The Ironies of Household Technology from the Open Hearth to the Microwave

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RUTH SCHWARTZ COWAN



More Work for Mother

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For Betty Schwartz and Louis E. Schwartz with love

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Chapter 5

The Roads Not Taken: Alternative Social and Technical Approaches to Housework

Ke all tend to believe that the social arrangements with which we are familiar are the social arrangements with which everyone else is familiar; and if they appear to have been stable for long periods of time, we feel that there is good reason to believe that in some—almost biological—way these arrangements must be "best," either because they are most effective or most desirable, or even because they are prescribed by fate and are thus unalterable. The single-family residence, private ownership of household tools, and the allocation of housework principally to women have been normal arrangements in this country for more than a century, and most of us assume that they surely must be "best" for people in all walks of American life. We tend to make similar assumptions about pieces of machinery: if there is only one basic kind of refrigerator, or automobile, or television set, then that kind must be "best"; and if other kinds did not survive the competitive struggle of the marketplace, then they were not equipped to fulfill our needs.

Yet, over the years, many alternative social arrangements for housework have been proposed; and, at one time or another, the single-family residence, private ownership of tools, and the allocation of housework to women have all been challenged. These alternatives have had passionate defenders, and some have even been popular for short periods, but all have eventually failed. The same is true for alternative technical arrangements. Difficult as it may be to believe, there were many different kinds of household appliances on the market at one time, not just the restricted variety we now find (I am speaking here of types, not brand names); and these machines have also had their passionate defenders-a passion sustained, as the social arrangements were not always, by the desire for economic profit. In the end, however, these machines have also failed to win, as today's advertisers would say, "market acceptance." To understand why our households are organized as they are today, it is enlightening to explore the history of some of the possible alternatives that people, for good or ill, chose not to adopt—the roads, as a poet said, that were not taken.

Commercial Enterprises

The quintessentially American solution to the problem of housework is commercialization. At one time or another, entrepreneurs have attempted to pursue almost every aspect of women's work—from the care of infants to the care of the dead —as a business. Colonial cities—such as Boston, New York, Phil-

adelphia, and Charleston—abounded with brewers, bakers, spinners, tailors, soapmakers, candlemakers, and dyers (most of them male) who undertook (for a price) to reproduce in their own places of business precisely the same work that many women of the time were doing at home for the benefit of their families.¹ During the early years of industrialization, some of those crafts became obsolete (candles, for example, were replaced by oil and gas lamps); but others-such as spinning, weaving, tailoring, soapmaking, and brewing-successfully weathered the conversion to large-scale, factory-based businesses. As industrialization proceeded, entrepreneurs began to experiment with commercial substitutes for other female skills; some of these experiments survived and flourished well into our own day, while others failed. The ones that succeeded, especially those concerned with the preservation of perishable foodstuffs and the preparation of foods for the table and of medicine for the sickroom, have been described in an earlier chapter; some of those that failed will concern us here.

Among the short-lived experiments were cooked-food delivery services, which were—unlike the modern enterprises that deliver pizza, wonton soup, or expensive exotic delicacies—intended to provide a family, on a contractual basis, with the basic meals that it needed seven days of the week. A scholar recently attempting an exhaustive treatment of the subject, has succeeded in locating records of nine such commercial establishments.² The earliest was founded in New York City in 1884; the latest in Flushing (in the borough of Queens, in New York City) in 1927; others were located in Pittsburgh, Pennsylvania, in Boston and Brookline, Massachusetts, in Mansfield, Ohio, and in New Haven, Connecticut. These establishments prepared meals in central kitchens and then delivered them to individual households at the time required; the householder had only to place the order, set the table, and (of course) pay the bill:

Now let the cook lady strike; who cares? All I have to do is to step to the telephone or drop a post card and order dinner, have it served hot at the door, well cooked and of excellent variety, for less money

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than you could do it yourself, to say nothing about wear and tear of nerves. It is emancipation, I say. . . . Be thankful there are those to blaze a trail out of the wilderness and lead the people into the promised land of delightful housekeeping. [An unattributed testimonial for the 20th Century Food Company, New Haven, 1901]³

In the early days, delivery was accomplished in horse-drawn vans; in later years, in trucks. Some of these businesses experimented with new and different containers to keep the food hot for long periods; and one entrepreneur, who had formerly been an editor of Good Housekeeping, went into the business of manufacturing the containers on which he had acquired a patent, in the firm belief that cooked-food delivery services were the wave of the future.⁴ He was, unfortunately, wrong. Although the records are by no means complete, none of the cooked-food delivery services appears to have been in business for much more than a decade, and most folded well before that. For whatever combination of reasons (and I shall return to this guestion later), cookedfood delivery services never became popular (the largest never serviced more than one hundred families), and none seems to have survived the difficult years of the Depression. Frozen T.V. dinners are our current, but not comparable, substitute.

THE COMMERCIAL LAUNDRY

Commercial laundries were longer-lived than cooked-food delivery services and, in their day, were considerably more popular, but they were eventually displaced as well. The origins of the industry are unclear. Some authorities say that the first commercial laundries appeared in the environs of San Francisco, California, in the late 1840s, to attend to the needs of the gold miners in the mountains; others, that such laundries were set up a decade or two earlier, in upstate New York, as an adjunct to the businesses that were then manufacturing detachable collars and cuffs for men's shirts; others, that they sprang up in many metropolitan areas to care for the linens used in hotels and boarding houses.⁵

Whatever the origins of the industry may have been, it is

clear that, in the years between 1860 and 1900, existing laundries expanded their services (especially to provide additional services to households), increasing numbers of entrepreneurs went into the business, and the businesses themselves increasingly depended on mechanized equipment. This equipment cleverly made use of the steam that was generated by the power source (a steam engine) to clean and rinse the laundry itselfhence, the terms steam and power laundry.⁶ By 1900 there were commercial laundries in all major cities and in many rural and suburban districts as well. They offered diverse services, from "wet wash" (which meant that the drying and finishing were done at home) to fully finished (usually by hand) laundry. Some of these laundries were located in poor neighborhoods and were patronized by people who had no facilities for doing laundry in their own residences. The heyday of the laundry business seems to have been the decade of the 1920s. Between 1919 and 1929, gross receipts for power laundries virtually doubled; they declined somewhat during the Depression and war years, increased again immediately after the war, and then went into a long period of decline, from which they show no signs of recovering.⁷ During the most prosperous years for the laundries, surveys undertaken by home economists demonstrated that, although few households (and only those with the highest income) "sent out" all their laundry work, very few families (and this was true even of poor ones) made no use at all of the commercial services. The items most commonly sent to commercial laundries were men's shirts and collars and "flatwork"-handkerchiefs, sheets, tablecloths, and napkins.⁸

In their day, the commercial laundries had both advocates and detractors. Those who argued in their defense believed, as Catherine Beecher and Harriet Beecher Stowe had, that laundry work was the most arduous, uncreative, and yet necessary part of women's work, and that, hence, "it would simplify the burdens of the American housekeeper to have washing and ironing day expunged from her calendar [and that] . . . whoever sets neighborhood laundries on foot will do much to solve the American housekeeper's hardest problem."⁹ Detractors, such as Christine

Frederick, a household efficiency expert, argued that commercial laundries were expensive, that the rough handling frequently resulted in damaged or lost clothing (which only added to the expense), and that they might also be unsanitary, because either of disease-contaminated clothing or of disease-contaminated workers.¹⁰

Had all things been equal, it seems likely that the advocates would have eventually won out against the detractors (since few housewives implicitly regard their own time and energy as valueless, as Frederick did, and since lost socks and buttons notwithstanding, the commercial laundries continued to flourish); but things were not equal. Although no one seems able to be precise about how the industry was born, all commentators agree on what killed it: the electric washing machine. Wherever and whenever electric washing machine sales went up, commercial laundry receipts went down.¹¹ The decline of the commercial laundry is, in fact, one of the few instances we have of a household function appearing to be well on its way to departing from the home-only to return. Helen and Robert Lynd noticed this in Middletown in the mid-1920s. After noting that "the advent of individually owned electric washing machines and electric irons has . . . slowed up the trend of laundry work . . . out of the home to large-scale commercial agencies," they remarked in a footnote:

This is an example of the way in which a useful new invention vigorously pushed on the market by effective advertising may serve to slow up a secular trend. The heavy investment by the individual family in an electric washing machine . . . tends to perpetuate a questionable institutional set-up—whereby many individual homes repeat common tasks day after day in isolated units—by forcing back into the individual home a process that was following belatedly the trend in industry toward centralized operation.¹²

Questionable or not, the practice of doing family laundry at home resurfaced with vigor; and today, commercial laundries are nothing but ghosts of their former selves, most of their trade being industrial rather than residential. THE BOARDING HOUSE AND THE APARTMENT HOTEL

Two other commercial enterprises that some people thought "questionable," but that flourished for a time, were the boarding house and the apartment hotel.¹³ Although we do not ordinarily think of these as businesses, that is what they were. The term boarding house here refers not so much to the common practice among poor immigrant families of "taking in boarders" (who were usually single and transient), but to the (to us) less familiar practice of converting what had once been a single-family home into a group residence with private bedrooms but "public" dining halls and parlors, all suitable for the use of middle-class people. Apartment hotels were somewhat more elaborate, usually larger, and always more expensive versions of boarding houses and were built de novo, rather than converted. Tenants rented suites of rooms for their private use; and various housekeeping services (laundry work, general cleaning, preparation of meals, telephone answering, and so on) were provided, sometimes as part of the rent, sometimes for an additional fee. The boarding house and the apartment hotel were dual attempts to profit from the fact that, between roughly 1870 and 1920, growing numbers of middle- and upper-class families either did not wish, or simply could not afford, to undertake the expense of running an independent household. In the 1870s, expensive apartment hotels were built in cities such as New York, Boston, and Hartford: the one in Hartford provided a centralized kitchen, a dining room, a laundry, and a barber shop.¹⁴ Between 1901 and 1903, plans for ninety such hotels were filed with city officials in New York, and the editors of Architectural Record proffered the observation that "thousands of steady New Yorkers have been moving into them-people who are neither business nor social Bohemians."15 In 1919, the thirteen-story Manoir Frontenac apartment hotel opened in Kansas City; it featured 103 expensive apartments, each outfitted with an electric grill-kitchenette for cooking breakfast and an electric dumbwaiter to deliver the other two meals from one of the building's three restaurants.¹⁶

During those same years, from 1870 to 1920, thousands of steady folk of lesser means had also been moving into boarding

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houses. No reliable estimate exists for the number of families who chose this form of dwelling, but it was sufficiently high to have engendered an angry response from social critics who believed, along with the editors of *Architectural Record*, that these institutions represented

the consummate flower of domestic irresponsibility . . . the most dangerous enemy American domesticity has yet to encounter. . . . A woman who lives in [a boarding house or an apartment hotel] has nothing to do. She cannot have food cooked as she likes; she has no control over her servants; she cannot train her children to live in her particular way; she cannot create that atmosphere of manners and things around her own personality, which is the chief source of her effectiveness and power. If she makes anything out of her life at all, she is obliged to do it through outside activities.¹⁷

This last sentence reflects, of course, the principal reason that some people, especially feminists such as Charlotte Perkins Gilman, liked these institutions:

This is the true line of advance; making a legitimate human business of housework; having it done by experts instead of by amateurs; making it a particularly social industry instead of a general feminine function . . . is good business. It is one of the greatest business opportunities the world has ever known.¹⁸

As it turned out, Gilman was wrong: like the cooked-food delivery service and the commercial laundry, the apartment hotel and the middle-class boarding house were not the greatest businesses the world has ever known; while some had more good years than others did, most of them were either defunct or in decline by the end of the 1920s.

