Five years later, a *New York Times* article proclaimed microwave cooking “the revolution that never happened.”⁹⁴

Safety remained an issue. Over the course of the 1980s, however, newspapers and magazines gradually shifted their focus from the imperceptible impact of nonionizing radiation to tangible dangers—the hazards of hot liquids, plastic wrap, and undercooked pork.⁹⁵ The hottest microwave safety topic of the late eighties and early nineties concerned the question of whether—and at what ages—parents should allow their children to use them. Articles such as “Can Your Child Use a Microwave Safely?” and “Is it Safe for Children to Use a Microwave?” made no mention of radiation. Rather, they enumerated the injuries and accidents that might result when unsupervised kids failed to use oven mitts or microwave-safe cookware, swallowed microwaved food before testing its temperature, or carelessly exposed themselves to steam (microwave popcorn bags were a major culprit here). Although text and accompanying photographs showed parents and children microwaving together, magazines and the advice they proffered acknowledged changes in family life wrought by middle-class women’s entry into the paid labor force: more children were home alone with convenience foods—many of which targeted school-age audiences—and microwave ovens.⁹⁶ The problem was not that juvenile users exposed themselves to electromagnetic waves. The hazards were far more conventional, the dangers domesticated and preventable. New definitions of safety put the microwave oven back into the kitchen, leaving questions about the potential dangers of low-level radiation unresolved. Despite its allegiance to tradition, the military-electronics industry complex had triumphed, in large part because the majority of American women no longer were “housewives.”

Coda: Havana Syndrome

By the 1990s, few Americans perceived any relationship between foreign policy and the appliances on their kitchen countertops. The Cold War was over. So, too, for the most part was the war on countertop radiation. But microwaves and espionage are once again in the news. In late 2016, barely a year after the United States and Cuba restored diplomatic relations, staff at the U.S. Embassy in Havana began to experience mysterious health problems—hearing

94. Judy Mann, “House Cleaning Still Women’s Work,” *Washington Post*, March 9, 1988; *Residential Energy Consumption Survey* (1990), xiii; Diane Goldner, “Microwave: Revolution That Never Happened,” *New York Times*, May 31, 1995. See also Julie Liesse, “Microwave-Only Food Market Loses Steam,” *Advertising Age*, July 16, 1990, 3.

95. “When Installing Microwave Weigh the Safety Factors,” *Chicago Tribune*, November 27, 1983; “U.S. Warns on Pork in Microwave,” *Chicago Tribune*, May 9, 1981; Margaret Sheridan, “Even Cooking Key to Succulent—and Safe—Pork,” *Chicago Tribune*, June 11, 1981; Marian Burros, “Eating Well: Microwave Cooking May Be Easy, but It Has Its Perils Especially for Children,” *New York Times*, August 16, 1989; Barbara Kafka, “Microwave Cooking: Avoiding Potential Risks from Plastic Wrap or Containers,” *New York Times*, October 4, 1989.

96. “Microwave Safety,” *Parents*, January 1987, 34; Ruth A. Jacobson and Rebecca E. Greer, “Can Your Child Use a Microwave Safely?,” *Woman’s Day*, March 1991, 24; “Is It Safe for Children to Use a Microwave?,” *Parents*, December 1994, 40; Lauren A. Dellabella, “Microwave Safety: Getting Started,” *Good Housekeeping*, September 1990, 154–154, 176; Julie Liesse Erickson, “Food Makers Jump on Microwave Kids’ Meals,” *Advertising Age*, November 7, 1988, 2; Liesse, “Microwave-Only Food Market Loses Steam.”

loss, headaches, nausea, dizziness, cognitive impairment. Over the next five years, “Havana Syndrome,” as the media dubbed it, spread across the globe, afflicting U.S. diplomats in China, Russia, Austria, India, and Vietnam, among other places. While its origins continue to be debated, the National Academies of Sciences, Engineering, and Medicine, in a report commissioned by the State Department and released in December 2020, cited “radiofrequency energy, a type of radiation that includes microwaves” as Havana Syndrome’s “most probable cause.”⁹⁷ The finding, which seemed to confirm a good deal of previous speculation, conjured up memories of the Moscow Signal and speculation that Russia was behind the more recent attacks.⁹⁸ With few exceptions, it did not conjure up references to microwave ovens; the media marriage between espionage, military weaponry, and microwave ovens evidently had ended in divorce. One exception seemingly proved the rule: *New York Times* science journalist William J. Broad contrasted the probable effects of the “concentrated beams” directed at diplomats with “such everyday uses as microwaving foods.” In the latter instance, “They’re seen as harmless.” Broad’s particular turn of phrase—“seen as harmless” recalls Marion Steinmann’s concluding words more than forty years before: “If my tiny Manhattan kitchen were large enough, I would probably keep and use a microwave oven there. But I would be careful about following manufacturer’s safety instructions and, to be doubly safe, I would stay well away from the thing while it was on.”⁹⁹

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97. “U.S. and Cuba Baffled by ‘Health Attacks’ on American Envoys in Havana,” *New York Times*, August 12, 2017; Tracy Wilkerson, “Envoy’s Cuba Illnesses Remain Unexplained,” *Chicago Tribune*, January 10, 2018; Tracy Wilkerson, “Illnesses of Cuba-based U.S. Diplomats Still Go Unexplained,” *Chicago Tribune*, February 20, 2018; Ana Swanson, Edward Wong, and Julian E. Barnes, “As U.S. Diplomats Fell Sick, Washington Minimized the Danger,” *New York Times*, October 21, 2020; Ana Swanson and Edward Wong, “Scientists Suggest Attack Caused Havana Illnesses,” *New York Times*, December 6, 2020. More recent investigations cast doubt on the National Academies of Sciences, Engineering, and Medicine’s conclusions. See Miriam Berger, “What to Know About ‘Havana Syndrome’, the Mysterious Illness Affecting U.S. Officials Around the World,” *Washington Post*, September 21, 2021; Julian E. Barnes, “Most ‘Havana Syndrome’ Cases Unlikely Caused by Foreign Power, C.I.A. Says,” *New York Times*, January 20, 2022; Julian E. Barnes, “Panel Says Some Havana Syndrome Cases May Stem From Radio Energy,” *New York Times*, February 2, 2022.

98. Gordon Corera, “‘Havana Syndrome’ and the Mystery of the Microwaves,” *BBC News*, September 9, 2021, www.bbc.com/news/world-58396698; Serge Schmemmann, “The Mystery of ‘Havana Syndrome,’” *New York Times*, November 3, 2021; “What Is Havana Syndrome, the Puzzling Malady Plaguing Western Diplomats?”; Ana Swanson and Edward Wong, “U.S. Diplomats and Spies Battle Trump Administration Over Suspected Attacks,” *New York Times*, October 19, 2020.

99. William J. Broad, “Microwave Weapons Are Prime Suspect in Ills of U.S. Embassy Workers,” *New York Times*, September 1, 2018; Steinmann, “Waves of the Future?,” 88.

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