THE FAILURE OF COMMERCIAL ALTERNATIVES

There are other "failed" commercial services that I might discuss (commercial vacuum cleaning, for example), but the central reason for discussing them would not change.* On the whole,

^{*}Commercial vacuum-cleaning services, which existed in the United States and some European countries prior to the First World War, consisted of large compressors which were taken from house to house by horse-drawn carts; flexible tubing was attached to the compressors and run through the front door of the house, and various nozzles with which to do the cleaning were attached to the end of this tubing.¹⁹

although Americans have not objected to commercialization, they have applauded the commercialization of some household functions while resisting that of others. Funeral "homes" had no difficulty (apparently) in supplanting housewives as preparers of the dead for burial, and nursing homes seem to be succeeding in supplanting private homes as residences for the elderly who are ill; but many of the commercial day-care centers that commenced with such fanfare little less than a decade ago have collapsed. Most of us send (or, rather, carry out) our dry cleaning, but not our laundry. We allow strangers into our homes to wash our rugs and our upholstered furniture, but we insist on vacuuming those objects ourselves. On the surface, our behavior appears quixotic and inconsistent; if there is an underlying pattern explaining our acceptance of commercialization in some forms and our resistance of it in others, the pattern is exceedingly difficult to discern. One is tempted to argue, with the economists, that the underlying factor must be price: some things are brought to market at a price we can afford, while other things are not; hence, we buy the former because we can and avoid the latter because we cannot. This explanation is, at best, only partially adequate. Nursing-home care is very expensive, vet nursing homes thrive; infant care centers are also very expensive, but they do not thrive. Commercial laundries are only apparently more expensive than doing laundry at home (once the machine has been paid for); if the housewife's time is accounted for at even the minimum hourly wage, commercial laundry fees are not exorbitant: a man's shirt or a woman's blouse, washed, dried, ironed, and folded, currently costs \$1.00 to \$1.30, which represents 20 minutes of a housewife's time, when estimated at the current minimum wage, and 15 minutes when estimated at the current standard wage for houseworkers (\$5.00 per hour).²⁰ Ever more families are bringing in two incomes, and ever more women are learning that their time is both literally and figuratively worth even more than \$5.00 per hour, yet few-if any-households are rushing to patronize the remaining commercial laundries. Price is undoubtedly important in determining the choices that people make between competing ways of doing housework; but it is only one among many

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factors, as we shall see when we look carefully at some other "failed" social arrangements.

Cooperative Enterprises

While commercialization may have been a quintessentially American solution to the problems of housework, it was not the only solution that Americans attempted. Whatever the national commitment to individualism has been over the years, there have always been a few brave souls who preferred cooperation of one sort or another; and long years before the well-publicized hippy communes of the 1960s, many of these brave souls had tried their hand at some form of communal housekeeping.

"Communal" or "cooperative" housekeeping here denotes any social arrangement in which either some (or all) of the work or some (or all) of the expense involved in running an individual household is shared by a group of people who are not relatives. The cooperative or communal strain in our national character has made itself manifest in a wide variety of social institutions over the years. On a scale measuring the personal commitment required, these institutions would range from utopian socialist communities of the nineteenth century (where the participants totally renounced their former lives and gave themselves over to the group life) to the consumer cooperatives of the twentieth (where the cooperator only commits capital-and usually not much capital at that). All of these cooperative enterprises affected some aspect of women's work-sometimes intentionally, other times only by accident. If the cooperative strain in our character had become dominant, the social and technical systems through which housework is now performed would have been shaped very differently.

In the earliest days of settlement, some of the American colonies were organized as communes. In Jamestown, Virginia, for example, all tools, foodstuffs, and arable land belonged to the joint stock company that had financed the venture, and the settlers shared the work equally. Nonetheless, there was never much doubt that the principles of private property and individual ownership would dominate the economic life of the colonists. What cooperation there was in the colonial period took the form of neighborly sharing: a certain amount of the work was jointly performed by neighbors in barn raisings, in quilting, husking, and scutching (that is, preparing flax so it could be woven into linen) bees, and similar communal undertakings. Some tools were also shared: one housewife might lend her baking oven; one husbandman, his scythe; but the actual owner or the ultimate user of the barn, the quilt, the oven, or the scythe was never in doubt.

Late in the eighteenth century and then with increasing frequency in the first half of the nineteenth, certain religious groups began to advocate more radical forms of communal housekeeping. The Shakers (United Society of Believers) who settled in Mount Lebanon, New York, in 1787 may have been the first and the most famous of these groups, but they were not, by any means, alone. The Rappists were organized in Economy, Pennsylvania, in 1805; the Separatist Society of Zoar, in Ohio in 1817; the Society of True Inspiration (also called the Amana Colony), in Buffalo, New York, in 1843; the Perfectionists (later the Oneida Community), in Putney, Vermont, in 1848; the Jansonites, in Illinois in the same year; and later still, the Huterite Brethren, in South Dakota in the 1870s.²¹ All these groups took their inspiration from the Sermon on the Mount and from the asceticism and communism preached by Jesus's earliest disciples. Each community practiced some form of shared work, shared property, and communal housekeeping. The Shakers slept in sexually segregated dormitories and worked at sexually segregated tasks; but all of what they defined as women's work (cooking, sewing, cleaning, laundering) was undertaken by groups of women working together, and assigned jobs were rotated periodically. In the Jansonite, Huterite, and Amana colonies, there were central dining rooms and nurseries, but each family occupied its own living quarters, although all the quarters were identical. The Perfectionists had what they called a "unitary household" but, unlike the Shakers, provided private sleeping quarters for couples, although they did not believe that the same individuals should be "coupled" to each other for long periods. Since the members of these communes were pooling their economic resources, they could afford to install the most modern housekeeping equipment. The writer Charles Nordhoff, who visited many of these communities in the 1870s, remarked that "a communist's life is full of devices for ease and comfort."22 Frequently what the members of the community could not purchase they could devise, because the practice of rotating jobs among themselves meant that different skills were frequently being brought to bear on different jobs. The Shakers invented, among other things, improved washing machines, the clothespin, removable window sashes, a round oven for more uniform cooking, and an apple parer that quartered and cored the fruit. The Amana Colony produced cradles that could rock six or seven children at a time and furniture that was scaled down for children's needs. The Oneida Community patented a lazy Susan for a dining table and an institution-sized potato peeler, as well as improved mop wringers and washing machines. As they took their inspiration principally from religion and not from social theory, few of these communities explicitly intended to lighten or to alter women's labor (although the Perfectionists were an exception), but the net effect of their social practices was just that.

In other communities that were motivated by social theory rather than by theology, sexual politics were much at issue. The Owenite socialists, the anarchists, and the Fourierist socialists (also called "associationists") formed nearly one hundred communities during the nineteenth and early twentieth centuries, in places as diverse as Red Bank (New Jersey), New York City, San Antonio (Texas), Palo Alto (California), Cheltenham (Missouri), and Corning (Iowa). In each of these communities, communal housekeeping was adopted either to liberate women so that they could participate in industrial employment, or to liberate families so that they could enjoy the comforts that pooled resources might produce. Families remained intact in these communities but did not dwell in traditional homes. Each family had a private residence (in some communities, a cottage; in others, an apartment in a larger structure) but could take advantage of common facilities for dining and for child care. The work of providing meals, clothing, laundry, household maintenance, and child care was undertaken by community members specially employed for those purposes. These socialists and anarchists disliked the individual household as an institution but not the individual family:

The isolated household is wasteful in economy, is untrue to the human heart and is not the design of God, and therefore it must disappear. . . . When we say the isolated household is a source of innumerable evils, which Association can alone remedy, the mind of the hearer sometimes rushes to the conclusion that we mean to destroy the home relations entirely. . . . the privacy of domestic life, Association aims to render more sacred, as well as to extend it to all men.²³

If women were released from the drudgery of household labor, it was argued, and if women and men were free to pursue the work for which their talents best fitted them, then the exhaustion and frustration of daily life would disappear, and the relations between husbands and wives, parents and children, would be vastly improved. Similarly, if the returns from the work of the community were shared equally among all families, without some profiting handsomely from the labor of others, then there would be no difference between rich and poor, and all families would be able to enjoy the leisure and the comforts that industrialization had the potential to provide.

Whether religious or political, whether socialist or anarchist, there was some kind of cooperating community, practicing some form of communal housekeeping, in virtually every state of the Union during every decade from the early years of the nineteenth century until the end of the Depression. The founders and the members of these communities were highly motivated propagandists, since frequently the survival of their communities depended on their ability to make new converts. Some communities published newspapers and magazines; some members wrote books and articles; still others were missionaries and circuit lecturers. Although relatively few converts were made, the message of the "communists" was certainly heard throughout the land.

Not surprisingly, somewhat more modest experiments in co-

operative housekeeping began to appear, spearheaded not by "wild-eyed" radicals but by fairly ordinary middle- (or uppermiddle-) class people who could see some of the benefits that might accrue to cooperative housekeeping, but were not interested in giving their whole lives to it. In Cambridge, Massachusetts, in 1869, for example, Melusina Fay Pierce, then the wife of a Harvard professor, managed to persuade other respectable Cambridge families to invest in the Cambridge Cooperative Housekeeping Society. They rented a building not far from Harvard Square, installed equipment, and hired workers so as to function as a cooperative laundry and grocery store. The society collapsed after two years, without ever opening its planned cooperative kitchen.²⁴

In the 1880s, community dining clubs (consumer cooperatives, where the work was done by employees), cooperative kitchens (producers' cooperatives, where the work was done on a rotating basis by the women whose families would eventually consume the meals), and cooperative cooked-food delivery services began to appear and continued to be established in one community or another until the mid 1920s; the longest lived of these survived for somewhat more than two decades; but, on the average, they lasted for only four to five years.²⁵ Early in the twentieth century, cooperative laundries became popular; these were simply commercial laundries operating under cooperative ownership. In Chatfield, Minnesota, for example, a cooperative laundry was established in association with a cooperative creamery; shares were sold at five dollars apiece; modern equipment (steam coils, centrifugal extractors, mangles, specialized ironers) was purchased, and a staff of nine persons employed. Farm families could (and did) send their wash to town with their cream; town families paid a surcharge of 10 percent for pickup and delivery. After six years of existence, 224 families had become patrons.²⁶ In New York City, a similar enterprise was set up by a social welfare agency to provide laundry services for poor families who were willing to pay a nominal membership fee.²⁷

The most elaborate cooperative housekeeping venture of them all—and one whose failure suggests some of the reasons that others had difficulties—was the Evanston Cooperative Housekeeping Association, founded in a wealthy suburb of Chicago by forty socially prominent families in 1890. This co-op owned its own building, which housed a commercial laundry and a cooked-food delivery service of "hotel standard." On its first day in business, the co-op delivered two hundred luncheons, but the experiment lasted a mere two months—killed, apparently, by an incompetent manager, a strike of servants (who believed, quite rightly, that some of them were going to be laid off), and the refusal of the wholesalers in Chicago, who feared a boycott by local merchants, to continue to supply raw materials.²⁸

Like the Evanston Cooperative Housekeeping Society, most experiments in cooperative housekeeping were undertaken by people who were, if not wealthy, at least economically comfortable. There were, however, other kinds of cooperatives, like the New York City laundry mentioned earlier, that were set up by those who were middle class for the aid, the comfort, and the edification of those who were not. The principal intention behind these charitable cooperatives was to let them be controlled, eventually, by the cooperators themselves and, thus, to make the enterprise seem less demeaning as being less of a charity.²⁹ In Chicago, Jane Addams helped a group of single female factory workers establish a cooperative boarding arrangement for themselves, and various unions in New York City subsequently followed her example.³⁰ In Boston, Ellen Swallow Richards (one of the founders of the discipline of home economics) and several philanthropists established the New England Kitchen, a storefront community kitchen which prepared nutritious meals for immigrant families and trained immigrant housewives in American kitchen practices; the Kitchen failed to achieve its dream of becoming a cooperative because the immigrant families simply did not like the food the Yankee ladies were preparing.³¹ In cities throughout the land, cooperative laundries and cooperative day nurseries were not uncommon in the years before the First World War. During the war, some of these expanded; and in certain locales, soup kitchens were added. One editorial writer in the Ladies' Home Journal expressed the hope that, after the war, all these cooperatives might be put on a self-supporting basis for use by the whole community:

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[They] gave a new suggestion of the possibility of the eventual emancipation of women from the duplication in every household of equipment and labor for tasks that can be done cooperatively, thereby freeing the homemaker for the things that have to do with the higher life of the family.³²

The heyday of the cooperative communities was in the years just before and after the Civil War; the heyday of communal housekeeping in one or another of its more modest forms, in the years of Progressivism, roughly between 1890 and 1930. Few of these alternative social arrangements lasted for long; few fulfilled the high hopes of their founders, and few survived the decade of prosperity and the Red Scare, the 1920s. We see the remnants of these arrangements today in a few communes scattered in rural districts, in a few cooperative nursery schools in cities and suburbs, in scattered cooperative supermarkets and credit unions, and in an occasional neighborhood food-buying cooperative that has managed to survive the entry into the job market of most of its female cooperators. A working mother of today, hard pressed to manage cooking, laundry, and child care, may close her eyes and dream about how much easier her life would be if there were a municipal laundry (with pickup and delivery) in town, a cooperative dining club up the block, and a cooperative day-care center around the corner; but recent history gives her few grounds for being sanguine. In the context of American culture, cooperative enterprises-however sensible on paperhave turned out to be difficult to sustain; and few of their members seem to have kept up the fight for long.

Part of the problem, no doubt, was economic: cooperators frequently could not raise the capital that they needed to get started; and some experiments in cooperation were ended when the cost of labor or the cost of raw materials turned out to be higher than everyone had anticipated, or when hard times made it difficult for the cooperators to continue paying their share or patronizing the service. But economics was only part, and perhaps a rather small part, of the problem. More at the hub of the matter were difficulties with the human material. Cooperation is not easy, as is well

known by anyone who has survived five or more years of a marriage or tried to encourage cooperation in a group of recalcitrant nine-year-olds. It is hard enough when the task at hand is to win a baseball game or plan an advertising campaign or teamteach a course or build a new house. It is harder still when the task at hand strikes close to the individual human psyche, when the question is not how to build a house for someone else but how to build it for yourself; not how to serve a meal to strangers but how to serve it to your family; not how to train other people's children but how to train your own; when, in short, the task is not work but house work. Time and again cooperative communities died because internal arguments resulted in the departure of some of the cooperators or because members of the younger generation were not interested in following the cooperative paths of their parents. Limited cooperative ventures probably failed because their members found that they simply could not cooperate: one woman's husband did not like her to serve meals to another woman's husband, or one cook was preparing food in a fashion that the other cooks could not tolerate, or someone's notion of correct childrearing was widely at variance with someone else's, or the foods that were thought nutritious by one were considered barbaric by another.

Even under the best of circumstances, the survival of a cooperative venture is inherently-almost logically-problematic. When two ventures compete with each other (say, two companies that are both producing refrigerators, or two restaurants that are both serving fast food) and one fails (for whatever reason), there is still a reasonably good chance that the other will survive. Unfortunately, when two individuals (or two organizations) agree to cooperate with one another, and one partner subsequently reneges on the agreement, the whole enterprise collapses; one party can sustain a cooperative arrangement about as easily as one hand can clap. Thus, the chances of success for cooperative communities or even for cooperative kitchens were not high to start with, and social conditions in the United States during the period when cooperation was popular were not propitious. People in the mainstream of American society were almost always suspicious of "cooperators"; in the early nineteenth-century, cooperators were regarded as "godless heathens," and as such they were occasionally subjected to physical abuse. Later in the century, they were regarded as "free-lovers" and were driven out of town; in the twentieth century, especially in the 1920s, they were accused of being "reds," which meant the possible loss of their jobs and the certain loss of their social standing. Yet, even in the absence of overt hostility, the existence of the mainstream encouraged the failure of cooperative ventures, for whenever cooperation became too difficult or too frustrating, an erstwhile cooperator could always retreat to join the majority; there was always some place else to go.

The Domestic Servant

If most Americans voted with their feet to reject the commercialization and the communalization of some aspects of housework, many of them considered infinitely more attractive another alternative social arrangement—the maid. Although hard data on the subject are difficult to find (for reasons that will soon become clear), at no time in our national history have even half of the households in the nation been able to have such help full-time; but many more households, ranging fairly far down the economic ladder, have employed domestic servants seasonally, occasionally on a part-time basis. Employment of a servant is the most conservative of all alternative social arrangements for doing housework, because it is the only one that retains the singlefamily residence as well as the functions that any given family regards as crucial to its collective existence. This very conservativism may help to explain why, despite the expense involved, employment of a servant has always seemed attractive. For over three hundred years, American housewives have been telling each other that they would willingly trade in every one of the advantages of living in North America if they could only find a good maid. These housewives may not have regarded themselves as perceptive social critics, but they were unwittingly making a valid historical connection, for the social conditions that have made North American culture unique, and uniquely advantageous, are precisely the ones that have made good maids hard to find.

Over the years, there have been many different forms of household service.³³ During the first century or so of our existence, a large proportion of young women immigrants were indentured servants, trading a set number of years of employment in domestic service for the money that they needed to obtain passage across the ocean. In the centuries before industrialization, public authorities regularly sent young orphan girls to domestic service in "foster" households; and other young girls whose families were intact but poor went into service in return for room, board, and clothing. During the nineteenth century, wage labor began to replace these more or less medieval forms of employment, except of course in the antebellum South, where vast numbers of enslaved blacks performed domestic service without any hope of release. Elsewhere in the United States, however, unmarried women, many of them recent immigrants who would otherwise have had no residence on these shores, were earning a living (such as it was) as servants who resided in the homes of their employers. In 1870—the first year in which the employment of women was carefully recorded by census takers-fully one half of all women who were employed for wages were employed as domestic servants-roughly one million women, or one twelfth of the total labor force.³⁴ In the early decades of the twentieth century, the nature of the domestic servant labor force itself began to change.³⁵ As a result partly of the cessation of immigration, and partly of the expansion in industrial employment, young white women began to reject domestic service in favor of other kinds of work. Once having been predominantly white and single, the servant labor force in the twentieth century became increasingly black and married. This demographic change was accompanied by a change in the conditions of the labor. Married women preferred day labor to live-in work; and as the wages of such laborers continued to rise (since the supply was shrinking in relation to the demand), employers increasingly found that day labor was all that they could afford. Subsequently, with the introduction of income taxes, Social Security deductions, and contributions to unemployment funds, domestic work has been gradually forced into the underground economy. For the last few decades, employers and employees alike have been unwilling or unable to pay these taxes, and a vast amount of paid domestic labor is unreported and hence unrecorded. One consequence of this situation is a lack of information; another consequence is a lack of benefits. Domestic service today carries with it neither the benefits that used to accrue from having a free roof over one's head nor the benefits (such as Social Security pensions) that are now considered an essential part of legitimate wage earning.

In the past, as in the present, there have been impermanent, transient, or part-time forms of domestic service: rural girls who hired themselves out to cook and clean for farm families during the busy weeks of harvest; college students who regularly babysat for professors' children or came in occasionally to serve at dinner parties; women who, when their husbands were unemployed or temporarily disabled, picked up other people's wash and did it in their own homes; housekeepers who took over the management of a widower's household until he could find another spouse; suburban housewives who earned extra money by cleaning other people's homes a few days a week. Such employment has been difficult for census takers to enumerate, either because it has been deliberately unreported, or because people have been embarrassed to admit to it, or because irregular employment simply has not been inquired about in the census interview.

The variant forms that domestic service has taken, and the inherent difficulties that exist in enumerating it, render all statistical data on this subject dubious, except insofar as they suggest general trends. Prior to industrialization, it seems likely that one third to one half of the nation's housholds included resident domestic servants, but we have no way knowing how many households employed nonresident or temporary assistants. During the nineteenth century, the relative number of housholds employing full-time servants probably fell, but the absolute number was still fairly high, by twentieth-century standards, as the existence of at least one full-time maid was the *sine qua non* of middle-class status for a houshold. During the twentieth century, the ratio of servants to households has been falling, and in some locales, at some periods of time, it fell precipitously: in New York City, for example, there were 188 servants for every 1,000 families in 1880, 141 in 1900, and 66 in 1920.³⁶ Although day labor has been the most common form of domestic service in the twentieth century, so much of it is unreported as to make generalization virtually impossible, except to say that there are far fewer live-in servants than there used to be, and such servants have long since ceased to be required in middle-class households.

In any event, servants have always been something of a mixed blessing, for, as long as there have been settled communities on these shores, there has been a "servant problem." A household that has come to depend upon the work of a servant can be thrown into complete turmoil if the servant guits-and servants were forever quitting. Indentured servants were forever running away or asking to be released from their indenture in order to marry promising young men. Farm girls were forever getting lonely for their families or were never able to understand the sophisticated ways of the cities. Immigrant girls were, from the point of view of their employers, "forever dirty," "unreliable," "insubordinate"—and unable to understand instructions given to them in English. Black women were similarly, "forever drinking" or "coming late to work" or going off to "take care of a sick sister in North Carolina." Women who kept servants were forever worrving about the one who was just about to leave or the one who had just come to stay, and were forever giving each other advice about how to deal with the complex problem of finding and keeping competent helpers. Such women, from 1680 to 1980, counted themselves lucky if they "found someone good," and if "someone good" stayed on for more than six months. In the 1630s, Mary Winthrop Dudley of Boston complained in a letter to her mother about "what a great affliction I have me withal by my maide servant. . . . She hath got such a head and is growen soe insolent that her carriage . . . is insufferable."³⁷ Eighteenthcentury newspapers carried advertisement after advertisement for recovery of "my servant who hath run away."38 In 1832,

Frances Trollope, the English novelist's mother, complained that she could not engage a servant by the year in Cincinnati because, as one purportedly told her, "I hope I shall get a husband before many months . . . besides, mayhap I may want to go to school."³⁹ In the South at the turn of the century, housewives complained that they could not find competent help because "the agents from the North and West are offering high wages and taking away all the well-trained reliable colored people."40 In Muncie, Indiana, in 1925, the refrain was somewhat different: "It is easy to get good girls by the hour but very difficult to get any one good to stay all the time . . . [and] the best type of girl, with whom I feel safe to leave the children, wants to eat with the family."41 And, of course, some variant on each of these complaints-that servants are hard to find; that the ones that can be found are not reliable or competent; that, once hired, they become insolent; or that they will not work to the conditions that employers set—can still be heard today.

Employers seem always to have been perplexed about why they could neither find nor keep acceptable servants; they frequently protested either that "domestic service is good for a girl's health and for her moral character," or that "it prepares a girl for her ultimate career in the home," or that it "provides a haven for the homeless girl in this hazardous and heartless world."42 Yet the employers' quandry seems to have been a grand case of self-deception, since the causes of the "servant problem" were, in every age, fairly easy to perceive. The work itself was sheer drudgery, since the whole point of employing a servant was to have someone do the work the housewife herself did not wish to do. The conditions under which the work was done were abysmal when gauged by whatever standards were thought to be appropriate in any given time; whether they were working or resting, servants were expected to occupy the parts of the house into which the family itself would not deign to set foot. Live-in servants were expected to be at work or on call before the family arose from bed and after it went to sleep. They were allowed little time off; the standard, until recently, was one evening a week and one day every two weeks. And ultimately, if the system of domestic service had worked in the way in which employers wanted it to work, the employment of domestic servants would have denied to those servants precisely that social arrangement that the employers themselves were trying to preserve—that is, private family life. Employers restricted the social lives of their servants, not just because they wanted to preserve their own homes from unwanted intruders, or because they wanted to keep their servants at work as much as possible, but also because they dearly wished that their unmarried servants would remain unmarried.⁴³

Yet, even if the conditions of domestic service had been vastly improved, a servant class was not likely to have developed in this country. Domestic servants took the phrase "land of opportunity" literally to mean "the opportunity to cease being a domestic servant" or, if that was not possible, "the opportunity to see to it that my children do not become domestic servants." In the years before industrialization, the opportunity to escape domestic service existed because land was cheap and the ratio of women to men was low; a female indentured servant stood a reasonably good chance of being proposed to by a formerly indentured servant who now had enough money to buy a piece of land or to buy out the indenture of his intended wife. In the years during and after industrialization, the opportunity existed because the same unskilled and cheap female labor that some people wanted in their homes, other people wanted in their factories. The dark satanic mills did not look nearly so dark or nearly so satanic to young women who knew what it was like to work in some of America's dark satanic kitchens. In the factories, the work day may have been long, but it was not nearly as long as the work day in service; and when the work was done, it was at least done: a factory hand had her free time and her domicile to herself. Almost everyone who ever inquired into the matter discovered that unskilled women preferred factory work to household labor-a state of affairs that Frances Trollope remarked on as early as the 1830s.44 In the 1890s, a sociologist asked a number of factory employees who had been in service why they preferred the factories when domestic service was more remunerative (because of free room and board). One former servant replied succinctly:

In the first place, I don't like the idea of only one evening a week and every other Sunday. I like to feel that I have just so many hours work to do and do them, and come home and dress up and go out or sit down and sew if I feel like it, and when a girl is in service she has very little time for herself, she is a servant. In the second place a shop or factory girl knows just what she has to do and can go ahead and do it. . . . Of course I don't mean to say the domestics don't have a good time, they do; some of them have lovely places and lay up money, but after all, what is life if a body is always trying to see just how much money he or she can save?⁴⁵

Domestic work was regarded, as it still is, as demeaning work for an American. Servant girls complained that young men almost automatically treated them as if they were wanton women, that working girls in other occupations were reluctant to socialize with them, and that their families were frequently reluctant to admit to the nature of their daughters' employment.⁴⁶ A Maine housewife, who was interviewed in a study of domestic employment, illustrated the problem better than a hundred sociologists could have done when she remarked:

My husband has a servant who acts as his stenographer. She is welcome anywhere in society. I have a servant who does my work and although she is a graduate from Robinson's seminary in Exeter, she cannot even look inside anybody's house.⁴⁷

Servants illustrated it themselves, even more graphically, in their strident objections to the most obvious symbols of subordination: American servants resolutely refused to wear livery and resented being called by their first names:

Of course when I am with a mistress and she knows me, I am glad to be called Mary, but why should every mistress do it before she even engages us, and why should it be done in such a way that the iceman and grocer's boy and every Tom, Dick, and Harry always call us that? I am Mary to every guest in the house and every stranger ultimately, if the system of domestic service had worked in the way in which employers wanted it to work, the employment of domestic servants would have denied to those servants precisely that social arrangement that the employers themselves were trying to preserve—that is, private family life. Employers restricted the social lives of their servants, not just because they wanted to preserve their own homes from unwanted intruders, or because they wanted to keep their servants at work as much as possible, but also because they dearly wished that their unmarried servants would remain unmarried.⁴³

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The great promise of American political life, the promise that all people would be treated equally, was taken by servants to mean that employers simply could not be permitted to control, as they wished they could, every facet of a servant's life. "Vhat *fur* you call she mistress," a German cook protested when an American-born parlormaid attempted to improve her diction:

She iss no great lady over me to say to was I do. I my own mistress. I do so I vant . . . I only work *hier fur* money. I cook *fur* my business, *und* I take orders *fur* my business like girl in store. *Dies iss* Amerika. Cook *so gut wie* anybody who works for a living *hier [sic]*. 49*

Small wonder that so many immigrants left domestic service as soon as they reasonably could, and small wonder that they tried (with considerable success) to see to it that, no matter how poor they were, their children never entered it. In 1900, 60.5 percent of Irish-born wage-earning women in the United States were servants, but only 18.9 percent of the children of Irish-born parents were.⁵⁰ "We came to this country to better ourselves," said the daughter of an Irish cook in Philadelphia in 1905, "and it's not bettering to have anyone order you around."⁵¹

Thus, one of the social conditions that enabled industrialization to proceed quickly in this country—namely, the existence of a relatively tractable unskilled work force—was the condition that made it difficult for middle-class Americans to find servants. The poor and the recently immigrated provided the labor on which our industrial base was built, and they provided that labor in part because working in a factory—whatever its hardships may have been—was better than living and working in someone else's house. Twentieth-century housewives may have wished to trade in their vacuum cleaners for a "good old-fashioned maid," but could not do it because the good old-fashioned maids preferred positions on the assembly lines to positions in the parlor. And what was true in the past continues to be true in the present; like their potential employers, the only home potential servants wish

*The transliterations and the emphases are the author's, who was the parlormaid.

to work in full-time is the home they call their own. We can have vacuum cleaners or live-in maids, but not both.

Failed Machines

If the landscape of American social history is cluttered with the remains of failed communes and cooperatives, the landscape of American technical history is littered with the remains of abandoned machines. These are not the junked cars and used refrigerators that people leave along roadsides and in garbage dumps, but the rusting hulks of aborted ideas: patents that were never exploited (the patent record contains literally millions of them); test models that could not be manufactured at affordable prices; machines that had considerable potential but that were, for one reason or another, actively suppressed by the companies that had the license to manufacture them; devices that were put on the market but that never sold well and were soon abandoned. The publications of the Patent Office and the "new patents" columns in technical magazines reveal that the ratio of "failed" machines to successful ones is high, although no scholar has yet devised a formula by which it can actually be determined. Some nostalgia buffs have even become collectors of these "rusting hulks," filling scrapbooks with advertisements for bizarre devices and selling extant versions of them to one another at flea markets and antique shows.

The women's magazines of the nineteenth and twentieth centuries are filled with such aborted ideas: an ice-making machine driven by a small water wheel; a rocking chair that simultaneously propels a butter churn and a cradle; individual household incinerators; central vacuum-cleaning systems; sanitary toilets that do not use water; fireless cookers. There was a vast array of devices, some ludicrous but many, at least on the surface, very sensible. What resident of a drought-prone area today would not be grateful for a toilet that does not use water? How many energy-conscious housewives would be unwilling to try out a fireless cooker? In what city and town, plagued by erratic and expensive garbage pickup, would a householder not be pleased to be the first on the block to own a household incinerator? Why are these items either no longer on the market or not there at prices that most households can afford? Why do we have popcorn makers and electric can openers but not gas refrigerators or inexpensive central vacuum cleaners? If we can put a man on the moon, why have we been unable to pipe our garbage disposals into our compost heaps?

The answers to these questions are not simple: they involve economic decisions made by complex social institutions operating over long periods. In order to find out why a particular patent was not exploited, one must discover something about the Patent Office, something about the inventor, and something about potential consumers; in order to find out why a particular test model was never manufactured, one must learn about the technical problems involved, the decision-making procedures within the company that developed the test model, the state of the general economy, the availability of resources, and so forth. Yet if one wants to learn why our houses and our kitchens are constructed in certain ways but not in others-that is, why household work is shaped by certain constraints and not by others-then an exploration of the forces that cause some machines to "fail" and others to "succeed" may well be in order. One such case, which I shall here consider as an example of all the others, was the rivalry between the gas refrigerator (the machine that failed) and the electric refrigerator (the one that succeeded).

THE REFRIGERATOR: GAS VERSUS ELECTRIC

All mechanical refrigerators create low temperatures by controlling the vaporization and the condensation of a liquid, called a "refrigerant"; when liquids vaporize they absorb heat and when they condense they release it, so that a liquid can remove heat from one place (the "box" in a refrigerator) and transport it to another (in this instance, your kitchen). Virtually every refrigerator on the market in the United States today controls the condensation and the vaporization of its refrigerant by a special electric

nump known as a "compressor." Compression is not, however, the only technique by which these two processes can be controlled. The simplest of the other techniques is "absorption." The gas refrigerator is an absorption refrigerator. Inside its walls, a refrigerant (ammonia, usually) is heated by a gas flame so as to vaporize; the ammonia gas then dissolves (or is absorbed into) a liquid (water, usually), and as it dissolves it simultaneously cools and condenses. The absorption of ammonia in water automatically alters the pressure in the closed system and thus keeps the refrigerant flowing, hence making it possible for heat to be absorbed in one place and released in another, just as it would be if the flow of the refrigerant were regulated by a compressor. The absorption refrigerator, consequently, does not require a motorthe crucial difference between the gas refrigerator and its electric cousin. Indeed, with the exception of either a timing device or a thermal switch (which turns the gas flame on and off so as to regulate the cycles of refrigeration), the gas refrigerator need have no moving parts at all, hence no parts that are likely to break or to make noise.

The basic designs for both compression and absorption machinery were perfected during the nineteenth century.⁵² The phenomenon of latent heat (the heat absorbed when a liquid changes to a gas and released when the process is reversed) was discovered late in the eighteenth century and explored in great detail in the nineteenth because of its importance both in the new science of thermodynamics and in the new technologies of the steam engine. In those same decades, the need for mechanical refrigeration was growing as cities began to expand, both in Europe and in the United States, and ever larger quantities of food had to be preserved for longer periods of time as people continued to move farther from the places where it was grown. Between 1830 and 1880, dozens upon dozens of mechanical refrigerating machines were patented-machines that would make ice as well as machines that would cool large compartments without making ice. By the end of that period, the fundamental designs for large-scale compression and absorption installations had been perfected, largely through inventive and commercial trial and error. As a result of all this activity, manufactured ice became available throughout the southeastern United States by 1890 and throughout the northeast (where natural ice was more readily available through much of the year) by 1910. By 1890, nearly every brewery in the United States had purchased a refrigerating machine to remove the heat generated during the fermentation of beer and to cool the finished product while it aged and awaited transportation. Before the nineteenth century had turned into the twentieth, meat packers were using mechanical refrigeration in the handling and processing of meat, cold-storage warehouses had begun to appear in cities, icemen were carrying manufactured ice through the streets, and refrigerated transport (which utilized manufactured ice in railroad cars and refrigerating machines on ocean-going vessels) was becoming increasingly common and less expensive.

Operating a commercial refrigerator was an ambitious undertaking. Few machines weighed less than five tons, and a substantial number of them weighed from one hundred to two hundred tons. All the compression, and some of the absorption, machines required a source of mechanical power; and, as the electric motor was not yet perfected, this source was most commonly a steam engine (although hot-air engines and water turbines were occasionally used), which itself might weigh several dozen tons. As automatic controls were primitive, the machine was tended night and day by skilled operators, and each machine required a staff of even more skilled people to perform normal maintenance activities. Designing these machines was no simple task, since each one was built to unique specifications. By the turn of the century, a new profession had emerged: the refrigeration engineer-a person who could design and maintain refrigeration equipment. The American Society of Refrigerating Engineers was formed in 1904; and the Refrigerating Machinery Association, which represented the interests of manufacturers, one year earlier, in 1903.

None of this activity affected American households directly, even as late as 1920. Indirectly, many Americans benefited from lower prices for ice and greater availability of fresh meat, poultry, dairy products, and eggs during the first two decades of the century, but mechanical refrigeration was not yet possible in the household itself. The technical obstacles to developing a domes-

tic mechanical refrigerator were substantial: such a refrigerator would have to be small and light enough to fit somewhere in a household, automatic enough not to require constant supervision, reliable enough not to require constant servicing; and it would have to have a power source that could be operated by a totally unskilled worker. Ultimately, it would also have to be designed so that it could be mass-produced, and it would have to be safe: many of the refrigerants then in common use were either toxic or flammable, and "ice-house" accidents were regularly highlighted in the newspapers. That a potential market existed was clear, for the use of ice and iceboxes in American households expanded drastically after 1880. In Philadelphia, Baltimore, and Chicago, over five times as much ice was consumed in 1914 as in 1880; and in New Orleans, the increase was thirteenfold: the dollar value of iceboxes manufactured in the United States more than doubled between 1909 and 1919.53 In the early years (1910-20), neophyte manufacturers of domestic refrigerators had no difficulty finding investors willing to lend them money and large corporations willing to buy them out. Just before and after the First World War, the problems involved in initiating domestic refrigeration were technical, not financial or social, and appear to have been about as great for the absorption machine as for the compression one. Indeed, since, until about 1925, gas service was more widespread than electric service, one might guess that the absorption machine would have had the competitive edge.

The Electric Compression Machine The first domestic refrigerator actually to go into large-scale production, however, was a compression machine. The honor of being first seems to belong to A. H. Goss, then an executive of the General Motors Company; to E. J. Copeland, a purchasing agent for General Motors; and to Nathaniel B. Wales, a Harvard graduate who was an independent inventor.^{54*} On 14 September 1914, Goss and Copeland con-

^{*}In matters technological, the question of who was "first" is difficult to resolve, initially because one must be careful to specify "first at doing *what*," and then because available accounts, embedded as they are in the history of extremely private enterprises, are frequently vague, often in conflict, and most commonly nonexistent. Most authorities say that the Kelvinator was the first successful domestic refrigerator, but they may do so only because, at some point, the Kelvinator Corporation donated one of its "first" models to the Smithsonian. A reporter for *Air Conditioning and Refrigeration News* (then, *Air Conditioner*,

tracted with Wales to do the development work on a domestic refrigeration machine. After creating several test models, Wales settled on a compression machine using sulfur dioxide as a refrigerant; he had originally worked on an absorption machine, but for reasons that are unclear—those plans were dropped. On 13 May 1916, this enterprise was incorporated as Goss & Copeland Electro–Automatic Refrigerator Company; but a few months later, the name was changed to "Kelvinator." At this juncture, Wales left the enterprise. In 1917, Copeland developed a satisfactory automatic control device and a solution to the problem of gas leakage (sulfur dioxide is toxic); and in February 1918, the first Kelvinator refrigerators were sold.

The path that Goss and Copeland pioneered quickly became a beaten track. By 1923, when the officers of the General Electric Company decided to do a thorough study of the domestic refrigeration business, the mechanical engineer to whom they entrusted the job, A. R. Stevenson, was able to identify fifty-six companies that were already involved in the business.⁵⁶ Some of these, such as Kelvinator and its rival, Frigidaire (which had been founded in 1916 and purchased by General Motors in 1919), were heavily capitalized and had already produced several thousand refrigerators. Other companies had just entered the field and had only test models and/or faltering finances. In those early years, compression refrigerators dominated the field; and out of the fifty-six companies, only eight were yet either well financed or well on their way to large-scale production.

Yet, in 1923, even the compression domestic machine was still in its developmental stage: the machines on the market did not inspire every middling householder to reach immediately for a checkbook. They were, to start with, expensive: the price had fallen from its original peak; but in 1923, the cheapest still ran to \$450—not an inconsiderable sum at a time when most people earned less than \$2,000 a year. Furthermore, refrigerators were difficult to run. Electric utilities estimated that, once every three

Heating and Refrigeration News) asserted that the Isko Company (which was started "by Fred Wolf with the backing of . . . Detroit capitalists") went into business in 1912, and that the Guardian Frigerator Company (which later became Frigidaire) was started in 1916, but provided no date for the commencement of manufacturing in either case.⁵⁵ Lacking more complete information, Kelvinator remains "first."

months, they serviced the machines that they had sold: the tubes leaked; the compressors malfunctioned; the thermostats broke; and so did the motors.⁵⁷ All these early machines were, in addition, "separated" machines-and water-cooled ones at that. The refrigerating machinery was sold separately from the refrigerating compartment, which might well have been simply the icebox that a family had previously used; the machinery could be set up in the basement, say, and the icebox put in the kitchen. The compressor had additional work to do, since the refrigerant had to be moved a considerable distance, but it must have been a relief to householders to have the noise, the oil, and the serviceman in some remote part of the house. Water cooling (the standard technique in large commercial installations) was not convenient in the home. The water pipes froze in some locales in the winter time (turning a refrigerator back into an icebox); or the water frequently leaked into parts of the machinery where excess humidity created excess problems. F. C. Pratt, a vice president of G.E. in 1923, forwarded Stevenson's report to Gerard Swope, president of the company, with the following warning:

There reads through Mr. Stevenson's report the important fact that all existing practice carries a more than normal hazard of being revolutionized by inventions of a fundamental character. So many active minds throughout the country are being directed to the solution of these problems that it would be perhaps surprising if some such inventions did not materialize. The business is a rapidly evolving one, making real strides from the developmental to the commercial stage.⁵⁸

Pratt was right, as it turned out. In the decade between 1923 and 1933, inventions that would profoundly alter the design of domestic refrigerators did, in fact, materialize; and, again as he predicted, they materialized in more than one quarter. In Sweden, for example, two young engineering students, Carl G. Munters and Baltzar von Platen, figured out how to design an absorption refrigerator that would run continuously and thus would not require expensive automatic controls; this machine (the Electrolux-Servel) went on the market in 1926. Engineers at Kelvinator and, later, at General Electric discovered techniques for dispensing with water as a cooling agent. In 1927, General Electric became the first manufacturer to make a hermetically sealed motor and to sell the box as an integral part of its refrigerating machinery. Within a year, other manufacturers followed suit and also began mass production of refrigerator boxes made from steel rather than from wood. In 1930, chemists at General Motors (which still owned Frigidaire) developed a series of artificial refrigerants (the Freons) that were neither toxic nor flammable; and in 1932, engineers at Servel designed an air-cooled absorption machine. By the middle years of the Depression, most of the fundamental innovations in domestic refrigeration design (with the exception of automatic defrosting, which came later) had been made.⁵⁹

These innovations did not occur out of the blue. They were the end result of deliberate assignments given to a large number of highly trained (and highly paid) people, and of the equally deliberate expenditure of large sums of money not only to develop these ideas but to equip assembly lines that could realize them in production. The stakes were thought to be very high. The potential market for domestic refrigeration was enormous: by 1923, it was clear that every household in the United States was going to be equipped with either gas or electric service (and probably both in many places); and, thus, that if the price could be brought low enough, every household would become a potential customer for a refrigerator.⁶⁰ The potential revenues for the gas and electric utility companies would be even more enormous, since, unlike other household appliances, the refrigerator operates twentyfour hours a day. Thus, it is hardly surprising that the money and the time necessary to achieve these innovations was availableespecially during the economically free-wheeling 1920s. Yet, to say that the stakes were high is also to say that the risks were great. Some manufacturers were going to succeed, and others were going to fail-and one of the failures would turn out to be the only manufacturer in a competitive position to keep the gas refrigerator on the market.

One of the manufacturers that succeeded, and whose success helped carry the compression refrigerator to dominance, was General Electric. By the 1920s, General Electric was an enormous

corporation with vast resources and had its finger in almost every aspect of the electrical industry in the United States, from the design of large generating plants to the manufacture of light bulbs.⁶¹ The refrigerator that General Electric introduced to the public in 1925 (called the "Monitor Top" because the working parts were located in a circular box that sat on top of the refrigerating cabinet itself) was the product of almost fifteen years of developmental work on the part of General Electric employees. In 1911, G.E. had agreed to manufacture a commercial refrigerator for the Audiffren Company, which held the American rights to a patent owned by a French monk, the Abbé Audiffren. Sometime during 1917, engineers at the Fort Wayne, Indiana, plant (where the Audiffren was manufactured) began to build test models of a modified Audiffren design, suitable for use in the household. Immediately after the First World War, G.E. found itself in poor financial condition; in 1922, the company was reorganized, and Gerard Swope was brought in as president. Swope believed that General Electric was going to have to enter the consumer electric market and, to this end, instructed A. R. Stevenson, who was then head of the engineering laboratories in the company's main headquarters in Schenectady, to review the current state of the refrigerator business.⁶²

Stevenson's report, a model of engineering and econometric skill, provides glimpses of the factors that influenced decision makers at G.E. The report contained everything from engineering tests on competing machines to projections of the potential market for refrigerators sold at various prices. Stevenson had been asked to recommend a course of action to the managers of the company, and he did so without equivocating. Was it worth entering the domestic refrigeration business at all? Certainly Yes, concluded Stevenson. If it did, should G.E. purchase one of the many small companies already in the field (No) or make crosslicensing arrangements (our motors for your compressors) with one of the larger companies (No)? Should G.E. take advantage of the development work that had already been done at Fort Wayne and try to work with an Audiffren type of apparatus (Yes)? Was it worth spending the time and money that would be required to switch from water to air cooling? Absolutely, said Stevenson, not

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just because water cooling was a problem for home owners, but also because General Electric had to worry about the interests of its most important customers—not the home owners but the electric utility companies:

the electric power bill of the air cooled machine would be about \$1.30 more in six months than the water cooled machine. . . . Since the General Electric Company is entering this field for the benefit of the central station [the utility company that is generating electricity] it would seem wise to exploit a machine in which the total revenue would accrue to the central station rather than partly to the water works.⁶³

Stevenson understood that General Electric would be assuming a considerable risk if it entered the refrigerator business; but he believed the risk to be worth taking for a number of reasons: he believed that there was a good chance that G.E. would be first, that the company had the resources to sustain the initial losses, that after this initial period the profits would be great, and finally that "widespread adoption [would] increase the revenue of the central stations, thus indirectly benefiting the General Electric Company."⁶⁴ G.E. stood to gain, both coming and going, from developing a successful refrigerator.

The managers of G.E. must have agreed with Stevenson. During 1924, a group of engineers worked on developing an aircooled model of the original Fort Wayne design. In the fall of 1925, limited production began, and the "Monitor Top" was introduced to G.E.'s sales force and to the electric utility companies. During 1926, construction of an assembly line began (at a total cost of eighteen million dollars), and the design was modified again to allow for mass production. In 1927, a new department of the company was created to promote and market the machine: and within months of its establishment, the first mass-produced Monitor Tops had found their way into kitchens across the land. By 1929, fifty thousand Monitor Tops had been sold—a figure that may have been as surprising to the top management of General Electric (the company had anticipated sales of seven thousand to ten thousand per year) as it was to everyone else.65

General Electric stimulated sales of its refrigerators by means of outlandish advertising and public relations techniques. Franchised distributors were appointed in the major cities across the country and given exclusive rights to sell and service their territories. Rex Cole, in New York, was famous for constructing a neon sign that could be read three miles away, and for staging promotional parades. Judson Burns of Philadelphia had his new store designed in the shape of a Monitor Top. When G.E. introduced its first all-steel cabinets in 1929, a novel "Pirate's Chest" sales campaign was broached:

For some time previous to March 22 mysterious looking old ironbound boxes closely resembling pirates' treasure chests had been on display in the windows of General Electric refrigerator dealers, with a sign saying that they would be opened on March 22. The night before, large door keys were hung on door knobs in the residential sections with an invitation to attend the opening the following morning.

The event had been advertised in newspapers and through directby-mail literature. Many distributors and dealers arranged parties for the opening. A greater number provided radio programs. . . . In some cities the mayor was invited to open the box. In various stores, pirates swashbuckled inside and outside the sales rooms, and rode on floats with jazz bands.

Promptly at 11 o'clock that morning, in the presence of crowds of onlookers, numbering from 200 to 800 each, the chests were unlocked and disclosed the new All-Steel G.E. Refrigerator.⁶⁶

Special exhibition railroad cars toured the country, displaying refrigerators. Animated puppets danced in dealers' windows:

The June ANIMATED Window Display dramatized the shortest "short story" ever produced ... and the action takes place in a realistic stage setting in the interior of the G–E refrigerator.

Prologue: A BRIDE IN JUNE. Stage set consists of an illuminated cathedral interior during a wedding ceremony.

Act I: A SERVANT IN SEPTEMBER: A revolving stage discloses a second illuminated set consisting of a wearied housewife in an old-fashioned kitchen without electrical conveniences.

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Act II: FREEDOM IN A G-E KITCHEN: The revolving stage shows a third set consisting of a glorified G-E Kitchen and the symbolical "Freedom" figure [a vaguely-Grecian female with arms extended in a gesture of leaping joyousness].⁶⁷

The millionth Monitor Top was presented to Henry Ford in a special radio broadcast in 1931, and another one was sent on a submarine voyage to the North Pole with Robert Ripley (the originator of "Believe It or Not") in 1928. The most expensive media device of all was undertaken in 1935—a film that told "an interesting story in which comedy and romance are skillfully blended, all of which pivots on and revolves about the complete electric kitchen." An anonymous publicist waxed ecstatic:

It is of no avail to attempt to describe this picture, "Three Women." We can tell you that it is the most pretentious [*sic*], the most beautiful, the most effective commercial story ever told on the talking screen; that it is the first commercial Technicolor film ever made; that for gorgeous color and amazing realism it is on a par with outstanding examples of cinema artistry.⁶⁸

The film ran for close to an hour and starred such Hollywood notables as Sheila Mannors and Hedda Hopper, Bert Roach and Johnny Mack Brown.

General Electric was not alone, either in these outlandish promotional schemes or in its effort to develop a successful compression refrigerator; the other major refrigerator manufacturers, just as anxious to attract consumer attention (especially during the straitened Depression years), were just as willing to spend money on advertising and promotion. The electric utility companies, which were then in a most expansive and profitable phase of their history, cooperated in selling both refrigerators and the idea of mechanical refrigeration to their customers. By 1940 the market for household refrigerators was dominated by the four manufacturers of compression machines which had at their disposal the financial resources of enormous corporations: General Electric; Westinghouse, which began to manufacture refrigerators in 1930; Kelvinator, which was then owned by American Motors; and Frigidaire, which still belonged to General Motors.⁶⁹ Crosslicensing and mass-production techniques had made it possible for the manufacturers to lower their prices; installment plans and occasional price wars had made it possible for ever larger numbers of people to purchase refrigerators. Despite the Depression, and despite the still relatively high cost of refrigerators (when compared with other household appliances), roughly 45 percent of American homes were taking advantage of mechanical refrigeration by the time we entered the Second World War.⁷⁰

The Gas Absorption Machine The manufacturers of gas absorption refrigerators were not idle during these years, but they lacked the large sums of money, the armies of skilled personnel, the competitive pressure, and the aggressive assistance of utility companies that the compression manufacturers had been able to command. When Stevenson surveyed the refrigeration business in 1923, he located eight prospective manufacturers of absorption refrigerators.⁷¹ In the next several years, several of these went out of business—hardly surprising, since they had had little or no paidin capital with which to work; the Common Sense Company, for example, was working with thirty thousand dollars in the same year in which Kelvinator had one million dollars.⁷²

There seems to have been little guestion among knowledgeable people that the absorption refrigerator had the potential to be a superb machine for household use; and adjectives such as "ingenious" and "clever" were frequently appended to descriptions of gas refrigerators in the technical literature. "Thousands of people have examined this machine, among them a large number of engineers; in fact, generally speaking, the more technical a person is, the greater is the appeal made by the machine," wrote one commentator.⁷³ From the consumer's point of view, these refrigerators' chief advantages were that they were virtually silent (refrigerators with compressors once made a lot more noise than they do now-and they still hum noticeably); that, having few moving parts, they were potentially easy to maintain; and that operating costs could be kept fairly low, especially in locales where gas was cheaper than electricity. Stevenson's report on the Common Sense machine noted, for example:

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The salesman at the People's Gas Company in Chicago claims that they have sold about fifty of these machines. Some of them have been in service for two years, and he claims that they have no trouble or service calls.... Mr. Robertson of ... [G.E.'s] Chicago office, says that this ice machine is different from any other that he has seen, in that it has no rotating parts, and the machine appears to be very simple to maintain.⁷⁴

Yet the absorption machine, like the compression machine, was going to require expensive development and promotion before it could be made commercially successful; all the absorption machines that Stevenson located were water-cooled, and there was a public prejudice against the use of ammonia as a refrigerant. It remained to be seen whether anyone was going to undertake the developmental work, which would be both time consuming and expensive.

By 1926, when the American Gas Association met in Atlantic City for its annual convention, only three manufacturers of gas refrigerators remained in the field; and of these three, only one -Servel-would succeed in reaching the stage of mass production.75 In the early 1920s, Servel (whose name stood for "servant electricity") had been funded by a group of electric utility holding companies to manufacture and market compression refrigerators. But in 1925, it had purchased the American rights to the Swedish patents on the continuous absorption refrigerator, and had reorganized (with the injection of five million dollars from the financial interests that controlled the Consolidated Gas Company of New York) to devote itself principally to gas refrigeration.⁷⁶ Since it had a manufacturing plant already in existence when it purchased these new patents, it was able to commence production guickly; the Servel gas refrigerator went on the market in 1926 to the accompaniment of a good deal of publicity.

The other two manufacturers failed within a few years: they could neither compete with Servel nor sell the machines on which they held patents to any of the large corporations that might have had the resources to compete. The trials and tribulations of these small businesses are exemplified in the story of the SORCO refrigerator, which was one of the other two on display in Atlantic City in 1926.⁷⁷ SORCO was the creation of Stuart Otto, an

engineer who had patented an absorption refrigerator in 1923. He owned a factory in Scranton, Pennsylvania, that produced dress forms for seamstresses, and persuaded twenty of the leading businessmen of Scranton to put up five thousand dollars apiece so that he could develop his machine and modify his factory to produce it. These early SORCO refrigerators were advertised in gas-industry periodicals ("Build Up Your Summer Load—and fill your daily valleys: Gas controlled entirely by time-switch to be set by your service man") and were sold to gas utility companies.⁷⁸ The results of the tests being more or less positive, Otto decided in the fall of 1926 that the time had come to attempt large-scale production:

I was not able to raise the money from my stockholders when I informed them that \$1,000,000 or more would be required. My only alternative was to buy out my stockholders. So I made an option agreement with them to pay them for their stock within a year. I then went about the country offering manufacturing companies non-exclusive licenses for the manufacture of my machines under our patents, of which some fifteen existed.

I licensed Pathe Radio & Phonograph Co., Brooklyn, N.Y., Crocker Chair Company, Sheboygan, Wisconsin, Plymouth Radio & Phonograph Co., Plymouth, Wisconsin.

Each of these companies paid me a cash down payment on signing of \$25,000 and agreed to a guaranteed minimum of \$35,000 per year royalty on a 5% of net sales, for 17 years.⁷⁹

Otto had tried to interest General Electric and General Motors in his refrigerator. General Electric was, however, just about to bring out its own refrigerator; and General Motors had just purchased the patent rights on an English machine that utilized a solid rather than a liquid solvent.^{*} Otto was trying to enter the national market with ludicrously small sums of money; the days in which David had any reasonable chance of succeeding against Goliath had long since passed. Within a few years, Otto was forced to acknowledge failure: "Unfortunately . . . we were not

^{*}This refrigerator, the Faraday, was marketed, on a limited basis, by G.M. in the mid-1930s; but, as it was water-cooled and very expensive, G.M. soon dropped it.

financially able to carry the loads. After two years I managed to collect only a small portion of the accrued royalties."⁸⁰

Thus, Servel was essentially alone: from 1927 until 1956, (when it ceased production of refrigerators), it was the only major manufacturer of gas-absorption refrigerators in the United States. Never as highly capitalized as its competitors in the field of compression machinery (G.E., after all, had invested eighteen million dollars just in its production facilities in 1927, when Servel's entire assets amounted to no more than twelve million dollars), Servel had entered the market somewhat later than the other manufacturers and was never able to compete effectively. The gas utilities, notoriously conservative companies, were defending themselves against the encroachments of electricity and were not helpful; they complained that Servel was badly managed, that its refrigerators were more expensive than comparable electric machines, and that the lack of another manufacturer meant a lack of models with which to interest prospective customers.⁸¹ Servel did not succeed in bringing out an air-cooled refrigerator until 1933, six or seven years after the electrics had done so; and by then the race was virtually lost. For all its virtues as a machine, the Servel, even in its peak years, never commanded more than 8 percent to 10 percent of the total market for mechanical refrigerators.82

The demise of the gas refrigerator was not the result of inherent deficiencies in the machine itself. The machine was not perfect when it was first brought on the market, but it was no less perfect than the compression machine, its rival. The latter succeeded for reasons that were as much social and economic as technical; its development was encouraged by a few companies that could draw upon vast technical and financial resources. With the exception of Servel, none of the absorption manufacturers was ever able to finance the same level of development or promotion; and Servel never approached the capabilities of General Motors, General Electric, or Westinghouse. The compression refrigerator manufacturers came on the market earlier and innovated earlier, making it doubly difficult for competing devices to succeed. The fact that the electric utilities were in a period of growth and great profitability between 1920 and 1950, while the gas manufacturers and utility companies were defensive, conservative, and financially weak, cannot have helped matters either. If Stuart Otto had been able to obtain either capital or encouragement from the gas utilities, if Servel had been managed well enough to have innovated earlier, if either one of them had been able to command a chemical laboratory capable of discovering a new refrigerant, if there had been a sufficient number of gas-refrigerator manufacturers to have staged price wars, or license innovations to each other, or develop cooperative promotional schemes along with the gas-utility companies—well then, the vast majority of Americans might have absolutely silent and virtually indefatigable refrigerators in their kitchens. The machine that was "best" from the point of view of the producer was not necessarily "best" from the point of view of the consumer.

THE PROFIT MOTIVE AND THE ALTERNATIVE MACHINE

The case of the gas refrigerator appears, in many particulars, to be structurally similar to the cases of many other aborted or abandoned devices intended for the household. There were, at one time, dozens of different kinds of washing machine: contraptions that simulated the action of a washboard; tubs with sieves that rotated inside fixed tubs filled with soapy water; tubs that rocked back and forth on a horizontal axis; motor-driven plungers that pounded the clothing inside a tub. All these washing machines yielded, during the 1920s and 1930s, to the agitator within the vertically rotated drum, because of the aggressive business practices of the Maytag Company which owned the rights to that design. 83 The central vacuum cleaner, which technical experts preferred, quickly lost ground to its noisier and more cumbersome portable competitor, in part because of the marketing techniques pioneered by door-to-door and store-demonstration salesmen employed by such firms as Hoover and Apex.⁸⁴

Furthermore, many of the companies that pioneered successful household appliances had already developed a sound financial base manufacturing something else. Fedders, for example, made radiators for cars and airplanes before it made air conditioners; Regina made music boxes before it made vacuum cleaners; May-

tag made farm implements; Sunbeam made scissors and clippers for shearing sheep; Hoover made leather goods.⁸⁵ Alternatively, small companies with innovative ideas rarely succeeded unless they were purchased by, or made cooperative agreements with, much larger companies that had greater financial flexibility and the resources necessary to broach the national consumer market. Hotpoint belonged to General Electric, as did Edison Electric. Birdseve became part of General Foods; Norge, of Borg-Warner; Kelvinator, of American Motors. Bendix Home Appliances was a subsidiary of the Bendix Corporation, manufacturers of airplane parts. A larger corporation frequently purchased smaller ones or introduced new products when one (or several) of their old lines were failing. William C. Durant, of General Motors, for example, purchased Frigidaire because he wanted his salesmen to have something to sell when automobiles went off the consumer market during the First World War. Landers, Frary & Clark began to sell small appliances (under the name "Universal") when their cutlery trade fell off. Westinghouse went into refrigerators as a cushion against the Depression. Maytag started making washing machines because of seasonal slacks in sales of farm machinery.⁸⁶

By itself, the gas refrigerator would not have profoundly altered the dominant patterns of household work in the United States; but a reliable refrigerator, combined with a central vacuum-cleaning system, a household incinerator, a fireless cooker, a waterless toilet (otherwise known as an "earth closet"), and individually owned fertilizer-manufacturing plants (otherwise known as "garbage disposals that make compost") would certainly have gone a long way to altering patterns of household expenditure and of municipal services. We have compression, rather than absorption, refrigerators in the United States today not because one was technically better than the other, and not even because consumers preferred one machine (in the abstract) over the other, but because General Electric, General Motors, Kelvinator, and Westinghouse were very large, very powerful, very aggressive, and very resourceful companies, while Servel and SORCO were not. Consumer "preference" can only be expressed for whatever is, in fact, available for purchase, and is always tempered by the price and the convenience of the goods that are so available. At no time, in these terms, were refrigerators that ran on gas really competitive with those that ran on electric current.

In an economy such as ours in the United States, the first question that gets asked about a new device is not, Will it be good for the household-or even, Will householders buy it? but, rather, Can we manufacture it and sell it at a profit? Consumers do not get to choose among everything that they might like to have, but only among those things that manufacturers and financiers believe can be sold at a good profit. Profits are always the bottom line, and profits are partly compounded out of sales—but only partly. Profits are also compounded out of how much staff time has to be spent, whether a marketing arrangement is already in place, how easily manufacturing facilities can be converted, how reliably an item can be mass-produced—and similar considerations. General Electric became interested in refrigerators because it was experiencing financial difficulties after the First World War and needed to develop a new and different line of goods. G.E. decided to manufacture compression, rather than absorption, refrigerators because it stood to make more profits from exploiting its own designs and its own expertise than someone else's. Once having gone into the market for compression refrigerators, G.E. helped to improve that market, not just by its promotional efforts on its own behalf, but by the innovations that it could then sell to, or stimulate in, other manufacturers. And having done all that, G.E. helped to sound the death knell for the absorption machinery, since only a remarkable technical staff and a remarkable marketing staff, combined with an even more remarkable fluidity of capital, could have successfully competed with the likes of General Electric, Westinghouse, General Motors, and Kelvinator.

Conclusion

Is there any rhyme or reason to be discerned in this diverse pattern of failed alternatives? Some attempts to commercialize women's work succeeded, but other attempts clearly failed. Virtually every communal or cooperative housekeeping experiment has failed. The effort—and it was at one time strenuous—to develop a permanent class of servants in this country has also failed. Some modern appliances have become part of our daily environment; but others, which seemed equally promising at their inception (and which many of us might still find useful), have disappeared. Anthropologists are fond of saying that "one case may be an accident, two a coincidence, but if there are three or more something structural is at work."⁸⁷ Is there a set of structural conditions that might help us to make sense of these apparently unrelated outcomes?

Governmental repression or censorship are not here the answer, however much, in other countries, either or both may be. Ever since we have existed as a nation, some American somewhere has been experimenting with some radical rearrangement of household functions, from people who wanted to move spinning and weaving into factories (at the time, they were regarded as radical), to those who wanted to communalize child care on self-sufficient farms, to those who wanted to replace laundresses with Laundromats. All of these enterprises confronted political obstacles of one sort or another. The entrepreneurs of the 1820s were as much convinced that the government was against them as were the flower children of the 1960s; but whatever obstacles confronted both groups were as nothing compared with the fullscale repression that governments and churches are capable of imposing. The very fact that historians can find contemporaneous printed accounts of all these experiments is itself explicit testimony that most Americans could have learned of their existence, and that neither the government nor the churches were capable of (or even interested in) suppressing information about them.

The combined forces of capitalism and patriarchy are not the answer either—or, at least not in a conspiratorial sense. Many scholars have argued that these two large-scale, pervasive social institutions have worked together to create and then to buttress the single-family home, the private ownership of tools, and the allocation of housework to women.⁸⁸ According to this argument, capitalism requires some agency that will produce and then reproduce a stable and pliant workforce; capitalism prefers this agency to be numerous, small households, each possessing its own tools, in order that there may be the largest possible market for goods; and prefers that women should find their proper "place" in these households, so that, in the event of a social emergency, they can be called upon as a reserve, but temporary, labor force. Patriarchy, the argument goes, prefers this arrangement as well, because it keeps women subservient, thereby making men at once more powerful and more comfortable.

The history of these failed alternatives teaches that, although this Marxist feminist argument contains profound truths, it is not the whole story. Capitalism and patriarchy exist, but they are not the sole determinants of our behavior. It is true that all of the successful alternatives to traditional modes of doing housework have been stimulated by the profit motive, and also that much of what goes on in American households is indeed intended to serve the triple purposes of getting people out to work in the morning, of raising children who will, when their time comes, also be able to get out to work in the morning, and of making men comfortable. On the other hand, it is also true that some profit-making enterprises did not make profits. Why should the powers-that-be have preferred one form of profitable enterprise to another? Why should cooked-food delivery services, commercial laundries, gas refrigerators, and apartment hotels have failed, while fast-food chains, washing-machine manufacturers, compression refrigerators, and ordinary apartment houses have succeeded? The commercial laundries tried every technique in the book to advance their sales, and so did the washing-machine manufacturers; but people across the land decided to patronize one rather than the other. At least between 1927 and 1956, gas refrigerators were easily available to anyone who wanted one, but most people apparently did not care to make the effort. Apartment hotels were as profitable (perhaps even more profitable) than apartment houses, but more people were willing to move into the latter than the former, even when rents in the latter were very, very high. The Marxist feminist argument seems adequate to explain why successful enterprises have come into existence, but not the fact of their success.

More Work for Mother

In addition, while the argument makes clear why men, children, and entrepreneurs should have an interest in maintaining the single-family home, it does not explain why, in each generation, millions of women have chosen to marry and to have children and to become at least part-time housewives and to cooperate in the purchase of a house and its attendant tools. If it is really true that capitalism and patriarchy have oppressed women by relegating them to "places" in the home, then it must also be true that, without the usual instruments of terror, capitalism and patriarchy have somehow induced millions upon millions of women, generation after generation, to cooperate in their own oppression. And if that is true, then women, as a class, must be either inordinately stupid or inordinately passive—a conclusion that is both historically unlikely and profoundly anti-feminist. Is it not odd that we have no records of either large-scale or frequent rebellions against such a presumably oppressive system? In point of fact, we do not even have records of more than an occasional sit-down strike. Even a goodly number of suffragettes who wore themselves out lecturing and parading-indeed, even those who went so far as to chain themselves to the gates of the White House and refused to eat in jail-eventually returned home to worry about what would be served for dinner the next night. Elizabeth Cady Stanton, for example, was one of the most radical feminists of her day; yet she remained firmly embedded in a middle-class family life, against which she only occasionally chafed.⁸⁹ A twentieth-century example of the same phenomenon was Anna Kelton Wiley, a suffragette who chained herself to the White House gates in 1919, but who, for almost ten years before and forty years after that outrageous act, devoted herself to maintaining not one, but two, residences for her family.90 Were women such as Stanton and Wiley duped? Shall we believe that millions upon millions of women, for five or six generations, have passively accepted a social system that was totally out of their control and totally contrary to their interest? Surely there must have been at least one or two good reasons that all those women actively chose, when choices were available to them, to reside in single-family dwellings, own their own household tools, and do their own housework.

The history of all these failed alternatives to housework suggests that when the choices were available (and capitalism, if nothing else, has surely tossed up choices), the majority of people -whether rich or poor, owners or workers, male or femalechose to preserve in both the realm of symbol and the realm of fact, those activities that they deemed crucial to the creation and the maintenance of family life. There are, of course, specific reasons why each of the proposed alternatives to housework failed. Commercial laundries failed because the automatic washing machine was invented. Cooked-food delivery services failed because the meals were too expensive for the budgets of most families. The Shakers failed, in the long run, because they did not allow their members to bear children and thus create a new generation of Shakers; and the Oneida Community eventually failed, in part, because of errors made by its charismatic leader. One cooperative kitchen may have closed because its members could not agree with each other, and another may have closed because the husbands of the cooperators were not enthusiastic about the arrangement. One household may have failed to retain its servants because it was particularly nasty to them; and another, because it could not afford to compete with the wealthier household up the road. The gas refrigerator may have failed to become popular because the Servel Corporation was underfinanced; and the central vacuum cleaner, because it was too expensive for the average home. Yet, in the end, all these alternatives to the single-family residence, the private ownership of tools, and the allocation of housework to women, failed. The common condition that underlies their failure is the fact that most people prefer to live in their own homes, with their own relatives, rearing their own children, regularly sitting down to meals together, decorating their quarters according to their own lights, dressing themselves according to their own tastes, and controlling the tools with which they have to do their work. When push comes to shove, most people will opt to increase the possibility of exercising their right to privacy and autonomy: so that they can sleep, eat, have sexual relations, discipline their children, clean their bodies and their clothes without interference; and so that they can construct long-term emotional relationships with people of their own choosing. And when further push comes to further shove, when decisions have to be made about spending limited funds, most people will still opt for privacy and autonomy over technical efficiency and community interest. Americans decided to buy electric refrigerators rather than gas refrigerators because the latter were more expensive, and the expense could not be justified in any terms that were meaningful to the life of the family. Americans have decided to live in apartment houses rather than apartment hotels because they believe that something critical to family life is lost when all meals are eaten in restaurants or all food is prepared by strangers; they have decided to buy washing machines rather than patronize commercial laundries because they prefer to wash their dirty linen at home; they have decided to live in single-family houses rather than in communes because they like the privacy; and they have decided that it is easier to argue with one or two people, all relatives, about what is to be served for dinner, than with fifty or sixty participants in a cooperative kitchen. When given choices, in short, most Americans act so as to preserve family life and family autonomy. The singlefamily home and the private ownership of tools are social institutions that act to preserve and to enhance the privacy and the autonomy of families. The allocation of housework to women is, as we have seen, a social convention which developed during the nineteenth century because of a specific set of material and cultural conditions. It is a convention so deeply embedded in our individual and collective consciousnesses that even the profound changes wrought by the twentieth century have not yet shaken it.



(1) Homestead, Pennsylvania, Lewis Hine, c. 1910.

Washday

In the old days, if you had neither running water nor any tools but a scrubbing board and tub, washing clothes was back-breaking work (1), so difficult that your children could do little but look on (2). During the nineteenth century, you could have purchased one of the many hand-cranked washing machines that were on the market (3)-but the simplest and easiest way to avoid the horror of washday was to hire a laundress (4) or to patronize a commercial service (5). Later, you might have been able to sit down while your internal combustion engine (6) or an electric motor (7) did the scrubbing for you-although you would probably still have had to empty and fill the tub by hand as well as wring and haul the wet wash. The automatic washing machine-"the successor to the washing machine," as its first manufacturer called it-did not come on the market until just before the Second World War (8). Although it (and its accompanying dryer) make washday less exhausting, today you are doing much more laundry than your grandmother did (9, 10), while alternatives to doing it yourself-commercial laundries, and laundresses-have disappeared, along with alternative machines, such as this combination washing machine and dishwasher (11).





(3) Advertisement for a churn-type, hand-operated washing machine, n.d. Courtesy of the New-York Historical Society, New York City, Landauer Collection.

The Old City Laundry,

(2) Lewis Jung, photographer, no place indicated, c. 1930.



(4) Advertisement for a washing machine, showing two laundresses at work, c. 1869. Library of Congress.

No. 19 State Street. BRIDGEPORT, CONN. A few doors east of the Post Office. Good as the best! Cheap as the Cheapest! All Work Warranted to give Satisfaction. Work called for and delivered without extra charge. PRICE LIST FOR 1878-9.

I KIGE BIGT I OK TOTO OF	
Shirta	conio
Collars and Cuffs, per dozen	conta
Undorshirts and diswers	conte
Night Shirts	cente
Socks 4	centa
Handkerchiefs, per dozon	cents
Vceta	cents
Pants, wooles	cents
Pauts, lineu	cente
Coatsfrom 15 to 25	cents
Tion 4	cents
Towela	centa
Towels, roller	conta
Napkins 2	centa
Table Covers from 5 to 10	cente
Shoots 6	cente
Pillow Cases, gr 3	conte

All Shirt Bosoms, Collars and Cuffs Polished and made to look as good as new.

Ladies' Fancy Wear and Family Clothes Laundered in the Best Style at very Low Rates.

(5) Price list for a commercial laundry, 1878–79. Courtesy of the New-York Historical Society, New York City, Landauer Collection. Don't forget the place, No. 19 State St.

WM. H. LORD.

Standard Print, Bridgeport, Cona.



(6) J. C. Allen & Son, place and photographer unknown, c. 1910.



Home Laundry Machine





Harts Need Berei Touch Water



NATIONAL SEWING MACHINE COMPANY BELVIDERE, ILLINOIS (8) Advertisement for the earliest model of the Bendix, as it appeared in Parents Magazine, July 1940.





(9) Housewife washing diapers, New York City, Suzanne Szasz, 1952.

(11) Advertising photograph for a convertible washing machine and dishwasher, photographer and manufacturer unknown, as prepared by Earle Ludgin & Co., Chicago, 1946.

(10) Laundromat, photograph by Gus Pasquarella, for Saturday Evening Post, 4 May, 1946.

